



LENNOX RESIDENTIAL COMMUNICATING SYSTEMS INFORMATION GUIDE (V2)

Parameters and Error Codes-Troubleshooting for Communicating Thermostats, Indoor and Outdoor Units, iHarmony, Equipment Interface Module and PureAir S

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Mag-Mount for First and Second generation HD displays only)



HD display (First, Second and Third Generation)



S30 Smart Hub (Second & Third Generation)

PureAir S



S30 Smart Hub (First Generation)



iHarmony (Damper Control Module and Zone Sensor)



Lennox Communicating Air Handlers



Lennox Communicating Outdoor Units



Lennox Communicating Furnaces



NOTE: *There are parameters listed for various Lennox products that are supported by our communication systems (ie, iComfort E30, dehumidification, humidification and ERV/HRV). This version of the information guide includes new and revised alert codes which will be release in thermostat firmware version 3.81 or higher.*

1. Firmware Version

The contents of this service document includes changes implement up to thermostat and smart hub control software version 03.60.xxxx.

2. Equipment Parameters

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

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

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

2.1. Smart Hub

Table 1. Smart Hub Parameters

Parameter	Description
About	This screen provides information concerning language supported, equipment type name, control software revision, model, control mode number, control serial number, control hardware revision, protocol revision number, device product level, 24VAC average power consumption, 24VAC peak power consumption, compatible devices list, application code memory size and micro-controller part number.
Auto Changeover - Humidif. Deadband	Prevents the humidification and dehumidification settings from being closer together than 5% or greater than 10% (dead-band). Range is 5 to 10%. Default is 5%. Adjustments are in increments of 1%.
Auto Changeover - Temp Deadband	Prevents the Heating and Cooling from being set closer together than 3°F (1.67°C) or greater than 9°F (5.0°C) (dead- band). Range is 3 to 9°F (1.67 to 5.0°C). Default is 3°F (1.67°C). Adjustments are in increments of 1°F (0.56°C).
Auto Dehumidification Overcooling Threshold	This value can automatically be affected by adjusting other parameters. One example would be when enabling Max Dehumidification Overcooling. Range is 0 - 10%. Default is 4%. Adjustments are in increments of 1%.
Aux Heating Activation Threshold	This is an adjustment to hasten or delay the auxiliary heat activation. This adjusts how far below the set point the temperature must fall with the heat pump at 100% before allowing electric heat to come on. Range is 0 - 10°F (0.0 to 5.56°C) with increments of 0.25°F (0.14°C). The default setting is 2.5°F (1.39°C). Definition/Dependencies: Step Change versus Steady State Modes <ul style="list-style-type: none"> Outdoor temperature below the high balance point or with balance points disabled. Heat Pump demand above 95% for 10 minutes. Sixty (60) minute temperature rise prediction = less than this Parameter Setting (value) Result: The <i>Heating Proportional Integral Algorithm</i> (set for either less, normal, or more aggressive) will begin to stage on the electric heat to bring the space temperature up to set point. Synopsis: The lower this parameter is set, the quicker the auxiliary heating will respond, in both step-change and steady-state modes. NOTE: <i>Staged heating will stage by the differential setting.</i>

Table 1. Smart Hub Parameters

Parameter	Description
<p>Balance Point Control</p> <p>If system is set up as dual fuel or heat pump with electric heat and a outdoor temperature sensor connected to smart hub, the low and high balance point settings will appear. The balance points feature requires that a sensed outdoor temperature is provided to the thermostat. The outdoor ambient temperature can be read from either a:</p> <ul style="list-style-type: none"> • Field-installed outdoor temperature sensor (X2658). • Communicating heat pump. All communicating heat pumps have a factory-installed outdoor temperature sensor. <p>Options are enabled or disabled. Default is disabled. When enabled, both low and high balance points can be set.</p> <p>The high and low balance points will affect the upstaging of the thermostat.</p> <p>NOTE: Internet temperatures are not used in balance point.</p>	
<p>High Balance Point</p>	<p>This setting is used to prevent the furnace or electric heat from over heating the structure. (Alert 19 - Minor - Notification only - The outdoor temperature is higher than the level where the furnace or electric heat is programmed to heat the home.)</p> <p>Second-stage heating will not turn on unless the temperature falls below the high balance point setting.</p> <p>Range is -17 to 75°F (-27.22 to 23.89°C). Default is 50°F (10.0°C). Adjustments are in increments of 1°F (0.56°C).</p>
<p>Low Balance Point</p>	<p>Setting used to prevent the heat pump from heating the structure. (Alert 18 - Minor - Notification only - The outdoor temperature is below the level where the heat pump is programmed to heat the home).</p> <p>Range is -20 to 72°F (-28.89 to 22.22°C). Default is 25°F (-3.89°C). Adjustments are in increments of 1°F (0.56°C).</p> <p>First-stage heating will not activate if the temperature falls below the low balance point setting.</p> <p>NOTE: Dual-Fuel Applications (Communicating Systems Only) - Dual fuel applications, which include both a Heat Pump and a gas furnace, will provide multiple stages of heating. For example, a two-stage heat pump would deliver two stages of heat. The gas furnace can add two to four more stages of heat.</p>
<p>Cooling Discomfort Threshold</p>	<p>Default is ON. The purpose of this algorithm when set to ON is to detect systems with faults which are causing measurable loss of comfort and thus, need repair/service intervention.</p> <p>The algorithm monitors the duration in which the indoor temperature is above the cool set point or below the heat set point and does not approach the set-point. When an issue is detected alert code 901 is activated.</p>
<p>Cooling Capacity Alert</p>	<p>Options are ON or OFF. Default is ON. Cooling operation may not be sufficient for the hottest days. Based on local conditions and climatological data for zip code.</p> <p>Examples: Dirty Filter, low refrigerant charge, TXV, etc. Symptom during mild temperatures may include; system running longer than normal but not showing any other symptoms.</p>
<p>Cooling Mode (For multi-staged equipment only)</p>	<p>Options are Normal and Comfort. Default is Normal. When changing to Comfort Mode, several parameters are automatically modified for optimal system operations. The changed parameters are listed on the screen when set to Comfort.</p> <ul style="list-style-type: none"> • Normal - This setting cools the home to the desired temperature setting. Once second-stage is activated by timer or differential, it will not stage down to first-stage until the next cooling cycle demand. • Comfort - This is when the system could automatically stage up or down based on the current load demand.
<p>Cooling Prognostics</p>	<p>This algorithm will determine whether the unit will run out of capacity during the hottest time of summer. It will look back everyday a minimum of three days to see if there is a pattern and compare it to the hottest day on record for that zip code before triggering an notification. It must see a pattern before it will trigger the notification. There may be a component or components that will require attention.</p> <p>The sensitivity (threshold) selection options are OFF, LOW, MEDIUM, and HIGH. The default is HIGH. The alert code notification is 65545.</p>
<p>Discharge Air Temperature (DAT) Integral Gain (Lennox Variable Capacity Outdoor Units Only)</p>	<p>This indicates how stable the system is attempting to reach the discharge air temperature set point. You may hear the compressor hunting (ramping up and down) adjusting to lower setting will correct.</p> <p>Lennox advises not to make changes to this setting without first contacting Lennox technical support or Lennox field technical consultant.</p> <p>Default is 3.0. Range is 1.0 to 15.0 in increments of 0.5.</p>
<p>DAT Offset</p>	<p>This parameter is only available when a Lennox variable capacity outdoor units is installed along with a discharge air temperature sensor (DATS) unit.</p> <p>Default is 0.0°F (0.0°C). Range is -5.0°F to 5.0°F (-2.78 to 2.78°C) in increments of 0.5°F (0.28°C).</p>

Table 1. Smart Hub Parameters

Parameter	Description
DAT Proportional Gain <i>(Lennox Variable Capacity Outdoor Units Only)</i>	This is how the system attempts to reach the discharge air temperature set point. Lennox advises not to make changes to this setting without first contacting Lennox technical support or Lennox field technical consultant. Default is 3.0. Range is 1.0 to 15.0 in increments of 0.5.
Dew Point Adjustment	The Dew Point Adjustment can be set from -15% to +15%. These settings allow adjustments to the Dew Point setting for the home. Some homes may require an adjustment to help maintain comfort. If condensation is present on windows, set the adjustment lower, between -15% to -5%. If the home feels dry, set the adjustment upwards, between +5 to +15%. NOTE: <i>In this mode the RH set point is ignored.</i>
Electric Heat Control Mode <i>(Single and Two-Stage Lennox Communicating Outdoor Units Only)</i>	In heat pump applications, the electric heat is staged to provide supplemental heat to meet desired comfort levels. When the electric heat section is used in applications that do not have a heat pump, the elements are staged to limit heat so that it meets heating demands only. Options are Standard and Evenheat . Default is Standard .
Electric Heat Stages During Defrost	Can increase or decrease the number of electric elements to come on during a call for defrost. (Thermostat will have a demand for heat.) Range is 0 to 5 electric heat stages. Default is 2. Adjustments are in increments of 1.
Electric Heating Activation Hold Time	This parameter represents the amount of time the system waits to check the slope of the temperature against the value in "Aux Heating Activation Threshold" parameter. It checks the room temperature slope after a time to determine if aux heat is needed to achieve a new room temperature set point) to allow the heating PI to accumulate past 100 (up to 200) which allows electric auxiliary heat use. Range is 0~60 minutes with a default of 10 minutes. Increments are in 5 minute intervals.
Electric Heating Activation Temp Difference	When the system is operating at full heat pump demand, this is the amount of °F (°C) below the set point that is allowed before allowing the use of Aux heat to supplement the heat pump. This parameter is only available when the system is configured with an air handler and variable capacity heat pump. Range is 0.5 - 10°F. Default 1.5°F. Increment of 0.5°F.
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces.
EvenHeat Discharge Temp	When in EvenHeat control mode, the thermostat will stage the electric heat sections to maintain a constant discharge air temperature. The system must have a discharge air temperature sensor (DATS) connected to show this parameter. NOTE: <i>Not selectable on Lennox variable capacity outdoor units. Electric heat elements will be staged on by the demand of the thermostat.</i> Range is 85 to 130°F (29.4 to 54.4°C). Default is 85°F (29.4°C). Adjustments can be made in increments of 15°F (8.4°C) .
Gas Heat Control Mode <i>(SLP98 only)</i>	Options are Staged, Load Tracking Variable Capacity and Variable Capacity. Default is Load Tracking Variable Capacity Staged: Some furnaces can be configured to provide up to four stages of gas heat operation. When staged heating is chosen, the iComfort communicating thermostat allows you to choose between 1, 2, 3 and 4 stages of heat. Single-stage heat: first stage provides 100% of full capacity. <ul style="list-style-type: none"> • Two-stage heat: First stage provides 70% of full capacity; 2nd stage provides 100% of full capacity. • Three-stage heat: First stage provides 60% of full capacity; 2nd stage provides 80% of full capacity; third stage provides 100% of full capacity. • Four-stage heat: First stage provides 35 or 40% of full capacity; second stage provides 60% of full capacity; third stage provides 80% of full capacity; fourth stage provides 100% of full capacity. Load Tracking Variable Capacity: Load tracking variable capacity will smoothly track the load (sensible temperature changes) up and down and adjust the furnace heating rate both ways. Variable Capacity: Variable capacity only tracks the load upward (rising temperature). Variable capacity uses the thermostat stage differentials but not stage timers.
Gas Heating Activation Temp Difference <i>(Lennox Variable Capacity Heat Pump Units Only)</i>	When the system is dual-fuel and steady state while operating at full heat pump demand, this is the amount of °F (°C) below the set point that is allowed before allowing to switch to gas heat. Range is 0.5 to 10°F (0.28 to 5.56°C). Default is 1.5°F (0.83°C). Adjustments are in increments of 0.5°F (0.28°C).
Heat Cool Stages Locked In	Heat Cool (H/C) Stages Lock in default is disabled (heat/cool stages are turned off separately). If changed to Enabled, heat/cool stages are turned off together. <i>For non-variable speed systems only. See charts listed under Stage Differentials for examples.</i>

Table 1. Smart Hub Parameters

Parameter	Description
Group ID	Multiple smart hubs in a home can be assigned to a group (up to nine groups with up to five smart hubs in each group). All smart hubs in a specific group can communicate with other smart hubs in the same group over the home Wi-Fi network. Swipe screen to view or adjust other thermostats in the same group. If a smart hub is set to Group ID 0, there will be no connectivity with another smart hub. Basically this is a stand-a-alone setting for the individual smart hub. Default Group ID is 1. Valid range is 0 to 9.
HP Heating Lockout Time	The heat pump could not get a zone to progress 0.5 degrees towards the set point in 120 minutes (Alert Code 40 - Minor alert). System will switch to secondary heat source. (Electric heat or furnace in dual fuel applications). System will transition back to heat pump normal operation when system set point is reached. Range is 60 to 240 minutes. Default is 60 minutes. Adjustments are in increments of 30 minutes.
HP Heating Mode <i>(Lennox Variable Capacity Heat Pump Units Only)</i>	Options are Normal and Comfort . Default is Normal . The normal setting heats the home to the desired temperature setting using the highest efficiency modes. Comfort mode is when the heat pump will deliver warmer air for comfort, but sacrifices on efficiency.
Humiditrol Comfort Adjust	Options are Maximum Overcooling , Midpoint Overcooling and Minimum Overcooling . Default is Maximum Overcooling . <ul style="list-style-type: none"> • Maximum Overcooling: Indoor temperature > (greater than) two degrees above heating setpoint. • Midpoint Overcooling: Indoor temperature > (greater than) HEAT setpoint + COOL setpoint / 2. • Minimum Overcooling: Indoor temperature > (greater than) two degrees below cooling setpoint. NOTE: All Lennox variable capacity outdoor units are not compatible with Humiditrol (EDA).
Humidity Reading Calibration	If it is determine that the actual humidity percentage being detected at the thermostat is off based on independent readings using other humidity reading devices, the display can be adjusted using this setting. Range is -10.0 to 10.0%. Default is 0.0%.
Lock In 2nd Stage HP by Outdoor Temp <i>(Lennox Two-Stage Heat Pumps Only)</i>	This accessory allows the unit to lock in second stage heat pump heating when the outdoor temperature goes below the jumper pin setting. Options are off, 40°F (4°C), 45°F (7°C), 50°F (10°C) and 55°F (13°C). Default is off.
Max Heat Setpoint	The highest temperature setting that the heat set point can be set on the thermostat. Default is 90.0°F (32.33°C). Range is 60.0 to 90.0°F (15.56 to 32.22°C). Adjustable in increments of 1°F (0.56°C).
Max Humidification Setpoint	This setting will limit the highest humidification setting on the thermostat. This parameter will only appear when a humidifier accessory is installed. Range is 15 to 45%. Default is 45%. Adjustments are in increments of 1%.
Min Cool Setpoint	This setting will limit the lowest cooling temperature setting on the thermostat. Range is Range is 60.0 to 90.0°F (15.56 to 32.22°C). Default is 60°F (15.56°C). Adjustments are in increments of 1°F (0.56°C).
Min Dehumidification Setpoint	This setting will limit the lowest dehumidification setting on the thermostat. Range is 40 to 60%. Default is 40%. Adjustments are in increments of 1%.
Understanding Modulating Step Change and Steady State PI Gains	
Each of these terms has a multiplier (or gain) associated with it called the proportional gain and the integral gain respectively and affect responsiveness and stability	
<ul style="list-style-type: none"> • Standard is a moderate gain suitable for nearly all installations. • More Aggressive is a set of slightly higher gains that will make the system more responsive to changes, and will try harder to stay on the set point. This setting may cause some systems to oscillate. • Less Aggressive is a set of slightly lower gains that will make the system less responsive and help to stabilize an oscillating system by sacrificing a small amount of time to set point. 	
None of the above options will cause the system to end a call if the demand for heating or cooling remains above the minimum capacity of the system since the algorithm is designed to find the demand that allows the system capacity to exactly match the house heating or cooling loss, creating a balance and constant temperature.	
Minimum Gas Heating Off Time	Range is 2.5 to 10 minutes. Default is 1.5 minutes. Adjustable in increments of .5 minutes.

