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Dallas, Texas, USA



iComfort Wi-Fi®  
Thermostat

## NOTICE

Read this manual before programming this thermostat.  
Use this thermostat only as described in this manual.

### iComfort® Units

#### Indoor Unit

G71MPP-03 or later  
SLP98-01 or later  
SL280-03 or later  
EL296V-01 or later  
CBX40UHV-02 or later  
CBX32MV-06 or later

#### Outdoor Units

XC17-02 or later  
XP17-02 or later  
XP17N-01 or later  
XP19-06 or later  
XC21-05 or later  
XP21-01 or later  
XP21N-01 or later  
XP25-01 or later  
XC25-01 or later

### Shipping and Packing List

- 1 - iComfort Wi-Fi® thermostat (firmware version 2.13)
- 4 - Mounting screws
- 4 - Wall anchors
- 1 - Installation quick-start guide
- 1 - Installer's system setup guide
- 1 - Homeowner's manual
- 1 - Warranty card

## !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 service agency.

# INSTALLER'S SYSTEM SETUP GUIDE

## iComfort Wi-Fi® Thermostat

Touch Screen Programmable Communicating Thermostat

### CONTROLS

507343-01  
10/2014  
Supersedes 7/2014

TP Technical  
Publications  
Litho U.S.A.

### Overview — Technical Description and Features

This 24VAC thermostat is an electronic communicating, color display touchscreen and 7-day programmable thermostat. This thermostat stores system parameters and settings in non-volatile memory (i.e., retains data when electrical power fails or is turned off).

This thermostat can also connect to online services via the Internet through the homeowner's Wi-Fi router. After online registration is completed, the system may then be accessed by the homeowner from anywhere using a remote Internet connection via computer or personal communicating device.

The thermostat also supports:

- Wireless bands 802.11b, 802.11c and 802.11n,
- Three languages are supported (English, Français and Español),
- Air conditioning or heat pump units with up to four stages of heat / two stages of compressor operation (2 stages of heat pump heating, 2 stages of auxiliary back-up heating, 2 stages of emergency heating),
- Variable - capacity / multiple - stage heat/cool, universal compatibility (gas/electric/heat pump/air conditioner)
- Dual-fuel capable (iComfort® heat pump only) with two balance points.
- Indoor air quality with time-based notification of consumables including media filters, UVC bulbs, humidifier pads, and PureAir™ system catalyst service / replacement,
- iHarmony® zoning system (2 - 4 zones),
- Lennox iComfort® Equipment Interface Module (Catalog number 10T50) (provides iComfort Wi-Fi® to non-communicating indoor unit,
- Humidification measurement and control,
- Dew point adjustment control,
- Humiditrol® Enhanced Dehumidification Accessory (EDA),
- Equipment maintenance reminders,
- Autochangeover mode -- Permits control of heating, cooling, humidification, and dehumidification without user involvement,
- All Lennox branded iComfort® outdoor units have a outdoor temperature sensor factory installed,
- Enhance defrost control options for Lennox communicating heat pumps using Intellifrost™ Adaptive Defrost Control, part number 103369-04 or later.

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### **CAUTION**

This is a 24VAC Class 2 thermostat. Do not install on voltages higher than 30VAC.

Do not switch system to cool if the outdoor temperature is below 45°F (7°C). This can damage the cooling system.

### **CAUTION**

Electric shock hazard.

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

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

### **IMPORTANT !**

Connections to non-communicating outdoor units and accessories are described in the Quick-Start Installation guide. Wiring diagrams are also provided beginning on page 53 of this manual.

## Installation and Setup

During initial thermostat start-up the following screen will appear (see figure 1). This indicates that the thermostat is active and booting up.



Figure 1. Boot-Up Screen

### COMMUNICATION ERROR SCREEN

During initial thermostat start-up if the following screen appears (see figure 2), this will indicate that the thermostat has been incorrectly wired or has shorted wires. Turn power off to the system and verify that all wiring is correct.

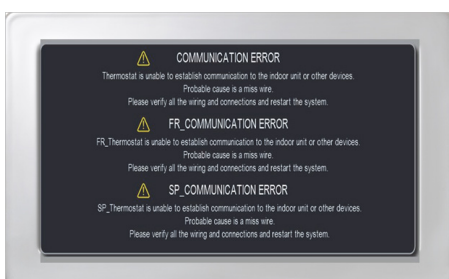


Figure 2. Communication Error Screen

## Figure 3. View/Edit Time and Date

When **Time and Date** screen appears, enter the correct date as follows:

- Use the left and right arrows to change the month and year.
- Touch a day of the month to select it.
- Press on the hour or minute; up down arrows appear to allow change.
- Touch the **am/pm** field to toggle it between am and pm.
- When the correct date and time is set, press **save** to save settings and return to previous settings screen.

Touch **next** to continue to next screen.

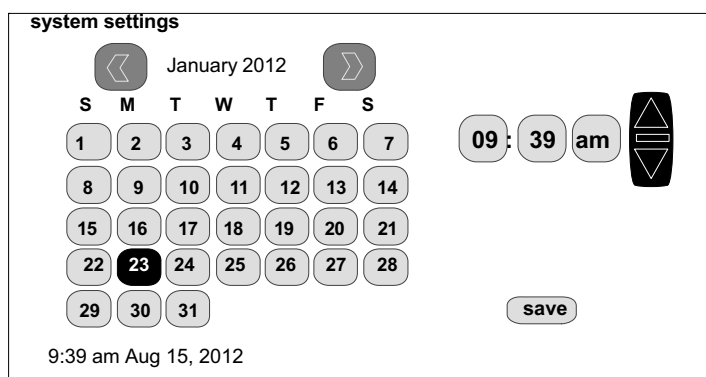
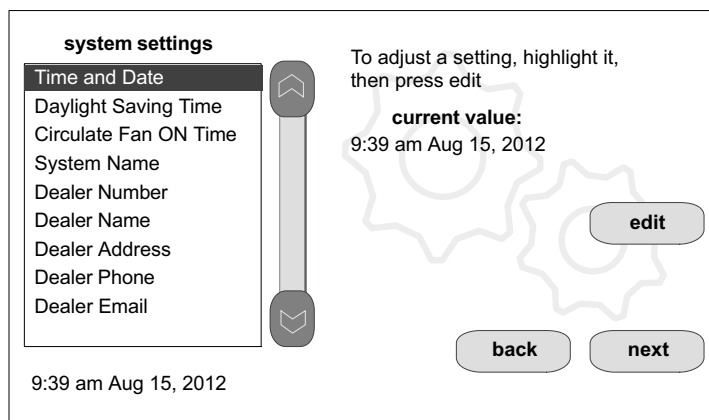


Figure 4. Set Current Time and Date

## Adjusting System Setting

### SET TIME AND DATE

Use the arrows to select **Time and Date**; press **edit** to proceed to the **Set current time and date** screen.



### CIRCULATE FAN ON TIME SETTING

**NOTE** - If the circulate fan mode is on, a timer is set to measure all the time that the fan is blowing, regardless if it is running to deliver heating or cooling or just for circulation.

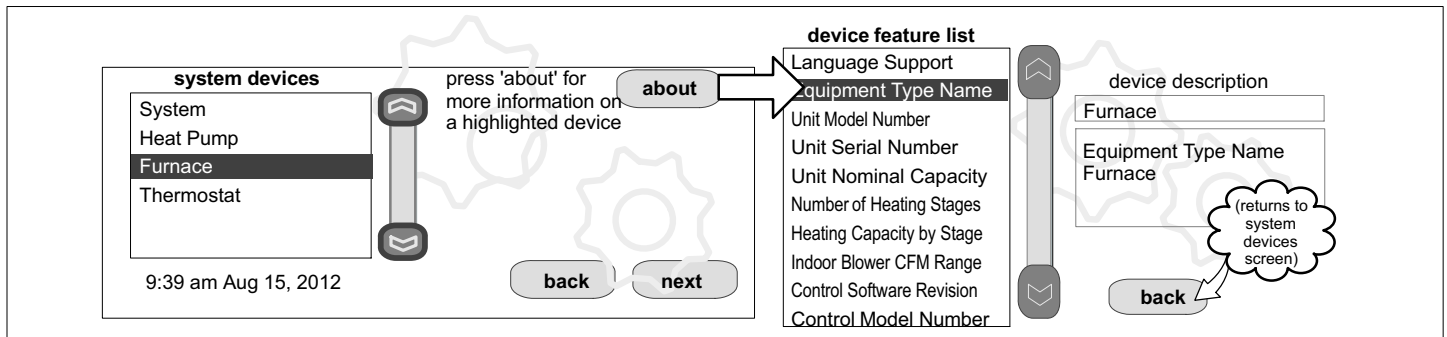
**Circulate** is enabled on the user's **home** screen or **system settings** page. It keeps air circulating from 15% to 50% percent of time. The following settings approximate how long the fan will run at these typical settings:

- 15% (9 minutes fan run time per hour)
- 25% (15 minutes fan run time per hour)
- 35% (21 minutes fan run time per hour)
- 45% (27 minutes fan run time per hour).



## Identifying System Devices

From the “system devices” screen, use arrow buttons to scroll to a device; then press the **about** button. Use the up/down arrows to scroll through and view additional information about the selected device. When finished viewing, press the **back** button.



## Non-Communicating Equipment — Adding Outdoor Unit, Dehumidifier and Humidifier

### NON-COMMUNICATING EQUIPMENT — ADDING OUTDOOR UNIT

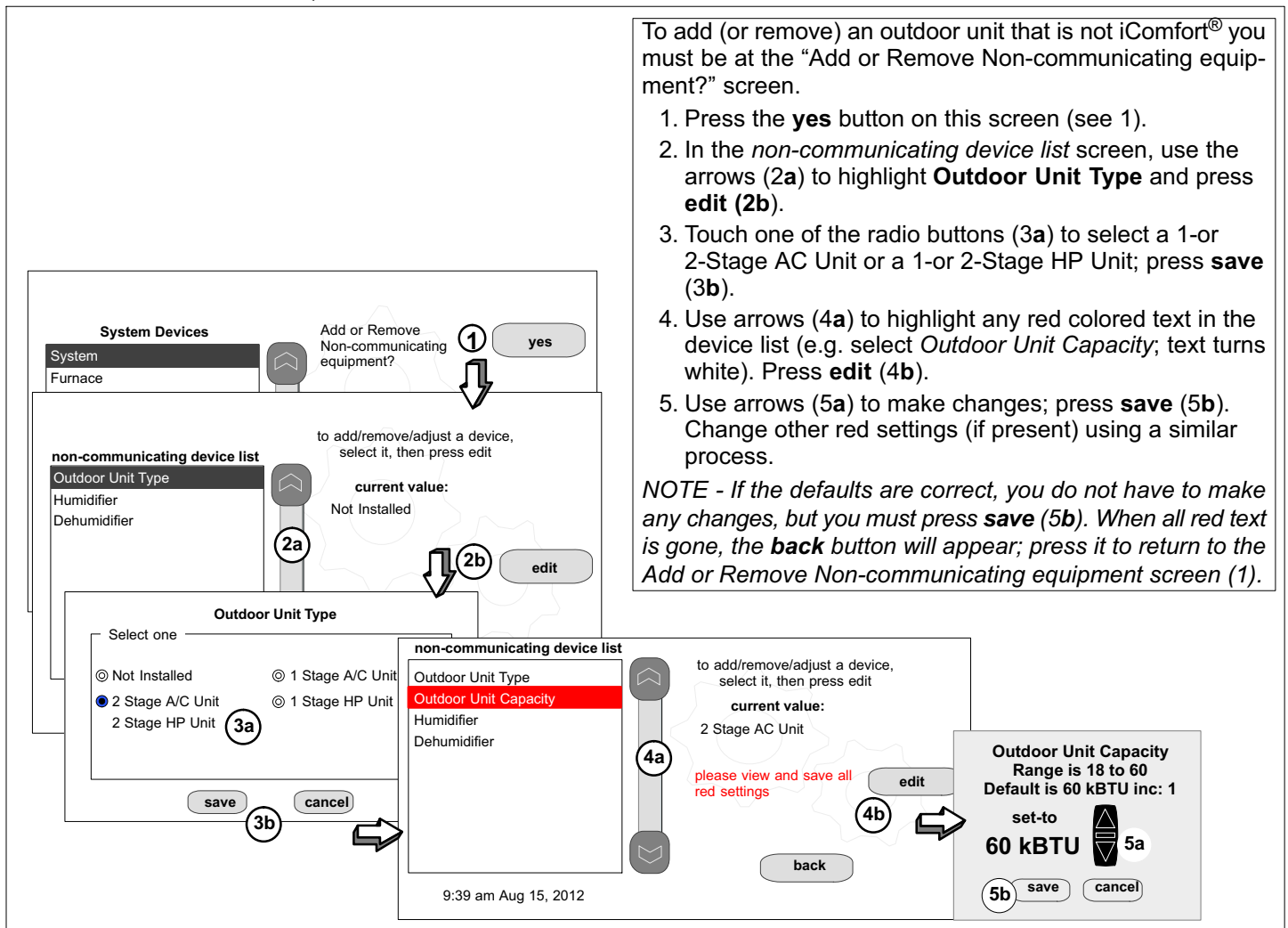
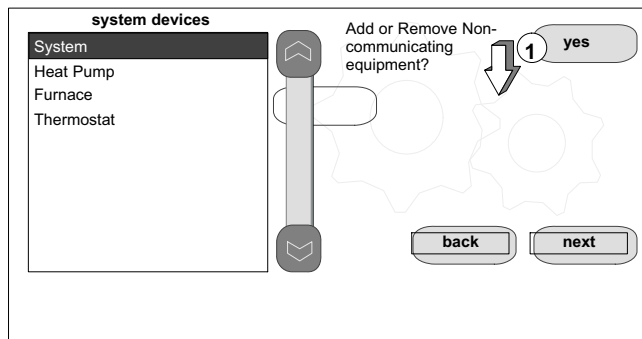


Figure 6. Add Non-Communicating Device — Outdoor Unit

## NON-COMMUNICATING EQUIPMENT — ADDING A HUMIDIFIER

Before adding a humidifier, be sure that:

- The humidifier is wired to the furnace or air handler control as shown on the optional accessories wiring diagram.
- The entire system is wired, powered up, and the thermostat has detected the system's installed communicating devices, and you are at the *Add or Remove Non-communicating equipment?* screen.



To add (or remove) a humidifier:

1. Press the **yes** button on this screen (see 1).
2. In the “non-communicating device list” screen, use the arrows (2a) to highlight *Humidifier* (note the current value, *Not Installed*) and press **edit** (2b).
3. Touch one of the radio buttons (3a) to select humidification equipment type. Options available are dependent on indoor unit model.
4. The previous screen returns, but the current value now shows your selection (4a). Press the **back** (4b) button.
5. The *Add or Remove...* screen reappears with your addition shown in the system devices list (5a). At this point, you may add more equipment (press **yes**) or if finished, press the **next** (5b) button to advance to the *Adjust a setting...* screen (see page 18).

**NOTE** - Adding humidity regulating non-communicating devices may be a 2-step procedure:

**1st**, the device must be installed and wired. After the humidifier is installed, the setting under the System mode Humidification Control Mode defaults to Basic).

**2nd**, (if you want another mode, i.e. Precision, Basic Dew Point, or Precision Dew Point, the device requires further configuration (see page 18).

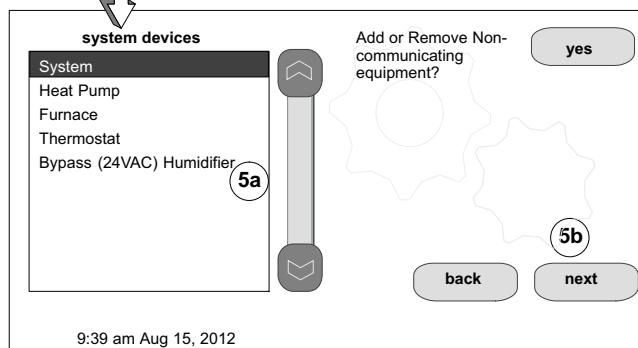
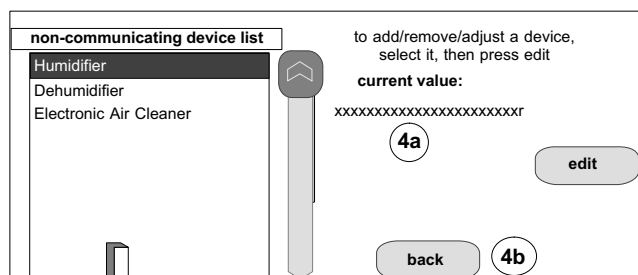
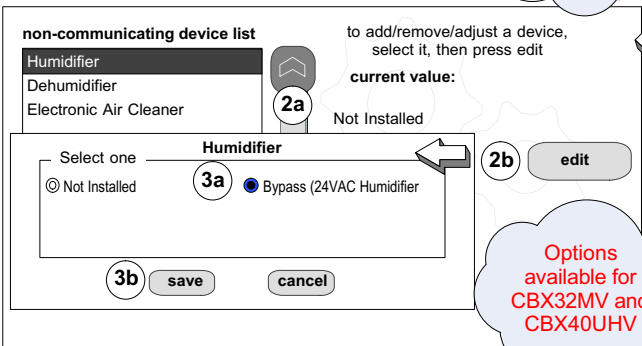
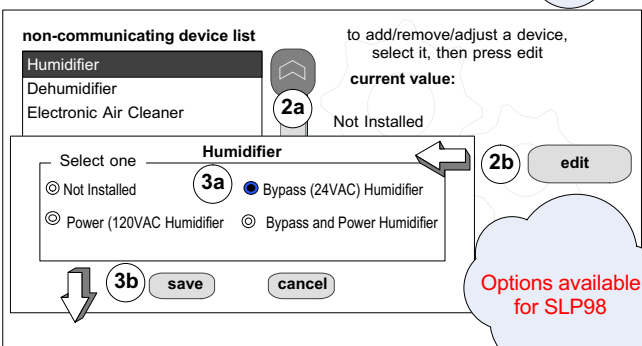
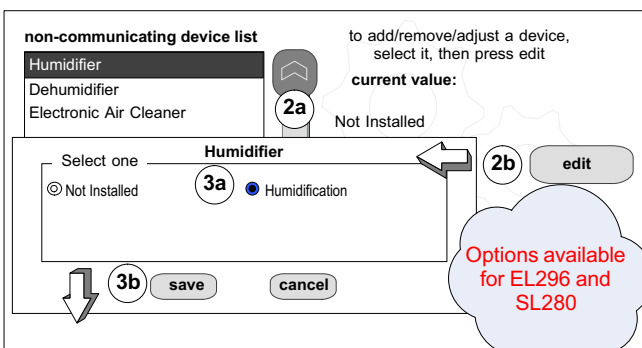


Figure 7. Add Non-Communicating Device — Humidifier



## NON-COMMUNICATING EQUIPMENT — ADDING HUMIDITROL® OR AUXILIARY DEHUMIDIFIER

Before adding a dehumidifier, be sure that:

- the dehumidifier is wired to the furnace or air handler control as shown on the optional accessories wiring diagram.
- the entire system is wired, powered up, and the thermostat has detected the system's installed communicating devices, and you are at the *Add or Remove Non-communicating equipment?* screen.

To add (or remove) a dehumidifier, you must be at the *Add or Remove Non-communicating equipment?* screen.

1. Press the **yes** button on this screen (see 1).
2. In the *non-communicating device list* screen, use the arrows (2a) to highlight *Dehumidifier* and press **edit** (2b). Note the current value (e.g. Not Installed).
3. Touch one of the radio buttons (3a) to select the type of dehumidifier (or select *Not Installed*, if removing dehumidifier); press **save** (3b).
4. When you scroll to the Dehumidifier device (4a), (Note the current value, e.g. Humiditrol.) Click **back** (4b) to return to the *Add or Remove...* screen (1).
5. The *Add or Remove...* screen reappears with your addition shown in the system devices list (5a). At this point, you may add more equipment (press **yes**) or if finished, press the **next** button (5b) to advance to the *Adjust a setting...* screen).

**NOTE** - Adding humidity regulating non-communicating devices may be a 2-step procedure:

- 1st**, the device must be installed and wired. After the dehumidifier is installed, the setting under the System mode Dehumidification Control Mode defaults to Basic).
- 2nd**, set Humiditrol® comfort adjust overcooling and the min/max dehumidification setpoints if desired (see page 18).

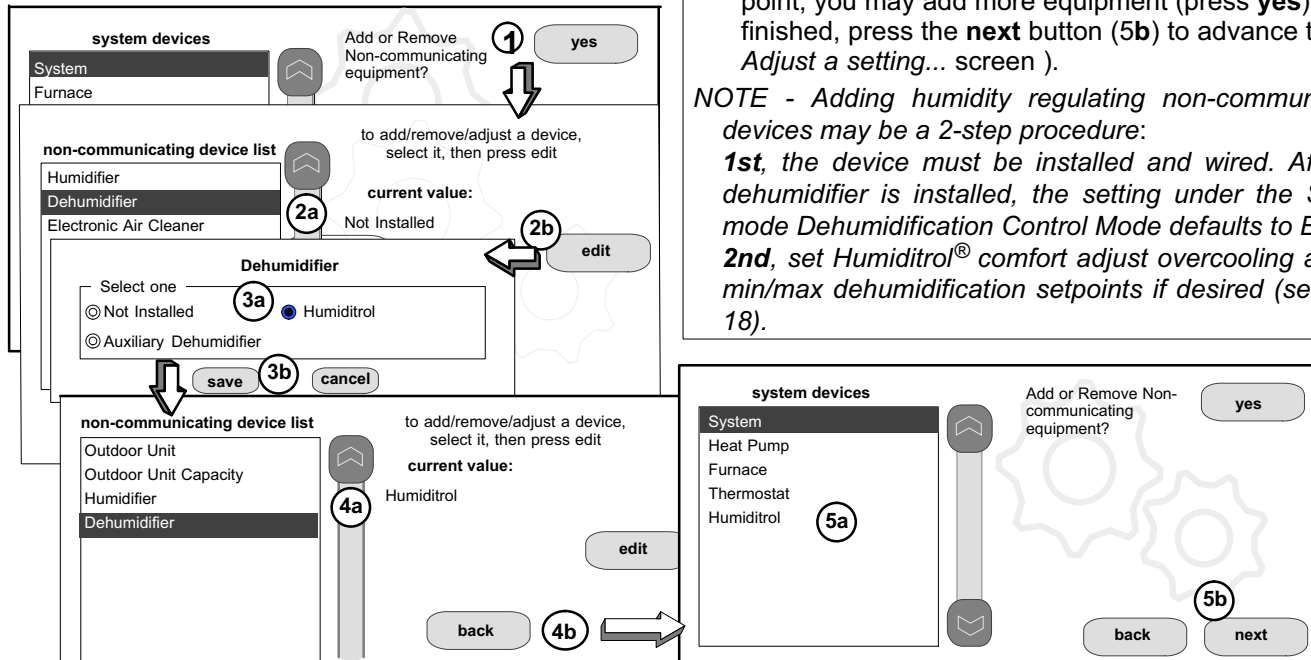


Figure 8. Add Non-Communicating Device — Dehumidifier

## Adjusting System Device Settings

1. Press any component listed under system devices to change specific communicating equipment parameters and edit details of devices in the system.
2. Use the arrows to highlight a setting and then press **edit** (figure 9A). In the example, the low heating airflow is changed from the default (400) to 325 (figure 9B). After changing, press **save**. (note the current value has changed; figure 9C). Some changes may affect other settings and, if so, those affected will appear in red and require changing/saving to clear the red settings.
3. When finished, press **back**; equipment parameters screen then press **next**. *Select tests to run screen appears*; either run tests as before or press *skip tests*.

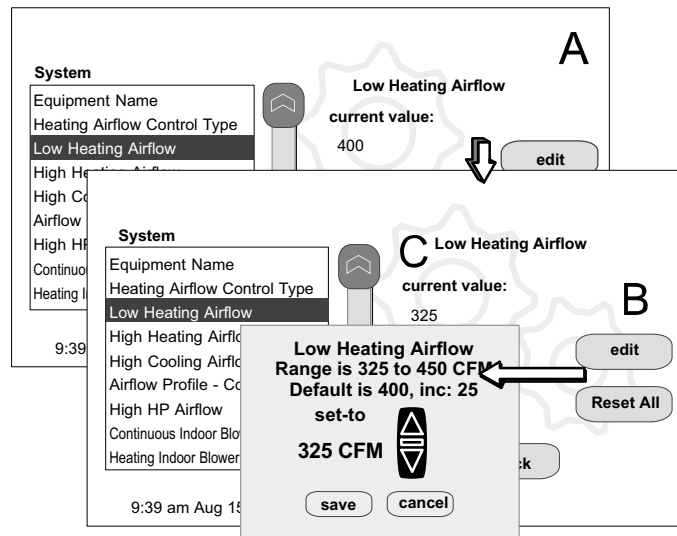


Figure 9. Edit Equipment Details

## iComfort® UNIT CONFIGURABLE SETTINGS

The following tables list the system devices settings available from the installer setup screens.

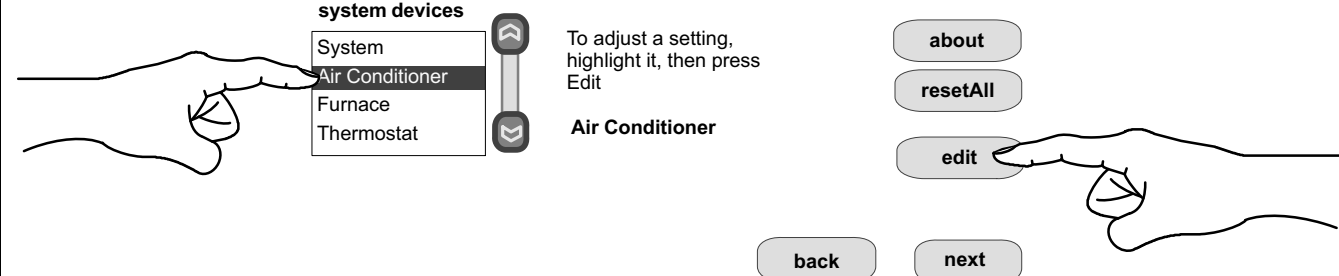
Table 2. System Devices > System

<div> <div> system devices <div> System Heat Pump Furnace Thermostat </div> </div> <div> To adjust a setting, highlight it, then press Edit </div> <div> System </div> <div> about resetAll edit back next </div> </div> <div>9:39 am Aug 15, 2012</div>			
Parameter Name:	Default	Parameter Value Setting	Increment
Equipment Name	—	Press edit to change name (up to 35 characters may be used). <b>Note:</b> Pressing the <b>resetALL</b> button will reset all custom parameter settings back to factory default.	—
Filter 1 Timer Selection	Calendar Time	Calendar Time, Run Time	—
Filter 2 Timer Selection	Calendar Time	Calendar Time, Run Time	—
UV Bulb Timer Selection	Calendar Time	Calendar Time, Run Time	—
Humidifier Pad Timer Selection	Calendar Time	Calendar Time, Run Time	—
PureAir Timer Selection	Calendar Time	Calendar Time, Run Time	—
Smooth Setback Recovery	Enabled	Enabled, Disabled	—
Electric Heat Control Mode	Standard	Standard, Evenheat	—
EvenHeat Discharge Temp	85°F	85°F to 130°F	15°F
Gas Heat Control Mode	Staged	Staged, Variable Capacity, Load Tracking Variable Capacity	—
Number of Gas Heating Stages (SLP98V only) (staged selection)	4	1, 2, 3 or 4	—
Modulating Gas Heating Steady State PI (SLP98V only)	Standard	Less Aggressive, More Aggressive, Standard	—
Modulating Gas Heat Step Change PI (SLP98V only)	Standard	Less Aggressive, More Aggressive, Standard	—
Modulating HP Heating Cycles Per Hour (XP25 only)	4.0	3.0 to 6.0	0.5
Modulating HP Electric Heating Switching Point (XP25 only)	1.0	0.0 to 2.0	0.25
Modulating HP Heating Steady State PI Gain (XP25 only)	Standard	Less Aggressive, More Aggressive, Standard	—
Modulating HP Heating Step Change PI Gain (XP25 only)	Standard	Less Aggressive, More Aggressive, Standard	—
Modulating Cooling Steady State PI Gain (XC25 and XP25 only)	Less Aggressive	Less Aggressive, More Aggressive, Standard	—
Modulating Cooling Step Change PI Gain (XC25 and XP25 only)	Less Aggressive	Less Aggressive, More Aggressive, Standard	—
Modulating Cooling Cycles Per Hour (XC25 and XP25 only)	4.0	3.0 to 6.0	0.5