Table 1. Smart Hub Parameters

Parameter	Description
Modulating Cooling Cycles Per Hour <i>(Lennox Variable Capacity Heat Pump Units Only)</i>	<p>This feature is activated when the structure British thermal unit (BTU) load is less than the minimum outdoor unit cooling capacity of the outdoor unit. The system will be cycled “ON” and “OFF” at the selected cycles per hour to maintain the settings of the thermostat. (This governs how many cycles per hour the system will try to run when it needs to run at less than minimum capacity).</p> <p>Range is 3 to 6 cycles hours. Can be adjusted in increments of 0.5. Default is 4.</p>
Modulating Cooling Step Change PI Gain <i>(Lennox Variable Capacity Heat Pump Units Only)</i>	<p>Step change gains deal with set point changes and affects how fast the system reaches the next set point (ramps up with set point changes).</p> <p>Options are less aggressive, standard and more aggressive. Default is standard.</p>
Modulating Cooling Steady State PI Gain <i>(Lennox Variable Capacity Heat Pump Units Only)</i>	<p>Steady state gain controls the demand when the system is not responding to a sensed temperature change away from the iComfort communicating thermostat setting (Ramps up speed relative to differential).</p> <p>Options are less aggressive, standard and more aggressive. Default is standard.</p>
Modulating Gas Heating Cycles Per Hour <i>(SLP98V only)</i>	<p>This feature is activated when the structure BTU load is less than the minimum Heat Pump heating capacity of the outdoor unit. The system will be cycled “ON” and “OFF” at the selected cycles per hour to maintain the settings of the iComfort S30. (This governs how many cycles per hour the system will try to run when it needs to run at less than minimum capacity).</p> <p>Range is 4 to 10 cycles. Default is 6 cycles. Adjustments are in increments of 0.5 cycles.</p>
Modulating Gas Heating Step Change PI Gain <i>(SLP98V only)</i>	<p>This is applicable to the SLP98V only. Step change gains deal with set point changes and affects how fast the system reaches the next set point (Example: Adjustment to the thermostat setting).</p> <p>Options are less aggressive, standard and more aggressive. Default is standard. Recommend not changing this setting.</p>
Modulating HP Heating Cycles Per Hour <i>(Lennox Variable Capacity Heat Pump Units Only)</i>	<p>This feature is activated when the structure BTU load is less than the minimum Heat Pump heating capacity of the outdoor unit. The system will be cycled “ON” and “OFF” at the selected cycles per hour to maintain the settings of the thermostat. (This governs how many cycles per hour the system will try to run when it needs to run at less than minimum capacity).</p> <p>Range is 3 to 6 cycles. Default is 4 cycles. Adjustments are in increments of 0.5 cycles.</p>
Modulating HP Heating Step Change PI Gain <i>(Lennox Variable Capacity Heat Pump Units Only)</i>	<p>Step change gains deal with set point changes and affects how fast the system reaches the next set point (Example: Schedule change or adjustment to the thermostat setting).</p> <p>Options are less aggressive, standard and more aggressive. Default is standard. Recommend not changing this setting.</p>
Modulating HP Heating Steady State PI Gain <i>(Lennox Variable Capacity Heat Pump Units Only)</i>	<p>Steady state gain controls the demand when the system is not responding to a sensed temperature change away from the thermostat setting.</p> <p>Options are less aggressive, standard and more aggressive. Default is standard. Recommend not changing this setting.</p>
Number of Gas Heating Stages <i>(SLP98V only)</i>	<p>Number of selectable stages when Gas Heat Control Mode is set in “Staged” mode.</p> <p>Options are 1 through 4. Default is 4.</p>
Outdoor Temperature Reading Calibration	<p>This will allow for adjustment to the outdoor temperature display when the display temperature is off. Outdoor sensor is required.</p> <p>Range is -10 to 10°F (-5.56 to 5.56°C). Default is 0°F (0.0°C). Adjustments are in increments of 1°F. (0.56°C)</p>
Precision Setback Recovery	<p>Options are enabled or disabled. Default is enabled.</p>
Reset smart hub	<p>Reset smart hub (erases smart hub settings and restarts installer setup).</p>

Table 1. Smart Hub Parameters

Parameter	Description
<p>Severe Weather Protection (High and low temperature notification)</p> <p>Options are enabled or disabled. Default is disabled. When enabled either the heat or freezing alert temperature setting will automatically generate an email notification to the homeowner that the applicable condition exist and homeowner interaction is required.</p> <p><i>NOTE: Notification is dependent on the thermostat having an active Wi-Fi connection and the user account has been setup and includes a valid email address.</i></p>	
Heat Alert Temperature	<p>This will notified the homeowner when the indoor temperature reaches the setting defined for this parameter.</p> <p>Range is 80°F to 100°F (26.7 to 37.8°C) with a factory default of 90°F (32.2°C). Increments adjusted by 1.0°F (0.56°C).</p>
Freezing Alert Temperature	<p>This will notified the homeowner when the indoor temperature reaches the setting defined for this parameter.</p> <p>Range is 30°F to 50°F (-1.11 to 10.0°C) with a factory default of 40°F (4.4°C). Increments adjusted by 1.0°F (0.56°C).</p>
<p>Single Setpoint Mode (SSP) (Non-Zoning System Only)</p> <p>On the user screens this is referred to as Perfect Temp (Temperature). Options are enabled or disabled. Default is disabled. The Single Set Point (SSP) algorithm allows the user the set only one temperature set point value rather than one value for heating and a different value for cooling. When zoning is present, the following SSP settings are not available. When enabled the following parameters are automatically configured for optimal settings.</p>	
SSP Heating Cancel Coast Counter Increment Slope	Range is 0 to 0.75°F (0.0 to 0.42°C). Default is 0.25°F (14°C). Adjustments are in increments of 0.125°F (0.07°C).
SSP Heating Cancel Coast Counter Decrement Slope	Range is 0.25 to 2°F (0.14 to 1.11°C). Default is 0.5°F (0.28°C). Adjustments are in increments of 0.125°F (0.07°C).
SSP Cooling Cancel Coast Counter Increment Slope	Range is -0.75 to 0.0°F (-0.42 to 0.0°C). Default is -0.25°F (-0.14°C). Adjustments are in increments of 0.125°F (0.07°C).
SSP Cooling Cancel Coast Counter Decrement Slope	Range is -2.0 to -0.25°F (-1.11 to -0.14°C). Default is -0.5°F (-0.28°C). Adjustments are in increments of 0.125°F (0.07°C).
SSP Heating Lockout Outdoor Temp	<p>When the outdoor temperature is above this setting, heating is not allowed if single set point is running.</p> <p>Range is 50 to 80°F (10.0 to 26.67°C). Default is 70°F (21.11°C). Adjustments are in increments of 1.0°F (0.56°C).</p>
SSP Cooling Lockout Outdoor Temp	<p>When the outdoor temperature is below this setting, cooling is not allowed if single set point is running.</p> <p>Range is 30 to 60°F (-1.11 to 15.56°C). Default is 40°F (4.44°C). Adjustments are in increments of 1.0°F.</p>
Smart Alert Enable	<p>Options are disabled, conservative, medium and aggressive. Default is disabled.</p> <ul style="list-style-type: none"> • Disable - There is no monitoring of Smart Alert Enable. • Conservative - The system will wait longer to display any Smart Alert Enable alert codes. This options allow for a minimum chance for false alert codes being shown. • Medium (default) - Extensive testing by the Lennox development team to minimize the number of false alert codes. • Aggressive - Will shorten time to display any Smart Alert Enable alert codes. <p>Smart Alert Enable function monitors:</p> <ul style="list-style-type: none"> • Thermostat set point setting. • Temperature reading. • Determine whether the system moving towards the desired temperature setting or is unable to achieve the desire temperature setting. • Uses local climate design temperatures. • System run times. <p><i>NOTE: Smart Alert Enable feature is disabled in a zoning system.</i></p> <p><i>NOTE: Depending on type of system (conventional heating/cooling or heat pump system) and optional equipment not all system settings will be displayed.</i></p>

Table 1. Smart Hub Parameters

Parameter	Description								
<p>Smooth Setback Recovery (SSR)</p>	<p>When enabled, smooth set back begins recovery up to two hours before the programmed time so that the programmed temperature is reached at the corresponding programmed event time. Assume 12°F (6.72°C) per hour for first-stage gas/electric heating and 6°F (3.36°C) per hour for first-stage compressor based heating or cooling. With Smooth Set Back disabled, the system will start a recovery at the programmed time. Options are enabled or disabled. Default is enabled.</p> <p>The SSR set point calculation is as follows:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">For New SSR CSP</td> <td style="padding: 2px;">Current SSR CSP</td> <td style="padding: 2px;">—</td> <td style="padding: 2px;">$\frac{\text{Current Program CSP} - \text{Target Program CSP}}{N}$</td> </tr> <tr> <td style="padding: 2px;">For New SSR HSP</td> <td style="padding: 2px;">Current SSR HSP</td> <td style="padding: 2px;">—</td> <td style="padding: 2px;">$\frac{\text{Target Program HSP} - \text{Current Program HSP}}{N}$</td> </tr> </table> <p style="margin-top: 5px;">Where: CSP = Cool Set Point HSP = Heat Set Point N = number of 30 second intervals to the target program set point Note: N = 240 when target program set point is 2 hours away (maximum recovery time)</p> </div> <p>Rules for SSR:</p> <ul style="list-style-type: none"> • SSR is enabled when both “Smooth Setback Recovery” is set to enabled (default) and the program schedule is turned on. • SSR does NOT turn off stage delay timers. • SSR will NOT change the dead band between heating and cooling modes. • SSR will not overshoot the target set point. • SSR will reset if the user updates the program schedule during the active SSR period. 	For New SSR CSP	Current SSR CSP	—	$\frac{\text{Current Program CSP} - \text{Target Program CSP}}{N}$	For New SSR HSP	Current SSR HSP	—	$\frac{\text{Target Program HSP} - \text{Current Program HSP}}{N}$
For New SSR CSP	Current SSR CSP	—	$\frac{\text{Current Program CSP} - \text{Target Program CSP}}{N}$						
For New SSR HSP	Current SSR HSP	—	$\frac{\text{Target Program HSP} - \text{Current Program HSP}}{N}$						
<p>Stage Delay Timers (First)</p>	<p>Staged Delay Timers - Default is Enabled. When ON, all stage delay timers (stages two through six) 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 setpoint 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.</p> <p><i>NOTE: The second-stage delay timer (when stage timers is Enabled) is used for both HEATING and COOLING. However, if the system has a variable capacity furnace, zoning or variable outdoor unit, all stage delay timer will be ignored.</i></p>								
<p>Stage Delay Timers (Second through Sixth)</p>	<p>Second through Sixth Stage Delay Timers (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 setpoint by 1.0°F in the programmed delay time, then the second stage is activated.</p> <p><i>NOTE: The Second 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, Second Stage Delay Timer will only be used for COOLING (not for heating, as the variable capacity algorithm ignores delay timers).</i></p>								
<p>Stage Differentials (First)</p>	<p>First Stage Differential - Stage 1 differential is used in all thermostats. The default is 1.0°F but can be programmed between 0.5° and 3.0°F in 0.5°F increments.</p>								
<p>Stage Differentials (Second through Sixth)</p>	<ul style="list-style-type: none"> • 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 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. <p><i>NOTE: Each stage’s differential is based on the previous stage’s differential endpoint. For example, in cooling mode, if first stage differential is set to 1.0°F, then the system comes on 0.5°F above setpoint and the second differential starts at the 0.5°F first stage endpoint and extends to second stage differential endpoint. In normal operation, the end of the cooling demand is at the setpoint –0.5°F and the end of the heating demand is at the setpoint +0.5°F.</i></p>								

Table 1. Smart Hub Parameters

Parameter	Description
	<div style="display: flex; justify-content: space-around;"> <div style="width: 48%;"> <p style="text-align: center;">Cooling (1- and 2-Stages)</p> </div> <div style="width: 48%;"> <p style="text-align: center;">Heating - Non-Heat Pump or Heat Pump w/o backup heat - 1 or 2 stages</p> </div> </div>
	<div style="display: flex; justify-content: space-around;"> <div style="width: 48%;"> <p style="text-align: center;">Heating - Heat Pump with Electric - 3 Stage (2 compressor / 1 backup OR 1 compressor / 2 backup)</p> </div> <div style="width: 48%;"> <p style="text-align: center;">Heating - Heat Pump with Electric - 4 Stage (2 compressor / 2 backup)</p> </div> </div>
	<div style="display: flex; justify-content: space-around;"> <div style="width: 48%;"> <p style="text-align: center;">Heating - Dual Fuel - 2 Stage (1 compressor / 1 backup)</p> </div> <div style="width: 48%;"> <p style="text-align: center;">Heating - Dual Fuel - 3 Stage (1 compressor / 2 backup)</p> </div> </div>

Table 1. Smart Hub Parameters

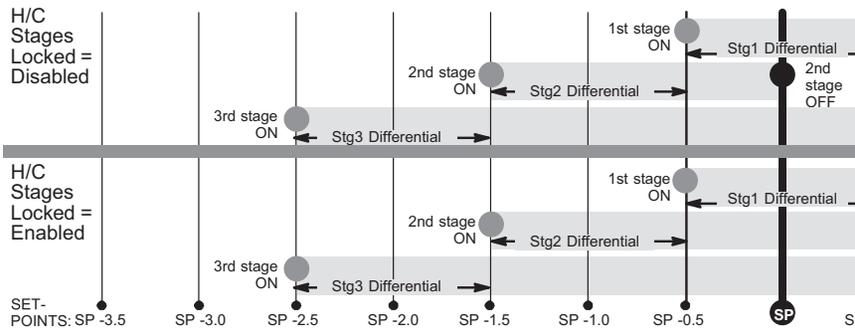
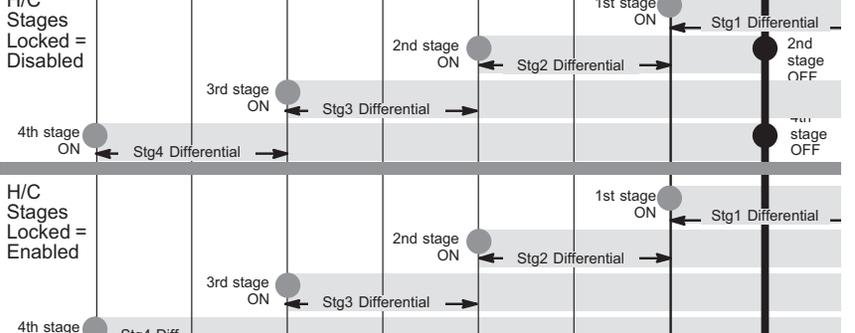
Parameter	Description
	<div style="display: flex; justify-content: space-around;"> <div style="width: 48%;"> <p style="text-align: center;">Heating - Dual Fuel - 3 Stages (2 compressor / 1 backup)</p>  <p>The diagram shows two scenarios for a 3-stage heating system. In the 'Locked = Disabled' scenario, stages 1, 2, and 3 are shown as horizontal bars that do not activate. In the 'Locked = Enabled' scenario, stages 1, 2, and 3 activate sequentially as the temperature drops below setpoints SP -1.5, SP -2.0, and SP -2.5 respectively. Each stage has a differential range indicated by arrows.</p> </div> <div style="width: 48%;"> <p style="text-align: center;">Heating - Dual Fuel - 4 Stage (2 compressor / 2 backup)</p>  <p>The diagram shows two scenarios for a 4-stage heating system. In the 'Locked = Disabled' scenario, stages 1, 2, 3, and 4 are shown as horizontal bars that do not activate. In the 'Locked = Enabled' scenario, stages 1, 2, 3, and 4 activate sequentially as the temperature drops below setpoints SP -1.5, SP -2.0, SP -2.5, and SP -3.0 respectively. Each stage has a differential range indicated by arrows.</p> </div> </div>
Temp Reading Calibration	<p>Range is -5.0 to 5.0°F (-2.78 to -2.78°C). Default is 0.0°F (-0.0°C).</p> <p>If it is determine that the actual temperature being detected at the thermostat is off based on independent readings using other ambient temperature reading devices, the display can be adjusted using this parameter setting.</p>
Temperature Control Mode	<p>The Feels-Like feature factors in the outdoor temperature and indoor humidity for a more accurate control of the temperature in the home. Either an outdoor temperature sensor is used or Internet Weather is enabled for this feature to operate. Modifying this setting here will also change the feature status on the user settings screen.</p> <ul style="list-style-type: none"> • Normal - This setting cools or heats the home to the desired temperature setting (Feels Like is OFF). • Comfort - This setting cools or heats the home to the desired temperature setting (Feels Like) is ON. When set to ON, other parameters are modified to optimal settings for this feature. Those setting changes will be listed on-screen when Comfort is enabled. <p>Default is Normal.</p>
<p>Ventilation Control Mode - timed (default) (Feature available in Firmware Release 3.50.xxx or higher)</p>	
<p><i>NOTE: The E30, M30 and S30 ventilation function is only a turn on - turn off feature. All CFMs must be adjusted from the HRV/ERV unit. The ventilation function can be controlled by outdoor temperatures and by timers in the thermostat. The ventilation feature can also control 1 and 2 stages of ventilation operation.</i></p>	
Ventilation Minutes Per Hour	<p>Parameter range is 0.0 - 60.0 minutes. Default is 20.0 minutes. Can be adjusted in increments of 1.0 minutes.</p> <ul style="list-style-type: none"> • The system first tries to satisfy the ventilation time by only ventilating while conditioning is occurring. <p><i>NOTE: Continuous fan is NOT considered conditioning.</i></p> <ul style="list-style-type: none"> • When the required time remaining to ventilate for the hour does not equals the amount of time remaining in that hour, the system begins ventilation and does not stop until the ventilation time requirement is satisfied. • When ventilating without a conditioning demand, the ventilation output is active as well as a continuous indoor fan demand. • When ventilating with a conditioning demand, the ventilation output is active with the conditioning demand outputs.
Ventilation High Outdoor Temperature Limit	<p>Parameter range is 60 to 115°F. Default is 100°F. Can be adjusted in increments of 5°F.</p> <p>While the outdoor temperature is equal to or higher than the setting for Ventilation High Outdoor Temperature Limit, ventilation does not run. When locked out due to high outdoor temperature, it will become unlocked when either the outdoor temperature is missing, or when the temperature reported is 1°F less than the Ventilation High Outdoor Temperature Limit setting when display units are in Fahrenheit, or is reported as 0.5°C less than lock out setting when the display units are Celsius.</p>
Ventilation Low Outdoor Temperature Limit	<p>Parameter range is -20 to 55°F. Default is 0°F. Can be adjusted in increments of 5°F.</p> <p>While the outdoor temperature is lower than the setting for the Ventilation Low Outdoor Temperature Limit, ventilation does not run. When locked out due to low outdoor temperature, it will become unlocked when the outdoor temperature is missing, or when the temperature reported is 1°F higher than the Ventilation Low Outdoor Temperature Limit setting when display units are Fahrenheit, or is reported as 0.5°C higher than lock out setting when the display units are Celsius</p>