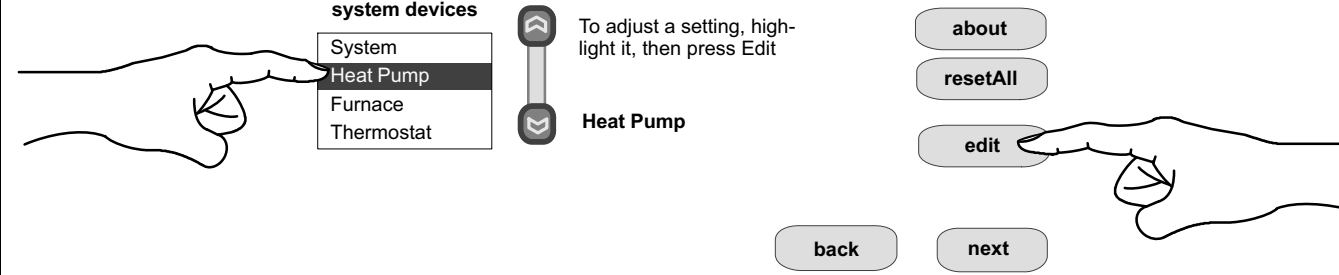


Parameter Name:	Default	Parameter Value Setting	Increment
Auto Changeover - Temp Dead-band	5°F	3 to 9°F	1°F
Max Heat Set point	90°F	40 to 90°F	1°F
Min Cool Set point	60°F	60 to 99°F	1°F
Heat Cool Stages Lock In	60°F	60 to 99°F	1°F
Balance Point Control	Disabled	Disabled or Enabled	—
Humiditrol Comfort Adjust	Maximum Overcooling	Maximum, Minimum and Midpoint Overcooling	—
Humidification Control Mode	Basic	Display Only, Precision, Precision Dew Point Control, Basic, Basic Dew Point Control	—
Max Humidification Setpoint	45°F	15 to 45°F	1°F
Auto Changeover - Humidif. Dead-band	5°F	5 to 10°F	1°F
Dew Point Adjustment	0°F	-15°F to 15°F	1°F
Humiditrol and Aux Dehum Min Run Time	15 minutes	5 to 30 minutes	5 minutes
HP Heating Lockout Time (enabled in zoning system) - When heat pump cannot satisfy demand in a reason time, the control switches to gas heating and lockout the heat pump for 120 minutes by default.	120 minutes	60 to 240 minutes	30 minutes
Heat Cool Stages Locked In	Disabled	Enabled, Disabled	—
*1st Stage Differential	1.0°F	0.5 to 3°F	0.5°F
*2nd Stage Differential	1.0°F	0.5 to 8°F	0.5°F
*3rd Stage Differential	1.0°F	0.5 to 8°F	0.5°F
Stage Delay Timers	Enabled	Enabled, Disabled	—
*2nd Stage Delay	20 Minutes	5 to 120 Minutes	5 Min
*3rd Stage Delay	20 Minutes	5 to 120 Minutes	5 Min
Electric Heat Stage During Defrost ( <i>Used to adjust the number of electric heating elements that will be energized when the heat pump is in defrost mode.</i> )	2	0 to 5	1
Min De-humidification Setpoint	40	50 to 55 RH%	1
Outdoor Temperature Reading Calibration	0°F	-10 to 10°F	1°F
Zoning Gas heating DAT Cool down Target	100°F	80 to 110°F	1°F
Zoning Anticipated Discharge Air Temperature Adjustment	60 Seconds	0 to 120 seconds	5 seconds
Zoning Target Supply Air Temp for Cooling	50°F	50 to 60°F	1°F
Zoning Target Supply Air Temp for Gas/Electric Heating	100°F	100 to 130°F	5°F
Zoning Target Supply Air Temp for HP Heating	90°F	85 to 110°F	1°F
Zoning Supply Air Temp Limit for Cooling	40°F	35 to 45°F	2°F
Zoning Supply Air Temp Limit for Gas/Electric Heating	140°F	140 to 160°F	5°F
*Number of stages shown in thermostat is dependent on equipment that is installed. Electric heat will bring on 2 elements at a time if available.			
Lock in 2nd stage HP by Outdoor Temp	Off	Off, 40°F (4°C), 45°F (7°C), 50°F (10°C), 55°F (13°C)	—
HP Heating Lockout Time	120 Minutes	Range is 60 to 240 minutes.	60 Min
Zoning Minimum Zone Run Time	120 Seconds	Range is 90 to 600 seconds	30 Sec
Zone 1 First Stage Differential	1.0°F	0.5 to 3.0°F	0.5°F
Zone 2 First Stage Differential	1.0°F	0.5 to 3.0°F	0.5°F
Zone 3 First Stage Differential	1.0°F	0.5 to 3.0°F	0.5°F
Zone 4 First Stage Differential	1.0°F	0.5 to 3.0°F	0.5°F
Zone 1 Continuous Blower CFM	To be determine by equipment capacity.		
Zone 2 Continuous Blower CFM			
Zone 3 Continuous Blower CFM			
Zone 4 Continuous Blower CFM			
Zone 1 Cooling CFM			
Zone 2 Cooling CFM			
Zone 3 Cooling CFM			
Zone 4 Cooling CFM			
Zone 1 Heating CFM			
Zone 2 Heating CFM			
Zone 3 Heating CFM			
Zone 4 Heating CFM			

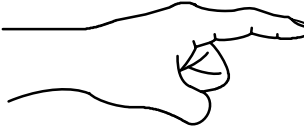


**Table 3. System Devices > Air Conditioner**

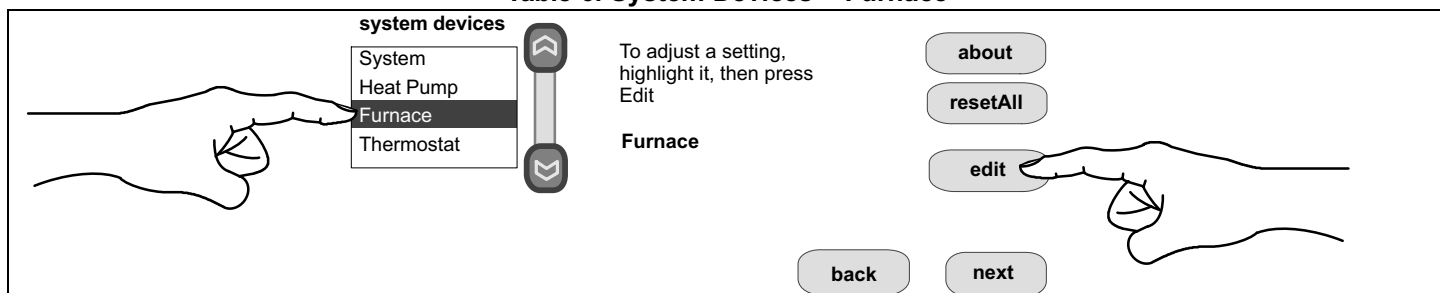
 <p>system devices</p> <p>System Air Conditioner Furnace Thermostat</p> <p>To adjust a setting, highlight it, then press Edit</p> <p>Air Conditioner</p> <p>about</p> <p>resetAll</p> <p>edit</p> <p>back</p> <p>next</p>			
Parameter Name:	Default	Parameter Value Setting	Increment
Equipment Name	Outdoor Unit	Press edit to change name (up to 35 characters may be used). <b>Note:</b> Pressing the <b>resetALL</b> button will reset all custom parameter settings back to factory default.	—
Compressor Short Cycle Delay	300 Seconds	60 to 300 Seconds	60 Sec
High Normal Cooling Airflow (XC25 only)	1600	450 to 2150	25
Low Normal Cooling Airflow (XC25 only)	750	450 to 2150	25
Dehum Airflow Adjustment Adder	0	0 to 30	1

**Table 4. System Devices > Heat Pump**

 <p>system devices</p> <p>System Heat Pump Furnace Thermostat</p> <p>To adjust a setting, highlight it, then press Edit</p> <p>Heat Pump</p> <p>about</p> <p>resetAll</p> <p>edit</p> <p>back</p> <p>next</p>			
Parameter Name:	Default	Parameter Value Setting	Increment
Equipment Name	Outdoor Unit	Press edit to change name (up to 35 characters may be used). Pressing the <b>resetALL</b> button will reset all custom parameter settings back to factory default. <b>Note:</b> The <b>resetALL</b> function is required when replacing the outdoor unit control with a new control part number 103369-04). Performing the <b>resetALL</b> task will enable new defrost parameters to be accessible.	—
Compressor Short Cycle Delay	300 Seconds	60 to 300 Seconds	60 Sec
Compressor Shift Delay On/Off	On	On, Off	
High Normal Cooling Airflow (XP25 only)	1600	450 to 2150	25
Low Normal Cooling Airflow (XP25 only)	750	450 to 2150	25
High Normal HP Heating Airflow (XP25 only)	1600	450 to 2150	25
Low Normal HP Heating Airflow (XP25 only)	750	450 to 2150	25
Dehum Airflow Adjustment Adder	0	0 to 30	1
Defrost Termination Temp	50°F	50°F to 100°F When Outdoor Control 103369-04 or later is used, the following options are available: 50F (10C), 90F (32C), 70F (21C) and Max Defrost	10°F
Automatic Max Defrost (parameter only available if using outdoor control 103369-04 or later). See page 31 for further details.	OFF	OFF or ON	1
Max Defrost by Weather (parameter only available if using outdoor control 103369-04 or later). See page 31 for further details.	OFF	OFF or ON	1

**Table 5. System Devices > Air Handler**

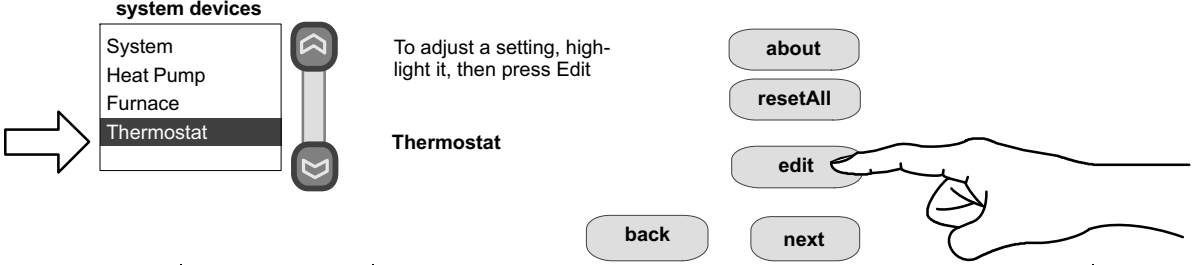
<div> <div>  <div> <b>system devices</b>  System  Heat Pump  <b>Air Handler</b>  Thermostat </div> </div> <div>   To adjust a setting, highlight it, then press Edit  <b>Air Handler</b>   </div> <div> <div>about</div> <div>resetAll</div> <div>edit</div> <div>back</div> <div>next</div> </div> </div>			
Parameter Name:	Default	Parameter Value Setting	Increment
Equipment Name	Air Handler	Press edit to change name (up to 35 characters may be used). <b>Note:</b> Pressing the <b>resetALL</b> button will reset all custom parameter settings back to factory default.	—
Electric Heating Airflow	nnnn CFM (See Note at end of table)	NOTE: CFM Default and Values Settings are dependent on the tonnage of the unit	5CFM
High Cooling Airflow	nnnn CFM (See Note at end of table)	NOTE: CFM Default and Values Settings are dependent on the tonnage of the unit	5CFM
Airflow Profile - Cooling	1	1: No Delays, 2: ON: No delays; OFF: 45 sec delay 3: ON: 82%/7.5min; OFF: No delays 4: ON: 50%/30s, 82%/7.5min; OFF: 50%/30s	—
Continuous Indoor Blower Airflow	nnnn CFM (See Note at end of table)	NOTE: CFM Default and Values Settings are dependent on the tonnage of the unit	10CFM
Heating Indoor Blower OFF Delay	10 sec	0 to 10 Seconds	1 sec
Heating Indoor Blower ON Delay	0 sec	0 to 5 Seconds	1 sec
Cooling Indoor Blower OFF Delay	0 sec	0 to 30 Seconds	2 sec
Cooling Indoor Blower ON Delay	2 sec	0 to 10 Seconds	1 sec
<b>Note</b> All communicating Installer Parameters default CFM values based on DIP switch setting (non-communicating value) are calculated using the CFM conversion tables and rounded up to closest number on 25 CFM resolution.			

**Table 6. System Devices > Furnace**


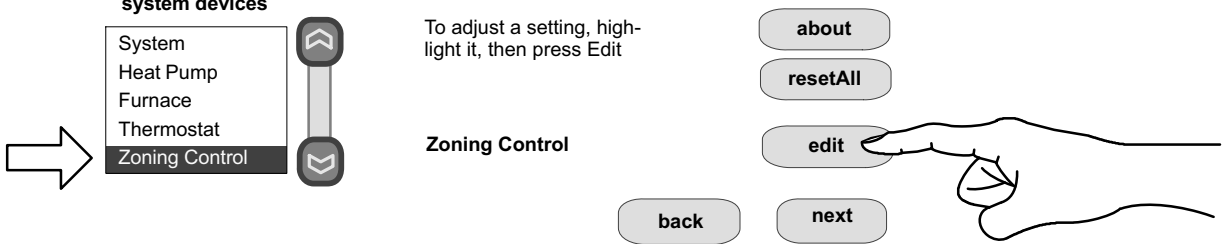
Parameter Name	Default	Min.	Max.	Incr.	Dependency	Note or Options
Equipment Name	Press edit to change name (up to 35 characters may be used). <b>Note:</b> Pressing the <b>resetALL</b> button will reset all custom parameter settings back to factory default.					
Airflow Profile - Cooling	A	-	1-	-	None	A:ON:50%/30S,82%/7.5min OFF:5-%/30S B:ON:82%/7.5min; OFF: No delays C:ON: No delays; OFF: 45sec delay D:No delays
Continuous Indoor Blower Airflow	nnnn CFM (See Note 3 at end of table)					
De-humidification Airflow %	70	60	8-	1	None	
Heating Indoor blower OFF delay	DIP SW	60	180	10	None	DIP switch setting in Non-comm.
Heating Indoor blower ON delay	30 sec	15	45	5	None	45 sec fixed in Non-Comm. IFC
Cooling Indoor blower OFF delay	0 sec	0	30	2	Outdoor Unit present	Not used on Non Comm. IFC
Cooling indoor Blower ON Delay	2 sec	0	10	1	Outdoor Unit present	2 sec fixed in Non-Comm. IFC
HP Indoor Blower OFF Delay	45 sec	0	60	5	Heat Pump present	Not used on Non Comm. IFC
HP Indoor Blower ON Delay	0 sec	0	30	5	Heat Pump present	Not used on Non Comm. IFC
Heating Airflow Control Type	Selections available if discharge air temperature sensor is installed ( <i>fixed cfm and fixed discharge air temperature</i> ).					
Low Heating Airflow	Low and high heating air flow is dependent on model of indoor unit					
High Heating Airflow						
<b>Gas Heat Airflow Settings</b>						
Heating Airflow Control Type (variable capacity furnaces only)	0 – Fixed CFM	0	1	1	DATS installed	0 (Fixed CFM) 1 (Fixed DAT)
Low Heating Airflow (CFM @ min. heat)	DIP SW	See furnace documentation (IOM or Product Specifications) for size specific information		25	Heating Airflow Control Type = 0	See furnace documentation (IOM or Product Specifications) for size specific information
High Heating Airflow (CFM @ 100% heat)	DIP SW			25		
Low Heating Discharge Air Temperature (DAT @ min heat) (variable capacity furnaces only)	DIP SW*			5	Heating Airflow Control Type = 1	
High Heating Discharge Air Temperature (DAT @ 100% heat) (variable capacity furnaces only)	DIP SW*			5		
* - Default DAT value is rounded to the closest number on 5 deg F resolution and limited by Minimum and Maximum value.						
<b>Cooling Airflow Settings</b>						
High Cooling Airflow (CFM @ 100% cool)	Outdoor unit tons 400CFM	Min CFM	Max CFM	25	Outdoor Unit present	1/2 HP blower
		Min CFM	Max CFM	25		1 HP blower
Low Cooling Airflow (CFM @ lowest cool stage)	(See Note 1 at end of table)	Min CFM	Max CFM	25	2+ stage Outdoor Unit present	1/2 HP blower
		Min CFM	Max CFM	25		1 HP blower

Heat Pump Airflow Settings						
High Heat Pump Airflow (CFM @ 100%)	Outdoor unit tons 400CFM	Min CFM	Max CFM	25	Heat Pump present	1/2 HP blower
		Min CFM	Max CFM	25		1 HP blower
Low Heat Pump Airflow (CFM @ lowest stage)	(See Note 2 at end of table)	Min CFM	Max CFM	25	2+ stage Heat Pump present	1/2 HP blower
		Min CFM	Max CFM	25		1 HP blower
Other Parameters						
Continuous Indoor Blower Airflow	DIP SW (See Note at end of table)	Min CFM	Max CFM	25	None	1/2 HP blower
		Min CFM	Max CFM	25		1 HP blower
Humidification Airflow	Same as above	Min CFM	Max CFM	25	Humidifier present	1/2 HP blower
		Min CFM	Max CFM	25		1 HP blower
Note 1:	Minimum Outdoor Unit Cooling Stage as a percentage of High Cooling Airflow (value is rounded up to the closest number on 25 CFM resolution).					
Note 2:	Minimum Outdoor Unit Heating Stage as a percentage of High Heat Pump Airflow (value is rounded up to the closest number on 25 CFM resolution).					
Note 3:	All communicating Installer Parameters default CFM values based on DIP switch setting (non-communicating value) are calculated using the CFM conversion tables and rounded up to closest number on 25 CFM resolution.					

**Table 7. System Devices > Thermostat**

			
Equipment Name	—	Press edit to change name (up to 35 characters may be used). <b>Note:</b> Pressing the <b>resetALL</b> button will reset all custom parameter settings back to factory default.	
Temp Reading Calibration	0°F	-5°F to 5°F	
Humidity Reading Calibration	0%	-10 to 10%	

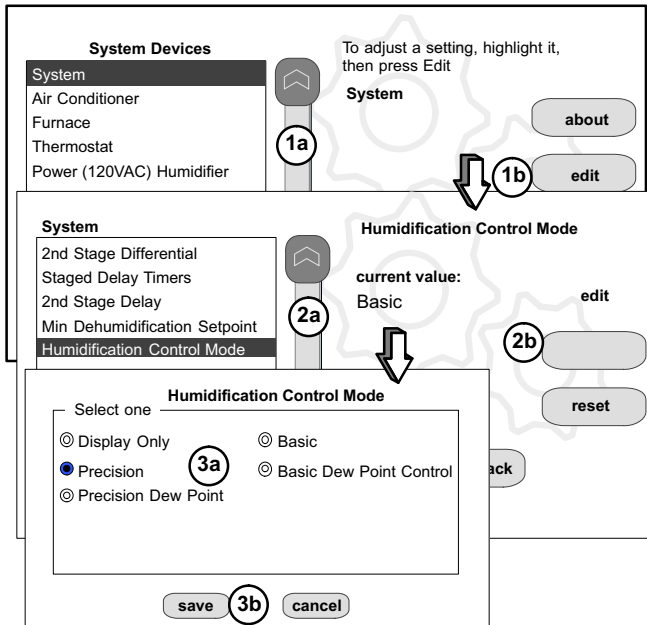
**Table 8. System Devices > Zoning Control**

					
Parameter Name	Default	Min.	Max.	Incr.	Dependency
Zone 2 Temp Reading Calibration	0°F	-5°F	5°F	1°F	Damper control module installed
Zone 3 Temp Reading Calibration	0°F	-5°F	5°F	1°F	
Zone 4 Temp Reading Calibration	0°F	-5°F	5°F	1°F	

**NOTE** - More zoning parameters are available under **system devices > system** on page 9.

## Complete iComfort® System — Adjusting Humidification Settings

### SYSTEM DEVICES SCREEN — HUMIDIFICATION CONTROL MODE SETTINGS



Pre-adjustment **REQUIREMENTS**:

**1st**, the device has been **installed** (see page 6).

**2nd**, you pressed **next** at the “Add or Remove...” screen (see page 6).

Configure the device as follows:

1. In the “system devices” list, use the arrows (1a) to highlight **System**. Press **edit** (1b).
2. In the “System” list, use the arrows (2a) to highlight **Humidification Control Mode**. The current value defaults to Basic mode. Press **edit** (2b).
3. Touch one of the radio buttons (3a) to select the mode of humidification control; press **save** (3b). (After saving, check that the current value now shows the new selection).
4. Press the **back** button to return to “Adjust a setting...” screen.

**NOTE** - If the defaults for the settings shown in red, you are not required to make any changes, but you must go into the edit tool, and press **save** (5b). When all red text is gone, the **back** button will appear; press it to return to the “Adjust a setting...” screen.

Basic Dew Point Control adjustment mode will change the humidification set point based:

- on the outdoor temperature
- user-defined Dew Point Adjustment setting
- user-defined Auto Changeover - Humidif. Deadband setting
- user-defined Max Humidification Setpoint setting

Precision Dew Point Control adjustment mode will operate when these conditions are met:

- humidification mode has been enabled
- humidification demand exists (24V present at H).
- the unit is in HEAT mode
- user-defined Dew Point Adjustment setting
- user-defined Auto Changeover - Humidif. Deadband setting
- user-defined Max Humidification Setpoint setting

**NOTE** - In dew point adjustment mode, the humidification setpoint has no effect whatsoever on unit operation. Only the user-defined dew point adjustment setting affects operation per the following formula:

$$RH_{\text{setpoint}} = \frac{\text{Outdoor Temp } (^{\circ}\text{F})}{2} + 25 + \text{RH}_{\text{user dew point adjustment}}$$

Where:  $RH_{\text{user dew point adjustment}}$  cannot exceed +/- 15% and  $RH_{\text{setpoint}}$  minimum is 15% and cannot exceed 45%

Figure 10. Complete iComfort® System Devices Screen — Humidification Setting



## FEATURE SCREEN — HUMIDIFICATION SETTINGS

1. From the *Main Screen*, press the right arrow icon to go to the *Features* screen.
2. From the *Features* screen, select *system* settings.
3. Touch the button of the humidification controls you want to adjust; if it says humidifier OFF, one touch will display a selection for ON.
4. When you touch the set-to button, the arrows appear, allowing you to change to the desired humidity percentage setting.

### How Humidification Mode Works

**DISPLAY, BASIC AND PRECISION**—These modes allow user control of relative humidity between 15 and 45%. These conditions must be met for either mode to operate:

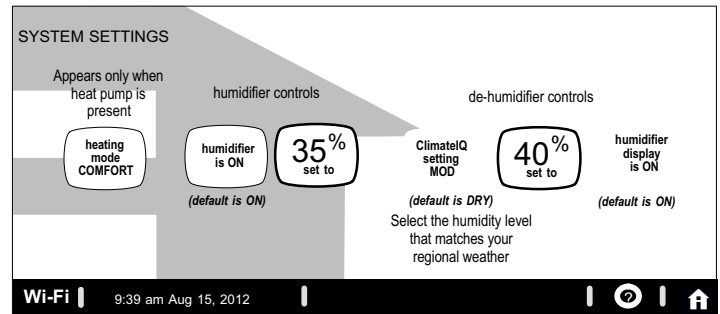
- humidification mode has been enabled, and
- the unit is in HEAT mode, and
- humidification demand exists (24V present at H), and
- **DISPLAY** mode indicates humidification is OFF.
- **BASIC** mode also requires presence of heating demand [Y for HP heat, or W for gas heat (W may be energized with G de-energized)].
- **PRECISION**—(Available only if Wi-Fi is operational or outdoor sensor is attached)

Basic Dew Point Control adjustment mode will change the humidification set point based:

- on the outdoor temperature
- user-defined Dew Point Adjustment setting

Precision Dew Point Control adjustment mode will operate when these conditions are met:

- humidification mode has been enabled
- humidification demand exists (24V present at H).
- the unit is in HEAT mode



**Figure 11. Complete iComfort® Feature Settings Screen — Humidification Setting**

## Complete iComfort® System — Adjusting Dehumidification Settings

### SYSTEM DEVICES SCREEN — DEHUMIDIFICATION SETTINGS

*Pre-adjustment REQUIREMENTS:*

- 1st**, the device has been **installed**
- 2nd**, from the “Add or Remove Non-communicating equipment?”, press **next**.
- 3rd**, in the “Adjust a setting...” screen, configure the device as follows:

1. In the “system devices” list, use the arrows (1a) to highlight **System**. Press **edit** (1b).
2. **Humiditrol® only**—In the “System” list, use the arrows (2a) to highlight **Humiditrol Comfort Adjust**. The current value defaults to Maximum Overcooling. Press **edit** (2b).
3. **Humiditrol® only**—Touch one of the radio buttons (3a) to select the overcooling level; press **save** (3b). (After saving, check that the current value now shows the new selection).
4. Use arrows (4a) to highlight **Min De-humidification Setpoint**; press **edit** (4b). Note the current value (e.g. 45).
5. Use arrows (5a) to make changes; press **save** (5b). (After saving, check that the current value now shows the new selection).
6. Press the **back** button to return to “Adjust a setting...” screen.

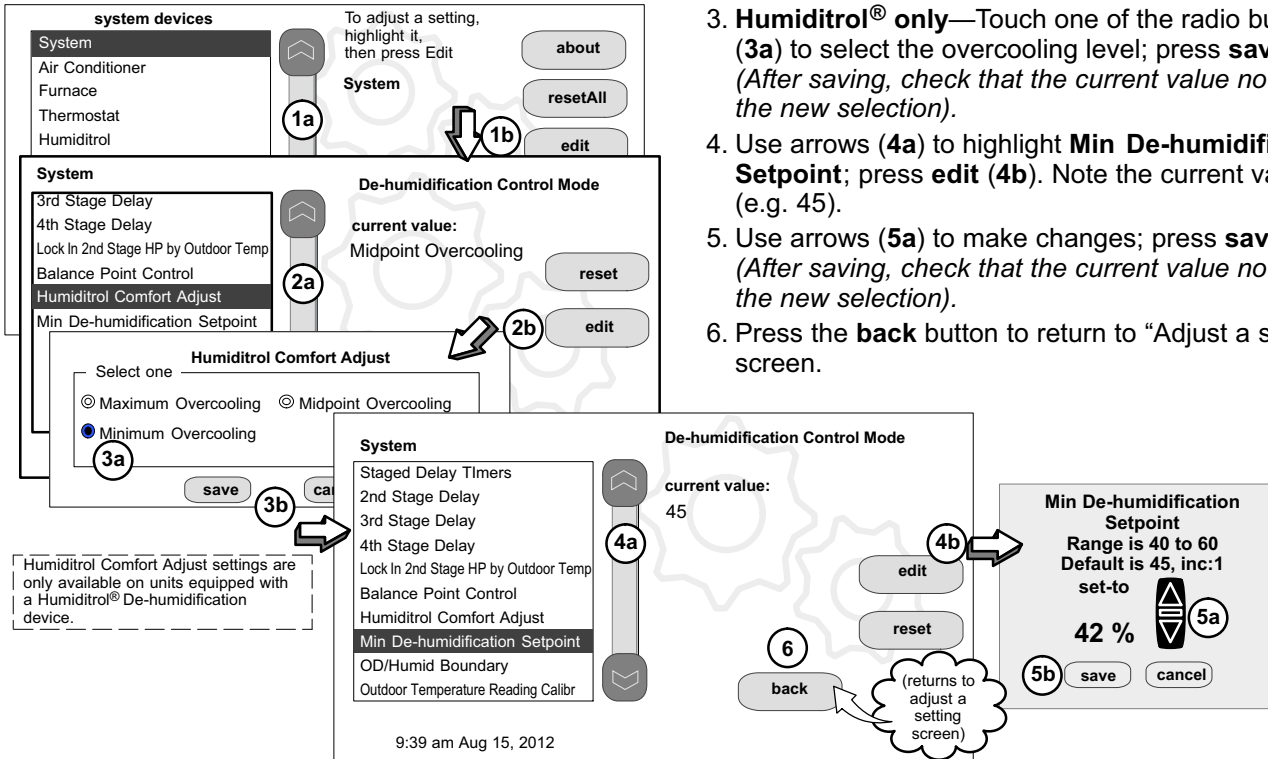


Figure 12. Complete iComfort® System Devices — Dehumidification Settings

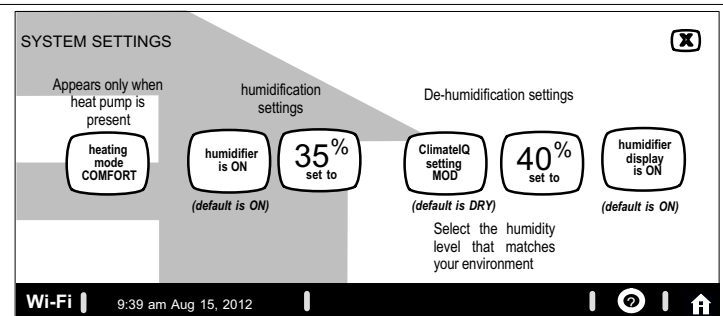
### FEATURE SCREEN — DEHUMIDIFICATION SETTINGS

1. From the *Main Screen*, press the *right arrow* icon to go the *Features* screen.
2. From the *Features* screen, select *system settings*.
3. Touch the *ClimateIQ* setting button. Available options when selected are selection for DRY, MODERATE and HUMID.
4. Selecting HUMID bring on the **set-to** button. When you touch the **set-to** button, the arrows appear, allowing you to change to the desired dehumidifier percentage setting

#### COOLING MODE — CLIMATE IQ™

Three climate settings are available:

- **Dry** - The system supplies higher indoor airflow at all compressor capacities, increasing efficiency by operating at a higher sensible-to-total ratio.
- **Moderate** - The system supplies indoor airflow that balances efficiency and comfort.
- **Humid** - The system supplies lower indoor airflow at all compressor capacities, improving humidity removal by operating at a lower sensible to total ratio.



#### HEATING MODE (XP25 ONLY) — CLIMATE IQ™

This technology optimizes dehumidification settings for specific climates to improve home comfort during cooling or heating operations.

Two climate settings are available:

- **Comfort** - The system reduces indoor airflow, increasing supply air temperature.
- **Normal** - Standard system operation.

Figure 13. Dehumidification iComfort® System Controls

## DEHUMIDIFICATION — HOW IT WORKS

This is applicable only to the XC17, XP17, XP17N, XC21, XP21 and XP21N models.

**DRY, MODERATE AND HUMID** —These modes allow user control of relative humidity between 40% and 60% RH. These conditions must be met for either Moderate or Humid modes to operate:

- dehumidification mode has been enabled, and
- the unit is in COOL mode, and
- dehumidification demand exists (OV present at H), and

**DRY** mode if off with no dehumidification control.

**MODERATE** mode requires presence of cooling demand (Y for HP heat).

**HUMID** mode requires the system to be in the cooling mode and to of had a cooling call prior to the dehumidification call. Their does not need a cooling call to be present to bring on Humid dehumidification. This mode can over cool the space by 2 degrees while trying to satisfying the dehumidification demand.

**Humiditrol® or Auxiliary Dehumidifier** mode requires:

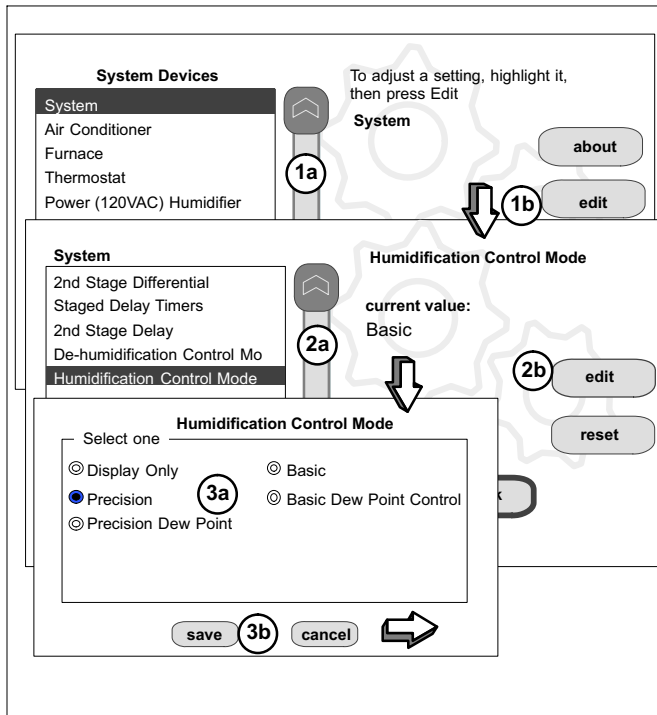
*NOTE - Systems using iComfort® and a dehumidifier - "Dehum" jumper on furnace/air handler control does not need to be cut when using with a iComfort Wi-Fi® thermostat.*

- dehumidification has been enabled on installer settings, and
- the unit is in COOL mode, (or if in AUTO and at least one thermostat cooling call made prior to the dehumidification demand), and
- a dehumidification demand exists (RH above set point), and
- outdoor temperature is below 95°F and indoor temperature above 65°F (Humiditrol only).