Table 1. Smart Hub Parameters

Parameter	Description
Ventilation High Outdoor Dew Point Limit	Parameter range is 45 to 80°F. Default is 55°F. Can be adjusted in increments of 5°F. While the outdoor dew point is higher than the setting for the high outdoor dew point limit, ventilation does not run. When locked out due to high outdoor dew point limit, it will become unlocked when the outdoor dew point is missing, or when the dew point temperature reported is 1°F less than the lock out setting when display units are Fahrenheit, or is reported as 0.5°C less than lock out setting when the display units are Celsius.
Ventilation Control Mode - ASHRAE	
<i>NOTE: In this mode the thermostat can assist the installer with the calculations to get the required CFM, but the thermostat has no ability to control CFM from the HRV/ERV.</i>	
<ul style="list-style-type: none"> • The system first tries to satisfy the ventilation volume by only ventilating while conditioning is occurring. Continuous fan is not considered conditioning. • The total volume of ventilation air is accumulated and stored to compare against the target hourly ventilation volume (Vhr). The accumulated value resets each hour. • When the remaining required volume of ventilation air for the hour divided by the fan only ventilation rate is equal to or greater than the time remaining to ventilate for the hour and no conditioning is occurring, the system begins ventilation using continuous fan and does not stop until the target hourly ventilation volume requirement is satisfied. • When ventilating without a conditioning demand, the ventilation output is active as well a continuous indoor fan demand. • When ventilating with a conditioning demand, the ventilation output is active with the conditioning demand outputs. • When the system is ventilating, the user interface can indicate as such by showing “ventilating” to the user on the home screen. 	
Ventilation Outdoor Condition Override	Options are Disabled (default) or Enabled .
ASHRAE Compliance Check	= NO (Ventilation CFM too low to comply with ASHRAE 62.2) or YES (Current settings comply with ASHRAE 62.2)
ASHRAE Infiltration Credit	Parameter range is 0.0 - 200.0 CFM. Default is 2500 square feet. Can be adjusted in increments of 1.0 CFM.
ASHRAE House Floor Area Serviced by This Ventilator	Parameter range is 500.0 - 5000.0 square feet. Default is 2500.0 CFM. Can be adjusted in increments of 100.0 square feet. The formula for calculating how much ventilation is required is: (total square footage of the home/100) + ((number of bedrooms+1) x 7.5 cfm)
ASHRAE Number of Bedrooms	Parameter range is 1.0 - 10.0. Default is 3.0. Can be adjusted in increments of 1.0.
Ventilation Outdoor Condition Override - Enabled	
Ventilation High Outdoor Temperature Limit	Parameter range is 60 to 115°F. Default is 100°F. Can be adjusted in increments of 5°F. While the outdoor temperature is equal to or higher than the setting for Ventilation High Outdoor Temperature Limit , ventilation does not run. When locked out due to high outdoor temperature, it will become unlocked when either the outdoor temperature is missing, or when the temperature reported is 1°F less than the Ventilation High Outdoor Temperature Limit setting when display units are in Fahrenheit, or is reported as 0.5°C less than lock out setting when the display units are Celsius.
Ventilation Low Outdoor Temperature Limit	Parameter range is -20 to 55°F. Default is 0°F. Can be adjusted in increments of 5°F. While the outdoor temperature is lower than the setting for the Ventilation Low Outdoor Temperature Limit , ventilation does not run. When locked out due to low outdoor temperature, it will become unlocked when the outdoor temperature is missing, or when the temperature reported is 1°F higher than the Ventilation Low Outdoor Temperature Limit setting when display units are Fahrenheit, or is reported as 0.5°C higher than lock out setting when the display units are Celsius
Ventilation High Outdoor Dew Point Limit	Parameter range is 45 to 80°F. Default is 55°F. Can be adjusted in increments of 5°F. While the outdoor dew point is higher than the setting for the high outdoor dew point limit, ventilation does not run. When locked out due to high outdoor dew point limit, it will become unlocked when the outdoor dew point is missing, or when the dew point temperature reported is 1°F less than the lock out setting when display units are Fahrenheit, or is reported as 0.5°C less than lock out setting when the display units are Celsius.
Wall Insulation	Options are poor , average and good . Default is average . This parameter is used in the algorithm for the “feels like” mode.
Zone 1 through 4 First Stage Differential	Differential is the temperature between when first stage will cycle ON and cycle OFF. (Example: Zone 1 HD display is set at 70°F (21°C) with a 1.0°F (0.56°C) differential. Cooling Demand - cooling will cycle ON when the room temperature reaches 70.5°F (21.4°C) and cycle OFF when the room temperature is 69.5°F (20.8°C). Range is 0.5 to 3°F (0.28 to 1.67°C). Default is 1°F (0.56°C). Adjustments are in increments of 1°F (0.56°C). <i>NOTE: For Lennox Variable capacity Outdoor Units differentials are ignored.</i>

Table 1. Smart Hub Parameters

Parameter	Description
Zone 1 through 4 Continuous Blower CFM	<p>Minimum and maximum CFM will be dependent on system component configurations. These parameter values are automatically adjusted to the specific hardware configuration. See iHarmony zoning system installation instruction for minimum CFMs for specific indoor units.</p> <p>Zones requesting the fan ON are only allowed while no other zone demand is present. The thermostat will sum all the zone continuous blower CFM requirements and send the command only after positioning the dampers and waiting for the damper close delay period to expire (30 seconds) Continuous blower demands are the lowest priority demands, all other conditioning demands will over-ride the continuous blower demand.</p> <p>Range is 5 CFM to maximum of indoor unit. Default is dependent on tonnage of indoor unit. Adjustments are in increments of 5 CFM.</p>
Zone 1 through 4 Cooling CFM	<p>Minimum and maximum CFM will be dependent on system component configurations. These parameter values are automatically adjusted to the specific hardware configuration. See iHarmony zoning system installation instruction for minimum CFMs for specific indoor units.</p> <p>Target cooling CFM for a specific zone. Range is 5 CFM to maximum of indoor unit. Default is dependent on tonnage of indoor unit. Adjustments are in increments of 5 CFM.</p>
Zone 1 through 4 Heating CFM	<p>Minimum and maximum CFM will be dependent on system component configurations. These parameter values are automatically adjusted to the specific hardware configuration (See table 9 in iHarmony installation instruction for minimum CFMs for specific indoor units).</p> <p>Target heating CFM for a specific zone. Range is 5 to maximum of indoor unit. Default is dependent on tonnage of indoor unit. Adjustments are in increments of 5 CFM. Adjustments are in increments of 5 CFM.</p>
Zoning Anticipated Discharge Air Temperature Adjustment	<p>This parameter setting compensates for a rapid change of the discharge air temperature due to fast changing conditions. It examines the change in the discharge air temperature for the previous two minutes and extrapolates or looks forward by the number of seconds set in the parameter and uses this as the DATS value for staging. This parameter setting helps prevent limit trip/frozen coil from occurring.</p> <p>Range is 0 to 120 seconds. Default is 0 seconds. Adjustments are in increments of 5 seconds.</p>
Zoning Gas Heating DAT Cool Down Target	<p>At the end of a gas cycle, the Heat Blower Off-Delay may not be long enough to completely cool the heat exchanger. This may result in a primary limit trip then, or at the beginning of the next heat demand. This parameter allows the blower to run after a gas heat call ends until the discharge air temperature sensor (DATS) cools to the temperature set in the parameter. If the temperature is set too low this will cause the temperature in the room to overshoot.</p> <p>Range is 80 to 90°F (26.67 - 32.22°C). Default is 90°F (32°C). Adjustments are in increments of 1°F (0.56°C).</p>
Zoning Initial Staging Hold Time for Gas Heating	<p>In zoning systems, the furnace was upstaging before the discharge air sensor reached a steady-state value and it would sometimes trip a limit due to staging up the gas before the blower would even come on (as occurs during pressure switch calibration).</p> <p>In addition and options for delaying the first staging event even further since the starting point of the modulation gas heat in zoning is picked to be appropriate for the airflow being provided, so this parameters allows an adjustment on top of the initial delay. Range: 3.0 – 8.0 minutes, with a default: 5.0 minutes. Can be adjusted in 1 minute increments.</p>
Zoning Minimum Zone Run-Time	<p>Range is 90 to 600 seconds. Default is 120 seconds. Adjustments are in increments of 30 seconds.</p>
Zoning Supply Air Temp Limit for Cooling	<p>In cooling mode, this setting sets the discharge air temperature low limit. Below this temperature, the cooling is turned off.</p> <p>Range is 35 to 45°F (1.67 - 7.22°C). Default is 40°F (4.44°C). Adjustments are in increments of 1°F (0.56°C).</p>
Zoning Supply Air Temp Limit for Gas / Electric Heating	<p>In heating mode, this setting sets the target discharge air temperature.</p> <p>Range is 120 to 160°F (48.88 to 54.44°C). Default is 125°F (52°C). Adjustments are in increments of 5°F (2.78°C).</p>
Zoning Target Supply Air Temp for Cooling	<p>In cooling mode, this setting sets the target discharge air temperature.</p> <p>Range is 40 to 60°F (4.44 - 15.56°C). Default is 45°F (7.22°C). Adjustments are in increments of 1°F (0.56°C).</p>
Zoning Target Supply Air Temp for HP Heating	<p>In heat pump heating mode, this setting sets the target discharge air temperature.</p> <p>Range is 85 to 110°F (29.44 to 43.33°C). Adjustments are in increments of 1°F (0.56°C). Default 90°F (32°C) plus 20 degrees overshoot for both stage and variable capacity systems.</p>
Zoning Target Supply Air Temp for Gas/ Electric Heating	<p>Default is 110°F. Range is 100°F to 130°F with 1 degree increment adjustable. In heating mode, this setting sets the target discharge air temperature. Default 100°F (38°C) plus 20 degrees overshoot for both stage and variable capacity systems.</p>

2.2. Heat Pumps

Table 2. Heat Pump Parameters

Parameter	Description
About	This screen provides information concerning language supported, equipment type name, unit model number, unit serial number, unit nominal capacity, number of heating states, number of cooling stages, heating capacity by stage, cooling capacity by stage, control software revision, control model number, control serial number, control hardware revision, outdoor air temp sensor, protocol revision number, device product level, 24VAC average power consumption, 24VAC peak power consumption, line voltage average power consumption, line voltage peak power consumption, outdoor inverter model number, outdoor inverter firmware version, outdoor fan RPM profile, unit code, compatible devices list, application code memory size and micro-controller part number.
Automatic Max Defrost <i>(Single and Two-Stage Lennox Communicating Heat Pumps)</i>	When set to ON , the system will always run at MAX DEFROST when accumulated compressor off time is longer than 30 minutes and ambient temperature is less than 35°F (1.6°C). When ambient sensor temperature is higher than 40°F (4.5°C) then defrost termination will be 90°F (32°C). This option has two settings, either ON or OFF . Default is OFF .
Compressor Shift Delay ON / OFF <i>(Single and Two-Stage Lennox Communicating Outdoor Units)</i>	Single and Two-Stage Heat Pumps: <ul style="list-style-type: none"> • This feature reduces sounds that occur while the unit is cycling in and out of the defrost mode. • When enabled, there is a 30-second compressor shift delay which de-energizes the contactor and ECM fan outputs. After the delay expires, the contactor and ECM fan outputs are energized. • When disabled, the reversing valve is shifted by de-energizing the outputs. Variable Capacity Heat Pumps: <ul style="list-style-type: none"> • The “Shift delay” is not a technician configurable parameter on variable capacity heat pumps. • “Shift Delay” is always enabled going into and out of a defrost. the inverter was updated with “slope logic” and shift delay is always enabled. The shift delay is: Compressor shut off > 4s delay > reversing valve shifts > 26s delay > compressor restarts. I have attached a screen print from a current XP25-036 from remote in that lists the technician configurable parameters.
Compressor Short Cycle Delay' <i>(Single and Two-Stage Lennox Communicating Outdoor Units)</i>	This feature prevents the compressor from being short cycled any time the compressor is turned “OFF”. The range is 60 - 300 seconds. Default is 300 seconds and with an incremental adjustment of 60 seconds. When the system initiates a compressor short cycle delay, the outdoor unit control's seven segment display will countdown the delay in minutes 1 to 5 minutes. The sequence is time remaining and a dash, and will repeat that cycle (5, 4, 3, 2 and 1) until the count down is complete. If the delay timer is change to let's say 180 seconds, then the countdown will start at 3.

Table 2. Heat Pump Parameters

Parameter	Description
<p>Defrost Termination Temp <i>(Single and Two-Stage Lennox Communicating Heat Pumps)</i></p>	<p>This is the temperature that defrost mode will be terminated. In dual fuel applications (furnace and heat pump), defrost tempering is automatically enabled and operates as follows:</p> <ul style="list-style-type: none"> • Furnace will run for 75 seconds ON then after 90 seconds OFF for two cycles. • After the first two cycles, the furnace will run for 60 seconds ON then cycle OFF for 90 seconds. • This cycle will be repeated until the room thermostat is informed by the outdoor control that defrost has terminated. <p>The range is 50 - 100°F (10.0 to 37.78°C). Default is 50°F (10.0°C) and with an incremental adjustment of 10°F (5.56°C).</p> <p>Variable capacity - Both Furnace and Heat Pump are Variable capacity: When the thermostat receives information that the heat pump has entered defrost the thermostat sends a minimum rate heating demand to the furnace. Then the thermostat terminates the minimum rate heating demand upon defrost completion or any time the heat pump stops. (i.e., pressure switch opens, mode switch changes, etc.)</p> <p>Staged – Both Furnace and Heat Pump are Multi-Stage: When the thermostat receives information that the heat pump has entered defrost the thermostat performs the following :</p> <ul style="list-style-type: none"> • Sends a first stage heating demand to the furnace. • After 75 seconds elapse from the time the first stage demand was sent, the thermostat terminates the furnace heating demand. • After the furnace minimum off time has elapsed (90 seconds) from the time the previous heating termination, the thermostat starts first stage furnace heat again by sending the first stage heating demand. This is the new adjustable gas heat delay setting for zoning. • After 60 seconds elapse from the previous heating demand being sent, the thermostat terminates the furnace heating demand. • Repeat steps 3 and 4 while defrost is active, terminating any running furnace heat demand when the heat pump indicates that defrost is no longer active or any time the heat pump stops (i.e., pressure switch opens, mode switch changes, etc.). <p>NOTE: The on times above assume the minimum furnace ignition time of 35 seconds.</p>
<p>Dehum Airflow Adjustment Adder <i>(Lennox Variable Capacity Outdoor Units Only)</i></p>	<p>Dehumidification airflow = HUMID Mode CFM table value for a given thermostat demand + dehumidification adjustment adder (High Normal Cooling Airflow CFM x Dehumidification Airflow Adjustment Adder in percentage).</p> <p>Both these values are in the installer set up under dealer control center > equipment > heat pump. Range is 0 to 30%. Default is 28%.</p> <p>NOTE: Deactivated in auxiliary dehumidification and enhanced dehumidification accessory (Humiditrol).</p> <p>NOTE: The lower the Dehum adder % the lower the Air Flow. If adjustments, the recommendation is to adjust to 0%.</p>
<p>Equipment Name</p>	<p>A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces.</p>
<p>High Normal Cooling Airflow <i>(Lennox Variable Capacity Heat Pump Units Only)</i></p>	<p>Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements.</p> <p>The range is 450 - 2000 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM.</p>
<p>Fan Cycling <i>(Single and Two-Stage Lennox Communicating Heat Pumps)</i></p>	<p>Options are ON or OFF. Default OFF.</p>
<p>High Normal HP Heating Airflow <i>(Lennox Variable Capacity Heat Pump Units Only)</i></p>	<p>Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements.</p> <p>The range is 450 - 2000 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM.</p>
<p>Low Normal Cooling Airflow <i>(Lennox Variable Capacity Heat Pump Units Only)</i></p>	<p>Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements.</p> <p>The range is 450 - 2000 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM.</p>
<p>Low Normal HP Heating Airflow <i>(Lennox Variable Capacity Heat Pump Units Only)</i></p>	<p>Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements.</p> <p>The range is 450 - 2000 CFM. Default is dependent on unit capacity with incremental adjustment of 25 CFM.</p>

Table 2. Heat Pump Parameters

Parameter	Description
Max Defrost by Weather <i>(Single and Two-Stage Lennox Communicating Heat Pumps)</i>	Options are off and on. Default is off. When set to on, information from the default Internet weather source is used to determine when Max Defrost is used.
Reset Heat Pump	Any installer modifications under the heat pump tab will be reset back to the factory defaults if the reset heat pump option is used.

2.3. Air Conditioners

Table 3. Air Conditioner Parameters

Parameter	Description
About	This screen provides information concerning language supported, equipment type name, unit model number, unit serial number, unit nominal capacity, number of cooling stages, cooling capacity by stage, control software revision, control model number, control serial number, control hardware revision, outdoor air temp sensor, protocol revision number, device product level, 24VAC average power consumption, 24VAC peak power consumption, line voltage average power consumption, line voltage peak power consumption, outdoor inverter model number, outdoor inverter firmware version, outdoor fan RPM profile, unit code, compatible devices list, application code memory size and micro-controller part number.
Compressor Short Cycle Delay	This feature prevents the compressor from being short cycled any time the compressor is turned "OFF". The range is 60 - 300 seconds. Default is 300 seconds and with an incremental adjustment of 60 seconds. When the system initiates a compressor short cycle delay, the outdoor unit control's seven segment display will show the delay in minutes from 1 to 5 minutes. The sequence is time (minutes) remaining and a dash, and will repeat that cycle (5, 4, 3, 2 and 1) until the count down is complete. If the delay timer is change for example to 180 seconds, then the countdown will start at 3 (minutes).
Dehum Airflow Adjustment Adder	This allows the indoor airflow to further reduced and fined tuned in certain systems to allow better dehumidification when there is a dehumidification call during cooling. Default dehumidification airflow is 72% of maximum airflow to improve dehumidification performance when there is a dehumidification call. Range is 0 to 30%. Default is 28%.
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces .
High Normal Cooling Airflow <i>(Lennox Variable Capacity Air Conditioners Only)</i>	The range is 450 - 2000 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM. Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements.
Low Normal Cooling Airflow <i>(Lennox Variable Capacity Air Conditioners Only)</i>	The range is 450 - 2000 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM. Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements.
Reset Air Conditioner	Any installer modifications under the air conditioner tab will be reset back to the factory defaults if the reset air conditioner option is used.

2.4. Air Handlers

Table 4. Air Handler Parameters

Parameter	Description
About	Provides information concerning unit code, language support, equipment type name, unit model number, unit serial number, unit nominal capacity, number of heating states, heating capacity by stage, indoor blower CFM range, control software revision, control model number, control serial number, control hardware revision, discharge air temp sensor, outdoor air temp sensor, protocol revision number, device product level, factory installed transformer, 24VAC average power consumption, 24VAC peak power consumption, line voltage average power consumption, line voltage peak power consumption, compatible devices list, applicable code memory size, and micro-controller part number.
Airflow Profile - Cooling	Options are: 1 - No delays. 2 - ON: No delays; OFF: 45 sec delay. 3 - ON: 82% - 7-1/2 minutes; OFF: No delays. 4 - ON: 50% - 30 seconds at 82% - 7-1/2 minutes at 100% and finish cycle 50% / 30 seconds off.
Continuous Indoor Blower Airflow	Range of operation of the indoor blower during continuous blower operation. The range is 450 to 2150 CFM. Default is dependent on component match-up. Incremental adjustments are made in 5 CFM. <i>NOTE: All Lennox communicating system parameter default CFM values are based on Air Handler Control (AHC) DIP switch setting (non-communicating value) prior to power up. This dip switch settings are use and calculated using CFM conversion tables. They are then rounded up to closest number on 25 CFM resolution. Any DIP switch changes made after power up are ignore.</i>
Cooling Indoor Blower OFF Delay	The range is 0 - 30 seconds. Default is 0 seconds with an incremental adjustment of two seconds.
Cooling Indoor Blower ON Delay	The range is 0 - 10 seconds. Default is 2 seconds with an incremental adjustment of one second.
Dehumidification Airflow % <i>(Lennox Non-Communicating Outdoor Unit)</i>	Range is 60.0 to 80.0%. Default is 70.0% Dehumidification only with call for cooling and runs dehumidification air volume (70% of the cooling at volume default. If two-stage unit, then will upstage to second-stage compressor.
Electric Heating Airflow	Range of operation of the indoor blower during electric heat operation. The range is 1560 to 2150 CFM. Default is dependent on unit capacity with an incremental adjustment of 5 CFM.
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces.
Heating Indoor Blower OFF Delay	Heating Indoor Blower OFF Delay (Electric Heat only -Blower runs at continuous air CFM setting during delay timing period). The range is 0 - 10 seconds. Default is 10 seconds with an incremental adjustment of one second.
Heating Indoor Blower ON Delay	The range is 0 - 5 seconds. Default is 0 seconds with an incremental adjustment of one second.
High Cooling Airflow <i>(Lennox Two-Stage Outdoor Unit)</i>	Range of operation of the indoor blower during high cooling operation. The range is 1560 to 2150 CFM. Default is based on cooling demand with an incremental adjustments of 25 CFM.
High HP Airflow <i>(Lennox Two-Stage Heat Pump Unit)</i>	Range of operation of the indoor blower during high heat pump operation. Information below is example only and exact air flow range is dependent on equipment tonnage. Use your example and add adjustment increments of +/-25 CFM. Example: The range is 800 -1100 CFM. Default setting is depending on unit tonnage. Can be incrementally adjusted by 25 CFM.
HP Indoor Blower OFF Delay	Heat Pump Indoor Blower OFF Delay (Heat Pump only - Blower runs at continuous air CFM setting during delay timing period). The range is 0 - 60 seconds. Default is 45 seconds with an incremental adjustment of five seconds.
HP Indoor Blower OFF Delay	The range is 0 - 30 seconds. Default is 0 seconds with an incremental adjustment of five seconds.

Table 4. Air Handler Parameters

Parameter	Description
Low Cooling Airflow <i>(Lennox Two-Stage Outdoor Unit)</i>	Range of operation of the indoor blower during low cooling operation. The range is 450.0 to 2150 CFM. Default is based on cooling demand with an incremental adjustments of 25 CFM.
Low HP Airflow <i>(Lennox Two-Stage Heat Pump Unit)</i>	Range of operation of the indoor blower during low heat pump operation. Information below is example only and exact air flow range is dependent on equipment tonnage. Use your example and add adjustment increments of +/-25 CFM. Example: The range is 450 - 600 CFM. Default setting is depending on unit tonnage. Can be incrementally adjusted by 25 CFM.
Reset Air Handler	Any installer modifications under the air handler tab will be reset back to the factory defaults if the reset air handler option is used.

2.5. Furnaces

Table 5. Furnace Parameters

Parameter	Description
About	This screen provides information on unit code, language supported, equipment type name, unit model number, unit serial number, unit nominal capacity, number of heating stages, heating capacity by stage, indoor blower CFM range, control software revision, control model number, control serial number, control hardware revision, discharge air temp sensor, outdoor air temp sensor, protocol revision number, device product level, factory installed transformer, 24VAC average power consumption, 24VAC peak power consumption, line voltage average power consumption, line voltage peak power consumption, compatible devices list, application code memory size and micro-controller part number.
Airflow Profile - Cooling	Options are: A - ON: 50% - 30 seconds at 82% - 7-1/2 minutes at 100% and finish cycle 50% / 30 seconds off. B - ON: 82% - 7-1/2 minutes at 100% and finish cycle off. C - ON: 100% - No delays; OFF: 45 seconds. D - no delays.
Continuous Indoor Blower Airflow	The range is 450 - 2000 CFM with a default setting based on equipment type match-up. Adjustments are in increments of 5 CFM. NOTE: All Lennox communicating parameter default CFM values are based on Furnace Control (IFC) DIP switch setting (non-communicating value) prior to power up. This dip switch settings are use and calculated using CFM conversion tables. They are then rounded up to closest number on 25 CFM resolution. Any DIP switch changes made after power up are ignored.
Cooling Indoor Blower Off Delay	The range is 0.0 - 30.0 seconds with a default setting base on equipment type match-up. Adjustment are increments of 10 seconds. Default is 0.0 seconds.
Cooling Indoor Blower On Delay	The range is 0.0 - 10.0 seconds with a default setting base on equipment type match-up. Adjustment are increments of one second. Default is 2.0 seconds.
Dehumidification Airflow % <i>(Lennox Non-Communicating Outdoor Unit)</i>	Range is 60.0 to 80.0%. Default is 70.0%. Dehumidification only with call for cooling and runs dehumidification air volume (70% of the cooling at volume default). If two-stage unit, then will upstage to second-stage compressor.
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces.
Heating Indoor Blower Off Delay	The range is 60 - 180 seconds with a default setting base on equipment type match-up. Adjustment are increments of 10 seconds.

Table 5. Furnace Parameters

Parameter	Description
Heating Airflow Control Type	<p>Options for this setting are fixed CFM or fixed DAT (discharge air temperature). Default is dependent on equipment type match-up.</p> <p>Fixed CFM is selected as the Heating Airflow Control Type (parameter default selection), the circulator will operate at a CFM that is linearly interpolated between Low Heating Airflow and High Heating Airflow based on the current IFC firing rate. For example, if the firing rate is 60% and Low Heating Airflow and High Heating Airflow were set to 500 CFM and 900 CFM respectively (both parameter values are set during the IFC commission), the circulator will run at 297 CFM ($= 500 + (900 - 500) * (60 - 40) / (100 - 40)$) – assuming 40% minimum fire rate.</p> <p>Fixed Discharge Air Temperature (DAT) control when selected as Heating Airflow Control Type, the IFC will vary circulator at a CFM to maintain a set Discharge Air Temperature (DAT). For example if the firing rate is 60% and Low Heating DAT and High Heating DAT were set to 115°F (46°C) and 130°F (54.4°C) respectively (both parameter values are set during the IFC commission), the IFC will control the circulator to maintain a DAT at 120°F (48.9°C) ($115 + (130 - 115) * (60 - 40) / (100 - 40)$) – assuming 40% minimum fire rate.</p> <p>When Fixed DAT is enabled, the following parameters are available:</p> <p>Low Heating Discharge Temp Range is 105 to 135°F (43.44 to 60.0°C). Adjustable in increments of 5°F (2.78°C). Default is 120°F (51.67°C).</p> <p>High Heating Discharge Temp Range is 115 to 145°F (48.89 to 65.56°C). Adjustable in increments of 5°F (2.78°C). Default is 130°F (57.22°C).</p>
Heating Indoor Blower On Delay	The range is 15 - 45 seconds with a default setting base on equipment type match-up. Adjustment are increments of five seconds.
High Cooling Airflow	<p>Range of operation of the indoor blower during high cooling operation.</p> <p>The range is dependent of indoor unit model and size. Default is based on cooling demand with an Incremental adjustments of 25 CFM.</p>
High Heating Airflow	Both range and default setting is based on equipment type match-up. Adjustments are in increments of 25 CFM. This value is automatically adjusted by the system based on heating airflow control type used.
High HP Airflow	Range is 800.0 to 1100.0 CFM. Default is 967.0 CFM.
HP Indoor Blower Off Delay	The range is 0.0 - 60.0 seconds with a default setting base on equipment type match-up. Adjustment are increments of 5 seconds. Default is 45.0 seconds.
HP Indoor Blower On Delay	The range is 0.0 - 30.0 seconds with a default setting base on equipment type match-up. Adjustment are increments of 5 seconds. Default is 0.0 seconds.
Low Cooling Airflow	<p>Range of operation of the indoor blower during low cooling operation.</p> <p>The range is dependent of indoor unit model and size. Default is based on cooling demand with an Incremental adjustments of 25 CFM.</p>
Low Heating Airflow	Both range and default setting is based on equipment type match-up. Adjustments are in increments of 25 CFM. This value is automatically adjusted by the system based on heating airflow control type used.
Minimum Gas Heating Off Time	<p>Default is 1.5 minutes. Range is 1.5 to 10 minutes. With increments of 0.5.</p> <p>This setting will help with the alert code 250 limit tripping in zoning applications where a second zone calls immediately after the satisfying a gas heating call and there is still residual heat in heat exchanger.</p>
Reset Furnace	Any installer modifications under the furnace tab will be reset back to the factory defaults if the reset furnace option is used.

2.6. Zoning

Table 6. Zoning Control Parameters

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

2.7. Thermostat - HD display

Table 7. Thermostat (HD display) Parameters

Parameter	Description
About	This screen provides information concerning model number, serial number, hardware revision, software revision, language support and equipment type name.
Auto Brightness	Options are on and off . Default is off .
Brightness Value	The brightness range is 0 - 100. Default 80. Touch either the + or - button to increase or decrease the setting.
Display Pure Air	Options are on and off. Default is off. Default is on. When on it will display the PureAir S information on the home screen. Setting is ignore if PureAir S is not installed.
Display Indoor Humidity	Options are on and off . Default is off .
Display Outdoor Weather	Options are on and off . Default is off .
Outdoor Temperature Source	Options are off, Internet (AccuWeather) or sensor . Default is Internet (AccuWeather).
Proximity Control	Options are on and off . Default is off . Is used to wake-up the display from screen saver mode when motion near the HD display is detected.
Reset thermostat	Resets the thermostat settings to factory default.
Screen Locked	Options are unlocked , partially locked and locked . Default is unlocked .
Screen Saver	Options are off , weather , power save and logo . Default is off .
Wide Setpoint	Options are on and off . Default is off . This allows a wider low and high temperature. Normal range is 60 to 90°F (15.6 to 32.2°C). When this parameter is set to on , the range is 40 to 100°F (4.4 to 37.8°C). This feature can also be set through the user interface setting screen. From the home screen go to menu > settings > heat and cool (or it may be just heat or cool) > wider set-point range.

2.8. Thermostat - Mag Mount (Used with Display 1.0 and 2.0 Only)

Table 8. Mag-Mount Parameters

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

2.9. PureAir S

Table 9. PureAir S Parameters

Parameter	Description
Equipment	PureAir Filter
Dirty Filter Detection and UV Life Detection	<p>Default: ON. Options are either ON or OFF.</p> <p>This parameter turns on and off the filter life and ultra-violet lamp life reporting. When set to off, the control will continue to calculate the remaining filter life through continuous sampling, but will not use filter tests to determine filter life. The control will:</p> <ul style="list-style-type: none"> • Perform a filter calibration upon indication of a filter change regardless of the value of this parameter. • Perform a ultra-violet lamp calibration upon indication of a lamp change regardless of the value of this parameter. • Calculate ultra-violet lamp life remaining regardless of the value of this parameter. <p>Alert codes 504 and 503 will not be sent while this parameter is set to "Off".</p> <p>The Diagnostics screen on the thermostat will continue to show values for both filter life and ultra-violet lamp life regardless of the value of this parameter.</p>
Max Air Filtered between Tests	<p>Default is 100%, Range is 50% to 100% Changes can be made in increments of 10%. This parameter:</p> <ul style="list-style-type: none"> • Modifies the amount of air that is allowed to pass through the filter after a valid % life determination before a filter test is initiated. • Expressed as a percentage of the cubic feet of air that would pass through the filter if the fan operated at continuous fan CFM for 30 days.
UV lamp operation detection	Default: on . Options are either on or off .
Filter Life	Provides percentage of remaining filter life. This is for display purposes only and cannot be changed.
Last replacement date for filter	Date last filter reset was accomplished. This is for display purposes only and cannot be changed.
Purifier life	Provides percentage of remaining purifier life. This is for display purposes only and cannot be changed.
Last replacement date for purifier	Date last purifier insert reset was accomplished. This is for display purposes only and cannot be changed.
<ul style="list-style-type: none"> • Reset PureAir S will reset all PureAir S parameters back to factory defaults. • Reset purifier will reset it to 100%. This is usually accomplished after the purifier insert has been replaced. • Reset filter will reset it to 100%. This is usually accomplished after the air filter has been replaced. 	

2.10. Thermostat Utilities

Table 10. Utilities

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

3. Communicating Alert Codes, Soft Disable, Inverter Codes/ LEDs and Troubleshooting

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

3.1. Soft Disable

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

Sometimes soft disable will occur when a control is being replaced. Reconfiguring the system should resolve this issue.

The Lennox communicating thermostat will not show a alert code for a soft disabled control. When soft disabling occurs only the control that has been disabled will display the blinking LED status or seven-segment display indicator. Refer to the device's installation and setup guide for further guidance.

The iComfort control with the soft disable state will indicate so as follows:

- On air handler, integrated furnace and outdoor controls, the soft disable state is display by double horizontal lines on seven segment display.
- On iHarmony damper control module and EIM the green LED will blink 3 seconds on and 1 second off.

Possible Cause

- Soft disable may occur when a control has been replaced. Reconfiguring the system should resolve this issue.
- Sometimes Lennox communicating thermostat detects a new device or an existing device or a device on the system that is not communicating with the thermostat. If this occurs, an alert code 10 is activated and the thermostat sends a soft disable command to the offending device on the communications bus (outdoor control, IFC, AHC, EIM, or damper control module).

Re-Configure System

Use the following procedure if any controls are displaying the soft disable indicator:

1. Confirm proper wiring between all devices such as thermostat and Smart Hub.
2. Cycle power.
3. Go to the **menu > settings > advanced settings > view dealer control center**. Touch **proceed** to continue.

4. Select **equipment**.

5. Touch **reset**.

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

7. Select **confirm** to continue.

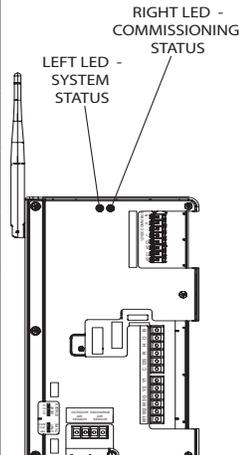
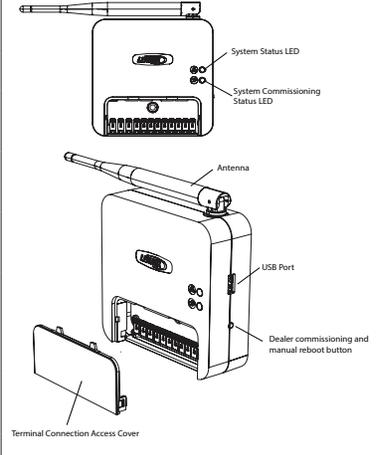
8. The thermostat will reboot and start through the system commissioning procedure.

3.2. Inverter LED Normal Operations Indicators

Lennox outdoor units with inverters will display two LEDs. For normal operation with no errors present - Red LED is ON and Green LED is OFF. If there is an inverter error, the LED code number along with the LED flash sequences are listed in the following table along with the corresponding Lennox alert code.

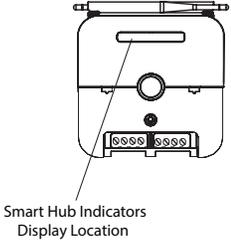
3.3. E30 and S30 (Second and Third Generation) LED Indicators

Table 11. System and Commissioning LED Indicators

E30	S30 V2	LED Color	Status	Description
		System Status LED		
		Green	System is normal	A solid green LED indicates no system errors are detected. System operating as designed.
		Red	HVAC Fault	System has service now alert which needs installer attention.
		Amber	Wi-Fi Error	Blinking amber LED indicates either Wi-Fi is not connected, no Wi-Fi is within range, or and Wi-Fi hardware error. Could also indicate intermittent Wi-Fi connection.
		Magenta	Thermostat Error	Blinking magenta LED indicates either mag-mount or HD display not connected.
		Cyan	Hardware Error	Blinking cyan LED indicates internal communication error.
		Commissioning Status LED		
		Blue	System is normal	No mobile device is directly connected using Wi-Fi to the smart hub.
		Green	Blinking green LED indicates the commissioning button has been activated and the smart hub is waiting for a connection with a mobile device.	
		Green	A solid green LED indicates a mobile device is connected to the smart hub.	
<ul style="list-style-type: none"> • If multiple errors are present, the system status LED will display each active condition for one second on and one second off. • The system will continue to cycle through all active alert codes. • System alert codes are displayed in the following priority: HVAC alerts, thermostats and then Wi-Fi. 				