- **MAX** adj. - Indoor temp > 2°F above heating set point
- **MID** adj. - Indoor temp >  $\frac{\text{HEAT setpoint} + \text{COOL setpoint}}{2}$
- **MIN** adj. - Indoor temp > 2°F below cooling set point

## Partial iComfort® System — Adjusting Humidification Settings (Non-Communicating Outdoor Unit)

### SYSTEM DEVICES SCREEN — HUMIDIFICATION CONTROL MODE



#### Pre-adjustment REQUIREMENTS:

**1st**, the required devices (outdoor unit and humidifier) has been **installed** (see page 6).

**2nd**, you pressed **next** at the Add or Remove... screen (see page 6).

Configure the device as follows:

1. In the *system devices* list, use the arrows (1a) to highlight *System*. Press **edit** (1b).
2. In the *System* list, use the arrows (2a) to highlight *Humidification Control Mode*. The current value defaults to Basic mode. Press **edit** (2b).
3. Touch one of the radio buttons (3a) to select the mode of humidification control; press **save** (3b). (After saving, check that the current value now shows the new selection).
4. Press the **back** button to return to *Adjust a setting...* screen.

**NOTE** - If the defaults for the settings shown in red, you are not required to make any changes, but you must go into the edit tool, and press **save** (5b). When all red text is gone, the **back** button will appear; press it to return to the *Adjust a setting..* screen.

Figure 14. Adjust a Non-Communicating Device Setting — Humidification

### FEATURE SCREEN — HUMIDIFICATION SETTINGS

1. From the main screen, press the **right arrow** icon to go to the *Features* screen.
2. From the *Features* screen, select *system* settings.
3. Touch the button of the humidification settings you want to adjust; if it says humidifier OFF, one touch will display a selection for ON.
4. When you touch the *set-to* button, the arrows appear, allowing you to change to the desired humidity percentage setting.

#### How Humidification Mode Works

**DISPLAY, BASIC AND PRECISION**—These modes allow user control of relative humidity between 15 and 45%. These conditions must be met for either mode to operate:

- humidification mode has been enabled, and
- the unit is in HEAT mode, and
- humidification demand exists (24V present at H), and
- **DISPLAY** mode indicates humidification is OFF.
- **BASIC** mode mode also requires presence of heating demand [Y for HP heat, or W for gas heat (W may be energized with G de-energized)].
- **PRECISION**—(Available only if Wi-Fi is operational or outdoor sensor is attached)

Basic Dew Point Control adjustment mode will change the humidification set point based on the outdoor temperature and a user-defined dew point adjustment setting.

Precision Dew Point Control adjustment mode will operate when these conditions are met:

- humidification mode has been enabled, and
- the unit is in HEAT mode, and
- humidification demand exists (24V present at H).

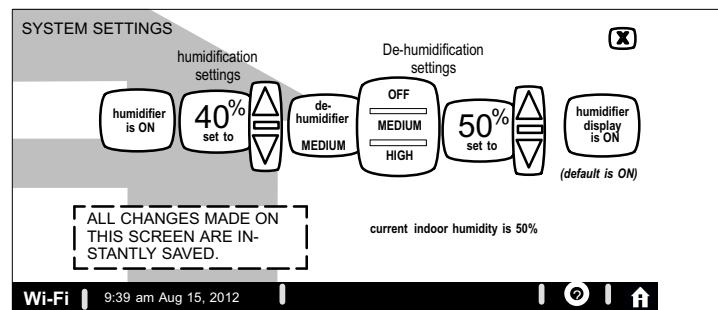


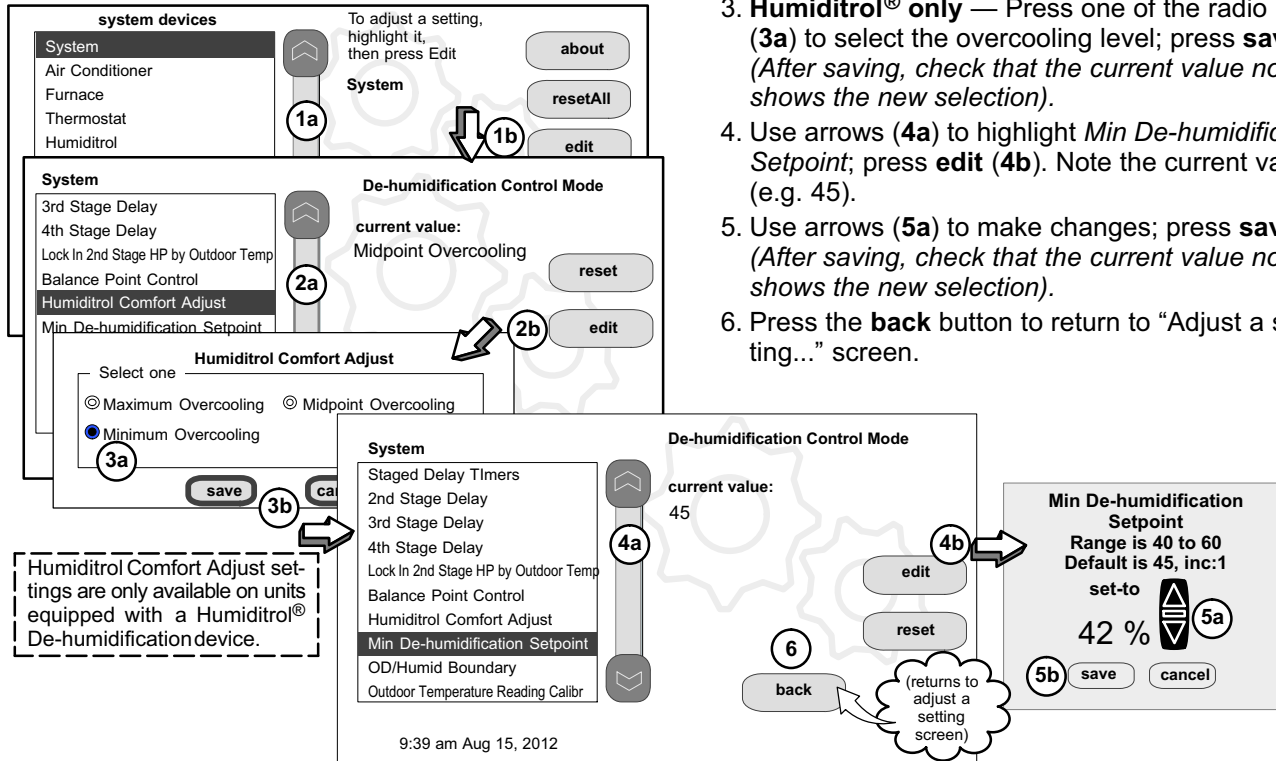
Figure 15. Humidification Settings Controls

## Partial iComfort® System — Adjusting Dehumidification Settings (Non-Communicating Outdoor Unit)

### SYSTEM DEVICES SCREEN — HUMIDITROL COMFORT ADJUSTMENT

#### Pre-adjustment REQUIREMENTS:

- **1st**, the device has been **installed**
- **2nd**, from the *Add or Remove Non-communicating equipment?*, press **next**.
- **3rd**, in the *Adjust a setting...* screen, configure the device as follows



1. In the “system devices” list, use the arrows (1a) to highlight **System**. Press **edit** (1b).
2. **Humiditrol® only**—In the “System” list, use the arrows (2a) to highlight **Humiditrol Comfort Adjust**. The current value defaults to Maximum Overcooling. Press **edit** (2b).
3. **Humiditrol® only** — Press one of the radio buttons (3a) to select the overcooling level; press **save** (3b). (After saving, check that the current value now shows the new selection).
4. Use arrows (4a) to highlight **Min De-humidification Setpoint**; press **edit** (4b). Note the current value (e.g. 45).
5. Use arrows (5a) to make changes; press **save** (5b). (After saving, check that the current value now shows the new selection).
6. Press the **back** button to return to “Adjust a setting...” screen.

Figure 16. Adjust a Non-Communicating Device Setting — Dehumidification

### FEATURE SCREEN — DEHUMIDIFICATION SETTINGS

1. From the main screen, press the right arrow icon to go to the *Features* screen.
2. From the *Features* screen, select *system* settings.
3. Touch the button of the dehumidification settings you want to adjust; if it says dehumidifier OFF, one touch will display a selection for OFF, MEDIUM or HIGH.
4. Selecting MEDIUM or HIGH will bring on the **set-to** button.
5. When you touch the **set-to** button, the arrows appear, allowing you to change to the desired dehumidifier percentage setting

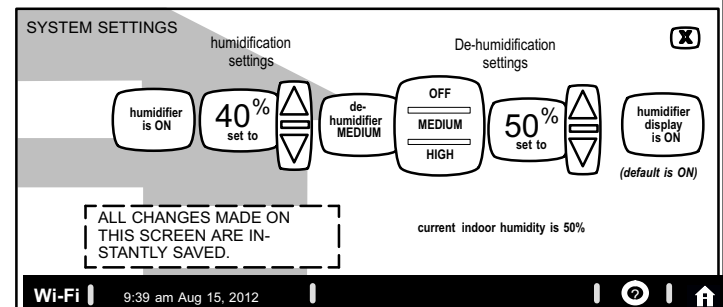


Figure 17. Dehumidification Settings Controls

## DEHUMIDIFICATION — HOW IT WORKS

Remember that the humidification only operates while in the heating mode and dehumidification only operates while in the cooling mode.

**OFF, MEDIUM AND HIGH**—These modes allow user control of relative humidity between 40% and 60% RH. These conditions must be met for either mode to operate:

- de-humidification mode has been enabled, and
- the unit is in COOL mode, and
- de-humidification demand exists (0V present at H), and

**MEDIUM** mode also requires presence of cooling demand [Y for HP heat, or W for gas heat (W may be energized with G de-energized)].

**HIGH** mode requires the system to be in the cooling mode and to of had a cooling call prior to the dehumidification call. Their does not need a cooling call to be present to bring on Humid dehumidification. This mode can over-cool the space by 2°F while trying to satisfying the dehumidification demand.

**Humiditrol® or Auxiliary Dehumidifier** mode requires:

*NOTE - Systems using iComfort® and a dehumidifier - "Dehum" jumper on furnace/air handler control does not need to be cut when using with a iComfort Wi-Fi® thermostat.*

- Wi-Fi is operational or outdoor sensor is installed and set up
- Dehumidification has been enabled on installer settings, and
- the unit is in COOL mode, (or if in AUTO, at least one thermostat cooling call made prior to the dehumidification demand), and
- a dehumidification demand exists (RH above set point), and
- outdoor temp. below 95°F; indoor temp. above 65°F, and
- for **HUMIDITROL**, adjust Humiditrol® comfort parameters as follows:

- **MAX** adj. - Indoor temp > 2°F above heating set point
- **MID** adj. - Indoor temp >  $\frac{\text{HEAT setpoint} + \text{COOL setpoint}}{2}$
- **MIN** adj. - Indoor temp > 2°F below cooling set point

**Figure 18. Humidifier Controls (Non-Communicating Outdoor Unit)**

### Auxiliary Dehumidification (Communicating and Non-Communicating Outdoor Units)

Control State	Conditions
Auxiliary dehumidification is controlled by iComfort® thermostat with or without zoning.	<ul style="list-style-type: none"> <li>• System must be in cooling mode and have a call for dehumidification from the iComfort® thermostat. This will start the auxiliary dehumidifier.</li> <li>• A separate wire from auxiliary dehumidifier will need to be run to <b>G</b> terminal on indoor unit control to start the blower.</li> </ul>
Auxiliary dehumidification is controlled by dehumidification control with or without zoning	Needs a dehumidification demand from the stand-alone dehumidification thermostat and a separate wire run to G terminal on indoor unit to start the blower.



## Zoning Control Settings (iHarmony® Zoning System)

**NOTE** - Skip if no zoning control device is installed.

### HEAT/COOL CHANGEOVER

The following is an example of how the system operates during a heating / cooling changeover.

When the system is satisfying a call from zone 1 for heating and receives a call for cooling from zone 2, the following will occur:

- Then system will continue to fulfill the demand from zone 1 until satisfied, or a maximum time of 20 minutes has occurred.
- If after 20 minutes the system is still operating based on satisfying the heating demand from zone 1, the system will terminate that demand.
- The system will shut system down for five (5) minutes. This will allow for system temperatures and operating pressures to stabilize.
- After a five minute delay the system will begin operations to satisfied the cooling demand from zone 2.

The system will continue to operate in this matter each time it receives a zone call that is opposite of the current mode of operation (heating or cooling).

### DAMPER OPERATION

#### Cooling Operation - Conventional Heat/Cool and Heat Pump Systems

When a in-zone thermostat makes a demand for cooling, the zone damper opens and the cooling equipment begins operating. Dampers will closed for any zone with no cooling demand.

Cooling demand is terminated when:

1. All zone demands for cooling are terminated.
2. The demand has exceeded the heat/cool changeover time limit (20-minutes) while a heat demand exists.

When cooling demand is terminated, a 5 minute minimum off time delay is initiated.

Second stage cooling is energized when the discharge air temperature is 7°F higher than the set point of the cooling staging temperature.

#### Heating Operation - Conventional Heat/Cool and Heat Pump Systems

When a in-zone thermostat makes a demand for heating, the zone damper opens and heating equipment begins operating. Dampers will closed for any zone with no heating demand.

Heating demand is terminated when:

1. All zone demands for heating are terminated.
2. The demand has exceeded the heat/cool changeover time limit (20-minutes) while a cooling demand exists.

When heating demand is terminated, a 5-minute minimum off time delay is initiated.

Second-stage heating is energized if the discharge air temperature is lower than the set point of the heating staging temperature set point.

Under system devices use the following procedures to adjust various zoning control parameters (a complete list of all available parameters are listed starting on page 8).

### ZONE CONTROL (ADJUSTING SYSTEM DEVICES)

#### System Devices > System

A complete list of available zoning parameters under **System** is provided in table 2 on page 8.

1. In the **system devices** screen, use the arrows (A) to highlight **System** and press **edit** (B).
2. Touch one of the options (C) to select for example **Zoning Target Supply Air Temp for Cooling** Press **edit** (D) to continue.
3. Use up or down arrows (E) to change the value.
4. Press **save** (F).

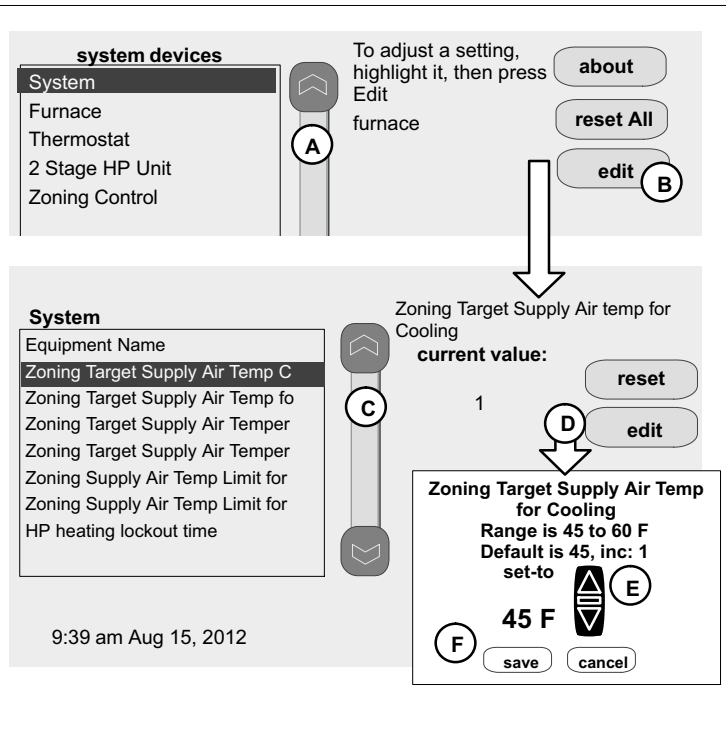


Figure 19. Adjusting System Devices > System Parameters for iHarmony® Zoning System

## ZONING CONTROL (ADJUSTING SYSTEM DEVICES / ZONING CONTROL SETTINGS)

### System Devices > Zoning Control

1. In the "system devices" screen (figure 20), use the arrows (A) to highlight **Zoning Control** and press **edit** (B).
2. Touch one of the options (C) to select "Zone 2 Temp Reading Calibration". Press **edit** (D) to continue.
3. Use up or down arrows (E) to change the value.
4. Press **save** (F).

After completing the **Zone Control** settings press the **back** button to continue. If all system settings have been completed, then from "system devices" screen, continue by pressing the **next** button. The **Edit and Test Airflow per Zone** screen will appear.

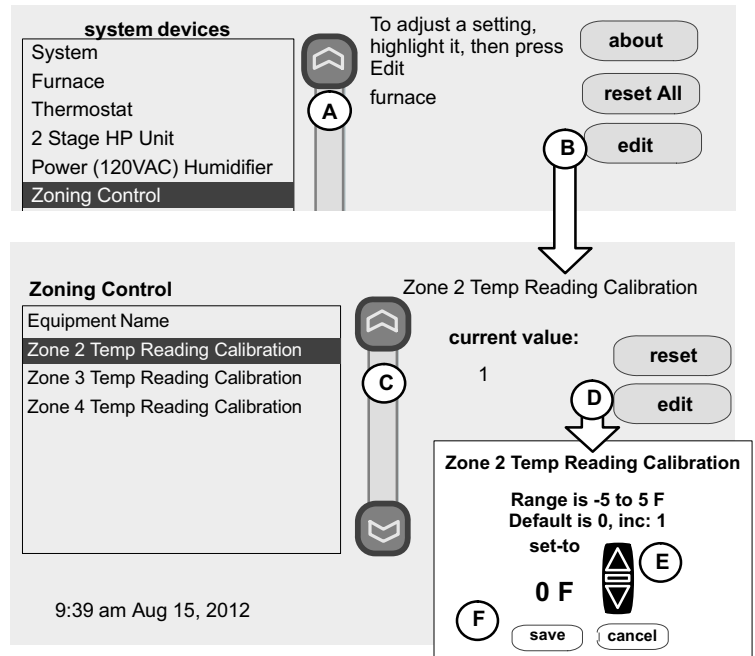


Figure 20. Adjust Zone Temperature Reading Calibration

### EDIT AND TEST AIRFLOW PER ZONE

Adjustment to all air flows are made either at the **System Devices > System** screen or using the *Edit and Test Airflow per Zone* screen as illustrated here. The following procedure is to adjust individual zone airflow (CFM) for Blower Circulation, Cooling and Heating airflow.

- The **Maximum Airflow** for the selected mode on the left is displayed at the top right of the screen.
- The **Assigned Airflow** (the sum of the selected airflow for each zone) is displayed at the top right of the screen.

**NOTE** - The *airflow per zone (in red)* must be selected and verified before continuing.

1. Select the desired radio button option - **Blower Circulation Airflow**, **Cooling Airflow** or **Heating Airflow** (A).

2. Adjust airflow for a specific zone by pressing on the desired zone (B). Total maximum airflow for all zones in this example is a combined 1250 CFM. Minimum CFM per zone is **50** and maximum is **1250**.
3. Adjust airflow by using the up or down arrow to change the CFM (C).
4. Press **start** (D) to begin operation for that specific zone.
5. Repeat procedure to configure all applicable zones.
6. Press **save** (E).
7. Press **next** (F).

Continue to next section on testing and diagnostics.

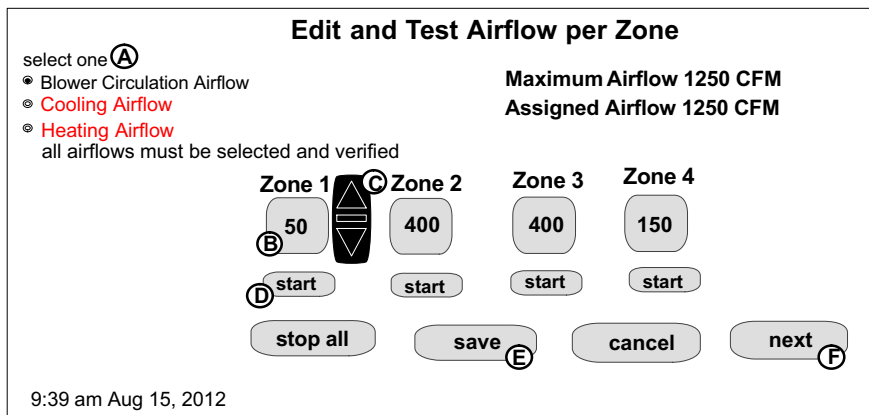
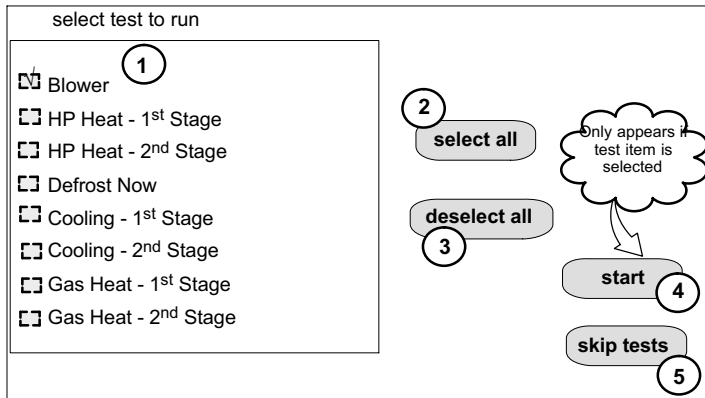


Figure 21. Editing Zone CFM

## Using the Tests / Diagnostics Features

### TO SELECT TESTS TO RUN

Use the following procedure to run test for various heating and cooling stage operations.



**Figure 22. Selecting Tests**

1. Select a specific tests (1) to run or use the **select all** (2) button to run all configurations. Use the **deselect all** (3) button to un-check desired test.
2. Press the **start** button (4) to run all selected tests or press **skip tests** (5) to end the test procedure.
3. After the tests are completed or you have selected skip test select the exit button to end.

**NOTE** - Test mode lasts for 30 minutes (with the temperature updating every 30 seconds) except for the defrost test, which lasts 30 seconds. Tests feature provides the technician time to manually verify the equipment operation.

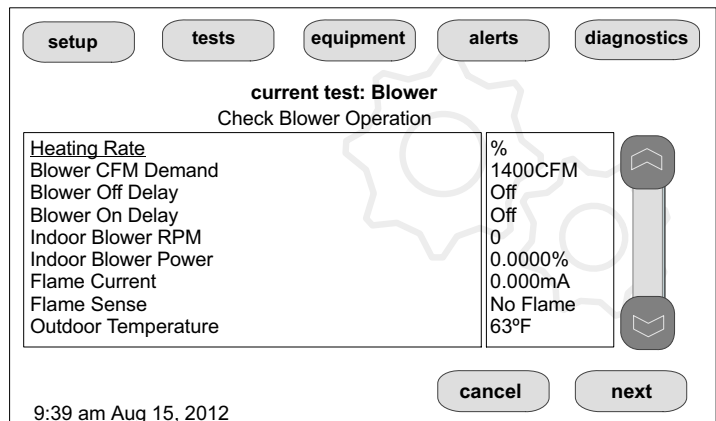
The **tests** feature is available after **setup** has been completed once. After you press **next** in the final **setup** screen, the "select tests to run" screen (figure 22) will appear. (If you want you may skip tests; press **skip tests**.)

To run all of the tests, press **select all**. All boxes in the list of tests will be checked. Or, touch box(es) next to test(s) to run certain tests.

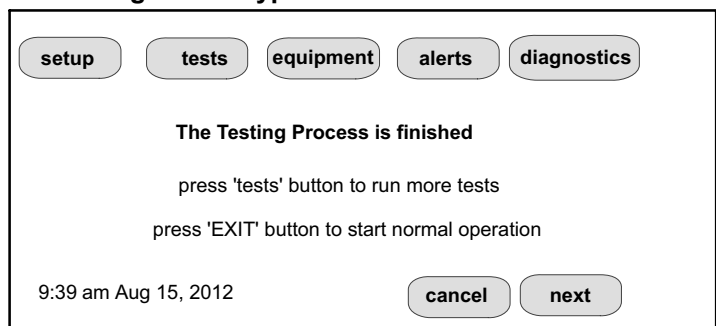
After the tests have been started, the screen will describe which test is running and shows a diagnostic summary of each test (see figure 23). After reviewing the results and concluding that no further tests are needed, press **next** to proceed to next

test. The technician must verify that the test procedure is producing the desired result at the equipment.

After pressing **next** after the final test, the *Testing finished* screen will appear (figure 24). At this point, use the **EXIT** button (if you have completed the required setup), or use **diagnostics** button (to analyze the system), or use **equipment** button (if you wish to make any changes to device details).



**Figure 23. Typical Tests Results Screens**



**Figure 24. Testing Finished Screen**

### DEHUMIDIFICATION AND ZONING (SOFTWARE VERSION 2.13)

When using the iHarmony® zoning system, dehumidification is disable and not supported at this time except for Humiditrol and auxiliary dehumidification modes. See Service and Application note ACC-13-05 for further details.

## Connecting to a Home Wi-Fi Router

### ! IMPORTANT

Never use the home router's guest account. Also do not use any unsecured (no security encryption is enabled) or public Wi-Fi access.

**Check the router utility program or contact service provider for help.** When determining the location for the Wi-Fi thermostat, be sure it is in an area near enough to the homeowners Wi-Fi router to ensure good communications signal between the thermostat and the router. (*Hint: Use a smart phone with Wi-Fi and Wi-Fi finder application to locate and determine signal strength.*)

**NOTE** - Thermostat will not be able to reliably connect to a router if the received signal strength indicator (RSSI) is -70 or greater.

### ENABLING WI-FI

To enable the Wi-Fi feature to communicate with a wireless router

1. Press and release **Wi-Fi** in the lower left corner of the HOME screen

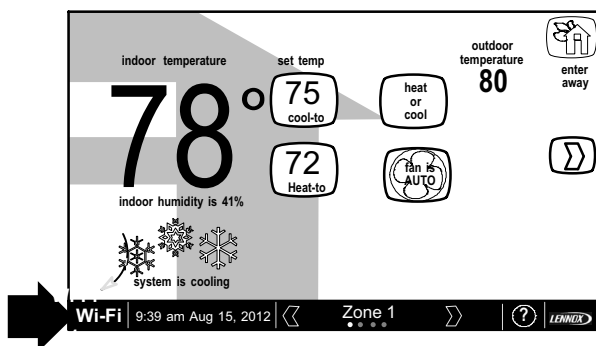


Figure 25. Press Wi-Fi

2. Press the **Wi-Fi disable** button to enable Wi-Fi.

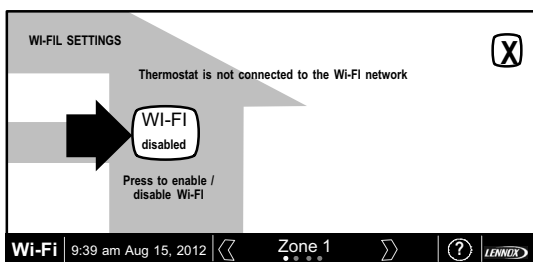


Figure 26. Enable Wi-Fi

3. The *User Agreement* screens will appear next. Press **next** as many times as necessary; then press **accept** after reading the User Agreement.

### ESTABLISHING A WI-FI CONNECTIONS

There are two methods to setup your Wi-Fi connection. Select either *NETWORK SETTINGS* or *connection status*.

### Method 1 — Network Settings Method

1. Press **NETWORK SETTINGS**; this screen shows a graphical view of buttons representing OPEN and SECURE Wi-Fi networks and a button for adding a network.

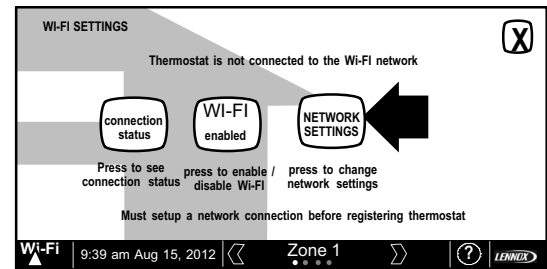


Figure 27. Enable Wi-Fi

- **Open** connection which requires no password (It is highly recommend that only a secure connection is used).
  - **Secure** connection which requires Wi-Fi password (security key).
  - **Add a network** is required when Wi-Fi identification (SSID) is being hidden (not broadcasting). You will need to know the Wi-Fi network name (SSID), security encryption type (if enabled), and security password (if security encryption is enabled).
2. When selecting a:
    - **unsecured** connection a screen will appear with two options, **connect** and **router info**. Press **connect** to continue.
    - **secured** connection a screen will appear requesting the Wi-Fi network password (security key). There are two options to select from which are **connect** and **router info**. Using the on-screen keyboard, enter the password (security key) and then press **connect** to continue.

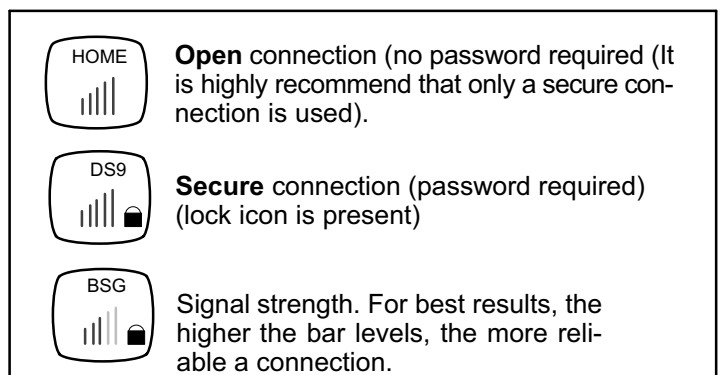


Figure 28. Typical Connection Type and Signal Strength

**NOTE** - The **router info** button provides information concerning the home Wi-fi connection (i.e, RSSI, IP address, MAC address and wait state) all of which may be helpful in troubleshooting network connection issues).

3. If connection is successful the screen will return to the available networks screens. Press **X** to return to the

previous screen. If the connection was successful it will be listed connected as exemplified below.

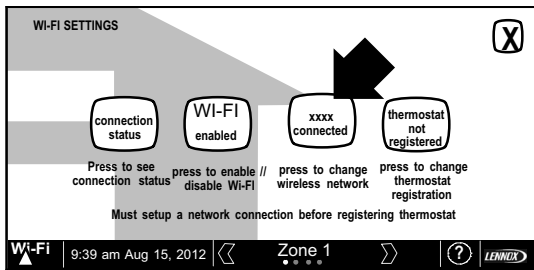


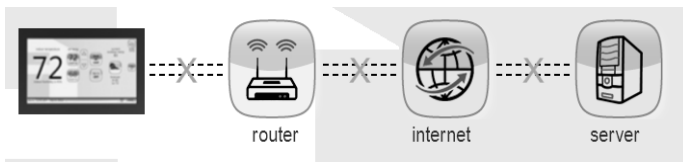
Figure 29. Network Connected

## ESTABLISHING A WI-FI CONNECTIONS TO A HIDDEN NETWORK

1. When connecting to a hidden network, press the **add new network** icon to continue. Enter the **network name (SSID)**. If security encryption is enabled, then press the **security is none** icon. Select either **WEP**, **WPA** or **WPA2**.
2. Using the on-screen keyboard, enter the password (security key). If the network name or security key combination is incorrect or incorrectly type, and access to the specified network failed, a message will alert you to retry.
3. If connection is successful the screen will return to the available networks screens. The network successfully connected will be listed and shown as connected as exemplified in figure 29.

### Method 2 — Connection Status Method

1. Press connection status; this screen shows a graphical view of the current connection status.



2. Select the router icon to choose the desire W-Fi network. When selecting a:
  - **unsecured** connection a screen will appear with two options, **connect** and **router info**. Press **connect** to continue.
  - **secured** connection a screen will appear requesting the Wi-Fi network password (security key). There are two options to select from which are **connect** and **router info**. Using the on-screen keyboard, enter the password (security key) and then press **connect** to continue.
3. If connection is successful the screen will return to the available networks screens. Press **X** to return to the previous screen. If the connection was successful it will be listed connected as exemplified below.

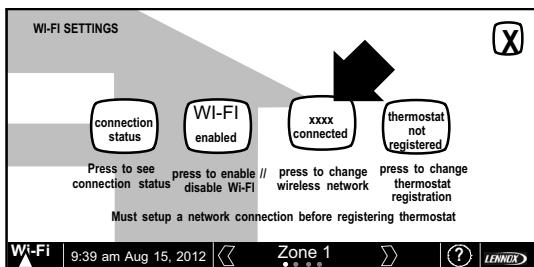


Figure 30. Network Connected

4. Select **X** to return to the **WI-FI SETTINGS** screen. Select connection status again to verify that connection to the *router* and *Internet* is active. Both the *router* and *Internet* icons will have green backgrounds if connections are successful.



## Troubleshooting Wi-Fi Connection

The following terminology is used in this troubleshooting section:

- **Router Signal Strength (RSSI)**. RSSI is an indication of the signal strength of the Wi-Fi router being received by the scanning device (i.e., smart phone). Therefore, the higher the RSSI number (or less negative in some devices), the stronger the signal.
- **802.11a, g and n** are wireless networking specification that extends throughput up to 130mbps using the 2.4 GHz band.
- **Internet Protocol Address (IP address)**. This is a numerical label assigned to each device (e.g., computer, printer, thermostat) participating in a computer network that uses the Internet Protocol for communication. An IP address serves two principal functions: host or network interface identification and location addressing.

### Electromagnetic Interference Causing Poor Connectivity

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

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

To eliminate a possible source of interference, temporally disable any devices and see if Wi-Fi performance has improved.

### Router Signal Strength (RSSI)

The ideal signal strength range for the iComfort Wi-Fi® thermostat is -1 to -69 RSSI. The signal strength can be viewed from the thermostat interface. Use steps 1

1. Press **NETWORK SETTINGS**; this screen shows a graphical view of buttons representing Wi-Fi options **OPEN** and **SECURE** wireless networks and a button for adding a network.

2. Select the access point that has already been established and connected too. There are two options to select from which are **connect** and **AP info**. Select **AP Info** and verify the RSSI strength. If the signal is anywhere between -1 to -69, then the signal strength is sufficient. If outside this range, then either locate the router closer to the thermostat or add a repeater.

## ACCESS POINT INFO

### Detailed information for the access point

MAC=

WSTATE=CONN.

BSSID=68

RSSI= -46

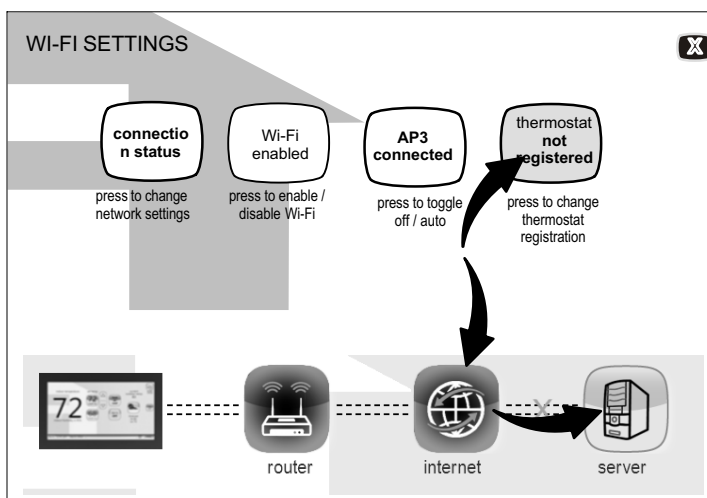
IP addr=

Figure 31. Verifying Signal Strength

## Registering the iComfort Wi-Fi® Thermostat

### REGISTRATION FOR ONLINE ACCESS

1. From the WI-FI SETTINGS screen, press either the **thermostat not registered** icon or the **connection status** icon and select the **server** icon.



2. Enter homeowner email address and system description and press the **register** button.

Register with iComfort Wi-Fi thermostat to enable remote access and online weather information

enter your email

System Desc

**register**

3. A pop-up screen asking if the email address below is correct? Verify the email address is correct and press **yes**.
4. Another pop-up screen will appear notifying the user to check their email.

An email has been sent to xxxxxxxxx@lennoxind.com with instructions on how to register your thermostat. If you haven't received the email, please check your spam folder and make sure that your email address is correct.

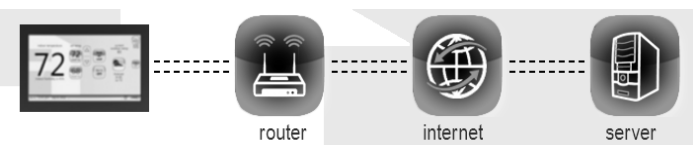


**NOTE** - If the email address originally entered is incorrect, return to the **thermostat registered** screen and reenter the correct information and press register.

5. After the iComfort Wi-Fi® server sends the email with the network link, registration and account creation must be completed on the homeowners personal computer (see Page 27).

**NOTE** - Time from pushing the registration button on the thermostat and receiving the consumer portal register link from your email on your computer is normally from 5 to 15 minutes.

6. After registration has been completed, press the connection status icon to verify the connection was successful. If the connection is successful the server icon background will be green.



7. After successful connection to the server is completed, the **firmware update** button will appear. The default setting is set to auto. If any firmware updates are available they will immediately start downloading and update the thermostat. The thermostat will reboot itself after the update is completed.

This auto update feature can be disabled by pressing the firmware update button to toggle to OFF but is not recommended.

**NOTE** - Firmware updates will not affect installer or user thermostat settings. Both will be retained after the update.

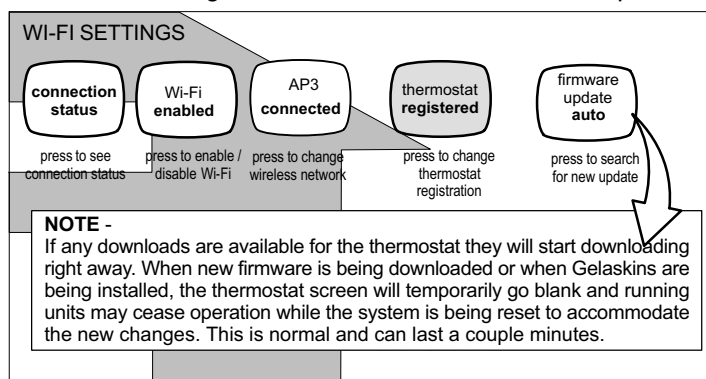


Figure 32. Registration for Online Access



## Account Registration for Server

Figure 33. Registration Screen

**NOTE - This following information is customer setup instructions and is shown here to allow the installer to help walk the customer through the setup process.**

After registering through your iComfort Wi-Fi® thermostat interface, go to the homeowners computer and locate the email sent from the server:

*Dear Customer,  
Congratulations on your purchase of a Lennox iComfort thermostat! You are only a few steps away from total control of your Lennox iComfort system. Registering your thermostat will allow you to remotely access it from anywhere in the world on any device with an Internet connection. Please complete your Lennox iComfort registration by clicking the link below:  
[Register](#)*

**NOTE - if the customer has already setup an account, click the "Click Here" button to access that account.**

Click on the Register link; the screen (to the left) will appear. Fill in the User Name and Password fields and check the agree to terms and conditions box. Click **Create User** button.

A series of pages and prompts follows to provide guidance through profile setup and user preference definitions.

## Using the Secure Web Portal

Access all the great Wi-Fi enabled features on your iComfort® thermostat from our secure web portal.

**[www.myicomfort.com](http://www.myicomfort.com)**

After signing in, you'll be able to view your iComfort system settings, adjust the temperature and view reminders and alerts – just as you would on your iComfort thermostat at home. With a familiar look and settings this simple, you should feel right at home. Don't forget to check out the available Apps and skins.

From the web portal welcome page, you may also click on links to launch an interactive demo or learn more about iComfort.

## Skins

By adding a skin and matching skin image screen-saver to your iComfort Wi-Fi, you can coordinate it with the decor in any room. Skins are available in many colors, patterns and designs.

Skins can be ordered from **[nuvango.com](http://nuvango.com)**

Go to Shop > All Products and scroll down to EVERYTHING ELSE and select LENNOX ICOMFORT

After ordering the skin, the company will email the image file (.jpg) to you. The frame skin will be mailed to you as well. The skin image can be uploaded to the iComfort Wi-Fi thermostat from the consumer portal site ([www.myicomfort.com](http://www.myicomfort.com)) under the tab "skins".

## Screen-Saver

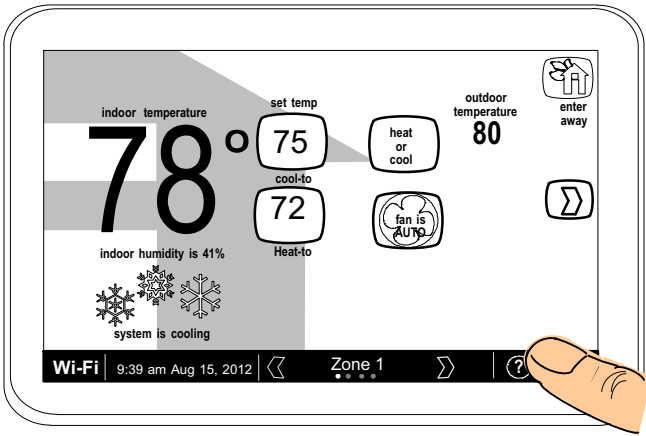
You can also customize the screen-saver by uploading your own photo on- **[www.myicomfort.com](http://www.myicomfort.com)** under the tab "skins". Image must be 800x480 DPI in JPG format.

### HOW DO I TURN ON SCREEN-SAVER

1. From the thermostat **Home** screen, press **⌂**.
2. Press the **display setting** button.
3. Press the **screen saver** button.
4. From the pop-up menu, select either **on** for the default screen-saver or **skins** for your custom uploaded image. The skin picture will appear after 30 seconds of inactivity.
  - When set to **off**, the screen stays on.
  - When set to **on**, after 30 seconds of inactivity the screen will go blank
  - When set to **skins** and no skin or custom image has been uploaded, the screen will display LENNOX after 30 seconds of inactivity. If a skin or custom image has been uploaded, after 30 seconds of inactivity, the image will be displayed.

## Accessing Installer Screens and Changing Equipment Parameters

To access the installer screens after the unit has been placed in operation and the user home screen is displayed, press the “Lennox” logo and hold for 5 seconds (see figure 34). The system will access the installer screens.



**Figure 34. Enter Installation Setup Mode**

A message screen stating “Qualified Lennox equipment installer warning” screen appears (Figure 35). Press **yes** to proceed (**no** returns to the home screen).



**Figure 35. Qualified Lennox Equipment Installer Warning**

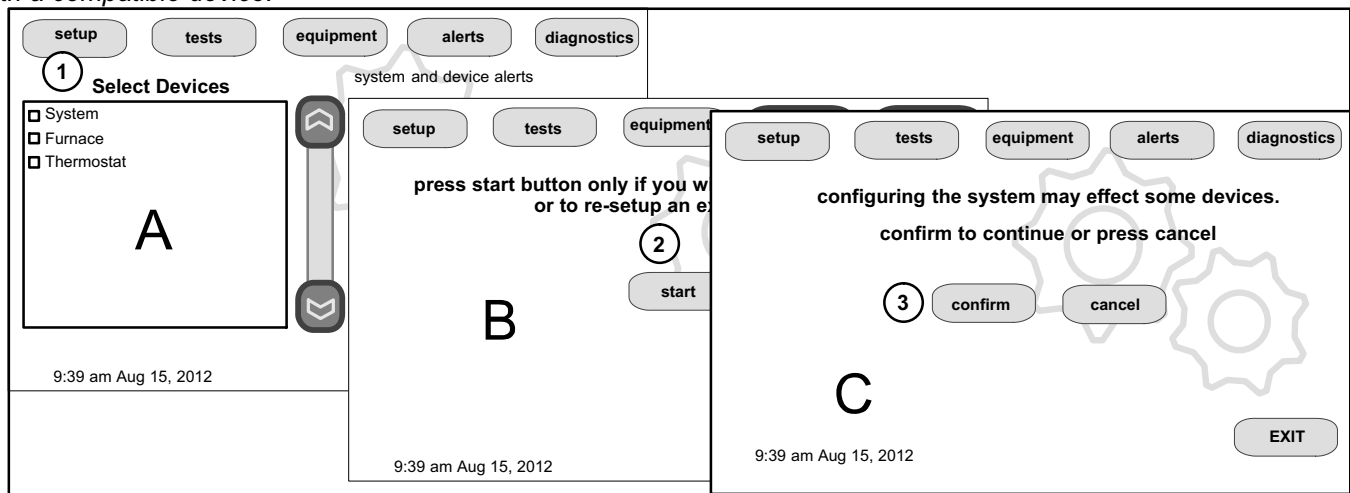
1. When pressing **yes**, the thermostat's will search for communicating devices in the system.
2. When pressing **no**, the thermostat's returns to the main screen.
3. When pressing **reset**, the thermostat's resets all parameters to factory default, searches for communicating equipment and erases all information concerning non-communicating equipment previously stored in the thermostat.
4. After initial installation, if an alert is present when you are making changes to settings, no action on the alert is mandatory.
  - Press **equipment** if you need to set up equipment parameters and edit details of devices in the system.
  - Press **diagnostics** if you need to run to analyze the system (see page 23).

## RECONFIGURING SYSTEM

If any component of the HVAC system has been changed, e.g. replacing an outdoor sensor, reconfiguring the system will be required.

1. To begin reconfiguring a system (after you have accessed the program from the Lennox logo [previous page]), press the setup button (1, figure 36A). The “Start system configuration” screen (fig. 36B) will appear.
2. Press **start** (2, figure 36B) to proceed. The “Re-configure confirmation” screen (fig. 36C) will appear. This reminder notes that *system configuration* may affect some existing device settings and prompts to **confirm** or **cancel** the configuration process.
3. Press **confirm** (3, figure 36C) to continue system configuration; the screen will change to the system discovery screen. At this point, the program goes through the same setup as the initial setup process which begins on Page 3.

**NOTE** - “Compatible device found” screen (shown below) appears only when a device has been removed and replaced with a compatible device.



**Figure 36. Re-Configuration Process**

## ADJUSTING EQUIPMENT PARAMETERS AFTER INITIAL INSTALLER SETUP

1. From the **Home Screen**, press and hold **Lennox** (see figure 34) until the warning screen appears. Press **yes** to continue.
2. Press **equipment** to change equipment parameters and edit details of devices in the system without having to re-run the setup program.
3. Select the **equipment** button to continue. The **system devices** screen will open. Use the arrows to select a device and press **edit**.
4. Use the arrows to highlight a setting and then press **edit** (figure 37A). In the example, the low heating airflow is changed from the default (400) to 325 (figure 37B). After changing, press **save**. (note the current value has changed; figure 37C). Some changes may affect other settings and, if so, those affected will appear in red and require changing/saving to clear the red settings.
5. When finished, press **back**; equipment parameters screen then press **next**. "Select tests to run screen appears"; either run tests as before or press **skip tests**.

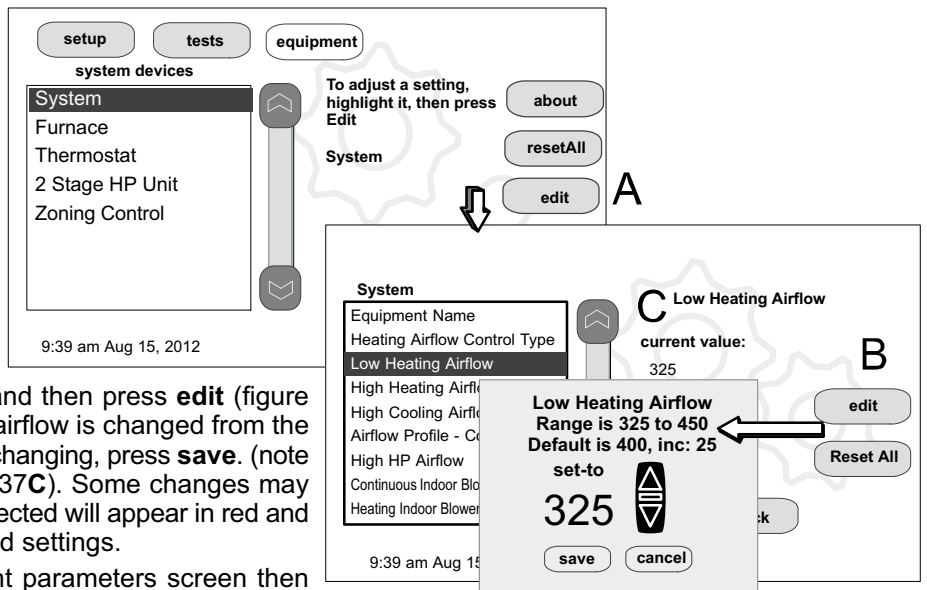


Figure 37. Edit Equipment Details

### Stage Delay and Differential Settings (Installer settings)

**First-Stage Differential** — First Stage differential is used in all thermostats. The default setting is 1.0°F with an optional setting range between 0.5° and 3.0°F in 0.5°F increments.

From the equipment button, use the arrows to select First-Stage Differential. Press **edit**. Use the up/down arrows to adjust to the desired setting and press **save**.

**Second-Stage Differential** (where applicable) — The default is 1.0°F but can be programmed between 0.5° and 8.0°F in 0.5°F increments.

**Third-Stage through Sixth-Stage Differential** (where applicable) — The default is 0.5°F but can be programmed between 0.5°F and 8.0°F in 0.5°F increments.

**NOTE** - Each stage differential is based on the previous stage differential endpoint. For example, in cooling mode, if stage 1 differential is set to 1.0°F, then the system comes on 0.5°F above set point and the second differential starts at the 0.5°F stage 1 endpoint and extends to second-stage differential endpoint.

**NOTE** - In normal operation, the end of the cooling demand is at the set point -0.5°F and the end of the heating demand is at the set point +0.5°F.

**Staged Delay Timers** — The factory default is set to Enabled. 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) in cases when

the previous stage of heating or cooling will not raise or lower the room temperature to the set point in a given time. When disabled is selected all stage delay timers are disabled. This means stages are changed based on the temperature and not their timer delays.

**NOTE** — The 2nd Stage Delay Timer (when Staged Delay Timers is Enabled) is used for both HEATING and COOLING. However, if the system has a variable capacity furnace, 2nd Stage Delay Timer will only be used for COOLING (not for heating, as the variable capacity algorithm ignores delay timers).

**Second through sixth Stage Delay timer** (where applicable) — If Staged Delay Timers are enabled, the default delay is 20 minutes but can be programmed from 5 to 120 minutes in 5-minute increments. If first stage fails to advance the ambient temperature toward the set point by 1.0°F in the programmed delay time, then the second stage is activated.

**Heat Cool Stages Locked In** — The factory default setting is disabled (heat/cool stages are turned off separately). If changed to enabled, heat/cool stages are turned off together. Scroll to Heat Cool Stages Locked In; press **edit**. Use arrows to select between Disabled or Enabled. Press **save**.

**Lock-In Second Stage HP by Outdoor Temperature** — default Off (heat pump second-stage operates normally). Use this setting to lock in the second-stage compressor when the outdoor temperature is at or less than the LOCK TEMP set point. Scroll to Lock In Second-Stage HP by Outdoor Temperature; press **edit**. Use arrows to select a temperature between 40°F and 55°F. Press **save**.

## Smooth Setback Recovery (SSR)

SSR is an algorithm designed to “smoothly” reach a occupied program schedule set point. The algorithm looks 2 hours ahead for the occupied program schedule period's set point. If the occupied set point requires the system to turn on (present temperature below the heat set point or above the cool set point), then SSR will calculate a new set point. Once initiated, SSR monitors the change in room temperature and calculates a new set point every 30 seconds. Then SSR provides this new set point for the heating and cooling algorithms; the new set point will be displayed on the User Interface.

### SSR RULES :

1. SSR is enabled when “Smooth Setback Recovery” is set to **enabled** and the program schedule is turned on.
2. When SSR is enabled, then it will check for a new set point every 30 seconds.
3. The SSR Target Program Schedule set point is always 2 hours ahead.
4. When SSR starts, then the Current SSR set point will equal the current program schedule set point.
5. When a new program schedule period starts, then the New SSR set point will equal the new program schedule period's set point, unless there are two or more program periods within the 2 hour window. In this case, SSR will track the highest heat set point or the lowest cool set point found in the 2 hour window.
6. SSR will NOT run during a program schedule HOLD.
7. SSR does NOT look at the current temperature.
8. If the target program heat set point is lower than the Current SSR heat set point, then the New SSR Heat Set point will equal the Current SSR Set point.
9. If the target program cool set point is higher than the Current SSR cool set point, then the New SSR Cool Set point will equal the Current SSR Set point.
10. The New SSR Set point will be displayed on the User Interface.
11. SSR does NOT control the equipment.
12. SSR does NOT turn off Stage Delay Timers.
13. SSR does NOT round the newly rounded set point, but the set point shown on the user interface is rounded.
14. SSR will NOT change the Temperature Dead band.
15. SSR will not adjust a set point to violate the Temperature Dead band.
16. SSR will not overshoot the Target Set point.

## Defrost Operations

This section is applicable only to heat pumps that are using outdoor control part number 103369-03 or higher.

Configure the device as follows:

1. In the *system devices* list, use the arrows (1a) to highlight *Heat Pump*. Press **edit** (1b).
2. In the Heat Pump list, use the arrows (2a) to highlight *the desired option*. Press **edit** (2b).

Figure 38. Adjust Defrost Settings

### DEFROST TERMINATION TEMPERATURE

1. The **Defrost Termination Temp** parameter factory default is **50°F** (10°C). This setting can be changed to terminate defrost at **70°F**, **90°F** or **MAX** (21°C, 32°C and MAX).

*NOTE - Colder climates may require a higher defrost termination temperature to maintain a clear coil.*

2. If the parameter is set to **MAX**, defrost will run **maximum defrost sequence**.

### AUTOMATIC MAX DEFROST

These features are only available when the heat pump outdoor control part number is 103369-03 or later. See figure 40 for the sequence of operations for Automatic Max Defrost.

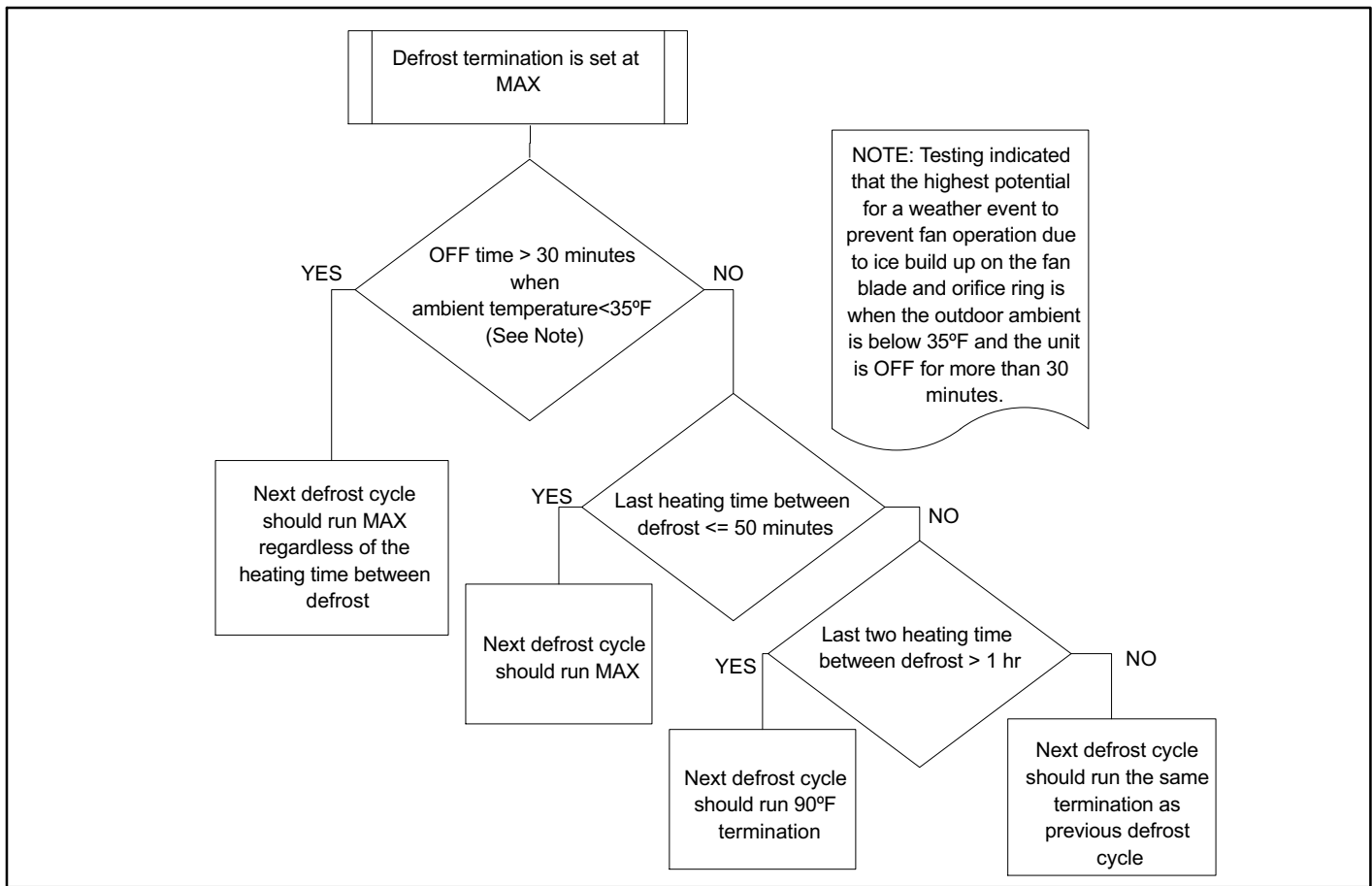
1. **Defrost Auto** can be set to either **ON** or **OFF**. Factory setting is **OFF**.

**Note:** *If the jumper is missing the default is OFF.*

2. **Defrost Auto** is set to **OFF**, the defrost cycle will run and terminate based on **Defrost Termination Temperature** setting.
3. **Defrost Auto** is set to **ON**, the defrost termination will be determined based on the following rules:
  - A.. The first defrost after the unit is powered up, or the first defrost after cooling call will terminate based on the **Defrost Termination Temperature** setting.
  - B.. The accumulated heating run-time between defrost cycles:
    - **If the heating run time between defrost cycles is less than 50 minutes**, the defrost termination

temperature will be increased for the next defrost cycle based on the current termination setting. If the current termination setting is **50°F** or **70°F**, then the next defrost termination will be **90°F**. If the **Defrost Termination Temperature** setting is set at **90°F** or **MAX**, the next defrost cycle will terminate at the **MAX** setting.

- **If the heating run-time between defrosts is longer than 1 hour for 2 consecutive heating cycles** and the defrost termination temperature is set at 50°F, 70°F, or 90°F, then the defrost control will follow the **Defrost Termination Temperature** setting during the next defrost cycle. If the **Defrost Termination Temperature** setting is set to **MAX**, then the next defrost termination temperature will be decreased to **90°F**.
- C.. If **Defrost Termination Temperature** setting is set to **MAX**, the system will always run at **MAX** when accumulated compressor **OFF** time is longer than **30 minutes and ambient temperature is less than 35°F**.
  - D.. When the ambient sensor temperature is **higher than 40°F** and **Defrost Termination Temperature** setting is set to **MAX**, defrost termination will be **90°F**. If **Defrost Termination Temperature** setting is **50°F**, **70°F**, or **90°F**, defrost termination will follow the **Defrost Termination Temperature** setting.