3.4. S30 (First Generation) LED Indicators

Table 12. S30 (First Generation) LED Indicators

 <p>Smart Hub Indicators Display Location</p>	 <p>WI-FI – INDICATES THE STATUS OF THE INTERNAL WI-FI MODULE AND WHETHER OR NOT IT IS CONNECTED TO THE HOME WI-FI NETWORK.</p>	<p>System Status LED</p>		
	 <p>THERMOSTAT – INDICATES THE STATUS OF THE THERMOSTAT MAG-MOUNT AND HD DISPLAY AND WHETHER OR NOT THE SMART HUB CAN COMMUNICATE WITH THE HD DISPLAY.</p>			
	 <p>HVAC – SHOWS THE STATUS OF THE HVAC EQUIPMENT IN THE HOME CONTROLLED BY THIS SMART HUB, AND WHETHER OR NOT THE SMART HUB CAN COMMUNICATE WITH THEM.</p>	Red	Flashing	Flashing red indicators show a problem with the associated function. Flashing red ALERT indicator shows that a service now alert condition exists. If one of the other indicators is also flashing red, that is the likely source of the alert. If no other indicators are flashing red, the source of the alert is not defined.
	 <p>ALERT – SHOWS IF THERE IS A CRITICAL ALERT CONDITION.</p>	Amber	Flashing	Flashing amber Wi-Fi indicator shows that the Wi-Fi module check is in progress. Steady amber Wi-Fi indicator shows that the Wi-Fi module has passed its check but is not connected to the home Wi-Fi network.
		Amber	On	Steady amber indicators show smart hub boot up and self-check processes are in progress or have completed. Boot up and self checks normally complete rapidly, so amber indicators may appear only briefly (except for the Wi-Fi indicator).
		Blue	On	<ul style="list-style-type: none"> Steady blue when there is one or more smart hubs in the home and they are not connected to a mobile device running a iComfort Mobile Setup application. Steady blue when there is one or more smart hubs in the home, but not interconnected. Steady blue when one or more smart hubs are interconnected in the home through a Lennox-managed local network.
		Green	Flashing	Flashing green indicators show acquisition and test of resources across wired interfaces to the mag-mount / HD display and to installed HVAC equipment.
		Green	On	Steady green indicators show that the associated function is connected and operating normally.

3.5. S30 (First Generation) Center Push Button Indicator

The center push button has a RGB (red-green-blue) LED backlight that indicates the Lennox-managed local network communication status of the smart hub, and if the smart hub is transferring a software image from a flash drive plugged into the USB port. While this LED indicator can show any color, it is currently limited to amber, green, or blue.

When the smart hub is in a normal steady state, -- when the smart hub is in normal day-to-day operation -- the center push button backlight shows:

- Steady blue when there is one or more smart hubs in the home and they are not connected to a mobile device running a iComfort Mobile Setup application.
- Steady blue when there is one or more smart hubs in the home, but not interconnected.
- Steady blue when one or more smart hubs are interconnected in the home through a Lennox-managed local network.

During various smart hub transient states -- when the smart hub is engaged in a special task that should complete soon -- the center push button backlight shows:

- Steady amber (briefly) while the smart hub conducts self tests and boots up.
- Flashing amber while software or firmware updates for an iComfort® S30 system component or a connected field-upgradable HVAC asset is being transferred from files on a flash drive plugged into the smart hub USB port.
- Steady blue while the smart hub conducts checks on its internal Wi-Fi module and remote HVAC assets. (Icon indicators show progress.)
- Flashing blue when the smart hub is attempting a Lennox-managed local network connection with another smart hub in the home or with a mobile device running the iComfort® Mobile Setup application.
- Steady blue when the smart hub is connected to a mobile device running the iComfort Mobile Setup application through a Lennox-managed local network connection. (This is considered a transient state because the mobile device will disconnect from the Lennox-managed network when the task at hand is complete.)

3.6. Alert Codes

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

- **Service Urgent** alerts are displayed on Home (user) screen under the homeowner and installer alert buttons. **Service Urgent** means that a service call is needed to get the system running.
- **Service Soon / Service Urgent** means that the system will likely recover on its own and no interaction is necessary. Typically, either after a specific timer period or a specific number of instances, some **Service Soon** alerts will escalate to **Service Urgent**.
- **Service Soon** alerts are found only in under the installer alert button.
- **Information Only-Dealer** is information only and helps Lennox interpret test results and understand complicated behaviors. **Information Only** are not reported to homeowner or dealer.

NOTE: Communication System: *When communication controls are operating in a communication system, all jumpers and links setting on the controls are ignored. Jumpers and links setting are treated as defaults and would only be active if the system was configured as a non-communicating system.*

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
10		Service Urgent	Unknown Device Detected	<p>The thermostat when NOT in configuration mode has detected an unknown device. Typically the thermostat will send a command to the unknown device and place the device into a soft disable state. The soft disable control will indicate so as follows:</p> <ul style="list-style-type: none"> • On air handler, furnace and outdoor controls, the soft-disabled state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will flash 3 seconds on and 1 second off. • On the equipment interface module, the green LED will flash 3 seconds on and 1 second off. • A new communicating device has been added to the system since the original configuration setup was completed. • Go to menu > settings > advanced settings > view dealer control center > equipment and press reset all equipment. This will allow the system to auto-detect any Lennox communicating devices attached. 	Clear alert code by reconfiguring the system.
11		Service Urgent	Missing Device	<p>The thermostat cannot find a previously installed system component.</p> <ul style="list-style-type: none"> • Check all system components (devices) connections to make sure they are Lennox communicating compatible. • Cycle system power. • If problem persists, then check all system components (devices) connections to make sure they are Lennox communicating compatible. • Go to menu > settings > advanced settings > view dealer control center > equipment and press reset all equipment. This will allow the system to auto-detect any Lennox communicating components attached. 	Cycle system power, and If problem persists then clear by reconfiguring the system.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
12		Service Urgent	Indoor Unit Not Detected	<p>Thermostat did not find an indoor unit. Make sure there is an Lennox communicating indoor unit on the system.</p> <ul style="list-style-type: none"> • Check for voltage and missing component. • Check R, i+, i- and C connections at mag-mount or subbase, smart hub and all attached communicating components. • Ohm wires for electrical continuity. • Cycle power to both indoor unit first and then thermostat. • Verify that equipment interface module (if applicable) is configured as either an air handler or furnace when used with a non-communicating indoor unit. • Go to menu > settings > advanced settings > view dealer control center > equipment and press reset all equipment. This will allow the system to auto-detect any Lennox communicating components attached. • Replace indoor unit control if there is no response. 	Automatically clears when the system detects that the issue no longer exists.
13		Service Urgent	Duplicate Comfort Sensor ID	<p>Thermostat found more than one outdoor unit, or more than one indoor unit, or more than one thermostat connected to the system. Thermostat will display the message "Too Many Devices of the Same Type".</p> <ul style="list-style-type: none"> • Check wiring and remove duplicate equipment. • Go to menu > settings > advanced settings > view dealer control center > equipment and press reset all equipment. This will allow the system to auto-detect any Lennox communicating components attached. 	Automatically clears when the system detects that the issue no longer exists.
14		Service Urgent	Too Many Devices of the Same Type	<p>The thermostat found more than one thermostat, indoor or outdoor unit on the system.</p> <ul style="list-style-type: none"> • Check wiring and remove duplicate equipment. • Go to menu > settings > advanced settings > view dealer control center > equipment and press reset all equipment. This will allow the system to auto-detect any Lennox communicating components attached. 	Automatically clears when the system detects that the issue no longer exists.
15		Information Dealer Only	Parameter Mismatch Detected	Incorrect parameter settings detected. Dealer would need to re-set the system and start configuration again.	Automatically clears once proper system configuration is completed.
20		Service Urgent	Protocol Upgrade Required	The thermostat cannot work with one of the system devices because the thermostat firmware needs to be updated first.	Update thermostat firmware.
21		Service Urgent	Incompatible Equipment Detected	Equipment is trying to be utilized that is not compatible with other system components, such as a single-stage non-variable speed motor furnace with a modulating outdoor unit.	Use compatible equipment.
29		Service Urgent	Over Temperature Protection	<p>The thermostat is reading an indoor temperature that is higher than 90°F (factory default). The thermostat will not allow any heating operation to begin until it senses an indoor temperature lower than 90°F. Indoor temperature rose above 90°F during a heating or cooling demand.</p> <ul style="list-style-type: none"> • Heating operation is not allowed. • Check to ensure that heating equipment is not stuck ON (reversing valve, etc.) • Check the accuracy of the thermostat temperature sensor. • Select cooling system mode to cool the indoor space below 90°F. 	Automatically clears when the system detects that the issue no longer exists.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
30		Service Urgent	Low Temperature Protection	<p>The thermostat will not allow any cooling operation to begin until it senses a temperature higher than 40°F.</p> <ul style="list-style-type: none"> • 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. 	Automatically clears when the system detects that the issue no longer exists.
31		Service Urgent	Lost communication with Device	<p>The applicable system component (indoor, equipment interface, damper control module or outdoor unit) has not communicated with thermostat for more than three minutes.</p> <ul style="list-style-type: none"> • Check connections and voltages. • Ohm wires for electrical continuity. • If float switch is installed on air handler drain pan, check condensate line to ensure it is not clogged and tripping the float switch connected in series with R terminal. • Check to see if freezestat is installed. 	<p>If fault persists, then cycle power.</p> <p>Fault clears after communication is restored.</p>
32		Information Only-Dealer	Device Resetting	<p>The applicable system component (device) is resetting itself. This issue may occur during a power outage or power fluctuation in the system. If persistent or if it coincides with the system operations then proceed with the following troubleshooting steps.</p> <ul style="list-style-type: none"> • Check the power connections. • Check the amperage draw at the transformer (possible overloaded). • Check 24VAC voltage at the system component (device). • If the fault persists after checking the connections, replace the applicable control. 	To clear the alert code, go to menu > settings > advanced settings > view dealer control center > notifications and select the alert code and press the clear button.
34		Service Urgent	Must Program Unit Capacity For Device	<p>The thermostat does not know the capacity (tonnage) of the indoor or outdoor unit. The applicable system component is missing the programmed unit capacity.</p> <ul style="list-style-type: none"> • Remove power to thermostat before programming the unit control. • Go to applicable unit control and program the unit capacity manually (see the unit installation instruction for configuration instructions). • Once configuration is complete then reconnect thermostat wires. • Go to menu > settings > advanced settings > view dealer control center > equipment and press reset HVAC equipment. This will allow the system to auto-detect any Lennox communicating components attached. 	Automatically clears when the system detects that the issue no longer exists.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
35		Service Urgent	Incorrect Operation Of Device	<ul style="list-style-type: none"> • Message sent by thermostat to unit after more than 15 minutes asking for initiating heating or cooling with no response from unit. • Message sent by thermostat to unit after more than 15 minutes asking for termination of heating or cooling with no response from unit. <p>Result</p> <p>A communicating device in the system has been disabled due to a fault/lockout code in the unit's control.</p> <p>Another possible cause is electrical noise interference affecting the communicating system when the compressor contactor coil is energized.</p> <p>Corrective Action:</p> <ul style="list-style-type: none"> • Communicating system: Wire a transient voltage suppressor in parallel with the compressor contactor coil terminals on the outdoor unit. • Non-communicating outdoor unit: Wire transient voltage suppressor (89W72) in parallel with compressor contactor coil or across the Y1 and C terminals on the indoor control board. <p>NOTE: See service and application note IAQ-10-01 for further details.</p> <p>Transient Voltage Suppressor Part information: Made by Little Fuse, part number 5KP43CA bidirectional Transorb aka TVS Diode. Please contact your FTC or inside technical support for help in acquiring the transient voltage suppressor if not available in your local electronics store.</p>	
36		Service Urgent	Heating when Not Requested	<p>The system has been heating for at least 15 minutes without a demand for heating.</p> <ul style="list-style-type: none"> • Run the system in diagnostic mode and verify that it matches actual equipment operation. Go to menu > settings > advanced settings > dealer control center > diagnostics and press the start diagnostics button. • Check for other alert codes that may be preventing the system from operating as expected. • Check all heating equipment to determine cause of heating demand. • Recycle power. 	Automatically clears when the system detects that the issue no longer exists.
37		Service Urgent	Cooling when not Requested	<p>The system has been cooling for at least 15 minutes, without a demand for cooling.</p> <ul style="list-style-type: none"> • Run the system in diagnostic mode and verify that it matches actual equipment operation. Go to menu > settings > advanced settings > dealer control center > diagnostics and press the start diagnostics button. • Check for other alert codes that may be preventing the system from operating as expected. • Check all cooling equipment to determine cause of cooling demand. • Recycle power. 	Automatically clears when the system detects that the issue no longer exists.
38		Service Urgent	Not Heating when Requested	<p>The system has not been able to turn on the heating for more than 45 minutes.</p> <ul style="list-style-type: none"> • The system will go off-line for 60 minutes and will attempt to restart itself. • Run the system in diagnostic mode and verify that it matches actual equipment operation. Go to menu > settings > advanced settings > dealer control center > diagnostics and press the start diagnostics button • Check for other alert codes that may be preventing the system from operating as expected. • Check all heating equipment to determine cause. • Recycle power. 	Automatically clears when the system detects that the issue no longer exists.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
39		Service Urgent	No Cooling when Requested	<p>The system has not been able to turn on the cooling for more than 45 minutes.</p> <ul style="list-style-type: none"> The system will go off-line for 60 minutes and will attempt to restart itself. Run the system in diagnostic mode and verify that it matches actual equipment operation. Go to menu > settings > advanced settings > dealer control center > diagnostics and press the start diagnostics button Check for other alert codes that may be preventing the system from operating as expected. Check all cooling equipment to determine cause. Recycle power. 	This alert code will automatically clear when the system detects the issue no longer exists.
40		Information Only-Dealer	HP Heating Lockout.	<p>The heat pump could not increase the room temperature 0.5°F towards the set point in 30 minutes.</p> <p>Gas Furnace Heating</p> <p>In order to use the gas furnace as a primary heating source (not defrost tempering) when the outdoor temperature is between the high and low balance points, the heat pump:</p> <ul style="list-style-type: none"> Must be used for a minimum of 30 minutes and the temperature in the zone not increase by more than 0.5°F Has not gone into defrost in the 30 minute period. <p>The default for HP Heating Lockout Time default is 120 minutes and will lock the heat pump off when the outdoor temperature is above the high balance point. Selectable range is 60 to 240 minutes.</p> <ul style="list-style-type: none"> Go to menu > settings > advanced settings > dealer control center > equipment > smart hub and located HP Heating Lockout Time to verify the lockout time setting. Check air flow to the zones or zones. Check discharge air temperatures. Check calibration of room thermostat. <p>Outdoor Unit and Zoning</p> <p>When the heat pump could not get a zone thermostat to progress 0.5°F towards the set point in 30 minutes the system will lock out the heat pump and switch to the secondary heat source. (Electric heat or if in dual fuel applications the furnace will be used and the system put in heat pump heating lockout timer) default is 120 minutes. It will lock the heat pump off and the gas furnace will finish the heating cycle</p> <p>Set the low balance point and high balance point as close together as possible. (This is a 3°F difference – Example: set high balance point at 25°F and low balance point would set at 22°F). Below the low balance point, the furnace will heat the home / between the low and high balance point, the heat pump and furnace will heat the home. I when the outdoor temperature is above the high balance point, the gas furnace is locked out and all the heat is provided by the heat pump.</p>	
41		Information Only-Dealer	Device Control Board Replaced	This alert code will appear anytime a communicating control [<i>Furnace, air handler, PureAir S, damper control module, air conditioner or heat pump</i>] is replaced in the system.	Must be cleared manually.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
105		Service Urgent	Communication Problem	<p>One of the system components has lost communication with the system. The system component (device) is unable to communicate.</p> <ul style="list-style-type: none"> S30 - Access dealer control center, select notifications icon, review alert code details to determine which device or unit has the communication problem. Review both active and cleared alerts. Wi-Fi – Press and hold the Lennox logo on the bottom right of stat for 5 seconds to access the dealer control center. Follow the prompts to access the dealer / installer screen and select the “Alerts” tab. Review alert code details to determine which device or unit has the communication problem. Review both active and cleared alerts. Zoning - Remove wire from smart hub to iHarmony control and just have wiring from furnace. <p>Troubleshooting:</p> <ul style="list-style-type: none"> Check each control for additional codes In most cases issues are related to electrical noise. Verify that high voltage power is separated from the low voltage communication wires. Check for proper grounding on line voltage and low voltage wiring, transformer and equipment. Check for incorrectly wired or loose or spliced connections between system components (devices or units). Make sure all unused wires are tied together and taken back to the C terminal on the indoor control board as shown in the installation and setup guide. Disconnect all wiring to other system components (except thermostat to indoor unit) and reconnect one device at a time and recommission system each time a device is reconnected until the issue is located. Zoning: If zoning is installed and is wired directly from smart hub to iHarmony control then disconnect that wiring. Run control wiring from the iHarmony control directly to the indoor unit control. Wiring diagrams are provided in the iHarmony Installation and Setup Guide. Float Switch: When using a float switch, use isolation relay to break common wire to outdoor unit. For testing purposes, remove float switch from the circuit. Firmware and Accessories: Make sure that smart hub has correct firmware version for added accessory. (Example: Pure Air S and/or Apple Home Kit must have software version 3.4 or higher before it will connect to system properly. (If software is not updated in system it will cause system operation issues). Inductive voltage from surrounding sources. Check each wire in AC mode to C on circuit board. <ul style="list-style-type: none"> > Good voltage is .03-.3VAC inductive voltage is not an issue. > Acceptable can be up to .7VAC with moderate success. > Some units have worked with up to 1.2VAC with occasional success. > Voltage over 1.2VAC needs to be addressed. 	Automatically clears when the system detects the issue no longer exists.
110		Service Urgent	GF Low AC Line Voltage	<p>The component AC line voltage is too low. This alert code may appear during a brownout.</p> <ul style="list-style-type: none"> It may also occur when line voltage is below its designed operating value. Check and correct the power line voltage. 	Automatically clears when the system detects the issue no longer exists.