**Figure 39. Automatic Max Defrost Rule**

#### MAX DEFROST BY WEATHER

Factory default for this feature is disabled. When enabled Max Defrost is always used if any of the following weather conditions are reported via the Internet to the thermostat:

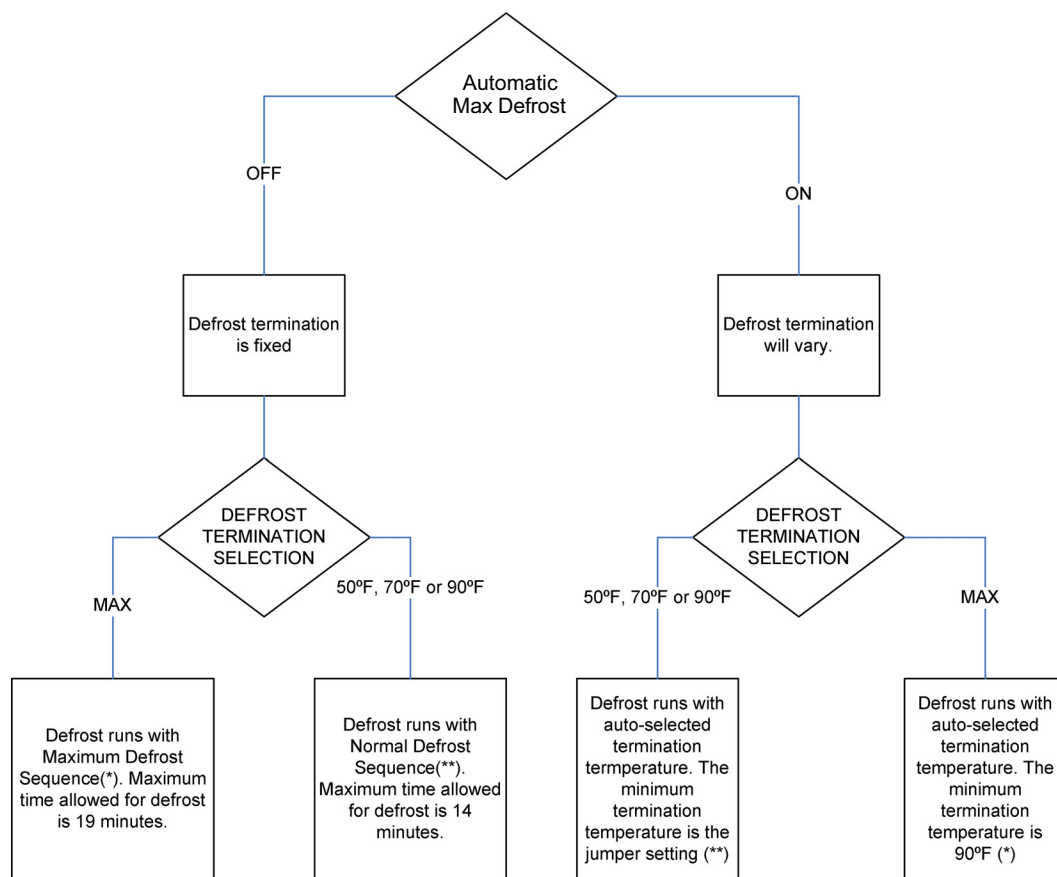
- Rain (light, medium or heavy) and outdoor temperature is reported as less than 35°F
- Sleet
- Freezing rain

**Note:** This setting when enabled is always used regardless of day, night or thermostat termination temperature setting in a total communicating system.

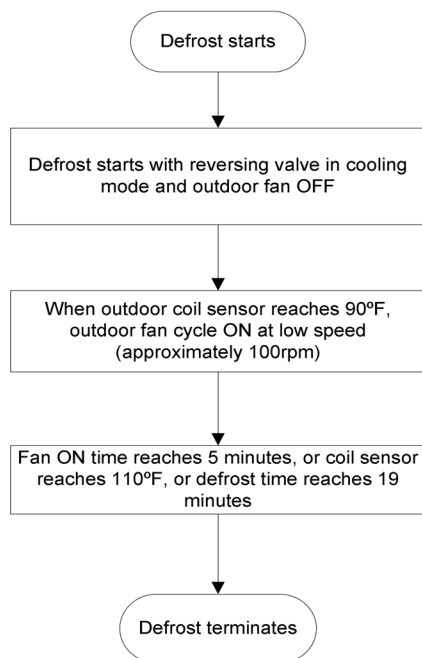
#### Example:

If the following conditions are true then the thermostat will direct the outdoor unit control to operate the outdoor unit in Max Defrost mode during this weather event.

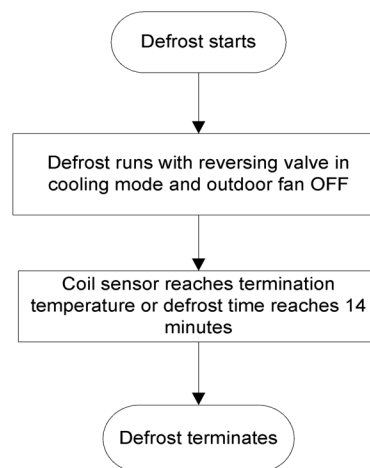
- Defrost termination temperature is set at 50°F, 70°F or 90°F in a full communicating system;
- Any of the exemplified weather conditions are forecast,



#### (\*) Maximum Defrost Sequence



#### (\*\*) Normal Defrost Sequence



Note: If the defrost terminates by reaching the maximum allowed defrost time, it is not considered a successful defrost and the unit will enter defrost again after 30 minutes of compressor heating run time with the coil sensor below 35F

**Figure 40. Automatic Max Defrost Selection and Sequence of Operations**



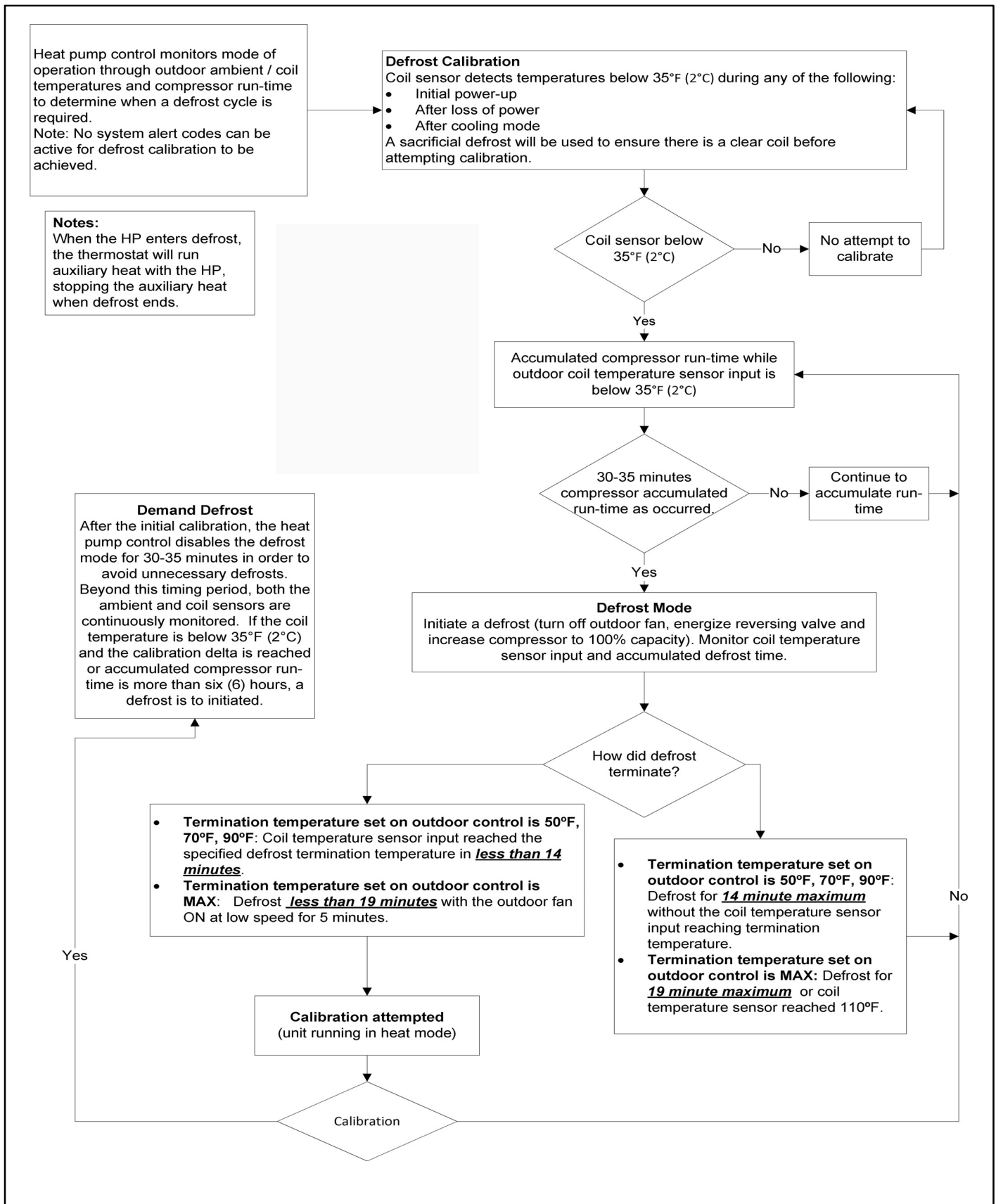


Figure 41. Demand Defrost - Automatic Max Defrost



## Heat Pump, Dual-Fuel, Dual-Fuel Tempering and Balance Points

**IMPORTANT** - The Balance Points feature requires that a sensed outdoor temperature is provided to the thermostat. This can be either a connection to Wi-Fi (for local temperature information) or a connection to an outdoor sensor (included in all communicating iComfort® heat pumps; optional outdoor temperature sensor X2658 for non-communicating heat pumps).

### BALANCE POINTS - HEAT PUMP

The LOW and HIGH set points may be controlled by the iComfort Wi-Fi® thermostat using the LOW and HIGH Balance Points feature. To enable the Balance Points feature, go to the installer section equipment button. Scroll down to the System screen, select **edit** and scroll down to Balance Points Controls. Use arrows to select **Enabled** and then press **save**. See figure 42 for a simplified explanation of how balance points control system operation.

#### LOW BALANCE POINT

If the outside temperature is below the programmed low balance point (set by default at 25°F), compressor operation is not allowed. Since the heat pump is not as effective at a lower outdoor temperatures, it may be more comfortable to use the auxiliary electric heat or the furnace (in dual fuel systems, it may be more economical) to satisfy a demand for heat. The low balance point options are from -20°F to the high balance point temperature. The set point can be adjusted in 1.0°F steps.

#### HIGH BALANCE POINT

If the outside temperature is above the programmed high balance point (set by default at 50°F), auxiliary electric heat operation or furnace operation (in dual fuel system) is not allowed. This ensures that the lower cost heat pump operation will satisfy the heating demand, rather than the more expensive auxiliary electric heat. The high and low balance points will not lock out both compressor heat and auxiliary heat/furnace at the same time.

### DUAL-FUEL APPLICATIONS

The following information is applicable to communicating systems only.

#### 1. Staged Operations

Dual-fuel applications, which include both a Heat Pump (XP17 or XP21 only) 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. Figure 42 flow chart illustrates Dual Fuel operation with Balance Points.

#### 2. Variable Capacity (Modulating) Operations

Dual-fuel applications, which include both a variable capacity heat pump (XP25) and a variable capacity gas furnace (SLP98), will provide variable capacity heating.

#### 3. Tempering — Staged Furnace

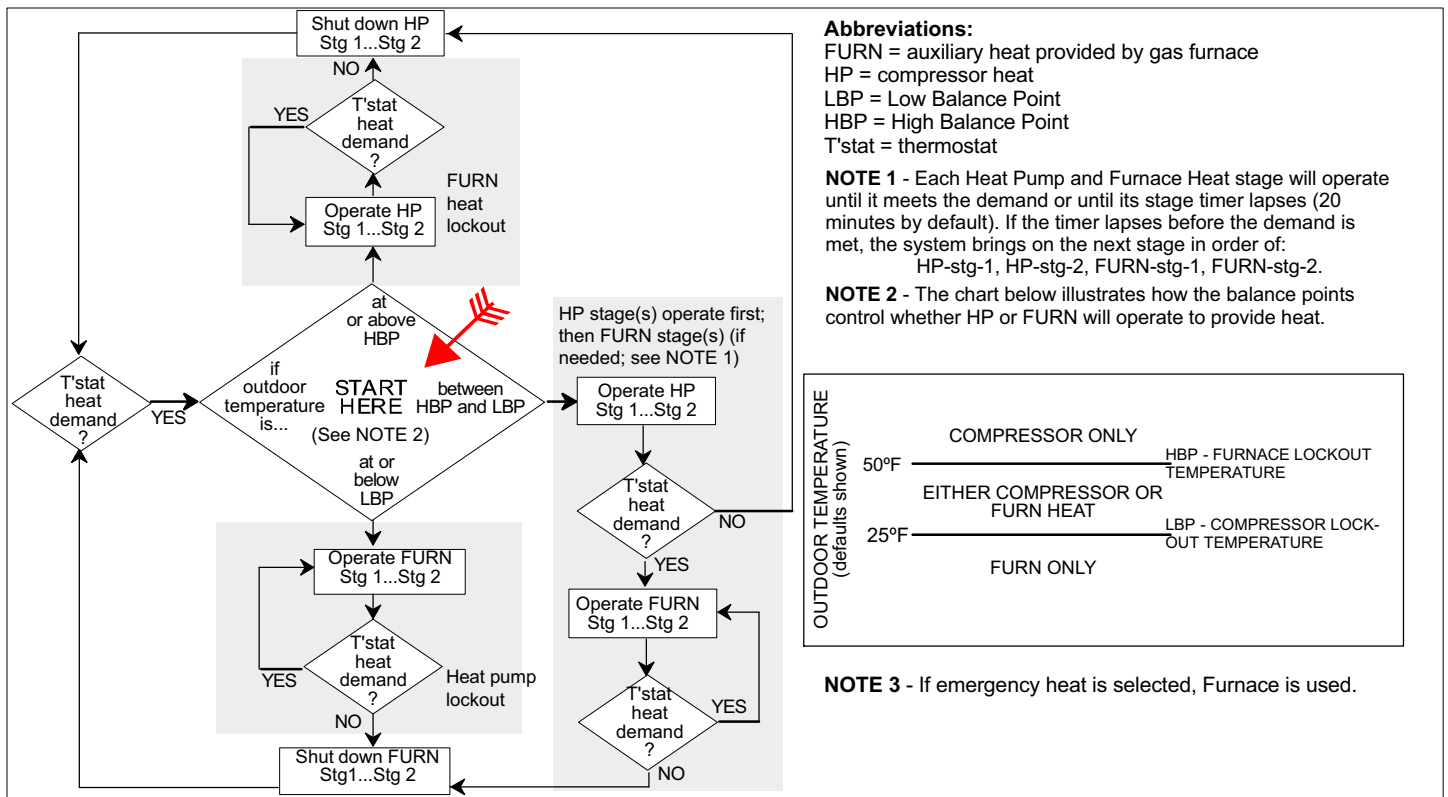
Dual-fuel tempering staged furnace employs no sensor implementation. Furnace cycles on and off at first stage rate.

- First cycle on-time is longer than subsequent times to bring temperature up.
- Subsequent times are shorter to maintain temperature.

#### 4. Tempering — Variable Capacity (Modulating) Furnace (SLP98)

Dual-fuel tempering staged furnace employs no sensor implementation. Furnace starts heating at minimum heat rate while defrost is active.

- Testing has shown the entering air is within acceptable limits.
- During defrost the airflow will run at second-stage CFM.



**Figure 42. Dual Fuel Operation with Balance Points**

## Modulating Outdoor Units with Duel-Fuel

### TRANSITION FROM HEAT PUMP TO GAS

- **Steady-State:** If heating demand rises above 95% Btu capacity for 10 minutes or greater, and the temperature is greater than 1.5°F less than the set point then the system will switch the heat source to gas heating.
- **Step Change State:** If heating demand rises above 95% Btu capacity for at least ten minutes and the minute slope of the temperature sensor is less than 1°F/Hr, then the system switches the heat source to gas heating.

### FURNACE STARTING POINT AFTER SWITCHING

- **Modulating Furnace:** The firing rate starts with the minimum capacity of the furnace, and begins gas heating using step change gains. It will switch to steady state gains when the room temperature reaches the set point.
- **Staged Furnace:** The staged algorithm is used to determine the starting heating stage of the furnace.

### DUEL-FUEL DEFROST

When the system is heating using the heat pump and defrost cycle is initiated, the following will occur:

- After the defrost cycle is completed, the system will return to heat pump heating for ten minutes. During the ten minutes period no heating mode changes will be made.
- After the ten minute ignore period is completed, the system conditions are checked to determine if the current heating mode meets the system requirements.

*NOTE: The defrost cycle and the 10 minute ignore time following heat pump heating mode termination do not count towards any timer based requirement to switch heat sources.*

### TRANSITIONING FROM GAS TO HEAT PUMP

1. **Step Change Mode:** While in step change mode, the thermostat will not switch back to the heat pump heating.

### 2. Steady-State Mode:

- **With Modulating Furnace:** In steady state when the temperature is less than 0.5°F from set point, furnace has been running for more than 15 minutes and the heat rate is less than 85% BTU capacity, then the heat pump will become the primary source of heat.
- **With Staged Furnace** (*assumes a staged control routine*): In steady-state when the staged furnace demand satisfies the heat set point, the system will switch back to heat pump heating as the primary heat source again.

### HEAT PUMP STARTING POINTS AFTER SWITCHING

1. **From Modulating Furnace to Modulating Heat Pump:**  
The thermostat uses step change gains for the first 20 minutes, and a starting heat rate at least 10% higher than the minimum rate.
2. **From Staged Furnace to Modulating Heat Pump:**  
Starts with 70% demand.
3. **Modulating Gas Furnace:**
  - The installer sets the maximums heating CFM required in each zone. The sum of all the active zones CFMs allows the thermostat to interpolate the furnace heating rate. This correlates to the set zone CFM by using the high heating airflow and low heating airflow parameter values from the furnace. This is used as the starting point for maintaining the DAS temperature that has been set, and will be used each time the blower CFM changes its value.
  - If the DAS temperature is lower than the target, the thermostat increases the demand by 5% every two minutes until the DAS is within the target window. If the DAS is higher than the target, the thermostat lowers the demand by 5% every two minutes until the DAS temperature is within the target window.

## Gas Heat Control Mode

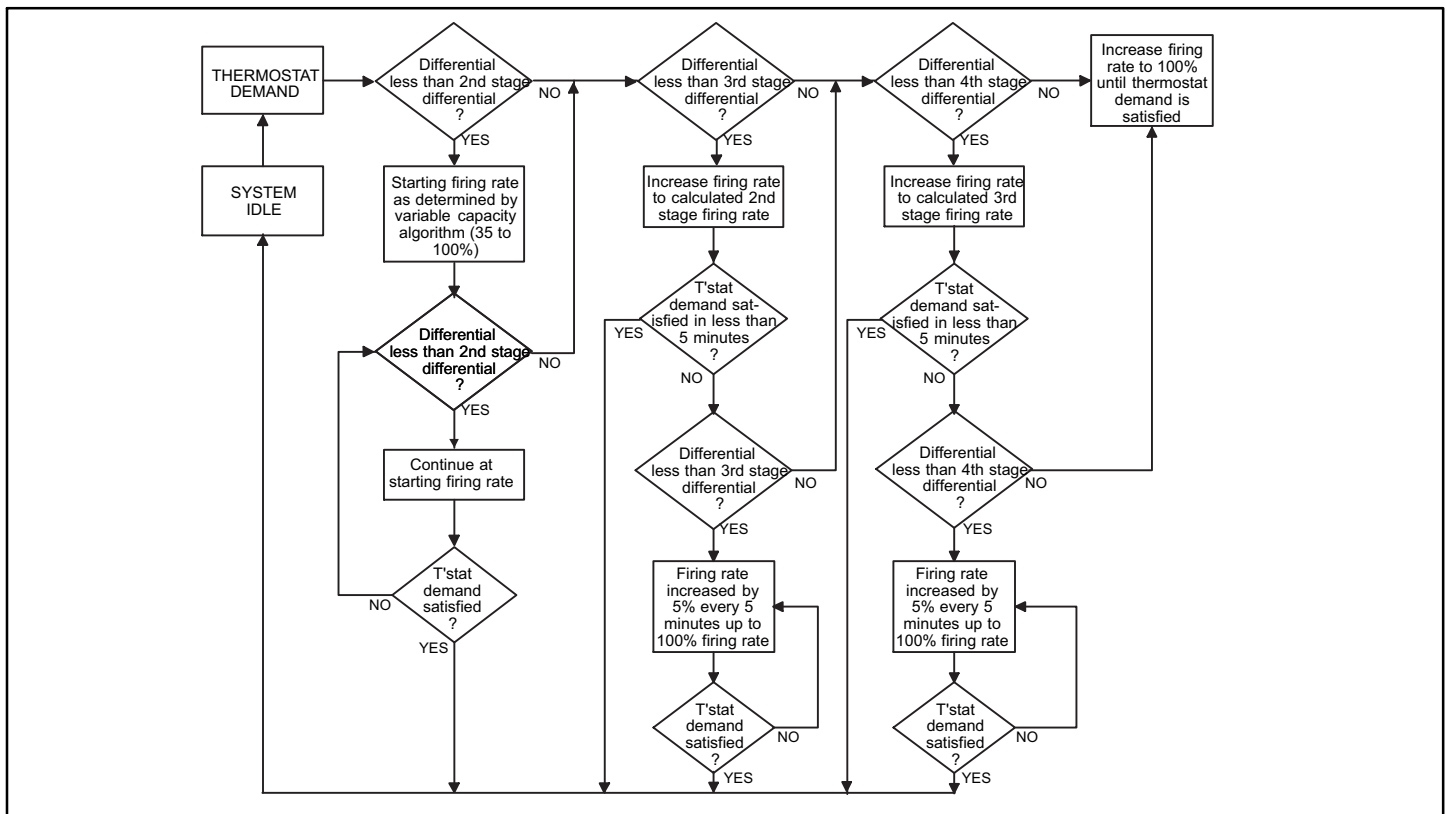


Figure 43. Variable Capacity Operation Flow Chart

Table 9. Variable Capacity Furnace Operation

Thermostat Demands	Operation
None	Furnace is off
First level heat demand.	1. Furnace BTU rate is calculated by the iComfort® integrating algorithm. 2. Furnace firing rate will continue at current heating rate until first stage demand is satisfied or an additional thermostat demand is received.
Second level heat demand added	1. Thermostat will immediately increase variable capacity furnace firing rate to the calculated BTU percentage representing the second stage thermostat demand. 2. Furnace firing rate will increase by 5% every 5 minutes (up to 100% if second stage thermostat is not satisfied.) If thermostat second stage demand is satisfied the current firing rate will continue until all thermostat demands are satisfied.
Third level heat demand added.	1. Thermostat will immediately increase variable capacity furnace firing rate to the calculated BTU percentage representing the third stage thermostat demand. 2. Thermostat will increase the firing rate by 5% every 5 minutes (up to 100% if third stage thermostat is not satisfied.) If thermostat third stage demand is satisfied the current firing rate will continue until all thermostat demands are satisfied.
Fourth level heat demand added.	iComfort® thermostat will immediately set variable capacity furnace firing rate to 100% until all thermostat demands are satisfied.

### Variable Capacity Control of Gas Heat Mode (G71MPP and SLP98V)

The thermostat includes a feature that provides variable capacity control of the gas heat mode. The purpose of variable capacity control is to keep the room temperature at, or near, the desired set point with minimum system cycling.

The thermostat bases its “decisions” for furnace operation control using the following inputs:

- Room temperature,
- History of cycle times (how long does it typically take to bring the room temperature to the desired set point),
- Target set point, and
- Differential temperature settings between 1st - 4th stage.

The thermostat uses this information to vary the heating capacity to efficiently satisfy the heating demand. The full range of the furnace heating capacity (low end is a percent of the 1st stage capacity; high range is 100% of full capacity) is used. When in variable capacity gas heat mode, the furnace operation includes longer run times at lower heat stages.

Table 9 details the variable capacity furnace operation.

**SLP98** variable capacity furnaces BTUs firing rates can be incremented by as little as 1% (35% to 100% range available) as the thermostat may dictate. The thermostat monitors room temperature, previous heat cycle times, and target set point to

determine the starting firing rate, and any required firing rate increases or decreases during the thermostat demand.

During a heat demand, the iComfort® thermostat monitors the differential between set point and room temp. As this differential increases and reaches field adjustable levels (stages), the thermostat will increase firing rate accordingly to maintain room temperature and ultimately satisfy the heat demand. On the next heat cycle, the iComfort® stat will calculate a new starting firing rate (in 1% increments) with the goal of maintaining room temperature at, or near, thermostat set point with a minimum of system cycling. The principles of operation are described in figure 43 and table 9.

## STAGED OPERATION

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; 3rd 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; 3rd stage provides 80% of full capacity; 4th stage provides 100% of full capacity.

## LOAD-TRACKING VARIABLE CAPACITY FAQs (SLP98V ONLY)

**What is Load-tracking Variable Capacity?** When an SLP98 Furnace is connected to an iComfort Wi-Fi® thermostat, the thermostat takes complete charge of the variable capacity staging of the

furnace. Load-tracking Variable Capacity is only available with iComfort Wi-Fi® thermostats.

### How is Load-tracking Variable Capacity different from 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 only tracks the load upward (rising temperature). Variable capacity uses the thermostats stage differentials but not stage timers. LVC disregards both stage differentials and stage timers.

### What makes Load-tracking Variable Capacity work? With iComfort®

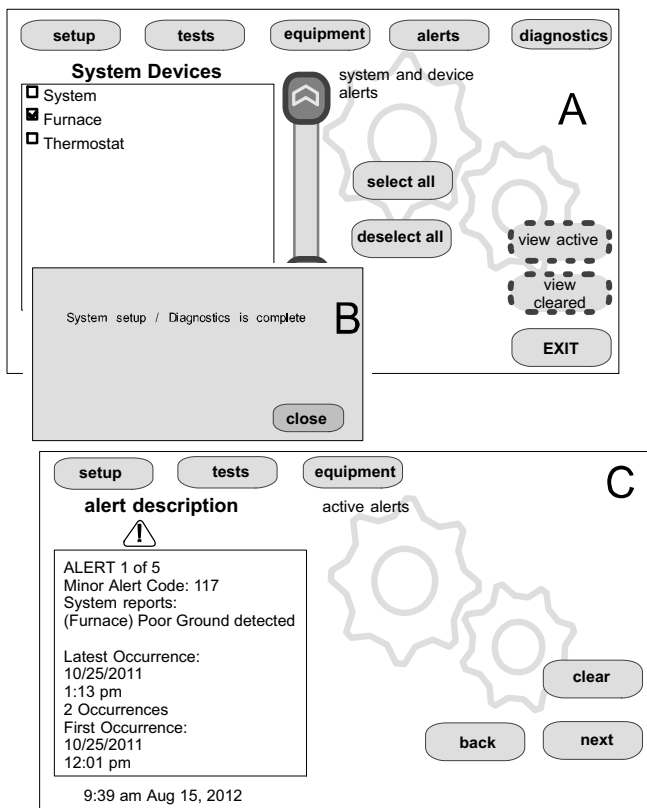
Load-tracking Variable Capacity, the thermostat uses a Proportional Integral Algorithm (PIA) to control firing rates of the furnace. The algorithm in the Load-tracking Variable Capacity provides much more precise control over the furnace than the Variable Capacity algorithm.

### Interesting Points about the Proportional Integral Algorithm (PIA):

- The further temperature is from the current set point, the higher PIA sets the heating rate.
- The longer away from a programmed set point, the higher the heating rate.
- If needed, PIA will turn heating on and off in short cycles when there is a heat demand that is lower than the lowest the furnace can provide.
- If the heat demand is higher than the minimum the furnace can provide, the furnace will run without shutting off.
- As the room temperature rises nearer the set point, the heating rate will decrease.
- As the room temperature falls further away from the set point, the heating rate will increase.
- The stage differentials have no effect when running the PIA.
- The second stage timers have no effect when running the PIA.

## Alert Codes and Troubleshooting

Press **alerts** if you need to run to see any alerts that may present or to view alerts that have been cleared.



**Figure 44. Selecting and Viewing Alerts**

### VIEW AND CLEAR INSTALLER ALERTS

**NOTE - Service alerts** remind users to service filters, humidifier pad, UV light and PureAir™ Air Purification system and are not shown in the installer's menu.

From the user's home screen, press and hold the "Lennox" logo in the bottom right corner of the thermostat to access the installer program. Press **yes** when asked if you want to proceed. The installer screen opens at the "system and device alerts" screen (figure 44A).

The left side of the "system and device alerts" screen shows a list of each communicating device discovered in the system and check boxes for selecting each device. Or, you may use buttons to the right of the System Devices list to **select all** (or **deselect all**). After something has been selected; use **view active** to list all active alerts for selected devices. If there are no alerts, the display will show "There are no new alerts that require service". If there are alerts, these are stored for recall but only one alert will appear in the box at a time (see figure 44B). Use the **next** button to advance through all the alerts. If only one alert is present, the **next** button will not appear.

Alerts may pop up on the screen during setup. Details of all active alerts can only be accessed through the installer's screens. To view all alerts present at any time, press the **alerts** button. "System setup / Diagnostics is complete" (figure 44B) appears; close it and the "Select devices to view alerts screen" (figure 44A) appears.

Use **view cleared** alerts to list previously active alerts that were cleared by the device or installer. Until at least one alert has been cleared by the device or the installer, the message "There are no new alerts that require service" will be displayed.

The first alert will be displayed in the alert screen (figure 44B), in order of:

1. red alert icon
2. yellow alert icon (service)

A **red alert icon** identifies a system or device issue that can prevent the system from working properly or at all, and if allowed to run, could cause damage to the system. **The issue raised by the alert must be addressed and corrected before clearing the alert!**

Press **clear** (figure 44B) to clear a red alert. The alert will be stored in the "cleared alerts" file. If an alert cannot be cleared, revisit the alert issue and make repairs accordingly.

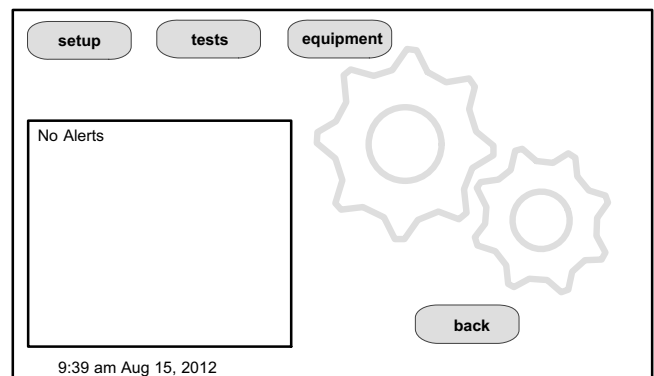
After all active alerts have been cleared, only the back button remains and the alerts box shows "No Alerts" (figure 45).

Press **back** to return to the system and device alert screen (figure 44A, Page 40).

### VIEW CLEARED ALERTS

A history of cleared alerts allows the installer to review cleared alerts. This information can help diagnose problems. Use the arrows to **select** either **select all** or check an item from the list and then press **view cleared alerts**. Then, scroll through the alerts using the **next** button.

Press **back** to return to the alerts screen (figure 44A, page 40).



**Figure 45. Cleared Alert Confirmation**

Table 10. Alert Codes and Troubleshooting			Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear
10	Critical	(Thermostat) The thermostat has found an unknown device on the system.	The room thermostat has found an unknown device on the system. An unknown device is seen by the room thermostat in or outside of configuration mode. Clear by reconfiguring the system.
11	Critical	(Thermostat) The thermostat cannot find a previously installed unit.	Check all connections and cycle system power. If problem persists, clear by reconfiguring the system. Press the setup tab, press start, and press confirm. If problem persists, then check all DEVICE connections to make sure they are iComfort®-compatible.
12	Critical	(Thermostat) The thermostat cannot find an iComfort® indoor unit.	Thermostat did not find an Indoor Unit. Make sure there is an iComfort® indoor unit on the system. Check R, i+, i- and C connections, ohm wires and cycle power. Replace indoor unit control board if there is no response.
14	Critical	(Thermostat) The thermostat found more than one thermostat, more than one indoor unit, or more than one outdoor unit on the system.	Check wiring and remove duplicate equipment. Reconfigure system.
18	Minor	(Thermostat) 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.	Notification only - Outdoor Temp is below the Low Balance Point. Heat Pump will not be used to service a heating demand.
19	Minor	(Thermostat) 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.	Notification only - Outdoor Temp is above the High Balance Point. Indoor Unit (furnace or air-handler) will not be used to service a heating demand.
29	Critical	(Thermostat) The thermostat is reading an indoor temperature that is higher than 99°F. The thermostat will not allow any heating operation to begin until it senses a temperature lower than 99°F.	Indoor temperature rose above 99°F 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.
30	Moderate	(Thermostat) The thermostat is reading an indoor temperature that is lower than 40°F. The thermostat will not allow any cooling operation to begin until it senses a temperature higher than 40°F.	Indoor Temp fell below 40°F. 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 40°F.
31	Critical	(Thermostat) The thermostat has lost communication with the (furnace, air-handler or outdoor unit) for more than 3 minutes.	[Indicated unit] has not communicated with thermostat for more than 3 minutes. Check connections. Ohm wires. If fault persists, then cycle power. Fault clears after communication is restored.
32	Moderate	(Thermostat) The (furnace, air-handler or outdoor unit) is resetting itself.	[Indicated unit] is resetting itself. This event may occur during a power outage or power fluctuation in the system. If persistent or if it coincides with the system operation then proceed with the following steps. Check the power connections, check the amp draw at the transformer (the transformer maybe overloaded) and check 24VAC voltage at the DEVICE. The alarm is only cleared by pressing the clear button on the Installer Alerts Tab. If the fault persists after checking the connections, replace the unit's control board.
34	Critical	(Thermostat) The thermostat does not know the capacity (tonnage) of the (furnace, air-handler or outdoor unit). Please program the correct capacity of the (furnace, air-handler or outdoor unit).	[Indicated unit] is missing the programmed unit capacity. Go to [Indicated unit] and program the unit capacity manually. See the unit IOM for programming instructions. Remove power to thermostat before programming the unit control board. Once programming is complete, reconnect thermostat wires and reconfigure system.
36	Critical	(Thermostat) 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. Check for other alarms/codes that may be preventing the system from operating as expected. Step 1: Check all heating equipment to determine cause of heating demand. Step 2: Recycle power. System will clear code when it detects condition has cleared.
37	Critical	(Thermostat) 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. Check for other alarms/codes that may be preventing the system from operating as expected. Step 1: Check all cooling equipment to determine cause of cooling demand. Step 2: Recycle power. System will clear code when it detects condition has cleared.
38	Critical	(Thermostat) 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 try again.	Run the system in diagnostic mode and verify that it matches actual equipment operation. Check for other alarms/codes that may be preventing the system from operating as expected. Step 1: Check all heating equipment to determine cause. Step 2: Recycle power. System will clear code when it detects condition has cleared.

table continued on next page



Table 10. Alert Codes and Troubleshooting			Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear
39	Critical	(Thermostat) The system has not been able to turn on the cooling for more than 45 minutes. The system will go offline for 60 minutes and try again.	Run the system in diagnostic mode and verify that it matches actual equipment operation. Check for other alarms/codes that may be preventing the system from operating as expected. Step 1: Check all cooling equipment to determine cause. Step 2: Recycle power. System will clear code when it detects condition has cleared.
40			
105	Critical	(Thermostat / Furnace / Air Handler / Outdoor Unit/ Equipment Interface Module / Damper Control Module) The (Thermostat, furnace, air-handler or outdoor unit) has lost communication with the rest of the system.	Equipment is unable to communicate. This may indicate the existence of other alarms/codes. In most cases errors are related to electrical noise. Make sure high voltage power is separated from RSBus. Check for incorrectly wired and/or loose connections between the Thermostat, indoor unit and outdoor unit. Check for a high voltage source of noise close to the system. Generally, this is a self-recoverable error.
110	Critical	(Furnace) The line voltage is too low.	This alarm/code may appear during a brownout. Line voltage is below its designed operating value. Check and correct the power line voltage.
111	Critical	(Furnace) The line power voltage wiring is reversed.	The unit is reporting that its power line and neutral are reversed. Turn off the power to the system and correct the line power voltage wiring. System resumes normal operation 5 seconds after fault recovered.
112	Critical	(Furnace) The reporting device cannot find earth ground. The thermostat will shut down the system.	Provide proper earth ground to the equipment. System resumes normal operation 5 seconds after fault recovered.
113	Critical	(Furnace) The line voltage is too high.	Line voltage high (voltage higher than nameplate rating). Provide power voltage within proper range. System resumes normal operation 5 seconds after fault recovered.
114	Critical	(Furnace / Air Handler/ / Equipment Interface Module / Damper Control Module) There is a frequency/distortion problem with the power to the (furnace or air-handler).	This alarm/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 resumes normal operation 5 seconds after fault recovered.
115	Critical	(Furnace / Air Handler) The 24VAC to the (furnace or air-handler control board) is lower than the required range of 18 to 30VAC.	24-Volt Power Low (Range is 18 to 30 volts). Check and correct voltage. Check for additional power-robbing equipment connected to system. This alarm/code may require the installation of an additional or larger VA transformer.
115	Critical	(Damper Control Module) The secondary 24VAC damper control module is low.	24-Volt Power Low (Range is 18 to 30 volts). Check and correct voltage. Check for additional power-robbing equipment connected to system. This alarm/code may require the installation of an additional or larger VA transformer.
117	Minor	(Furnace) The reporting unit has poor earth grounding.	Provide proper grounding for the unit. Check for proper earth ground to the system. The alarm/code will clear 30 seconds after it is corrected.
120	Moderate	(Thermostat / Furnace / Air Handler / Outdoor Unit / Equipment Interface Module) There is a delay in the (Thermostat, furnace, air-handler or outdoor unit) responding to the system.	Typically, this alarm/code does not cause any issues and will clear on its own. The alarm/code is usually caused by a delay in the outdoor unit responding to the thermostat. Check all wiring connections. Cleared after unresponsive device responds to any inquiry.
124	Critical	(Thermostat / Furnace / Air Handler / Outdoor Unit / Equipment Interface Module / Damper Control Module) The thermostat has lost communication with the (furnace, air-handler or outdoor unit) for more than 3 minutes.	Equipment lost communication with the thermostat. Check the wiring connections, ohm wires and cycle power. The alarm stops all associated HVAC operations and waits for a heartbeat message from the unit that's not communicating. The alarm/fault clears after communication is re-established.
125	Critical	(Thermostat / Furnace / Outdoor Unit / Damper Control Module) There is a hardware problem on either the (Thermostat, furnace control board, air-handler control board or outdoor unit control board).	There is a control hardware problem. Replace the control if the problem prevents operation and is persistent. The alarm/fault is cleared 300 seconds after the fault recovers.
126	Critical	(Furnace / Outdoor Unit) There is an internal communication problem with the (furnace control board, air-handler control board or outdoor unit control board).	There is an internal hardware problem on the control. Typically the control will re-set itself. Replace the control if the problem prevents operation and is persistent. The alarm/fault is cleared 300 seconds after the fault recovers.
130	Moderate	(Air Handler / Equipment Interface Module) An air-handler configuration jumper is missing.	Configuration jumper(s) missing on control (applicable in non-communicating applications only). Replace the jumper or put wire between terminals on control. Cleared after jumper is connected.

table continued on next page

Table 10. Alert Codes and Troubleshooting			Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear
131	Critical	(Thermostat / Furnace / Air Handler / Outdoor Unit / Equipment Interface Module / Damper Control Module)) The (Thermostat, furnace, air-handler or outdoor unit) control parameters are corrupted.	Reconfigure the system. Replace the control if heating or cooling is not available.
132	Critical	(Air Handler / Damper Control Module)) The device's control software is corrupted.	Recycle power. If failure re-occurs, replace the control. System reset is required to recover.
180	Critical	(Furnace / Air Handler / Outdoor Unit/ Equipment Interface Module) The thermostat has found a problem with the (furnace, air-handler or outdoor unit) outdoor sensor.	In normal operation after 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 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 'About' screen. The alarm/fault will clear upon configuration, or sensing normal values.
200	Critical	(Furnace) The furnace roll out limit switch is open.	Correct the cause of roll out trip. Reset roll out switch. Reset power to clear. Test the furnace operation. The alarm/fault clears after the furnace roll out switch is closed.
201	Critical	(Furnace / Air Handler) The system has lost communication with the (furnace or air-handler) indoor blower motor.	Lost communication with indoor blower motor. Possible causes include: power outage, brown-out, motor not powered, loose wiring, condensation on air handler control without cover on breaker. Problem may be on control or motor side. Cleared after communication is restored.
202	Critical	(Furnace / Air Handler) The unit size code for the (furnace or air-handler) and the size of blower motor do not match.	Incorrect appliance unit size code selected. Check for proper configuring under Unit Size Codes for Furnace/Air Handler on configuration guide or in installation instructions. The alarm/fault clears after the correct match is detected following a reset. Remove the thermostat from the system while applying power and reprogramming.
203	Critical	(Furnace / Air Handler) The unit size code for the (furnace or air-handler) has not been selected.	No appliance unit size code selected. Check for proper configuring under: Unit Size Codes for Furnace/Air Handler on configuration guide or in installation instructions. Critical Alert. The alarm/fault clears after the correct match is detected following a reset. Remove the thermostat from the system while applying power and reprogramming.
204	Critical	(Furnace) There is a problem with the furnace gas valve.	Check gas valve operation and wiring. The alarm/fault clears after the issue is corrected.
205	Critical	(Furnace) The furnace gas valve relay contact is closed.	Check wiring on control and gas valve. The alarm/fault clears after the issue is corrected.
206	Critical	(Furnace) The furnace gas valve 2nd stage relay is faulty.	Furnace will operate on 1st stage for the remainder of the heating demand. The alarm/fault will clear after the issue is corrected. If unable to operate 2nd stage, replace control.
207	Critical	(Furnace) The furnace hot surface igniter is open.	Measure the resistance of hot surface igniter. Replace the it if it is not within the specified range found in IOM. The alarm/fault clears after the issue is corrected.
223	Critical	(Furnace) The furnace low pressure switch is open.	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. The alarm/fault clears after the issue is corrected.
224	Critical	(Furnace) 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. The alarm/fault clears after the issue is corrected.
225	Critical	(Furnace) The furnace high pressure switch is failing to 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. The alarm/fault clears after the issue is corrected.
226	Critical	(Furnace) The furnace high pressure switch is stuck closed.	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. The alarm/fault clears after the issue is corrected.
227	Moderate	(Furnace) The furnace low pressure switch is open 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. The alarm/fault clears after the issue is corrected.
228	Moderate	(Furnace) 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. The alarm/fault clears after a successful calibration.
229	Minor	(Furnace) The furnace control has switched to high fire ignition because the low fire pressure switch did not close in the allowed time.	IFC switched to high fire ignition because low fire pressure switch did not close in allowed time. No action is needed.

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Table 10. Alert Codes and Troubleshooting				Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear	
240	Moderate	(Furnace) 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. The alarm clears after a proper micro-amp reading has been sensed.	
241	Critical	(Furnace) 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. The alarm/fault will clear when a heat call ends successfully.	
250	Moderate	(Furnace) The furnace primary limit switch is open.	Check for proper firing rate on furnace. Ensure there is no blockage in the furnace and the duct work. Check for proper air flow. If limit switch is not closed within 3 minutes, the unit will go into 1-hour Watchguard mode. The alarm/fault will clear when a heat call ends successfully.	
252	Moderate	(Furnace) The furnace discharge air-temperature is high.	Check temperature rise, air flow and input rate. Check for dirty filters. The alarm/fault will clear when a heat call ends successfully.	
270	Critical	(Furnace) 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. The alarm/fault will clear on successful ignition.	
271	Critical	(Furnace) 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. The alarm/fault will clear on successful ignition.	
272	Critical	(Furnace) The furnace is in Watchguard mode. The furnace low pressure switch is open during run 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. The alarm/fault will clear when a heat call ends successfully.	
273	Critical	(Furnace) The furnace is in Watchguard mode. The furnace flame is going off during a heating cycle.	Check micro-amperes of flame sensor using thermostat diagnostics. Clean or replace sensor. Measure voltage of neutral to ground to ensure good unit ground. The alarm/fault will clear when a heat call ends successfully.	
274	Critical	(Furnace) The furnace limit switch has been open for more than 3 minutes.	The system will go into Watchguard mode. Check firing rate and air flow. Check for blockage. The alarm/fault will clear when a heat call ends successfully.	
275	Critical	(Furnace) The furnace flame is out of sequence.	The system will go into Watchguard mode. Shut off gas. Check for gas valve leak. The alarm/fault will clear on next successful ignition.	
276	Critical	(Furnace) 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 and pressure switch wiring connections. The fault/alarm will clear when the furnace calibrates itself successfully.	
290	Critical	(Furnace) 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 if it is not within specifications. The alarm/fault will clear on next successful ignition.	
291	Critical	(Furnace) The heating airflow is below the minimum required level.	The system will go into Watchguard mode. Check for dirty filters and other air flow restrictions. Check blower performance. The alarm/fault will clear when a heat call ends successfully.	
292	Critical	(Furnace / Air Handler) The (furnace or air-handler) indoor 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, obstruction etc. Replace motor or wheel if assembly does not operate or meet performance standards. The alarm/fault clears after the indoor blower motor starts successfully.	
294	Critical	(Furnace) There is over current in the furnace inducer motor.	The system will go into Watchguard mode. Check combustion blower bearings, wiring and amps. Replace if does not operate or does not meet performance standards. The alarm/fault clears after inducer current is sensed to be in-range after the ignition following the Watchguard mode or reset.	
295	Minor	(Furnace) The indoor blower motor is over heating.	Indoor blower motor over temperature (motor tripped on internal protector). Check motor bearings and amps. Replace if necessary. The alarm/fault clears after blower demand is satisfied.	
310	Critical	(Furnace / Air Handler / Damper Control Module) There is a problem with (furnace or air-handler) discharge air sensor.	Compare outdoor sensor resistance to temperature/resistance charts in installation instructions. Replace sensor if necessary. The alarm/fault is cleared 30 seconds after fault is detected as recovered.	
311	Minor	(Furnace) The heat firing rate has been reduced to match available airflow (cut-back mode).	Warning Only. Furnace blower in cutback mode due to restricted airflow. Reduce firing rate every 60 seconds to match available CFM. Check filter and duct system. To clear, replace filter if needed or repair/add duct. 2-stage controls will reduce firing rate to 1st stage. The alarm/fault clears when a heat call finishes successfully.	
312	Minor	(Furnace / Air Handler) The blower cannot provide the requested CFM due to high static.	Warning Only. Restricted airflow - Indoor blower is running at a reduced CFM (Cut-back 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 filter and duct system. To clear, replace filter if needed or repair/add duct. The alarm/fault is cleared after the current service demand is satisfied.	
313	Minor	(Furnace / Air Handler) The indoor and outdoor unit capacities do not match.	Check for proper configuring in installation instructions. Alarm is just a warning. The system will operate, but might not meet efficiency and capacity parameters. The alarm will clear after commissioning is complete.	

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Table 10. Alert Codes and Troubleshooting			Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear
344	Critical	(Furnace) Relay Y1 Failure	Y1 relay failed; operation stopped. Alarm clears 300 seconds after Y1 input sensed OFF.
345	Critical	(Air Handler / Equipment Interface Module / Heat Pump) The "O" relay on the air-handler, EIM or heat pump has failed. Either the pilot relay contacts did not close or the relay coil did not energize.	O relay / Stage 1 failed. Pilot relay contacts did not close or the relay coil did not energize. Replace control. Cleared after the fault recovered following reset. If error is applicable to the XC/XP 25, the outdoor control will need to be replaced.
346	Critical	(Air Handler) The heat pump jumper was not removed on the air-handler control board.	Configuration link(s) not removed on control. Cut O-R. Applicable with non communicating outdoor unit with communicating indoor system.
347	Critical	(Furnace / Air Handler / Equipment Interface Module) The "Y1" relay on the (furnace or air-handler) has failed. Either the pilot relay contacts did not close or the relay coil did not energize.	Operation stopped. Y1 relay / Stage 1 failed. (Pilot relay contacts did not close or the relay coil did not energize; no input back to IFC chip). Critical Alert. Cleared after reset and Y1 input sensed.
348	Critical	(Furnace / Air Handler) The "Y2" relay on the (furnace or air-handler) has failed. Either the pilot relay contacts did not close or the relay coil did not energize.	Y2 relay / Stage 2 failed. (Pilot relay contacts did not close or the relay coil did not energize; no input back to IFC chip). Critical Alert. Cleared after reset and Y1 input sensed.
349	Critical	(Furnace) The "O" to "R" jumper on the furnace needs to be restored.	Configuration link R to O needs to be restored. Replace link or hard-wire. Applicable in non communicating mode. Critical Alert.
350	Critical	(Air Handler) The air-handler's electric heat is not 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. Cleared after electrical heat detection is successful.
351	Critical	(Air Handler) There is a problem with the air-handler's 1st stage electric heat. Either the pilot relay contacts did not close, or the relay coil in the electric heat section did not energize.	Heat section / Stage 1 failed. (Pilot relay contacts did not close, or the relay coil in the electric heat section did not energize.) Air handler will operate on 1st stage for remainder of the heat call. Will clear after fault recovered.
352	Critical	(Air Handler) There is a problem with the air-handler's 2nd 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 1st stage electric heat until the issue is resolved.	Heat section / Stage 2 failed (Same as Code 351).
353	Critical	(Air Handler) There is a problem with the air-handler's 3rd 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 1st stage electric heat until the issue is resolved.	Heat section / Stage 3 failed (Same as Code 351).
354	Critical	(Air Handler) There is a problem with the air-handler's 4th 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 1st stage electric heat until the issue is resolved.	Heat section / Stage 4 failed (Same as Code 351).
355	Critical	(Air Handler) There is a problem with the air-handler's 5th 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 1st stage electric heat until the issue is resolved.	Heat section / Stage 5 failed (Same as Code 351).
370	Critical	(Furnace) The furnace control board has not received 24VAC power for 2 minutes or more.	The furnace control board has not received 24 VAC power for 2 minutes or more. Dealer cuts the W914 jumper (Dehum, Harmony III), the system will not operate and produce this code. The thermostat monitors the DS terminal in the furnace for power, and if the jumper is cut, power is lost to DS. The alarm 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 (IFC or AHC mode only)	Interlock relay is energized, but input is not sensed after 3 seconds. There will be no heating or cooling due to this error. De-energize interlock relay and energize after 5 minutes if demand is still present.
381	Moderate / Critical	(Equipment Interface Module) Interlock relay stuck (IFC or AHC modes only)	Interlock relay continuously sensed (with relay off). No heating and cooling operations. Alarm clears 30 seconds after fault clears.

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Alert Code	Priority	Alert Text	Steps to clear
382	Moderate	(Equipment Interface Module) Relay W1 failure (IFC and AHC modes only)	W1 relay energized, but input is not sensed after three seconds.
400	Critical	(Outdoor Unit) The compressor internal overload has tripped.	Thermostat demand Y1 is present; but, compressor is not running. Check power to unit. Clears the error after current is sensed in both RUN and START sensors for at least 2 seconds, or after service is removed, or after power reset.
401	Moderate	(Outdoor Unit) Either the compressor ran for more than 18 hours continuously trying to cool the home or the refrigerant pressure in the system is low.	Compressor ran more than 18 hours to satisfy a single thermostat demand. Will not lockout system. If 2 stage, units with blinking LED light controls, unit will run in low speed; units with 7-segment display will display code, but continue to run in high speed. If a Heat Pump, and if outdoor temp is less than 65 degrees, code is ignored. Clears the error after 30 consecutive normal run cycles or power reset. Also monitors low pressure switch trips.
402	Critical	(Outdoor Unit) Either the discharge or suction pressure level is out-of-limits, or the is compressor overloaded.	Discharge or suction pressure out-of-limits, or compressor overloaded. Clears the error after 4 consecutive normal compressor run cycles.
403	Moderate	(Outdoor Unit) The compressor ran for less than 3 minutes to satisfy a thermostat demand.	Compressor runs less than 3 minutes to satisfy a thermostat demand. Clears the error after 4 consecutive normal run cycles or power reset.
404	Critical	(Outdoor Unit) The compressor rotor is locked up. This could be due to a short circuiting of the run capacitor, seizing of the bearings or excessive liquid refrigerant etc.	Compressor rotor locked up due to run capacitor short, bearings are seized, excessive liquid refrigerant, etc. (NOTE: May need to install hard start kit). Clears the error after 4 consecutive normal run cycles or after power reset.
405	Critical	(Outdoor Unit) The compressor circuit is open. This could be due to a power disconnection, open fuse etc.	Compressor circuit open (due to power disconnection, open fuse, etc.) Clears the error after 1 normal compressor run cycle.
406	Critical	(Outdoor Unit) The required amount of current is not passing through the start current transformer.	Required amount of current is not passing through Start current transformer. Clears the error after current is sensed in START sensor, or after power reset.
407	Critical	(Outdoor Unit) The required amount of current is not passing through run current transformer.	Required amount of current is not passing through Run current transformer. Clears the error after current is sensed in RUN sensor, or 1 normal compressor run cycle, or after power reset
408	Critical	(Outdoor Unit) The compressor is running continuously.	Compressor runs continuously. Clears the error after 1 normal compressor run cycle or after power reset.
409	Moderate	(Furnace / Air Handler / Outdoor Unit) The secondary voltage for the (furnace, air-handler or outdoor unit) has fallen below 18VAC. If this continues for 10 minutes, the thermostat will turn off the (furnace, air-handler or outdoor unit).	Secondary voltage is below 18VAC. After 10 minutes, operation is discontinued. Clears the code after voltage is higher than 20 VAC for 2 seconds or after power reset.
410	Moderate	(Outdoor Unit) The outdoor unit pressure is below the required limit.	Unit pressures are below the lower limit. Pressure switch opens at 40 psig (system shuts down) and closes at 90 psig (system restarts).
411	Critical	(Outdoor Unit) The low pressure switch has opened 5 times during one cooling cycle. As a result, the thermostat has shutdown the outdoor unit.	Open low pressure switch error count reached 5 strikes. Check system charge using approach and sub cooling temperatures. Reset by putting outdoor unit control in test mode or resetting low voltage power.
412	Moderate	(Outdoor Unit) The outdoor unit pressure is above the required limit. The system will shut down.	Unit pressure is above the upper limit. System is shut down. The high pressure switch for HFC-410A will open at 590PSIG and close at 418PSIG. Confirm that the system is properly charged with refrigerant. Check condenser fan motor, TXV, indoor unit blower motor, stuck reversing valve or clogged refrigerant filter. Confirm that the outdoor unit is clean. The alarm clears after the pressure switch closes or a power reset
413	Critical	(Outdoor Unit) The high pressure switch has opened 5 times during one cooling cycle. As a result, the thermostat has shutdown the outdoor unit.	Open high pressure switch error count reached 5 strikes. Check system charge using approach 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.
414	Critical	(Outdoor Unit) The discharge line temperature is higher than the recommended upper limit of 279°F.	Discharge line temperature is > 279°F. 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. Clears after discharge temperature is < 225°F.
415	Critical	(Outdoor Unit) The discharge line temperature has been consistently higher than the recommended upper limit of 279°F.	Discharge line high temperature error count reached 5 strikes. Make sure coil is clean and airflow unobstructed in and out of condenser. Check system charge using approach and sub cooling temperatures. Reset by putting outdoor board in test mode or resetting low voltage power.
416	Critical	(Outdoor Unit) The outdoor coil sensor is either open, short-circuited or the temperature is out of sensor range. As a result the outdoor unit control will not perform any defrost tempering.	Sensor being detected open or shorted, or temperature is out of sensor range. Outdoor unit control will not perform demand or time/temperature defrost operation. (System will still heat or cool.) Clears when outdoor unit control detects proper sensor readings.

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Table 10. Alert Codes and Troubleshooting				Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear	
417	Critical	(Outdoor Unit) The outdoor unit sensor is either open, short-circuited or the temperature is out of sensor range. As a result the outdoor unit control will not perform any defrost tempering.	Outdoor unit control detects open or shorted sensor, or temperature that is out of sensor range. Critical Alert after 10 minutes. Reset by replacing sensor. 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 board will count one fault. After 5 faults, the board will lock out. Check for proper sensor reading and attachment to line. Replace if out-of-specifications.	
417	Moderate / Critical	(Damper Control Module) The damper control discharge air temperature sensor is either open, short-circuited or the temperature is out of sensor range. As a result the outdoor unit control will not perform any defrost tempering.	The damper control module detects open or shorted discharge sensor, or temperature that is out of discharge sensor range. Check the resistance of the discharge sensor and compare to temperature resistance chart - replace if needed. Reset by replacing the discharge sensor. This fault is detected by allowing the unit to run for 90 seconds before checking discharge sensor resistance. If the discharge sensor resistance is not within range after 90 seconds, the control will count one fault. After 5 faults, the control will lock out. Check for proper sensor reading and attachment to line. The alarm clears after a power reset.	
418	Moderate	(Outdoor Unit) There is a faulty "W" output circuit.	<b>W</b> terminal is energized <b>while in cooling mode</b> . 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. Solution: Disconnect any wiring from the W terminal. If 24 volts is still on the terminal, then it is a stuck relay. If the 24 volts disappears, then there is a need to check any of the wires hooked up to the W terminal.	
419	Critical	(Outdoor Unit) The "W" output on the outdoor unit has reported more than 5 errors. As a result, the system has shutdown the outdoor unit.	The <b>W</b> output (code E418) on the outdoor unit has reported more than 5-strikes. As a result, the system has shut-down the outdoor unit. Disconnect thermostat lines from W and verify 24VAC on the W. If 24VAC is present, replace the control.	
420	Critical	(Air Handler / Equipment Interface Module) The heat pump defrost cycle has taken more than 20 minutes to complete.	Defrost cycle lasts longer than 20 minutes. Check heat pump operation. Cleared when W1 signal is removed. Applicable only in communicating mode with non-communicating heat pump.	
421	Critical	(Outdoor Unit) The "W" output terminal on the outdoor unit is not wired correctly.	Voltage sensed on W output terminal when Y1 out is deactivated.	
422	Moderate	(Outdoor Unit) Compressor top cap switch exceeding thermal limit.	Check condenser fan motor, TXV, indoor unit blower motor, stuck reversing valve or clogged refrigerant filter. Automatically clears when error is corrected. 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.	
423	Moderate / Critical	(Outdoor Unit) The inverter has detected a circuit problem.	Control will lockout after 10 strikes within an hour. To clear disconnect power to outdoor unit and restart.	
424	Moderate	(Outdoor Unit) The liquid line temperature sensor has malfunctioned.	In normal operation after outdoor control recognizes sensors, the alarm will be sent if 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 iComfort Wi-Fi® thermostat 'About' screen. The alarm / fault will clear upon configuration, or sensing normal values.	
425	Minor	(Outdoor Unit) 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. Automatically clears when outdoor ambient temperature rises above limit for more than 5 minutes.	
426	Critical	(Outdoor Unit) Excessive inverter alarms	After ten faults within one hour control will lockout. To clear disconnect power to outdoor unit and restart. Inverter alarms 12 to 14 and 53 do not count towards this lockout condition.	
427	Moderate / Critical	(Outdoor Unit) The inverter has detected a DC peak fault condition.	If condition (55A or higher) is detected, outdoor unit will stop (compressor and fan). Anti-short cycle is initiated. If peak current (55A or higher) occurs 10 times within an hour, system will lockout. To clear, disconnect power to outdoor unit and restart.	
428	Moderate / Critical	(Outdoor Unit) The inverter has detected a high main input current condition.	If condition is detected, outdoor unit will stop (compressor and fan). Anti-short cycle is initiated. If condition occurs 10 times within an hour, system will lockout. To clear, disconnect power to outdoor unit and restart.	

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Table 10. Alert Codes and Troubleshooting			Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear
429	Moderate / Critical	(Outdoor Unit) 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). Anti-short cycles is initiated. If condition occurs 10 times within a 60 minute rolling time period, system will lock out and display a critical code.  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. 2) Capacitors on inverter do not properly charge.  1) This is a moderate code. The outdoor control anti-short timer will time out and the unit will recycle the demand. 2) replace inverter.
430	Moderate / Critical	(Outdoor Unit) Compressor start-up failure	If condition is detected, outdoor unit will stop (compressor and fan). Anti-short cycle is initiated. If condition occurs 10 times within an hour, system will lockout. To clear, disconnect power to outdoor unit and restart.
431	Moderate / Critical	(Outdoor Unit) The inverter has detected a PFC circuit over-current condition.	Error occurs when PFC detects a over current condition of 100A peak. If condition is detected, outdoor unit will stop (compressor and fan). Anti-short cycle is initiated. If condition occurs 10 times within an hour, system will lockout. To clear, disconnect power to outdoor unit and restart.
432	Moderate / Critical	(Outdoor Unit) 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). Anti-short cycle is initiated. If condition occurs 10 times within an hour, system will lockout. System will stop. To clear, disconnect power to outdoor unit and restart.
433	Moderate / Critical	(Outdoor Unit) 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). Anti-short cycle is initiated. If condition occurs 5 times within an hour, system will lockout. To clear disconnect power to outdoor unit and restart.
434	Moderate / Critical	(Outdoor Unit) Outdoor control has lost communications with the inverter for greater than 3 minutes.	Outdoor control has lost communications with the inverter for greater than 3 minutes. Outdoor control will stop all compressor demands, recycle power to the inverter by de-energizing the contactor for 2 minutes. If this occurs 3 time in one thermostat call, the outdoor unit will locked out and display a critical code.  1) Loose electrical connections. 2) Interruption of main power to inverter.  1) Check all electrical connections. 2) Check for proper main power to inverter.
435	Moderate / Critical	(Outdoor Unit) Inverter internal error.	When this error occurs, the outdoor control will cycle power to the inverter by opening the contactor for 2 minutes. Outdoor control will cycle power to the inverter 3 times and then outdoor unit is locked out.
436	Moderate / Critical	(Outdoor Unit) Inverter heat sink temperature exceeded limit.	This occurs when the heat sink temperature exceeds the inverter limit. Inverter will issue code 13 first and slow down to try to cool the heat since. If temperature remains high, outdoor unit will stop (compressor and fan). Anti-short cycle is initiated. If condition occurs 5 times within an hour, system will lockout. System will stop. To clear, disconnect power to outdoor unit and restart.  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 5 minutes to all capacitor to discharge before checking screws).
437	Moderate / Critical	(Outdoor Unit) Heat sink temperature sensor fault has occurred (temperature less than 4 °F or greater than 264°F after 10 minutes of operation).	This occurs when the temperature sensor detects a temperature less than 0.4°F or greater than 264°F after 10 minutes of operation. If condition is detected, outdoor unit will stop (compressor and fan). Anti-short cycle is initiated. If condition occurs 5 times within an hour, system will lockout. To clear disconnect power to outdoor unit and restart.
438	Moderate / Critical	(Outdoor Unit) The inverter has detected a PFC circuit over-current condition.	The inverter has detected a PFC over current condition. This would be caused by a high load condition, high pressure, or outdoor fan failure. Outdoor control will display the code when the inverter has the error. After 3 minutes, the inverter will reset and the compressor will turn on again. If it happens 10 times within a 60 minute rolling time period, the OD control will lock out operation of the outdoor unit and display a critical code.  Possible issue is system running at high pressures. Check for high pressure trips or other alert codes in room thermostat and outdoor control.
439	Moderate	(Outdoor Unit) Compressor slowdown due to high input current.	Input current is approaching a high limit. Compressor speed will automatically slow down. The control continues sending the inverter speed demanded by the thermostat. The control will set indoor CFM and outdoor RPM to values according to demand percentage rather than the actual Hz. Alarm is automatically clear.