Table 13. Alert Codes and Troubleshooting

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
111		Service Urgent	GF Line Polarity Reversed	<p>The unit is reporting that its power and neutral lines are reversed.</p> <ul style="list-style-type: none"> • Turn off the power to the system and correct the line power voltage wiring. • System resumes normal operation five seconds after service urgent condition is recovered. 	Automatically clears when the system detects the issue no longer exists.
112		Service Urgent	GF No Ground Connection	<p>The reporting component cannot find earth ground. The thermostat will shut down the system.</p> <ul style="list-style-type: none"> • Provide proper earth ground to the equipment. • System resumes normal operation five seconds after service urgent condition is recovered. 	Automatically clears when the system detects the issue no longer exists.
113		Service Urgent	GF High AC Line Voltage	<p>Line voltage high (voltage higher than nameplate rating).</p> <ul style="list-style-type: none"> • Provide power voltage within proper range. • System resumes normal operation five seconds after service urgent condition is recovered. 	Automatically clears when the system detects the issue no longer exists.
114		Service Soon/Service Urgent	AC Line Frequency / Distortion Prob	<p>In most cases the errors will have something to do with the transformer(s) phasing, input power or output loading (amperage load).</p> <p>For the air handler control only, alert code 114 is generated only if the measured line frequency is below 57Hz or above 63Hz and remains out of range for 10 consecutive seconds. We count power line cycles and determine line frequency every one second of time based on the processor's quartz crystal oscillator. We have a fair amount of filtering on when we consider a power line cycle to have occurred, so there would have to be really bad distortion for it to count an extra cycle or miss a real cycle.</p> <p>Voltage low enough to miss a cycle would generate an alert code 115. There are lots of events, such as power utility substation switching, that could occasionally make our power line frequency off by one count. These are rare one-time events and I don't know anything other than a generator with bad frequency that could cause problems long enough to cause this alert code.</p> <p>There is a frequency / distortion problem with the power to a specific system component. This alert code may indicate transformer overloading.</p> <ul style="list-style-type: none"> • Check the voltage and line power frequency. • Check the generator operating frequency, if the system is running on back-up power. • Correct voltage and frequency problems. • System will resume normal operation five seconds after fault recovered. • All applicable system component outputs are disabled – service soon condition. • After 10 minutes, the priority condition is escalated – service critical condition. • Damper control module will operate in central mode only until the proper voltage is restored or frequency distortion is resolved. • If connected to iHarmony, set damper control module transformer jumper to system transformer. Check for proper wiring. Replace 40VAC furnace transformer with 70VAC transformer. Re-commission system. <p>NOTE: The unitary control (outdoor unit control board) whether it is a single, two-stage or multi-stage control is not displaying alert code 114.</p>	
115		Service Urgent	Low Secondary (24VAC) Voltage	<p>24VAC power to a system component control is lower than the required range of 18 to 30VAC.</p> <ul style="list-style-type: none"> • Check and correct voltage. • Check for additional power-robbing system components (devices) connected to system. • This alert code may require the installation of an additional or larger VA transformer. • Damper control module will operate in non-zone mode until proper voltage is restored. 	Automatically clears when the system detects the issue no longer exists.

Table 13. Alert Codes and Troubleshooting

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
116		Service Soon	ID High Secondary (24VAC) Voltage	<ul style="list-style-type: none"> • Thermostat will display this code when 24VAC power is high (18 to 30VAC). • Will display Furnace or Air Handler High Secondary (24VAC) voltage. 	Check and correct voltage. Check for proper line voltage (120VAC, 240VAC, etc.) to equipment. Clears when control senses proper voltage.
117		Service Soon	ID Poor Ground	<p>The reporting unit has poor earth grounding.</p> <ul style="list-style-type: none"> • Provide proper grounding for the system component (device). • Check for proper earth ground to the system. • Reference Corp0123L10 for additional information 	Automatically clears 30 seconds after the issue is corrected.
120		Service Soon	Unresponsive Device	<p>There is a delay in the system component responding to the system. Typically this alert code does not cause any operational issues and will clear on its own.</p> <ul style="list-style-type: none"> • This alert code is usually caused by a delay in the outdoor unit responding to the thermostat. • Leaking voltage from strands within the bundle. <ul style="list-style-type: none"> > Land only the R wire on the R terminal to load the bundle with 24VAC. <ul style="list-style-type: none"> ▶ Typically only the R wire needs to be landed to identify if voltage is leaking. ▶ If voltage is present checking the other wires is informational only but not needed. ▶ If voltage is not present checking the other wires one at a time would be needed. > Check each loose wire in AC mode to C on circuit board. <ul style="list-style-type: none"> ▶ Good voltage is .03 -.3VAC leaking voltage is not the issue. ▶ Acceptable can be up to .7VAC with moderate success. ▶ Some units have worked with up to 1.2VAC with occasional success. ▶ Voltage over 1.2VAC needs to be addressed. 	Automatically clears after an unresponsive system component (device) responds to any inquiry.
124		Service Urgent	Tstat Lost Communication To Smarthub	<p>The thermostat has lost communication with a system component for more than three minutes. System component has lost communication with the thermostat.</p> <ul style="list-style-type: none"> • Check the wiring connections between components. • Ohm wires. • Cycle power. • Any component that is miss-wired may cause a false component code to be shown on system component. • Disconnect all wiring to other system components and check communication one at a time. <p>NOTE: When using a float switch, use isolation relay to break common wire to outdoor unit. For testing purposes, remove float switch from the circuit</p> <p>This alert code stops all associated system operations and waits for a heartbeat message from the system component that is not communicating.</p>	Automatically clears after communication is re-established with applicable system component (device).

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
125		Service Urgent	Control Hardware Problem	<p>There is a hardware problem on a system component control. There is a control hardware problem.</p> <ul style="list-style-type: none"> In system using iHarmony zoning, the system will remain in non-zone mode (all dampers open) for five minutes after priority condition no longer exist. In systems using a Equipment Interface Module, remove jumper if present on indoor unit between R and W2. In systems using a PureAir S, the pure air control board jumper selector is missing. <p>If none of the above tips are applicable, then replace the control if the problem prevents operation and is persistent.</p>	Automatically clears five minutes after the issue no longer exists.
126		Service Urgent	Control Internal Communication Prob	<p>There is an internal hardware problem on the system component control. In addition, if you have zoning the alert code is triggered when your zone temperature is deviating away from set point persistently.</p> <ul style="list-style-type: none"> Typically the system component control will reset itself. Replace the system component (device) control if the problem prevents operation and is persistent. 	Automatically clears 300 seconds after the issue no longer exists.
130		Service Urgent	Configuration Jumper Missing	<ul style="list-style-type: none"> Configuration jumper missing on equipment interface module (EIM). Configuration jumper missing on air handler communicating control board.. Install the missing jumper. Set as heat pump, furnace control or air handler control for EIM. <p>NOTE: This is applicable in non-communicating applications only.</p>	Automatically clears after the missing or incorrectly installed jumper is installed or corrected.
132		Service Urgent	Device Control Software Fault	<p>System component control software is corrupted.</p> <ul style="list-style-type: none"> Recycle power. If failure re-occurs, replace the system component control. 	Manual system power reset is required to recover from this alert code.
180		Service Soon	Outdoor Temperature Sensor Problem	<p>The thermostat has found a problem with the outdoor sensor in the outdoor unit or the optional outdoor sensor connected to the indoor unit. In normal operation after system component control recognizes sensors, the alert code will be sent if valid temperature reading is lost.</p> <ul style="list-style-type: none"> Compare outdoor sensor resistance to temperature / resistance charts in unit installation instructions. Replace sensor pack or stand alone outdoor sensor. At the beginning of (any) configuration, furnace, air-handler control or equipment interface module will detect the presence of the sensor(s). If detected (reading in range), appropriate feature will be set as 'installed' and shown in the 'About' screen. 	Automatically clears upon configuration, or sensing normal values.
181		Service Soon	OD Suction Pressure Transducer Fault	<ul style="list-style-type: none"> Suction Pressure Transducer reading above 4.75V or below 0.25V for 24hrs +/- 3hrs. Run on staged operation. 	Resets after 3 consecutive readings that are in range

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
182		Service Soon	OD Suction Temperature Sensor Fault	<ul style="list-style-type: none"> Reading below 0.25V or above 4.75V for 24hrs +/- 3hrs. System will continue to operate normally. 	Resets after 3 consecutive readings that are in range
183		Service Soon	OD Liquid Pressure Sensor Fault	<ul style="list-style-type: none"> Under 0.25V and above 4.75V readings for 24 hours +/-3hrs or more on the sensor will cause this error. Continue normal operation, see sections related to low pressure switch emulation for specific details related to low pressure switch faults. 	Resets after 3 consecutive readings that are in range
184		Service Soon	OD Liquid Temperature Sensor Fault	<ul style="list-style-type: none"> Sensor shorted or open for 24 hours +/-3hrs or more. Continue normal operation. 	Resets after 3 consecutive readings that are in range
200		Service Urgent	GF Rollout Limit Switch Open	<p>The furnace roll out limit switch is open. Correct the cause of roll out trip.</p> <ul style="list-style-type: none"> Reset roll out switch. Test the furnace operation. Check for blocked or obstructed vent pipe (Intake and/or Exhaust). Check for flame stability, if flame is unstable, look for cause. 	Automatically clears after the furnace roll out switch is closed.
201		Service Urgent	ID Blower Motor Fault	<p>Lost communication with indoor blower motor.</p> <ul style="list-style-type: none"> Possible causes include power outage, brown-out, motor not powered, loose wiring, condensation on system component control without cover on breaker. Problem may be on system component control or motor side. 	Automatically clears after communication is restored.
202		Service Urgent	ID Blower Motor & Unit Size Mismatch	<p>The unit size code for the indoor unit and the size of blower motor do not match. Incorrect appliance unit size code selected.</p> <ul style="list-style-type: none"> Remove the thermostat from the system while applying power and reprogramming. Check for proper configuring under unit size codes for furnace/air handler in configuration guide or in installation instructions. 	Automatically clears after the correct match is detected following a reset.
203		Service Urgent	ID Invalid Size Unit Code	<p>The unit size code for the indoor unit has not been selected or set incorrectly.</p> <ul style="list-style-type: none"> Verify that the correct unit size code is configured. Unit size codes for furnace and air handler are listed in the system component configuration guide or installation instruction. Remove the thermostat from the system while applying power and set the unit size code per instructions provided in the indoor unit installation instruction. 	Automatically clears after the correct match is detected following a reset.
204		Service Urgent	GF Check Gas Valve	<p>There is an issue with the furnace gas valve.</p> <ul style="list-style-type: none"> Check gas valve operation and wiring. Check for voltage to the gas valve. 	Automatically clears after the issue is corrected.
205		Service Urgent	GF Gas Valve Relay Contact Closed	<p>The furnace gas valve relay contact is closed.</p> <ul style="list-style-type: none"> Check wiring on control and gas valve. The relay is located on the furnace control . If issue continues replace furnace control. 	Automatically clears after the issue is corrected.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
206		Service Soon	GF Gas Valve 2nd Stage Relay Fault	<p>The furnace gas valve second-stage relay is faulty.</p> <ul style="list-style-type: none"> Furnace will operate on first-stage for the remainder of the heating demand. If unable to operate second-stage, replace furnace control. 	Automatically clears after the issue is corrected.
207		Service Urgent	GF HSI Sensed Open	<p>The furnace hot surface igniter is open.</p> <ul style="list-style-type: none"> Measure the resistance of hot surface igniter. Replace the igniter if it is not within the specified range found in furnace installation instruction. 	Automatically clears after the issue is corrected.
223		Service Soon	GF Low Pressure Switch Open	<p>The furnace low pressure switch is open.</p> <ul style="list-style-type: none"> Check pressure (inches w.c.) of the low pressure switch closing during a heat call. Measure operating pressure (inches w.c.). Inspect vent for blockages and combustion air inducer for correct operation and restriction. Check for blocked cold end heater box or condensate drain or drain strainers at outlet of cold end heater box. Check for cracked hoses. Check levelness of unit. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p>	Automatically clears after the issue is corrected.
224		Service Urgent	GF Low Pressure Switch Stuck Closed	<p>The furnace low pressure switch is stuck closed.</p> <ul style="list-style-type: none"> 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 for blockage and combustion air inducer for correct operation and restriction. Check for moisture in pressure switch. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p> <p>Other possible issues that are specific to the older Lennox communicating thermostats are as follows:</p> <p>It has been determined that this alert code is generated when a subsequent heating call occurs within 30 seconds of a prior call for heat ending. If a call for heat occurs during this time period, the inducer post-purge from the previous call may still be in process. If that condition exists, the IFC will sense the pressure switch circuit is closed therefore activating the alert code 224 and generate an email notification. Once the fault is cleared, typically seconds after being generated, the subsequent call for heat will be initiated and the furnace will return to normal operation.</p> <p>Lennox has not received any complaints of no heat situations associated with this operating condition. It has been determined that occasionally the fault clears itself and the alert code is not stored in the IFC or Lennox communicating thermostat.</p>	Automatically clears after the issue is corrected.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
225		Service Soon	GF High Pressure Switch Failed to Close	<p>The furnace high pressure switch will not close.</p> <ul style="list-style-type: none"> • Check pressure (inches w.c.) of high pressure switch closing during a heat call. • Measure operating pressure (inches w.c.). • Inspect vent for blockage and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box or condensate drain or drain strainers at outlet of the cold end heater box. • Check cracked hoses • Check levelness of unit. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p>	
226		Service Urgent	GF High Pressure Switch Stuck Closed	<p>The furnace high pressure switch will not open.</p> <ul style="list-style-type: none"> • Check operation of high pressure switch closing during a heat call. • Measure operating pressure (inches w.c.). • Inspect vent for blockage and combustion air inducer for correct operation and restriction. • Check for moisture in pressure switch. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p>	Automatically clears after the issue is corrected.
227		Service Soon	GF Low Pressure Switch Open in Run Mode	<p>The furnace low pressure switch is open while in run mode.</p> <ul style="list-style-type: none"> • Check pressure (inches w.c.) of low pressure switch closing during a heat call. • Measure operating pressure (inches w.c.). • Inspect vent for blockage and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box or condensate drain or drain strainers at outlet of cold end heater box. • Check for cracked hoses. • Check levelness of unit. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p>	Automatically clears after the issue is corrected.
228		Service Soon	GF Inducer Calibration Issue	<p>The furnace control is not able to calibrate the pressure switch. Unable to perform pressure switch calibration.</p> <ul style="list-style-type: none"> • Inspect vent for blockage and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box or condensate drain or drain strainers at outlet of cold end heater box (CEHB). • Check for cracked hoses. • Check levelness of unit. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p>	Automatically clears after a successful calibration.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
229		Information Only-Dealer	Ignition on High Fire	<ul style="list-style-type: none"> Furnace control switched to high fire ignition because low fire pressure switch did not close in allowed time. *Early models only, if fan is on when call for W1 is initiated; unit will fire on high fire for 60 seconds before dropping down to low fire. 	No action is required.
240		Service Soon	GF Low Flame Current - Run Mode	<p>This could be either low flame current or a loss of flame while in run mode.</p> <ul style="list-style-type: none"> Check micro-amperes of the flame sensor using thermostat or control board. Clean or replace the flame sensor. Measure voltage of neutral to ground to ensure good unit ground. Clean face of burner assembly. Confirm that the vent termination is properly installed and not re-circulating. Check for loose a wiring connection at gas valve. <p>NOTE: Refer to Service and Application Note H-14-06“ Flame Rectification In All Gas Furnaces” for additional information.</p>	Automatically clears after a proper micro-amp reading has been sensed.
241		Service Urgent	GF Flame Out of Sequence-Still Present	<p>Flame sensed without call for gas heating. Perform the following:</p> <ul style="list-style-type: none"> Shut off gas. Check for a gas valve leak. Check for voltage to gas valve. <p>Replace the gas valve if needed.</p>	Automatically clears when a heat call ends successfully.
250		Service Soon	GF Primary Limit Switch Open	<p>The furnace primary limit switch is open. If limit switch is not closed within three minutes, the unit will go into a 60 minute soft lockout (Watchguard mode). Perform the following:</p> <ul style="list-style-type: none"> Check for high gas pressure. Check for low supply air. Low supply air due to being plugged or restriction in system (example: dirty air filter or blockage in duct work). Check for proper firing rate on furnace. Check for non-functioning zone dampers. <p>NOTE: Limit trips will place the iHarmony zoning system into non-zone mode.</p> <p>NOTE: See ACC-14-01 for further details.</p>	<p>Automatically clears when a heat call ends successfully.</p> <p>NOTE: If this issue occurred on an iHarmony zoning system, the field will need to manually activate the zoning.</p>
252		Service Soon	ID Discharge Air Temperature High	<p>A discharge air-temperature is high. Perform the following:</p> <ul style="list-style-type: none"> Check temperature rise, air flow and input rate. Check for dirty air filter(s). <p>NOTE: See Service and Application Note ACC-14-01 for further details.</p>	Automatically clears when a heat call ends successfully.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
270		Service Urgent	GF Flame Failed To Ignite	<p>The furnace is in Watchguard mode. The furnace igniter cannot turn on the flame. This is a five strike condition during a single demand.</p> <ul style="list-style-type: none"> • Check for proper gas flow. • Ensure that igniter is lighting burner. • Check flame sensor current. • Check for dirty filters. • Check for blocked cold end heater box or condensate drain and cracked hoses. 	Automatically clears on successful ignition.
271		Service Urgent	GF Low Press Switch Open	<p>The furnace is in Watchguard mode. The furnace low pressure switch is open. This is a five strike condition during a single demand.</p> <ul style="list-style-type: none"> • Check pressure (inches w.c.) of low pressure switch closing during a heat call. • Measure operating pressure (inches w.c.). • Check for blocked cold end heater box (CEHB), or condensate drain or drain strainers at outlet of CEHB and cracked hoses. • Check for cracked hoses. • Check levelness of unit. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p>	Automatically clears on successful ignition.
272		Service Urgent	GF Low Press Switch Open Run Mode	<p>The furnace low pressure switch is open during run mode. The system will go into Watchguard mode.</p> <ul style="list-style-type: none"> • 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 for blockages, and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box (CEHB), or condensate drain or drain strainers at outlet of CEHB and cracked hoses. • Check for cracked hoses. • Check levelness of unit. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p>	Automatically clears when a heat call ends successfully.
273		Service Urgent	GF Flame Fail In Run Mode	<p>The furnace flame is going off during a heating cycle. The system will go into Watchguard mode.</p> <ul style="list-style-type: none"> • Check micro-amperes of flame sensor using thermostat or control diagnostics. • Clean or replace sensor. • Measure voltage of neutral to ground to ensure good unit ground. • Clean face of burner assembly. 	Automatically clears when a heat call ends successfully.

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274		Service Urgent	GF Primary Limit Switch Open	<p>The furnace limit switch has been open for more than three minutes. The system will go into Watchguard mode. In iHarmony zoning systems, the limit trips will place the system into central mode.</p> <ul style="list-style-type: none"> • Check for high gas pressure. • Low supply air due to being plugged or restriction in system (example: dirty air filter or blockage in duct work). • Check for proper firing rate on furnace. • Check for non-functioning zone dampers. <p>NOTE: Refer to Service and Application Note ACC-14-01 - iHarmony® and SLP98 - Insufficient Zone Heating and Alert Code 250 Issues for corrective actions.</p>	Automatically clears when a heat call ends successfully.
275		Service Urgent	GF Flame Out Of Seq. No Flame	<p>The furnace flame is out of sequence. The system will go into Watchguard mode.</p> <ul style="list-style-type: none"> • Shut off gas. • Check for gas valve leak. 	Automatically clears on successful ignition.
276		Service Urgent	GF Calibration Failure	<p>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.</p> <ul style="list-style-type: none"> • Measure operating pressure (inches w.c.). • Inspect vent for blockages, and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box (CEHB), or condensate drain or drain strainers at outlet of CEHB and cracked hoses. • Check for cracked hoses. • Check levelness of unit. <p>NOTE: Check Service Manual and Service and Application Note H-13-07 "Condensing Furnace Pressure Switch Troubleshooting" for additional information.</p>	Automatically clears when the furnace calibrates itself successfully.
290		Service Urgent	GF Ignition Circuit Fault	<p>There is a problem with the furnace ignition circuit. The system will go into Watchguard mode.</p> <p>Measure resistance of hot surface igniter. Replace the hot surface igniter if it is not within specifications.</p>	Automatically clears on successful ignition
291		Service Urgent	GF Heat Airflow Below Min	<p>The heating airflow is below the minimum required level. The system will go into Watchguard mode.</p> <ul style="list-style-type: none"> • Check for dirty air filter(s) and other air flow restrictions. • Check blower performance. 	Automatically clears when a heat call ends successfully.

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292		Service Urgent	ID Blower Motor Start Fault	<p>The indoor unit blower motor will not start. The system will go into Watchguard mode.</p> <ul style="list-style-type: none"> Indoor blower motor unable to start. This could be due to seized bearing, stuck wheel, and obstructions. Replace motor, motor module or wheel if assembly does not operate or meet performance standards. <p>NOTE: Refer to Service and Application Note H-17-02 "All Communicating Variable Speed Motors".</p>	Automatically clears after the indoor blower motor starts successfully.
294		Service Urgent	GF Inducer Motor Overcurrent	<p>There is over current in the furnace inducer motor. The system will go into Watchguard mode.</p> <ul style="list-style-type: none"> Check combustion blower bearings, wiring and amps. Replace furnace inducer motor if it does not operate or does not meet performance standards. 	Automatically clears after inducer motor current is sensed to be in-range after the ignition following either Watchguard mode or unit reset.
295		Service Soon	ID Blower Over Temperature	<p>The indoor blower motor is overheating. Indoor blower motor over temperature (motor tripped on internal protector).</p> <ul style="list-style-type: none"> Check motor bearings and amps. Replace indoor blower motor if necessary. Check for high duct static. 	Automatically clears after blower demand is satisfied.
310		Service Soon	Discharge Air Temp Sensor Problem	<p>There is a discharge air temperature sensor issue.</p> <ul style="list-style-type: none"> Confirm there is no short or open circuits in the Lennox communicating thermostat connections to any of the other components in the communication system. Compare discharge air temperature sensor (DATS) resistance to temperature / resistance charts in system component installation instruction. Replace discharge air sensor if necessary. <p>NOTE: Issues with a DATS connected to a damper control module or equipment interface model will not generate an alert code.</p>	Automatically clears 30 seconds after condition is detected as recovered or after system restart.
311		Information Only-Dealer	GF Heat Rate Reduced To Match Airflow	<p>The heat firing rate has been reduced to match available airflow (cutback mode). This is a alert code. Furnace blower in cutback mode due to restricted airflow.</p> <ul style="list-style-type: none"> Reduce firing rate every 60 seconds to match available CFM. Check air filter and duct system. To clear, replace air filter if needed or repair or add additional ducting. <p>Two-stage controls will reduce firing rate to first stage.</p>	Automatically clears when a heating call finishes successfully.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
312		Information Only-Dealer	Reduced/ Airflow-Indoor Blower Cutback	<p>The indoor blower cannot provide the requested CFM due to excessive static pressure. This is a minor alert code.</p> <ul style="list-style-type: none"> • Static pressure has exceeded the capability of the blower motor. • Possible restricted airflow - Indoor blower is running at a reduced CFM (cutback mode). • The variable speed motor has pre-set speed and torque limiters to protect the motor from damage caused by operating outside of design parameters (0 to 0.8" e.g. total external static pressure). • Check air filter and duct system. • To clear, replace air filter if needed or repair or add additional ducting. <p>NOTE: Blower motor cutbacks will not show alarm code. Duct static pressure reading must be taken.</p>	Automatically clears when a heating call finishes successfully.
344		Service Urgent	GF IFC Relay Y1 Stuck	<p>Link Relay Problem. Issue could be with possible Y1 relay failure.</p> <p>NOTE: Relay is located on the IFC (Integrated Furnace Control). If issue continues replace IFC.</p>	Automatically clears five minutes after Y1 input sensed OFF.
345		Service Urgent	Relay O Failure	<p>The O relay on the system component has failed. Either the pilot relay contacts did not close or the relay coil did not energize.</p> <ul style="list-style-type: none"> • Possible O relay / stage 1 failure. • Pilot relay contacts did not close or the relay coil did not energize. • Replace system component (device) control. <p>If error is applicable to the XC20, XC25, XP20 or XP25, the outdoor control will need to be replaced.</p>	Automatically clears after the fault recovered following reset.
346		Service Urgent	AH HP Jumper Not Removed	<p>The heat pump configuration link is not cut on the air handler control.</p> <ul style="list-style-type: none"> • Configuration link not cut on air handler control. • Cut O to R. <p>NOTE: This is only applicable when matching non-communicating heat pump with Lennox communicating indoor unit.</p>	Automatically clears when the system detects that the issue no longer exists.
347		Service Urgent	ID or EIM Relay Y1 Fault	<ul style="list-style-type: none"> • Lennox communicating thermostat sends a Y1 compressor demand to the indoor control requesting it to relay the demand to the outdoor unit. • The indoor unit communicating control will verify the presences of 24VAC between the Y1 and C on its terminals. If it does not detects the presences 24VAC, it will trigger alert code 347. <p>Possible cause for alert code 347 is Y1 relay on the applicable system component has failed. Either the furnace pilot relay contacts did not close or the relay coil did not energize.</p> <ul style="list-style-type: none"> • System operation will stop. • Possible Y1 relay / stage 1 failure. • Furnace pilot relay contacts did not close or the relay coil did not energize. <p>NOTE: There is no input back to the applicable system component control.</p>	Automatically clears after reset and Y1 input sensed.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
348		Service Soon	ID Relay Y2 Fault	<p>Possible cause for alert code 348 is Y2 relay on the applicable system component may have failed. Lennox communicating thermostat sends a Y2 compressor demand to the indoor control requesting it to relay the demand to the outdoor unit. The indoor unit communicating control will verify the presences of 24VAC between the Y1 and C on its terminals. If it does not detects the presences 24VAC, it will trigger alert code 348. Either the furnace pilot relay contacts did not close or the relay coil did not energize.</p> <ul style="list-style-type: none"> • Possible Y2 relay / stage 2 failure. • Furnace pilot relay contacts did not close or the relay coil did not energize. • No input back to furnace or air handler control. 	Automatically clears when the system detects that the issue no longer exists.
349		Service Urgent	GF IFC Error Check Jumper O To R	<ul style="list-style-type: none"> • Only applicable in non-communicating mode. • The O to R link on the furnace has been cut and could possibly cause a brown out. • Might also result in low voltage to which would generate alert code as well. • Configuration link R to O needs to be restored. Will need to restore link by hard-wiring the R to O terminals on the terminal strip. 	Automatically clears when the system detects that the issue no longer exists.
350		Service Urgent	AH Electric Heat Not Configured	<p>The air handler's electric heat is not configured or incorrectly configured.</p> <ul style="list-style-type: none"> • 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. <p>NOTE: Smart hub MUST be removed from the system before configuring electric heat.</p>	Automatically clears after electrical heat detection is successful.
351		Service Urgent	AH Electric Heat Stage 1 Fault	<p>There is an issue with the air handler's first stage electric heat. Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize.</p> <p>Possible heat section / stage 1 failure.</p> <p>NOTE: Air handler will operate on heat pump first stage for the remainder of the heat call.</p>	Automatically clears after fault recovered.
352		Service Soon	AH Electric Heat Stage 2 Fault	<p>There is a issue with the air handler's second stage electric heat. Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize.</p> <p>NOTE: The air-handler will operate on first stage electric heat until the issue is resolved.</p>	Automatically clears after fault recovered.
353		Service Soon	AH Electric Heat Stage 3 Fault	<p>There is a issue with the air handler's third stage electric heat. Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize.</p> <p>NOTE: The air-handler will operate on first stage electric heat until the issue is resolved.</p>	Automatically clears after fault recovered.
354		Service Soon	Electric Heat AH Electric Heat Stage 4 Fault	<p>There is a issue with the air handler's fourth stage electric heat. Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize.</p> <p>NOTE: The air-handler will operate on first stage electric heat until the issue is resolved.</p>	Automatically clears after fault recovered.
355		Service Soon	AH Electric Heat Stage 5 Fault	<p>There is an issue with the air handler's fifth stage electric heat. Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize.</p> <p>NOTE: The air-handler will operate on first stage electric heat until the issue is resolved.</p>	Automatically clears after fault recovered.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
370		Service Urgent	GF Interlock Switch Open	<p>Communicating Mode:</p> <p><i>NOTE: The on-board jumper DS-R (W914) will be cut.</i></p> <p>In communicating mode, the DS-R terminal is used with the EL296 and SL280 furnaces and will be used to monitor a field-installed interlock switch such as for example a float switch.</p> <p>When operating in this capacity, the DS jumper will be monitored as follows:</p> <ul style="list-style-type: none"> • When no alert codes are present there will be 24VAC present at this terminal. • When control see the loss of 24VAC for two minutes it will send an alert code 370 and disable heating function. • If currently running a demand it will de-energize all outputs (including the blower). • In case of an existing interlock switch alert code, upon power reset, an alert code message will be sent if voltage is not sensed on the DS terminal. • An alert code clearing message will be sent if 24VAC is sensed on DS terminal for the minimum of 10 seconds. • The monitoring of DS terminal will apply to both variable speed and constant torque controls. <p>Non-Communicating Mode:</p> <p><i>NOTE: The on-board jumper DS-R (W914) will NOT be cut.</i></p> <p>The furnace control has not received 24VAC power for two minutes or more on the DS terminal</p> <ul style="list-style-type: none"> • The system will not operate. • Dealer has cut the W914 jumper (Dehum, Harmony III) on the Lennox furnace control. • The thermostat monitors the DS terminal in the furnace for power and if the link has been cut then power will be lost to DS. • If DS to R terminal is accidentally cut you must reconnect a jumper from the DS to R on the terminals strip. 	This alert code will clear when 24VAC is continuously sensed on DS terminal for a minimum of 10 seconds or on a power reset.
371		Service Soon/Service Urgent	AH Float Switch Sensed Open	After being active for 10 minutes (600 seconds) the service soon condition will change to Service Urgent.	Automatically clears after fault recovered.
380		Service Soon/Service Urgent	EIM Interlock Relay Fault	<p>Interlock relay failure (furnace or air handler modes only).</p> <ul style="list-style-type: none"> • Interlock relay is energized, but input is not sensed after three seconds. • There will be no heating or cooling due to this alert code – service soon condition. • De-energize interlock relay and energize after five minutes if demand is still present – service urgent. 	Automatically clears after fault recovered.
381		Service Urgent	EIM Interlock Relay Stuck	<p>Interlock relay stuck (furnace or air handler modes only).</p> <ul style="list-style-type: none"> • Interlock relay continuously sensed (with relay off). • There is no heating and cooling operation – moderation condition. • After 10 minutes if event still exist it will be escalated to priority condition service urgent. 	Automatically clears 30 seconds after fault clears.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
382		Service Urgent	EIM Relay W1 Fault	Relay W1 failure (furnace or air handler modes only). W1 relay is energized but input is not sensed after three seconds.	Automatically clears when W1 relay input is sensed.
400		Service Soon	OD LSOM Comp. Internal Overload Tripped	The compressor internal overload has tripped. <ul style="list-style-type: none"> • Thermostat demand Y1 is present; however compressor is not running. • Check power to unit. 	This alert code is automatically cleared after current is sensed in both RUN and START sensors for at least two seconds or after service is removed, or after power reset.
401		Information Only-Dealer	OD Compressor Long Run Cycle	Either the compressor ran for more than 18 hours continuously while attempting to cool the home during a single demand or the system refrigerant pressure is low. <ul style="list-style-type: none"> • Alert code will not lockout system. • If the two-stage outdoor unit has an outdoor control with flashing LED lights then the unit will run in low speed; • An outdoor control with a seven-segment display, the outdoor control will display alert code 401, but continue to run in high speed. • If the outdoor unit is a heat pump, and the outdoor temperature is less than 65°F, alert code 401 is ignored. • Also monitors low pressure switch trips. 	Automatically clears after 30 consecutive normal run cycles or power reset.
402		Service Soon	OD System Pressure Trip	<ul style="list-style-type: none"> • Either the discharge or suction pressure level is out-of-limits, or the compressor has overloaded. • Check discharge or suction pressure. 	Automatically clears after four consecutive normal compressor run cycles.
403		Service Soon	OD Compressor Short-Cycling	The compressor ran for less than three minutes to satisfy a thermostat demand.	Automatically clears after four consecutive normal compressor run cycles.
404		Service Urgent	OD Compressor Rotor Locked	The compressor rotor is locked up due to either: <ul style="list-style-type: none"> • Run capacitor short. • Bearings are seized. • Excessive liquid refrigerant. <p>NOTE: May need to install hard start kit.</p>	Automatically clears after four consecutive normal run cycles or after power reset.
405		Service Urgent	OD Compressor Open Circuit	The compressor circuit is open due to: <ul style="list-style-type: none"> • Power disconnection - • Open fuse 	Automatically clears after one normal compressor run cycle.
406		Service Urgent	OD Compressor Open Start Circuit	The required amount of current is not passing through the START current transformer.	Automatically clears after current is sensed in START sensor, or after power reset.

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407		Service Urgent	OD Compressor Open Run Circuit	The required amount of current is not passing through RUN current transformer.	Automatically clears after current is sensed in RUN sensor, one normal compressor run cycle, or after power reset
408		Service Urgent	OD Compressor Contactor Welded	The compressor is running continuously.	Automatically clears one normal compressor run cycle or after power reset.
409		Service Soon	OD Control Board Low 24VAC	The secondary voltage for the applicable system component has fallen below 18VAC. This may be due to: <ul style="list-style-type: none"> • Secondary voltage is below 18VAC. • If this continues for 10 minutes, the thermostat will turn off the applicable system component. 	Automatically clears after voltage is detected as higher than 20VAC for two seconds or after power reset.
410		Information Only-Dealer	OD Open Low Pressure Switch	Unit low pressure is below the required limit. <ul style="list-style-type: none"> • Check operating pressures. • Low pressure switch opens at a specific pressure (system shuts down) and closes at a specific pressure (system restarts). 	Automatically clears when the system detects that the issue no longer exists.
411		Service Urgent	OD Low Pressure Switch Strikes Lockout	The low pressure switch has opened five times during one cooling or heating demand. <ul style="list-style-type: none"> • Thermostat will shut down the outdoor unit. • Open low pressure switch error count reached five strikes. • Check system charge using both approach and sub-cooling methods. • Reset by putting outdoor unit control in test mode or resetting low voltage power. 	Automatically clears when the system detects that the issue no longer exists.
412		Information Only-Dealer	OD Open High Pressure Switch	The unit high pressure is above the upper limit. <ul style="list-style-type: none"> • System will shut down. • Confirm that the system is properly charged with refrigerant. • Check condenser fan motor, expansion valve (if installed), indoor unit blower motor, stuck reversing valve or clogged refrigerant filter. • Confirm that the outdoor unit is clean. 	Automatically clears after the high pressure switch closes or a power reset
413		Service Urgent	OD High Pressure Switch Strikes Lockout	The high pressure switch has opened five times during one cooling demand. <ul style="list-style-type: none"> • Thermostat will shut down the outdoor unit. • Open high pressure switch error count reached five strikes. • Check system charge using superheat and sub-cooling temperatures. • Check outdoor fan operation. • Check for dirt or debris blocking air flow to outdoor unit. • Reset by putting outdoor unit control in test mode or resetting low voltage power. 	Automatically clears when the system detects that the issue no longer exists.
414		Service Soon	OD High Discharge Line Temperature	The discharge line temperature is higher than the recommended upper limit of 279°F. <ul style="list-style-type: none"> • Discharge line temperature is greater than 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. 	Automatically clears after discharge temperature is less than 225°F.