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Table 10. Alert Codes and Troubleshooting				Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear	
440	Moderate	(Outdoor Unit) 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. Alarm is automatically cleared.  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 5 minutes to all capacitor to discharge before checking screws)	
441	Moderate	(Outdoor Unit) 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. Alarm is automatically cleared.  Possible issue is system running at high pressures. Check for high pressure trips or other alert codes in room thermostat and outdoor control.	
442	Critical	(Outdoor Unit) The top cap switch has opened 5 times within one hour. As a result, the outdoor unit is locked out.	When compressor thermal protection sensor opens 5 times within 1 hour. Outdoor unit will stop. To clear, disconnect power to outdoor unit and restart.	
443	Critical	(Outdoor Unit) Incorrect appliance unit size code selected.	Check for proper configuring under unit size codes for outdoor unit on configuration guide or in installation instructions. If replacing inverter, verify inverter model matches unit size. The alarm/fault clears after the correct match is detected following a reset. Remove the thermostat from the system while applying power and reprogramming.	
530	Moderate / Critical	(Outdoor Unit) Low Damper 24VAC Voltage	<ul style="list-style-type: none"> <li>Damper supply voltage is &lt; 18VAC.</li> <li>Maintain non-zone mode for 5 minutes after alarm clears.</li> </ul>	
532	Moderate	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.	
542	Moderate/ Critical	Zone 1 Temperature Sensor Problem	Invalid temperature reading, Open or short sensor detected. System is restored 30 seconds after fault is recovered.	
543	Moderate/ Critical	Zone 2 Temperature Sensor Problem	Invalid temperature reading, Open or short sensor detected. System is restored 30 seconds after fault is recovered.	
543	Moderate/ Critical	Zone 3 Temperature Sensor Problem	Invalid temperature reading, Open or short sensor detected. System is restored 30 seconds after fault is recovered.	
545	Moderate/ Critical	Zone 4 Temperature Sensor Problem	Invalid temperature reading, Open or short sensor detected. System is restored 30 seconds after fault is recovered.	
594	Moderate / Critical	(Equipment Interface Module) Pre-coil discharge air temperature sensor problem (DFM mode only). Advances from moderate to critical after ten (10) minutes.	Interlock relay energized, but input not sensed after 3 seconds. No heating and cooling operations. De-energize interlock relay and re-energized 5 minutes later if demand is still present. Alarm clears 5 minutes after fault clears.	
600	Critical	(Outdoor Unit) Compressor has been cycled <b>OFF</b> on utility load shedding.	<b>Load shedding function:</b> 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 24 volts AC power to the <b>L</b> and <b>C</b> terminals on the outdoor control.	
601	Critical	(Outdoor Unit) Outdoor unit has been cycled <b>OFF</b> on low temperature protection.	<b>Low temperature Protection:</b> Outdoor unit will not operate when the outdoor temperature is at or below -4°F (-20°C). If the unit is operating and the outdoor temperature drops below -4°F (-20°C), the unit will continue to operate until the room thermostat is satisfied or the outdoor temperature drops to -15°F (-26°C). (Outdoor unit ambient sensor provides temperature readings).	
700	Moderate	(Thermostat) The temperature sensor in the thermostat is not working properly.	Recalibrate thermostat to clear. Replace thermostat if needed.	
701	Moderate	(Thermostat) The thermostat is reading indoor temperatures above the pre-programmed limit.	Recalibrate thermostat to clear; cool thermostat; adjust set point. Replace thermostat, if needed.	
702	Moderate	(Thermostat) The thermostat is reading indoor temperatures below the pre-programmed limit.	Recalibrate thermostat to clear; warm thermostat; adjust set point. Replace thermostat, if needed.	
703	Moderate	(Thermostat) The humidity sensor in the thermostat is not working properly.	Recalibrate thermostat to clear; adjust set point. Replace thermostat, if needed.	

table continued on next page

Table 10. Alert Codes and Troubleshooting			Critical alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Minor and Moderate alerts are found only in the Installer alert button.
Alert Code	Priority	Alert Text	Steps to clear
704	Moderate	(Thermostat) The thermostat is reading indoor humidity levels above the pre-programmed limit.	Recalibrate thermostat to clear. Replace thermostat, if needed.
705	Moderate	(Thermostat) The thermostat is reading indoor humidity levels below the pre-programmed limit.	Recalibrate thermostat to clear. Replace thermostat, if needed.
Ohm Check	—	The ohm reading in the system is either too high or too low.	Ohm reading between i+ and i- anywhere on the RSBus with supply power off should be between 70 and 90 ohms. If above 90 ohms, check and repair wiring, splices or other wiring defects that may be causing the excessive resistance. If less than 70 ohms, check for shorted wires.

## HOMEOWNER SERVICE ALERT CODES

Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
3000	Filter 1	3002	Humidifier Pad	3004	Maintenance	4000	User Wi-Fi state change, disable	4002	Image file download failed
3001	Filter 2	3003	UV Light	3005	PureAir Maintenance	4001	Firmware download failed		


Table 11. Troubleshooting Tips		Bold text indicates a button, or text display on the thermostat.		
No.	Issue / Problem	Possible Cause	Corrective Action / Comments	
1a	When the thermostat is first started and is stuck on the splash screen.	Thermostat is possibility incorrectly wired and cannot find an iComfort® indoor unit.	<ul style="list-style-type: none"> <li>- Stuck splash screen due to incorrect wiring will occur on thermostats with firmware version 2.00 or 2.02.</li> <li>- Thermostat did not find an Indoor Unit. Make sure there is an iComfort® indoor unit on the system. Check R, i+, i- and C connections, ohm wires and cycle power. Replace indoor unit control board if there is no response.</li> </ul>	
1b	When the thermostat is first started and is stuck on a blank screen.		<ul style="list-style-type: none"> <li>- Stuck splash screen due to incorrect wiring will occur on thermostats with firmware version 2.01.</li> <li>- Thermostat did not find an Indoor Unit. Make sure there is an iComfort® indoor unit on the system. Check R, i+, i- and C connections, ohm wires and cycle power. Replace indoor unit control board if there is no response.</li> </ul>	
1c	Screen turns blue and the following message appears <b>"Thermostat is unable to establish communication to the indoor unit or other devices. Probable cause is a miss wire Please verify all the wiring and connections and restart the system"</b> .		<ul style="list-style-type: none"> <li>- Blue screen with notification text that could be due to incorrect wiring will occur on thermostats with firmware version 2.10.</li> <li>- Thermostat did not find an Indoor Unit. Make sure there is an iComfort® indoor unit on the system. Check R, i+, i- and C connections, ohm wires and cycle power. Replace indoor unit control board if there is no response.</li> </ul>	
2	<ul style="list-style-type: none"> <li>- No electric heat operation.</li> <li>- The thermostat <b>system setting</b> does not offer a <b>emergency heat</b> choice on an HP system.</li> <li>- The thermostat does not offer any "heat" choice on an AC system with air handler with electric heat.</li> </ul>	Electric heat was not manually configured configured at the Air Handler Control (AHC) before the iComfort Wi-Fi® system discovery process at initial power-up.	<ul style="list-style-type: none"> <li>- Manually configure to discover the electric heat section(s) on the air handling (see Page 56 or CBX32MV or CBX40UHV manual for details).</li> <li>- Re-setup the iComfort® system by selecting the <b>setup</b> button in the Installer program and press <b>start</b> to begin <b>system discovery</b>; then reconfigure the system.</li> </ul>	
3	Thermostat Displays System Waiting message and the furnace does respond to a heating demand (no red critical alert icon or alert messages are displayed on the thermostat).	The furnace is in "watchguard" mode (moderate alert) and will not display the red critical alert icon nor be displayed in the homeowner alert button.	<ul style="list-style-type: none"> <li>- Go to the installer program <b>alert</b> button to view all alerts and details about those alerts.</li> <li>- If the furnace is in "watchguard" mode, the furnace can be reset from the Home screen by setting the thermostat <b>system settings</b> to <b>off</b> for 20 sec, then back to <b>heat</b>. Then initiate a new heat demand.</li> </ul>	
4	Outdoor temperature is not displayed on the thermostat.	Outdoor Temp Display must be enabled to display the outdoor temperature on the home screen.	On the home screen, press the right arrow  then press the display settings button. Click on outdoor temp display button to toggle ON.	

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
<b>Table 11. Troubleshooting Tips</b>		<b>Bold text indicates a button, or text display on the thermostat.</b>	
<b>No.</b>	<b>Issue / Problem</b>	<b>Possible Cause</b>	<b>Corrective Action / Comments</b>
5	A humidifier was added to the system as non-communicating equipment and the thermostat does not provide the ability to adjust the RH set point.	Humidification Control Mode is set for "Display only" which will not allow the iComfort® system to control the humidifier.	<ul style="list-style-type: none"> <li>- In the installer program, select the <b>equipment</b> button. Select "System" from the device list using the up/down arrows and press the <b>edit</b> button. Use up/down arrows to select <b>Humidification Control Mode</b> from the list. Select the desired humidifier control mode: <b>Basic</b>, <b>Precision</b>, or <b>Dew Point</b>. (Basic is the most popular) and press the <b>save</b> button. Follow the red instructions then exit the system.</li> <li>- If <b>Humidification Control Mode</b> is not offered as a menu item choice, the Humidifier must be added to the iComfort® system using the <b>Add or Remove Non-communicating equipment</b> screen under the thermostat installer program in the <b>setup</b> button.</li> </ul>
6	The non-communicating outdoor unit is part of the system, but the thermostat does not display the outdoor unit.	The outdoor unit was not added as a non-communicating unit during initial system setup.	In the thermostat installer program select the setup button and follow the on screen instructions until you reach the Add or Remove Non-communicating equipment screen; press yes. Select Outdoor Unit Type from the menu and press the edit button. Select 1 Stage AC Unit or 2 Stage AC Unit and press save. Follow the red instructions then exit the system.
7	High Balance Point and Low Balance Point are not listed as a menu item to adjust the set point on the thermostat of the heat pump system.	Balance Point Control must be enabled to display as the High Balance Point and Low Balance Point in the menu and provide the ability for the installer to adjust the set point.	<ul style="list-style-type: none"> <li>- In the installer program select the <b>equipment</b> button, then scroll down to system device to <b>System</b> and press <b>edit</b>. Scroll down the menu item choices to <b>Balance Point Control</b> and press <b>edit</b>. Select <b>enable</b> and press <b>save</b>. <b>High Balance Point</b> and <b>Low Balance Point</b> are now listed; adjust the balance point settings and press <b>save</b>.</li> <li>- If <b>Balance Point Control</b> is not shown as a menu item choice, the system does not have/recognize an outdoor sensor or the system is not a heat pump.</li> </ul>
8	iComfort® thermostat does not show a choice for Dew Point Control Humidification mode (only Basic and Precision choices).	Dew Point Control will only be displayed if the system has an outdoor sensor.	<ul style="list-style-type: none"> <li>- Add an outdoor sensor to the system and connect to the outdoor sensor terminals on the indoor unit.</li> <li>- iComfort® system is not able to read the outdoor temperature sensor in the iComfort® outdoor unit, check outdoor sensor.</li> </ul>
9	The iComfort® does not display an alert code message, but the furnace or unit control displays a diagnostic code.	The red Critical Alert icon and homeowner alert button do not display non-critical alerts.	Go to the installer program alert button to view all alerts and details about those alerts.
10	The iComfort® thermostat does not display the Model # and or Serial # indoor or outdoor unit.	The iComfort® control was replaced with a replacement control before the iComfort® system was initially setup or configured.	<ul style="list-style-type: none"> <li>- Replacement iComfort® controls do not have the Model # or Serial # loaded in the control.</li> <li>- The Model # and Serial # cannot be added to the control.</li> <li>- System will still operate normally.</li> </ul>
11	A non-communicating 2-stage outdoor unit was added to the system but the unit only runs in 2nd stage.	The "W915 2 Stage Compr" clippable option link on the furnace or air handler control must be cut when used with a non-communicating 2-stage outdoor unit.	Cut the "W915 2 Stage Compr" option link on the furnace or air handler control.
12	Transfer the model and serial numbers and system settings to a replacement control.	The iComfort® system is capable of copying settings from the previous configuration to the new compatible device (control) found.	Reconfigure the system using the installer program and select the setup button. The system will go through the system discovery process. The thermostat will display missing devices (old control) and found compatible devices (new control). Press the next button to accept the new device and copy the settings. Thermostat will display Settings were copied after successfully copying the information to the new control. See section title "Reconfiguring a system" in this manual.
13	Determine the actual Software version of the thermostat or one of the iComfort® unit controls.	iComfort® software is stored in the control and can be retrieved.	From the home screen click the right arrow  then click service info button; then click the thermostat info button; (display shows model & serial numbers and hardware, software, Wi-Fi revision information).
14	The iComfort® thermostat shows an error code related to the outdoor sensor and or the DAS even after removing these optional accessories.	The outdoor sensor and discharge sensor are options, however if the system was setup with the sensor in place, the iComfort® system will see an open sensor reading if it is disconnected.	<ul style="list-style-type: none"> <li>- Disconnect the outdoor sensor or discharge sensor.</li> <li>- Using the installer program, reset the system by selecting <b>setup</b> button and follow the screen prompts as the thermostat goes through a new <b>system discovery</b>.</li> </ul>
15	The iComfort® thermostat will not provide me a choice to add a non-communicating heat pump to a gas furnace.	The iComfort® system does not have the ability to control a non-communicating heat pump on a dual fuel system.	Replace the iComfort® thermostat with a conventional thermostat that has a dual fuel control mode (e.g. Lennox ComfortSense™ 7000).

table continued on next page

<b>Table 11. Troubleshooting Tips</b>		<b>Bold text indicates a button, or text display on the thermostat.</b>	
<b>No.</b>	<b>Issue / Problem</b>	<b>Possible Cause</b>	<b>Corrective Action / Comments</b>
16	During system discovery, the thermostat displays a message Thermostat is unable to communicate to system components.	The thermostat was not successful in communicating to the indoor unit.	<ul style="list-style-type: none"> <li>- Verify the indoor unit has a iComfort® communicating control.</li> <li>- Check wiring connections at R, i+, i- and C at the indoor unit and thermostats.</li> <li>- Check R, i+, i-, C wires for open/shorts.</li> </ul>
17	Temperature or humidity calibration does not respond to calibration changes.	Temperature/Humidity calibration changes will change display 1°F or 1% RH every 3 minutes.	Allow the system to stabilize and complete the calibration mode due to the time delay. A 5°F calibration change will take 15 minutes to calibrate the display.
18	The installer adjustable settings used to configure the system are not listed in the equipment button under the Thermostat (only Temp Reading Calibration and Humidity Reading Calibration are listed as menu items).	The adjustable system configuration settings are listed in the equipment button under System.	<ul style="list-style-type: none"> <li>- In the installer program select the <b>equipment</b> button and choose <b>System</b> from system device and press <b>edit</b>.</li> <li>- Over 25 installer adjustable settings are provided including balance point, humidification control, Dehumidification modes, stage differentials and delays.</li> </ul>
19	During the cooling mode the displayed air volume on the indoor control is substantially lower than expected.	The system may be following "the cooling ramping" profile or may be in "the Dehumidification mode".	<ul style="list-style-type: none"> <li>- During the default cooling ramping profile the blower will run for 7.5 minutes at 82% of the cooling air volume. If the "cooling ramping profile" is selected, the system will ramp to 100% after 7.5 minutes.</li> <li>- The dehumidification mode will run the system at 70% of the cooling air volume which will be in addition to the air volume reduction provided during the ramping profile. During the dehumidification mode, a "d" will be displayed on the furnace or air handler control.</li> </ul>
20	The Indoor unit is not providing the expected air volume according to the cfm shown on the indoor unit control.	<ul style="list-style-type: none"> <li>- Indoor unit air volume settings in the iComfort® thermostat are not correct.</li> <li>- System is operating in the cooling mode and following the cooling ramping profile or dehumidification air volume.</li> </ul>	<ul style="list-style-type: none"> <li>- In the installer program select the <b>equipment</b> button and choose the furnace or air handler from the <b>system devices</b> list and press <b>edit</b>. Verify/set the correct air volume for heating and cooling modes.</li> <li>- If in the cooling mode check for cooling ramp mode or dehumidification mode as in #18.</li> </ul>
21	<ul style="list-style-type: none"> <li>- No second stage cooling is provided on a iComfort® outdoor unit.</li> <li>- Space temperature is above second stage differential and has run in first stage a long time.</li> <li>- No red <b>Critical Alert</b> icon or alert is displayed in the homeowner <b>alert</b> button.</li> </ul>	The red Critical Alert icon and homeowner alert button do not display non-critical alerts.	<ul style="list-style-type: none"> <li>- Go to the installer program <b>alert</b> button to view all alerts and details about those alerts.</li> <li>- Look for alert code 401 (Compressor Long On Cycle) which indicates compressor ran more than 18 hours continuous and will lock out 2nd stage compressor.</li> <li>- Cycle indoor power off and back on, alert code 401 will clear within a few minutes.</li> </ul>
22	No weather being displayed.	iComfort Wi-Fi® not communicating with router.	Make sure Wi-Fi is enabled.
23	Unable to complete Wi-Fi router / Internet connection	Refer to 507037-01 <i>Wi-Fi Troubleshooting checklist for iComfort Wi-Fi® thermostat.</i>	

## Wiring Diagrams

**DAS NOTE** - The discharge air sensor is intended to be mounted downstream of the furnace heat exchanger and air conditioning coil. 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 IFC or AHC and the discharge air sensor should not exceed 10ft when wired with 18-gauge thermostat wire.

**OAS NOTE** - Wiring distance between the IFC or AHC and the outdoor temperature sensor should not exceed 200ft when wired with 18-gauge thermostat wire.

**HP/AC**

iComfort Wi-Fi® Thermostat  
iComfort by Lennox™ Indoor Furnace or Air Handler  
iComfort by Lennox™ Outdoor Condensing Unit or Heat Pump

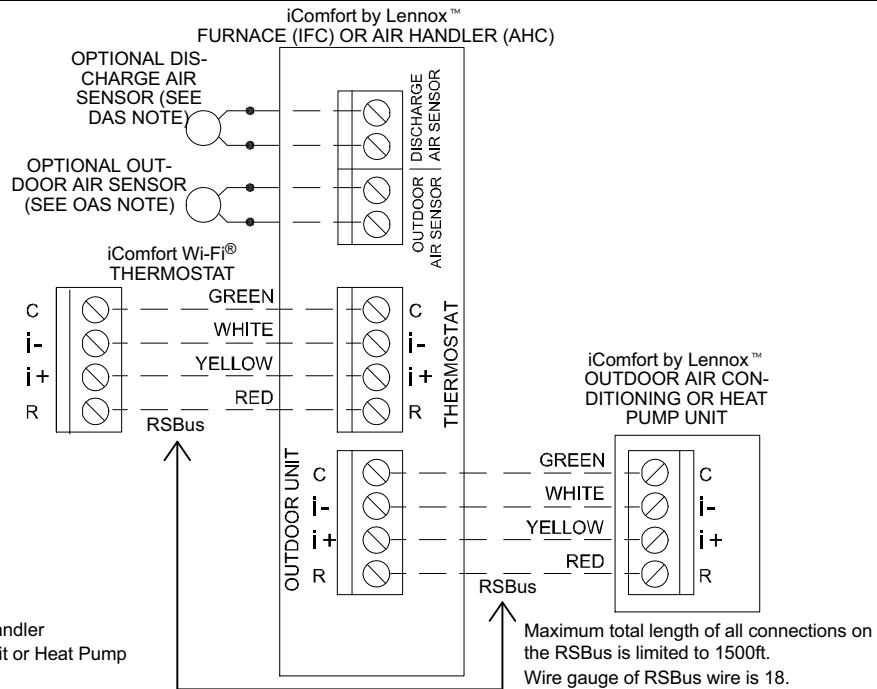


Figure 12. iComfort® Communicating System Wiring

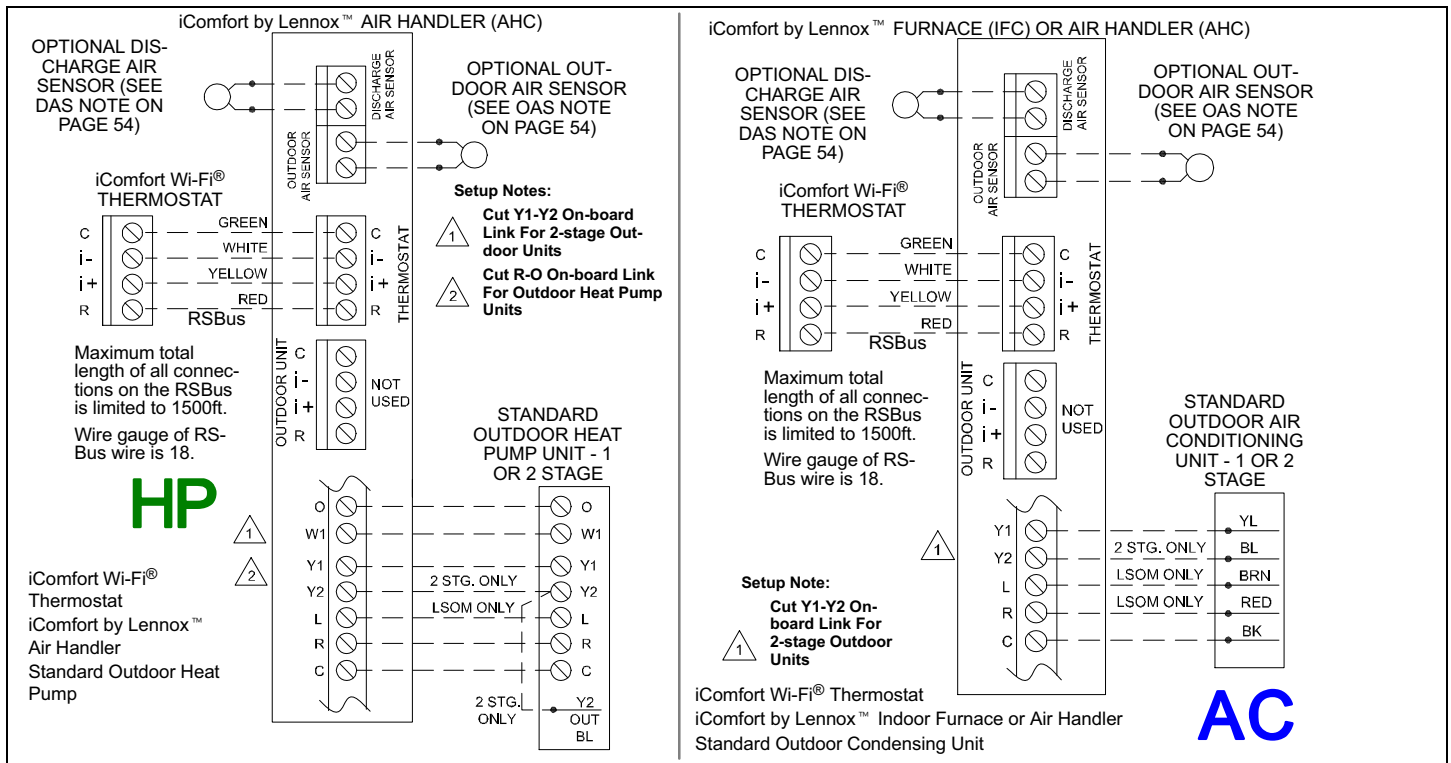
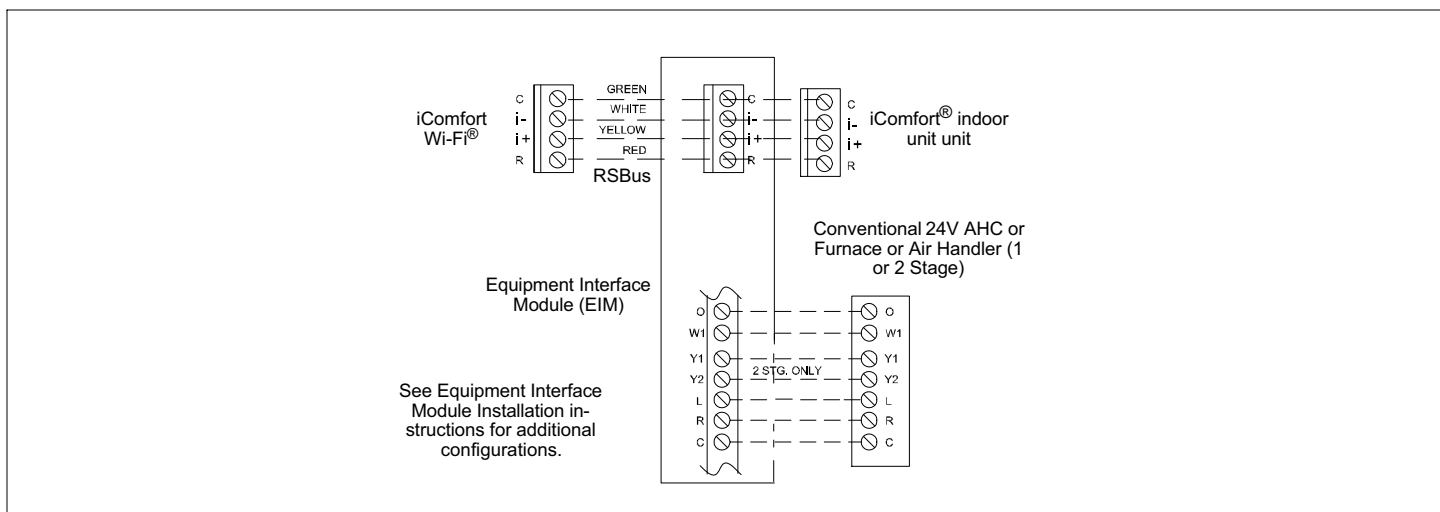
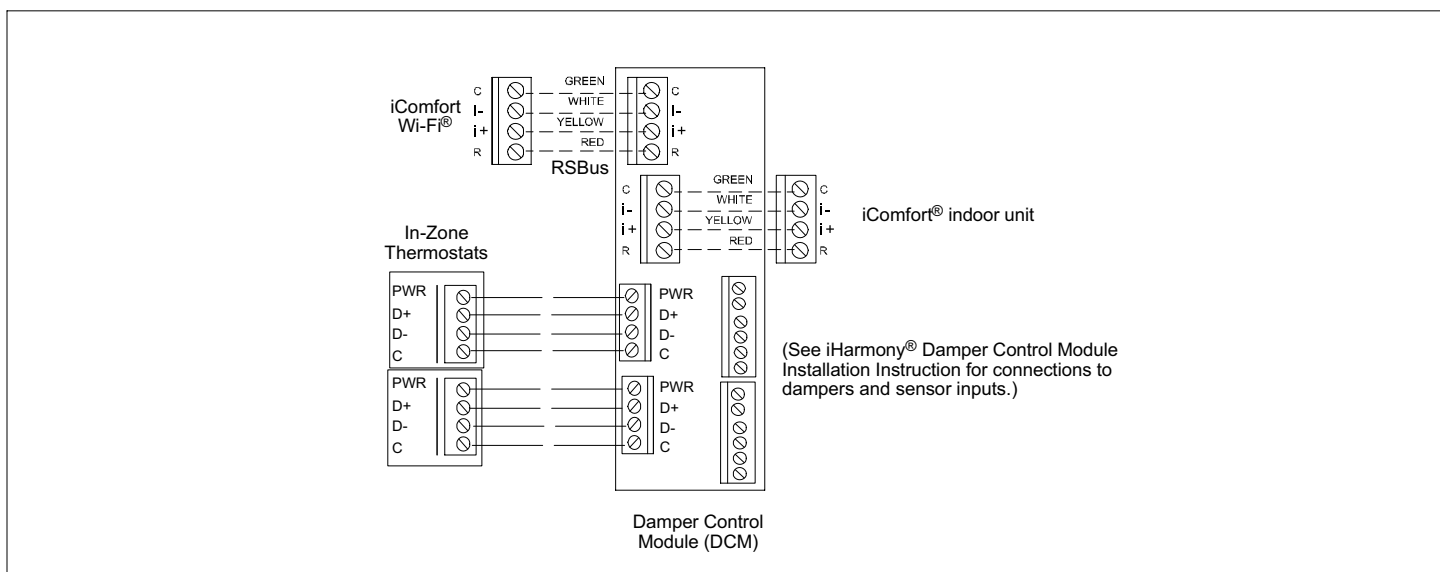


Figure 13. iComfort® Communicating Indoor/Non-Communicating Outdoor System Wiring



**Figure 14. iComfort Wi-Fi®, Equipment Interface Module, Non-communicating (Conventional) Indoor Unit and iComfort® Outdoor Unit.**



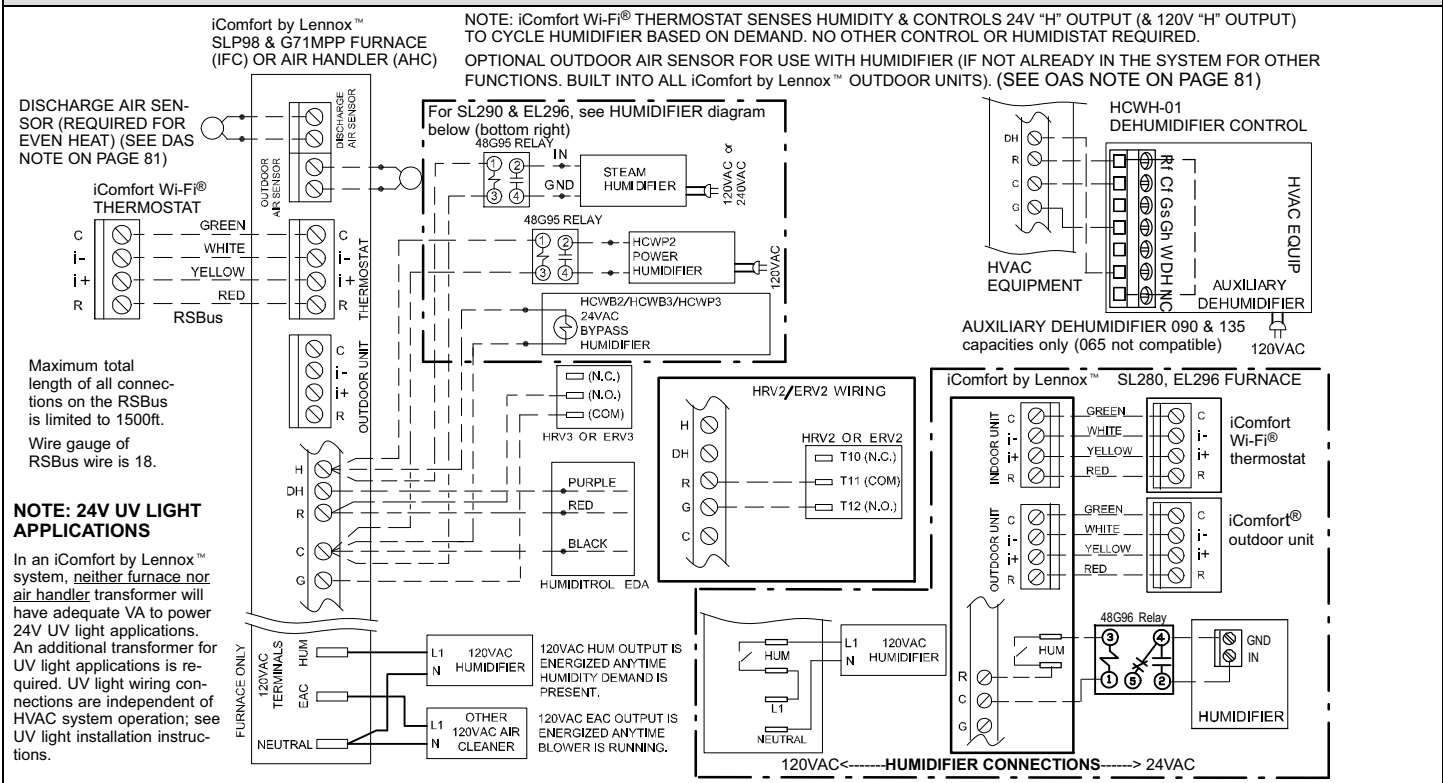
**Figure 15. iComfort Wi-Fi®, iHarmony® Damper Control Module, and Communicating Indoor Unit**

**DAS NOTE:** The discharge air sensor is intended to be mounted downstream of the heat exchanger and air conditioning coil. 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 IFC or AHC and the discharge air sensor should not exceed 10 feet when wired with 18-gauge thermostat wire.

**OAS NOTE:** The outdoor temperature sensor wiring distance between the IFC or AHC should not exceed 200 feet when wired with 18-gauge thermostat wire.

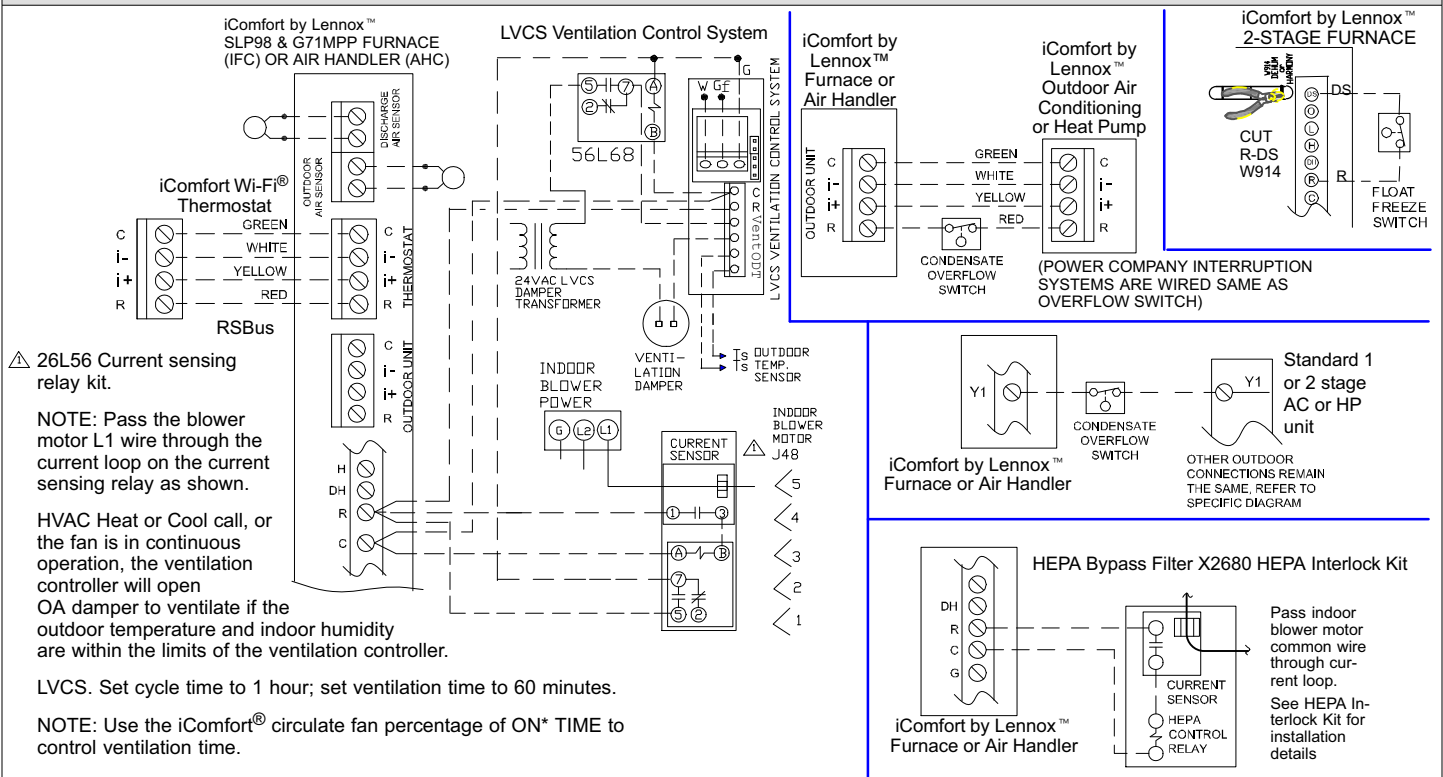
**RSBUS NOTE** Maximum total length of all connections on the RSBUS is limited to 1500 ft. (450 m). Max. length between components is 300 ft. (90 m).

**FOR USE WITH ANY ICOMFORT BY LENNOX™ SYSTEM**



### Figure 16. Optional Accessories Wiring

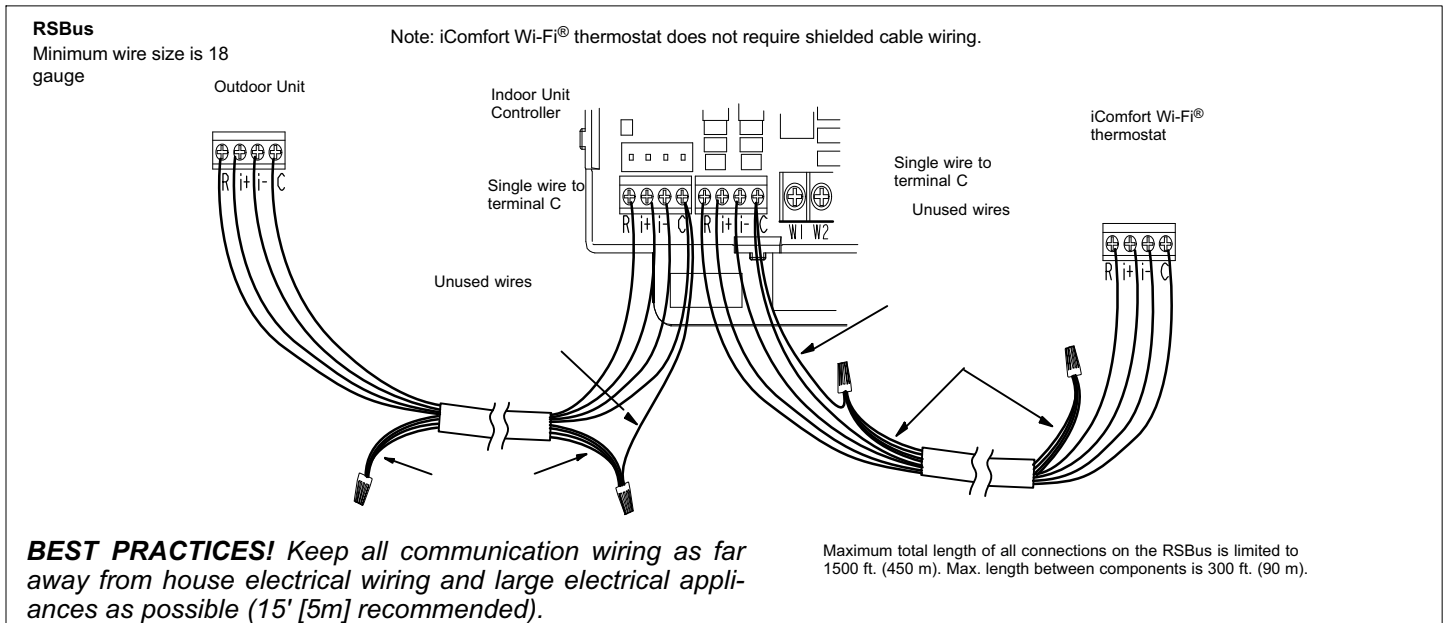
**FOR USE WITH ANY ICOMFORT BY LENNOX™ SYSTEM**



### Figure 17. Optional Accessories Wiring



## Thermostat Wire Termination in Communicating System



**Figure 18. Thermostat Wire Termination in Communicating System**

Communicating systems using the iComfort Wi-Fi® thermostat require four thermostat wires between the thermostat and the furnace/air handler control and four wires between the outdoor unit and the furnace/air handler control. 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 the diagram above.

This is not an issue in non-communicating systems.

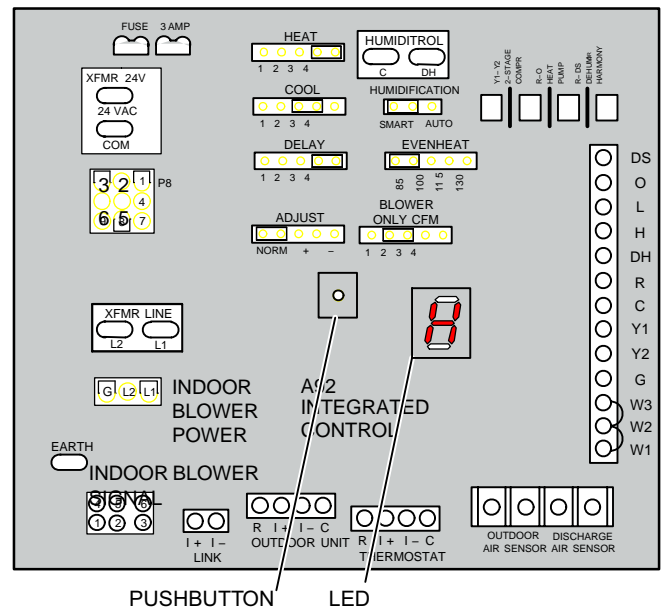
- Select field test mode—press and hold the push button until solid “—” appears; release button. Display will blink.
- Press the push button and wait for the display LED to show “H” (capital H), then release the button.
- The air handler control cycles the indoor blower motor “on” to the selected heat 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”.
- At this point, the iComfort Wi-Fi® will now detect the heat strip information stored in the air handler control.

## Configuring Heat Sections on Air Handler Control

**IMPORTANT:** After electric heat strips are installed, the Air Handler Control must be manually configured to detect the number of electric heat sections. (See also 506181-01 for complete configuration guide.)

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

- Power must be applied to the air handler but NOT to the thermostat. Remove thermostat from base plate or remove wires to thermostat at the air handler.
- On the air handler control, unit should be in idle mode (decimal blinks at 1 Hertz—0.5 second ON, 0.5 second OFF).



## Typical Systems Setup

### Complete iComfort® Systems — Furnace and Air Conditioner

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

1. **Wiring**—See **Communicating System and optional accessories Wiring** diagrams.
  - 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat to the 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 link on air handler control.
3. After the entire system is wired, power up the system; the iComfort Wi-Fi® thermostat will check the system for installed communication devices.
4. On the thermostat, go past the “Add or remove non-communicating devices” to the “To adjust a setting” screen.
5. Use the arrows to select **Furnace** from system devices list; press **edit**. 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. When you change certain settings, the system will prompt you to “please view and save all red settings”. Use the arrows to select the red settings and press **edit**. Either make changes or not, but press **save** either way. The red settings will go away after pressing **save**. When all CFM settings are complete, press the **back** button. Press **next step** to advance to the tests button.
6. Using up/down arrows, select the test options individually (if so desired, you may choose to TEST ALL) and press the **select** button. (If selecting individual tests, repeat until you have selected all you intend to run.)
7. Press the **start** button. Confirm the air conditioning unit is electrically energized and operational. Press **done**.
8. Exit the installer setup mode by selecting the **EXIT** button.

#### TIPS

- An outdoor temperature sensor is provided in an iComfort® air conditioning unit. To display the outdoor temperature on the home screen of the thermostat, you must turn on (or off) the “Outdoor Temp Display”. From the Home screen, press **press for more** area and select the **HELP** icon. Press the **user preferences** box and scroll down to “Outdoor Temp Display”. Press the **modify** button and use the up/down arrows to select **On** (or Off) and then press the **save** button. Press **done** to return to the Home screen.
- Turn the Indoor Humidity Display on and off in a similar manner as above.

## Complete iComfort® Systems — Furnace and HP Unit (Dual-fuel)

Dual fuel system using an iComfort® gas furnace (G71MPP, EL296V, SLP98, SL280) with an iComfort® heat pump (XP17, XP17N, XP21, XP21N and XP25 only).

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

- 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat to the gas furnace (R, i+, i-, C)
- 4-conductor thermostat wire from the furnace terminal strip to the iComfort® heat pump (R, i+, i-, C)
- 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 iComfort Wi-Fi® thermostat will check the system for installed communication devices.

4. On the thermostat, go past the “Add or remove non-communicating devices” to the “To adjust a setting” screen. Select “System” from the device list using the up/down arrows and press the **edit** button

5. Select Balance Point Control and press **edit**. Use the

down arrow to select “Enabled” and press **save**. High and Low Balance Points will appear in red.

6. Complete *Balance Point Control* by editing the High and Low Balance Points. It is not necessary to change the defaults, but you must save each setting. The red settings will go away after pressing **save**. Press the **back** button to return to the adjust screen.

7. Use the arrows to select **Furnace** from system devices list; press **edit**. From this furnace screen you will have access to the various airflow settings. Set the system air volumes according the needs of the home. When you change certain settings, the system will prompt you to “please view and save all red settings”. Use the arrows to select the red settings and press **edit**. Either make changes or not, but press **save** either way. The red settings will go away after pressing **save**. When all CFM settings are complete, press the **back** button. Press **next step** to advance to the tests button.

8. Test the system operation and confirm the HP unit is electrically energized and operational. Press **done**.

9. Exit the installer setup mode by selecting the **EXIT** button.

### TIPS

- High and Low Balance points are enabled and adjusted under the installer section of the thermostat. In the equipment button select “System” and press **edit**. Scroll down to “Balance Point Control” and press **edit** and select **Enabled** and then **save**.
- An outdoor temperature sensor is provided in an iComfort® heat pump unit. To display the outdoor temperature on the home screen of the thermostat, you must turn on (or off) the “Outdoor Temp Display”. From the Home screen, press **press for more** area and select the **HELP** icon. Press the **user preferences** box and scroll down to “Outdoor Temp Display”. Press the **modify** button and use the up/down arrows to select **On** (or Off) and then press the **save** button. Press **done** to return to the Home screen.
- Turn the Indoor Humidity Display on and off in a similar manner as above.
- Gas heat is provided to temper the air during defrost cycles.

## Complete iComfort® Systems — Air Handler and Air Conditioner

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

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

1. Configure air handler control (AHC) for auxiliary heat strips if used.
2. **Wiring**—See Communicating System and optional accessories Wiring diagrams.
  - 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat to the air handler (R, i+, i-, C)
  - 4-conductor thermostat wire from the air handler terminal strip to the iComfort® air conditioner (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 iComfort Wi-Fi® thermostat will check the system for installed communication devices.
5. On the thermostat, go past the “Add or remove non-communicating equipment” to the “To adjust a setting” screen.
6. Use the arrows to select *Air Handler* from system devices list; press **edit**. From this Air Handler screen you will have access to the various airflow settings. Set the system air volumes according the needs of the home. When you change certain settings, the system will prompt you to “please view and save all red settings”. Use the arrows to select the red settings and press **edit**. Either make changes or not, but press **save** either way. The red settings will go away after pressing **save**. When all CFM settings are complete, press the **back** button. Press **next step** to advance to the tests button.
7. Test the system operation and confirm the system is electrically energized and operational. Particularly, test the heat strips (when used) to insure the auxiliary stages operate as designed. Press **done**.
8. Exit the installer setup mode by selecting the **EXIT** button.

### TIPS

- If the thermostat “System Setting” does not offer a choice for “emerg. heat” and or the electric heat will not function; the electric heat has not been configured. Configure the electric heat as described on Page 56, or for complete detail, see the Air Handler installation instructions. Reconfigure the iComfort® system by entering the installer program and selecting the **setup** button and following the prompts.
- An outdoor temperature sensor is provided in an iComfort® air conditioning unit. To display the outdoor temperature on the home screen of the thermostat, you must turn on (or off) the “Outdoor Temp Display”. From the Home screen, press **press for more** area and select the **HELP** icon. Press the **user preferences** box and scroll down to “Outdoor Temp Display”. Press the **modify** button and use the up/down arrows to select **On** (or Off) and then press the **save** button. Press **done** to return to the Home screen.
- Turn the Indoor Humidity Display on and off in a similar manner as above.

## Complete iComfort® Systems — Air Handler and Heat Pump Unit

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

**IMPORTANT!** Be sure to set up the air handler control for heat strips (if used) prior to powering up the system and thermostat.

1. Configure air handler control (AHC) for auxiliary heat strips if used.
2. **Wiring**—See **Communicating System and optional accessories Wiring** diagrams.
  - 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat to the air handler (R, i+, i-, C)
  - 4-conductor thermostat wire from the air handler terminal strip to the iComfort® heat pump (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 iComfort Wi-Fi® thermostat will check the system for installed communication devices.
5. On the thermostat, go past the “Add or remove non-communicating equipment” to the “To adjust a
6. setting” screen. Select “System” from the device list using the up/down arrows and press the **edit** button
7. Select *Balance Point Control* and press **edit**. Use the down arrow to select Enabled and press **save**. High and Low Balance Points will appear in red.
8. Complete Balance Point Control by editing the High and Low Balance Points. It is not necessary to change the defaults, but you must save each setting. The red settings will go away after pressing **save**. Press the **back** button to return to the adjust screen.
9. Use the arrows to select air handler from system devices list and press **edit**. 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, press the **back** button. Address any red settings as described in steps 6 and 7. Press **next step** to advance to the tests button.
10. Test the system operation and confirm the system is electrically energized and operational. Particularly, test the heat strips (when used) to ensure the auxiliary stages operate as designed. Press **done**.
10. Exit the installer setup mode by selecting the **EXIT** button.

### TIPS

- If the thermostat “System Setting” does not offer a choice for **emerg. heat** and or the electric heat will not function; the electric heat has not been configured. Configure the electric heat as described on Page 56, or for complete detail, see the Air Handler installation instructions. Reconfigure the iComfort® system by entering the installer program and selecting the **setup** button and following the prompts.
- High & low balance points are enabled and adjusted under the installer section of the thermostat. In the equipment button select “System” and press **edit**. Scroll down to “Balance Point Control” and press **edit** and select **Enabled** and then **save**.
- An outdoor temperature sensor is provided in an iComfort® heat pump unit. To display the outdoor temperature on the home screen of the thermostat, you must turn on (or off) the “Outdoor Temp Display”. From the Home screen, press **press for more** area and select the **HELP** icon. Press the **user preferences** box and scroll down to “Outdoor Temp Display”. Press the **modify** button and use the up/down arrows to select **On** (or Off) and then press the **save** button. Press **done** to return to the Home screen.

## Partial iComfort® System — iComfort® Furnace and Non-Communicating Lennox Brand (conventional) Air Conditioner

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

1. **Wiring**—See **Communicating System and optional accessories Wiring** diagrams.
  - 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat to the 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 iComfort Wi-Fi® thermostat will check the system for installed communication devices.
4. In the installer setup button, select “Add or Remove non-communicating equipment” by using the **yes** button.
5. Select the *Outdoor Unit Type* from the device list using the up/down arrows and press the **edit** button. Then select the air conditioner type (1-stage AC or 2-stage AC) and press the **save** button.
6. Select the outdoor unit capacity and minimum outdoor unit capacity (2-stage only). Press **save** after editing each setting. Press **back** when finished to return to the adjust screen.
7. Use the arrows to select *Furnace* from system devices list; press **edit**. 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. When you change certain settings, the system will prompt you to “please view and save all red settings”. Use the arrows to select the red settings and press **edit**. Either make changes or not, but press **save** either way. The red settings will go away after pressing **save**. When all CFM settings are complete, press the **back** button. Press **next step** to advance to the tests button.
8. Using up/down arrows, select the test options individually (if so desired, you may choose to TEST ALL) and press the **select** button. (If selecting individual tests, repeat until you have selected all you intend to run.)
9. Press the **start** button. Confirm the air conditioner unit is electrically energized and operational. Press **done**.
10. Exit the installer setup mode by selecting the **EXIT** button.

### TIPS

- If the thermostat “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. Select “Add or Remove non-communicating” under the setup button in the Installer Section. Select “Outdoor Unit Type”, press the **edit** button and then choose “1 Stage AC” or “2 Stage AC” and press the **save** button.
- On two-stage air conditioners you must cut the “W915 2 Stage Compr” link on the furnace control.

## Partial iComfort® System — iComfort® Furnace and Non-Communicating Lennox Brand (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.

## Partial iComfort® System — iComfort® Air Handler and Non-Communicating Lennox Brand (conventional) Air Conditioner

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

**IMPORTANT!** Be sure to set up the air handler control for heat strips (if used) prior to powering up the system and thermostat.

1. Configure air handler control (AHC) for auxiliary heat strips if used.
2. **Wiring**—See **Communicating System and optional accessories Wiring** diagrams.
  - 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat 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 iComfort Wi-Fi® thermostat will check the system for installed communication devices.
6. In the installer setup button, select *Add or Remove non-communicating equipment* by pressing the **yes** button.
7. Select the *Outdoor Unit Type* from the device list using the up/down arrows and press the **edit** button. Then select the air conditioner type (1-stage AC or 2-stage AC) and press the **save** button.
8. On the thermostat, go past the “Add or remove non-communicating equipment” to the “To adjust a setting” screen.
9. Use the arrows to select *Air Handler* from system devices list; press **edit**. From this air handler screen you will have access to the various airflow settings. Set the system air volumes according the needs of the home. When you change certain settings, the system will prompt you to “please view and save all red settings”. Use the arrows to select the red settings and press **edit**. Either make changes or not, but press **save** either way. The red settings will go away after pressing **save**. When all CFM settings are complete, press the **back** button. Press **next step** to advance to the tests button.
10. Test the system operation and confirm the system is electrically energized and operational. Particularly, test the heat strips (when used) to insure the auxiliary stages have been detected and are operational. Press **done**.
11. Exit the installer setup mode by selecting the **EXIT** button.

### TIPS

- If the thermostat “System Setting” does not offer a choice for **emerg. heat** and or the electric heat will not function; the electric heat has not been configured. Configure the electric heat as described on Page 56, or for complete detail, see the Air Handler installation instructions. Reconfigure the iComfort® system by entering the installer program and selecting the **setup** button and following the prompts.
- If the thermostat *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. Select *Add or Remove non-communicating* under the setup button in the Installer Section. Select *Outdoor Unit Type*, press the **edit** button and then choose “1 Stage AC” or “2 Stage AC” and press the **save** button.
- 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 Non-Communicating Lennox Brand (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 set up the air handler control for heat strips (if used) prior to powering up the system and thermostat.

1. Configure air handler control (AHC) for auxiliary heat strips if used.
2. **Wiring**—See **Communicating System and optional accessories Wiring** diagrams.
  - 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat to the 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, power up the system; the iComfort Wi-Fi® thermostat will check the system for installed communication devices.
5. In the installer setup button, select *Add or Remove non-communicating equipment* by using the **yes** button.
6. Select the *Outdoor Unit Type* from the device list using the up/down arrows and press the **edit** button. Then select the heat pump type (1-stage HP or 2-stage HP) and press the **save** button.
7. On the thermostat, go past the *Add or remove non-communicating devices* to the *To adjust a setting* screen. Select *System* from the device list using the up/down arrows and press the **edit** button.
8. Select Balance Point Control (if outdoor sensor is installed) and press **edit**. Use the down arrow to select *Enabled* and press **save**. High and Low Balance Points will appear in red.
9. Complete Balance Point Control by editing the High and Low Balance Points. It is not necessary to change the defaults, but you must save each setting. The red settings will go away after pressing **save**. Press the **back** button to return to the adjust screen.
10. Use the arrows to select Air Handler from system devices list. Press **edit**. 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, press the **back** button. Address any red settings as described in steps 8 and 9. Press **next step** to advance to the tests button.
11. Test the system operation and confirm the system is electrically energized and operational. Particularly, test the heat strips (when used) to insure the auxiliary stages operate as designed. Press **done**.
12. Exit the installer setup mode by selecting the **EXIT** button.

### TIPS

- If the thermostat *System Setting* does not offer a choice for **emerg. heat** and or the electric heat will not function; the electric heat has not been configured. Configure the electric heat as described on Page 56, or for complete detail, see the Air Handler installation instructions. Reconfigure the iComfort® system by entering the installer program and selecting the **setup** button and following the prompts.
- High & low balance points are enabled and adjusted under the installer section of the thermostat. In the equipment button select "System" and press **edit**. Scroll down to *Balance Point Control* and press **edit** and select **Enabled** and then **save**.
- If an optional outdoor temperature sensor has been installed, you may display the outdoor temperature on the home screen of the thermostat. To turn on (or off) the *Outdoor Temp Display*. From the Home screen, press **press for more** area and select the **HELP** icon. Press the **user preferences** box and scroll down to *Outdoor Temp Display*. Press the **modify** button and use the up/down arrows to select **On** (or **Off**) and then press the **save** button. Press **done** 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:

- iComfort Wi-Fi®, iComfort® Equipment Interface Module with either a non-communicating (conventional) indoor unit and iComfort® outdoor unit.
  - iComfort Wi-Fi®, iComfort® Equipment Interface Module with either a non-communicating (conventional) indoor unit and outdoor unit.
  - iComfort Wi-Fi®, iComfort® furnace, iComfort® Equipment Interface and a non-communicating heat pump
1. **Wiring**—See **Communicating System and Optional Accessories Wiring** diagrams.
    - 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat to the equipment interface module (R, i+, i-, C)
    - 4-conductor thermostat wire from the iComfort Wi-Fi® thermostat to the 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 iComfort Wi-Fi® thermostat will check the system for installed communication devices.
  4. On the thermostat, go past the *Add or remove non-communicating devices* to the *To adjust a setting* screen. Select *System* from the device list using the up/down arrows and press the **edit** button
  5. Select *Balance Point Control* and press **edit**. Use the down arrow to select *Enabled* and press **save**. High and Low Balance Points will appear in red.
  6. Complete *Balance Point Control* by editing the High and Low Balance Points. It is not necessary to change the defaults, but you must save each setting. The red settings will go away after pressing **save**. Press the **back** button to return to the adjust screen.
  7. Use the arrows to select *Furnace* from system devices list; press **edit**. From this *Furnace* screen you will have access to the various airflow settings. Set the system air volumes according the needs of the home. When you change certain settings, the system will prompt you to *please view and save all red settings*. Use the arrows to select the red settings and press **edit**. Either make changes or not, but press **save** either way. The red settings will go away after pressing **save**. When all CFM settings are complete, press the **back** button. Press **next step** to advance to the tests button.
  8. Test the system operation and confirm the heat pump unit is electrically energized and operational. Press **done**.
  9. Exit the installer setup mode by selecting the **EXIT** button.

### TIPS

- High and Low Balance points are enabled and adjusted under the installer section of the thermostat. In the equipment button select “System” and press **edit**. Scroll down to *Balance Point Control* and press **edit** and select *Enabled* and then **save**.
- An outdoor temperature sensor is provided in an iComfort® heat pump unit. To display the outdoor temperature on the home screen of the thermostat, you must turn on (or off) the *Outdoor Temp Display*. From the Home screen, press **press for more** area and select the **HELP** icon. Press the **user preferences** box and scroll down to *Outdoor Temp Display*. Press the **modify** button and use the up/down arrows to select **On** (or Off) and then press the **save** button. Press **done** to return to the Home screen.
- Turn the Indoor humidity display on and off in a similar manner as above.
- Gas heat is provided to temper the air during defrost cycles.

## G71MPP OR SLP98 FURNACE SETTING ADJUSTMENT

If your iComfort Wi-Fi® 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 thermostat'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 the XC/XP25 where they are not 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.

### Replacement iComfort® Controls

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

**Table 19. Replacement Controls**

iComfort® Unit	Replacement Kit Catalog Number	Control Part Number
G71MPP (rev. 03 or later)	65W69	605341-01
SLP98 (rev. 01 or later)	10G43	102813-03
SL280 (rev. 02 or later)	83W88	103130-03
EL296 (rev. 01 or later)	83W88	103130-03
CBX40UHV (rev. 02 or later) <b>AND</b> CBX32MV (rev. 06 or later)	65W70	605341-02
XC17	11H36	103369-04
XP17 and XP17N	11H36	103369-04
XP19 (rev. 06 or later)	11H36	103369-04
XC21 (rev. 04 or later)	11H36	103369-04
XP21 and XP21N	11H36	103369-04
XP25	11F64 (repair part only)	103686-03
XC25	11F64 (repair part only)	103686-03