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415		Service Urgent	OD High Discharge Line Temp Strikes Lockout	<p>The discharge line temperature has been consistently higher than the recommended upper limit of 279°F.</p> <ul style="list-style-type: none"> Discharge line high temperature error count reached five strikes during a single demand. Make sure coil is clean and airflow unobstructed in and out of condenser. Check system charge using superheat and sub cooling temperatures. Reset by putting outdoor control in test mode or resetting low voltage power. 	Correct issue and cycle power to the system.
416		Service Soon	OD Coil Sensor Faulty	<p>The outdoor coil sensor is either open, short-circuited or the temperature is out of sensor range.</p> <ul style="list-style-type: none"> Outdoor unit control will not perform demand or time / temperature defrost operation. (System will still heat or cool.) This fault is detected by allowing the unit to run for 90 seconds before checking sensor resistance. If the sensor resistance is not within range after 90 seconds, the control will display a moderate code. Advances from moderate to critical after ten (10) minutes. Plug-in sensor harness correctly. Check resistance of sensor to determine if it is open, shorted, out of temperature calibration or out of ambient temperature range. Replace if out-of-specifications. 	<p>Automatically clears when outdoor unit control detects proper sensor readings.</p> <p>If sensor is faulty and the system is reporting the condition as critical, replaced sensor. Reset power to clear alert code.</p>
417		Service Soon	OD Discharge Sensor Faulty	<p>System Detection and Operation:</p> <p>The outdoor unit discharge line temperature sensor is either open, short-circuited or the temperature is out of sensor range.</p> <ul style="list-style-type: none"> This fault is detected by allowing the unit to run for 90 seconds before checking discharge line sensor resistance. If the discharge sensor resistance is not within range after 90 second period, the control will display the priority condition as service soon. If the moderate condition continues for 10 minutes, the system changes the priority condition to service urgent. <p>Possible Causes:</p> <ul style="list-style-type: none"> The applicable system component detects either an open, shorted or temperature out of range condition. Discharge sensor leads located in wrong pin positions in harness plug-in connector. Refer to the applicable unit installation and service procedure and locate the terminal descriptions table to verify cable harness assembly wiring pin positions are correct. <p>Possible Solutions:</p> <ul style="list-style-type: none"> Check the resistance of the discharge sensor and compare to temperature resistance chart located in the applicable unit installation and service procedure. If sensor resistance is out of range then replace the discharge line temperature sensor. If discharge sensor wiring leads are located in the wrong connector pin-out then order a replacement cable assembly. 	<p>Moderate - Automatically clears after fault signal condition is no longer present.</p> <p>Critical - Power down the system component and either replace faulty sensor or cable assembly (whichever is applicable). Power up system component after replacing the applicable part which will clear the alert code / priority condition.</p>

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
418		Service Soon	OD EIM W Output Hardware Fault	<p>There is a faulty W output circuit.</p> <ul style="list-style-type: none"> • W terminal is energized while in cooling mode. • Possible cause may be a stuck closed relay on the control, or something external to the control that is energizing W terminal when it should not be energized. • Disconnect any wiring from the W terminal. • If 24VAC is still present on the terminal, then it is a stuck relay. • If 24VAC disappears, then there is a need to check any of the wires hooked up to the W terminal. 	Automatically clears after fault signal is removed.
419		Service Urgent	OD EIM W Output Hardware Fault Lockout	<p>The W output has reported more than five errors.</p> <ul style="list-style-type: none"> • The system will shut down the outdoor unit. • The W output (alert code 418) on the outdoor unit has reported more than five strikes. • Disconnect thermostat wire from W and verify there is no 24VAC on the W. • If 24VAC is present, replace the outdoor control. 	Automatically clears after power recycled.
420		Service Soon	AH EIM Defrost Out Of Cycle	<p>The heat pump defrost cycle has taken more than 20 minutes to complete.</p> <ul style="list-style-type: none"> • Defrost cycle lasts longer than 20 minutes. • Check heat pump operation. • This is applicable only in communicating indoor unit with non-communicating heat pump. 	Automatically clears when W1 signal is removed.
421		Service Urgent	OD EIM W External Miswire Fault	<p>The W output terminal on the outdoor unit is not wired correctly. Voltage sensed on W output terminal when Y1 out is deactivated.</p>	Automatically clears once voltage is not sensed on output or power is cycled.
422		Service Soon	OD Compressor Top Cap Switch Open	<p>Compressor top cap switch exceeding thermal limit.</p> <ul style="list-style-type: none"> • Check condenser fan motor, TXV and indoor unit blower motor. • Check for stuck reversing valve or clogged refrigerant filter. • XC/XP25: Check to ensure that one of the wires from the top cap switch has not been disconnected from one of the TP terminals on the outdoor control. Reconnect wire if disconnected. • Check superheat and sub-cooling. 	Automatically clears when error is corrected.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
423	40	Service Soon/Service Urgent	OD Inverter CT Circuit Fault	<p>The inverter has detected a circuit issue.</p> <ul style="list-style-type: none"> When this condition is detected the outdoor control will stop outdoor unit operations and start the anti-short cycle timer – service soon condition. Outdoor control will lockout unit after 10 strikes within an hour – service urgent condition. Inverter LEDs will flash code 40 Refer to the unit service documentation for troubleshooting procedures. <p>Inverter flash code 40:</p> <p>The sequence is: Red LED: Four Flashes Green LED: Off</p> <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	<p>A service soon alert code will clear automatically when the inverter detects the condition no longer exist and will send a clear alert code message.</p> <p>To clear service urgent alert code disconnect power to outdoor unit and restart.</p>
424		Service Soon	OD Liquid Line Sensor Faulty	<p>The liquid line temperature sensor has malfunctioned.</p> <ul style="list-style-type: none"> In normal operation after outdoor control recognizes sensors, the alert code will be sent if a valid temperature reading is lost. Compare liquid line sensor resistance to temperature / resistance charts in unit installation instructions. Replace sensor pack if necessary. At the beginning of (any) configuration, furnace or air handler control will detect the presence of the sensor(s). If detected (reading in range), appropriate feature will be set as 'installed' and shown in the thermostat 'About' screen. 	Automatically clears upon configuration, or sensing normal values.
426		Service Urgent	OD Excessive Inverter Alarms	<p>After 10 faults within 60 consecutive minutes, the control will lockout. Inverter will flash codes 12 to 14 and 53.</p> <p>NOTE: These inverter codes do not count towards this lockout condition.</p>	To clear disconnect power to outdoor control and restart

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
427	21	Service Soon/Service Urgent	OD Inverter DC Peak Fault	<p>The inverter has detected a DC peak fault condition.</p> <ul style="list-style-type: none"> • If condition (55A or higher) is detected, outdoor unit will stop (compressor and fan) – service soon condition. • Anti-short cycle is initiated. • If peak current (55A or higher) occurs 10 times within an hour, system will lockout – service urgent condition. • Inverter LEDs will flash code 21. • If the unit is a XP20 or XP25 variable capacity heat pump, this error may occur entering or exiting a defrost cycle as the compressor restarts after the 30 second compressor shift delay. If the unit was manufactured prior to serial number 5817F and has frequent alert code 427, then compare the inverter part number to the latest part number listed in the unit repair parts. Units produced after serial number 5817F which is listed on the unit name plate have an inverter with updated software that includes compressor current slope logic to reduce the potential of alert code 427 instances from occurring during defrost. Replace the inverter with the latest inverter if necessary. • Refer to the unit service documentation for detailed troubleshooting procedures. <p>NOTE: Serial number format on unit name plate is PYYMNNNNN (PP = Manufacturing Plant, YY and M represents the year and month made).</p> <p>Inverter flash code 21.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> • Red LED: Two Flashes • Green LED: One Flash <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	To clear, disconnect and reconnect power to outdoor control.
428	22	Service Soon/Service Urgent	OD Inverter High Main Input Current	<p>The inverter has detected a high main input current condition.</p> <ul style="list-style-type: none"> • If condition is detected, outdoor unit will stop (compressor and fan) – service soon condition. • Anti-short cycle is initiated. • If condition occurs 10 times within an hour, system will lockout – service urgent condition. • Inverter LEDs will flash code 22. • Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 22.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> • Red LED: Two Flashes • Green LED: Two Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	To clear, disconnect power to outdoor unit and restart.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
429	23	Service Soon/Service Urgent	OD Inverter DC Link Low Voltage	<p>The inverter has detected a DC link low voltage condition.</p> <ul style="list-style-type: none"> 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) – service soon condition. An anti-short cycle timer is initiated. If condition occurs 10 times within a 60 consecutive minutes, system will lock out and display alert code 429 – service urgent condition. The outdoor control anti-short cycle timer will time out and the unit will recycle the demand. Inverter LEDs will flash code 23. Refer to the unit service documentation for detailed troubleshooting procedures. Perform test function and verify inverter DC link and line input voltage and current. Also check input to filter board and reactor before replacing inverter board. To perform this test, go to menu > settings > advanced settings > view dealer control center > tests. <p>Inverter flash code 23.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> Red LED: Two Flashes Green LED: Three Flashes <p>NOTE: <i>Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</i></p> <p>Troubleshooting Suggestions:</p> <ul style="list-style-type: none"> Check wire connections (U, V and W) at inverter plug in harness and compressor. Check the resistance of compressor windings. If not in range, replace compressor. Check compressor to ground. If ground issue, replace compressor. Check input power (Single Phase - 208/230VAC ± 10%. If out of range, correct main power issue. Check DC Link voltage and MICOM Sensing voltage. If out of range, replace inverter. if okay, possible mechanical issue with compressor. <p>Go to outdoor unit service manual for detail troubleshooting procedures and require values for testing DC link voltages and various insulation resistance characteristics.</p>	Automatically clears when the system detects that the issue no longer exists.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
430	26	Service Soon/Service Urgent	OD Inverter Compressor Startup Fail	<p>Compressor start-up failure.</p> <ul style="list-style-type: none"> • If condition is detected, outdoor unit will stop (compressor and fan) – service soon condition. • Anti-short cycle is initiated. • If condition occurs 10 times within 60 consecutive minutes, the system will lockout – service urgent condition. • Inverter LEDs will flash code 26. • Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 26.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> • Red LED: Two Flashes • Green LED: Six Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p> <ul style="list-style-type: none"> • Check refrigerant • Replace outdoor control board • Replace inverter. 	To clear, disconnect power to outdoor unit and restart.
431	27	Service Soon/Service Urgent	OD Inverter PFC Fault	<p>The inverter has detected a PFC circuit over-current condition.</p> <ul style="list-style-type: none"> • Error occurs when PFC detects an over current condition of 100A peak. • If condition is detected, outdoor unit will stop (compressor and fan) – service soon condition. • Anti-short cycle timer is initiated. • If condition occurs 10 times within 60 consecutive minutes, the system will lockout – service urgent condition. • Inverter LEDs will flash code 27. • Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 27.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> • Red LED: Two Flashes • Green LED: Seven Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	To clear, disconnect power to outdoor unit and restart.

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GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
432	28	Service Soon/Service Urgent	OD Inverter DC Link High Voltage	<p>The inverter has detected a DC link high voltage condition.</p> <ul style="list-style-type: none"> • Error occurs when the DC link capacitor voltage is greater than 480 VDC. • If condition is detected, outdoor unit will stop (compressor and fan) – service soon condition. • Anti-short cycle timer is initiated. • If condition occurs 10 times within 60 consecutive minutes, the system will lockout – service urgent condition. • Inverter LEDs will flash code 28. • Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 28.,</p> <p>The sequence is:</p> <ul style="list-style-type: none"> • Red LED: Two Flashes • Green LED: Eight Flashes <p>NOTE: <i>Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</i></p> <p>Troubleshooting Suggestions:</p> <ul style="list-style-type: none"> • Check wire connections (U, V and W) at inverter plug in harness and compressor. • Check the resistance of compressor windings. If not in range, replace compressor. • Check compressor to ground. If ground issue, replace compressor. • Check input power (Single Phase - 208/230VAC ± 10%. If out of range, correct main power issue. • Check DC Link voltage and MICOM Sensing voltage. If out of range, replace inverter. if okay, possible mechanical issue with compressor. <p>Go to outdoor unit service manual for detail troubleshooting procedures and require values for testing DC link voltages and various insulation resistance characteristics.</p>	To clear, disconnect power to outdoor unit and restart.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
433	29	Service Soon/Service Urgent	OD Inverter Compressor Over-current	<p>Compressor phase current is too high.</p> <ul style="list-style-type: none"> • During initial startup, a six minute time delay is implement to prevent the alarm from occurring. • Error occurs when compressor peak phase current is greater than 28 amps. • Inverter will issue inverter code 14 first and slow down to try to reduce the current. • If the current remains high, outdoor unit will stop (compressor and fan) – service soon condition. • Cycle timer is initiated. • If condition occurs five times within 60 consecutive minutes, the system will lockout – service urgent condition. • This alert code may be triggered by the inverter or the Lennox variable capacity outdoor (inverter controlled) unit. • Lennox outdoor control may trigger an this alert code if the inverter reduces the compressor speed which is identified as a alert code 441 and the compressor speed (in hz) is below the minimum speed. This will typically occur at start-up. The inverter automatically increases the compressor minimum speed below 45°F in the heating mode and above 115°F ensure the compressor capacity is sufficient for oil return. If alert code 433 occurs and inverter does not indicate an inverter code 29, the Lennox communicating Lennox outdoor control triggered the alert code 433. <p>> Check the Lennox outdoor control software version by accessing the outdoor unit diagnostics section of the iComfort communicating thermostat. The Lennox outdoor control with software versions 1.27 and later have updated software that includes a six minute time delay during the cooling mode and a 11 minute delay during the heating mode after receiving an alert code 433, which typically occurs during start-up.</p> <p>> If the system is connected to the Internet, the Lennox outdoor control can be updated over the Internet. Make sure the software “auto update” is enabled. The software “auto update” can be toggled to prompt the Lennox server to update the thermostat which will update the Lennox outdoor control. If the system is not connected to the Internet, replace the Lennox outdoor control with catalog number 17D27 or newer version.</p> <ul style="list-style-type: none"> • Inverter LEDs will flash code 29. • Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 29.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> • Red LED: Two Flashes • Green LED: Nine Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	To clear alert code disconnect power to both the indoor and outdoor units and then reconnect power. Restart system.

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
434	53	Service Soon/Service Urgent	OD Inverter Comm Error to Main Control	<ul style="list-style-type: none"> Outdoor control has lost communications with the inverter continuously during a single thermostat call and one hour period. Outdoor control will stop all compressor demands – service soon condition. Indoor blower will stop functioning. <p>NOTE: Indoor blower will not run in test mode either when alert code 434 is active. Only after system reset will it operate.</p> <ul style="list-style-type: none"> This alert code will occur if the outdoor unit power is turned off and the indoor unit power (24VAC to Lennox outdoor control) remains on, or if the indoor unit power is turned off (24VAC to Lennox outdoor control) and the outdoor unit power is on. This could occur while performing service or maintenance procedures on the indoor or outdoor unit. The Lennox outdoor control will attempt to re-establish communication to the inverter when the alert code 434 occurs by cycling the outdoor unit contactor off for two minutes. Upon energizing the contactor the Lennox outdoor control will attempt to communicate to the inverter for three minutes. This process will be repeated three times in attempt to establish communication before locking out. If the unit is locked out with a service soon alert code 434, reset the system by cycling the outdoor unit power off and back on. Then cycle the indoor power off (24VAC to the Lennox outdoor control) and then back on. If this condition continuously occurs during a one hour period and during a single thermostat call, the outdoor unit will lock out and display alert code 434 – service urgent condition. <p>Troubleshooting Options:</p> <ul style="list-style-type: none"> Check for loose or disconnected electrical connections. Interruption of main power to inverter. Inverter LEDs will flash code 53. Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 53.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> Red LED: Five Flashes Green LED: Three Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF</p>	<p>Automatically clears when the system detects that the issue no longer exists.</p> <p>If the unit is locked out with a service urgent alert code 434, reset the system by first cycling the outdoor unit power off and back. Then cycle the indoor power off (24VAC to the Lennox outdoor control) and then back on.</p>

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
435	60	Service Soon/Service Urgent	OD Inverter EEPROM Checksum fault	<p>Inverter internal error.</p> <ul style="list-style-type: none"> When this error occurs, the outdoor control will cycle power to the inverter by opening the contactor for two minutes – service soon condition. Outdoor control will cycle power to the inverter three times and then outdoor unit is locked out – Service Urgent condition. Inverter LEDs will flash code 60. Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 60.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> Red LED: Six Flashes Green LED: Off <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	To clear alert code disconnect power to outdoor unit and restart.
436	62	Service Soon/Service Urgent	OD Inverter High Heat-Sink Temperature	<p>Inverter heat sink temperature exceeded limit.</p> <ul style="list-style-type: none"> This occurs when the heat sink temperature exceeds the inverter limit. Inverter will issue inverter alert code 13 first and slow down to try to cool the heat sink. If temperature remains high, outdoor unit will stop both compressor and fan – service soon condition. Anti-short cycle is initiated. If condition occurs five times within an hour, system will lockout – service urgent condition. The screws that hold the inverter to the inverter board were loose causing poor contact between these two components. Tighten screws that hold the heat sink to the inverter control board. <p>NOTE: Wait five minutes for all capacitors to discharge before checking screws.</p> <ul style="list-style-type: none"> Inverter LEDs will flash code 62. Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 62.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> Red LED: Six Flashes Green LED: Two Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	<p>Service soon condition will automatically clear when the inverter sends an alert code clear message.</p> <p>Service urgent condition is cleared by disconnecting power to the outdoor unit and restart.</p>

Table 13. Alert Codes and Troubleshooting

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
437	65	Service Soon/Service Urgent	OD Inverter Heat-Sink temp Sensor Fault	<p>Heat sink temperature sensor fault has occurred (temperature less than 4°F or greater than 264°F after 10 minutes of operation).</p> <ul style="list-style-type: none"> When the temperature sensor detects a temperature less than 4°F or greater than 264°F after 10 minutes of operation. Outdoor unit will stop both compressor and fan – service soon condition. Anti-short cycle is initiated. If condition occurs five times within an hour, system will lockout – service urgent condition. Inverter LEDs will flash code 65. Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 65.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> Red LED: Six Flashes Green LED: Five Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	<p>Service soon priority condition will automatically clear when the inverter sends an alert code clear message.</p> <p>Service urgent priority condition can be cleared by disconnecting and reconnecting power to outdoor unit to restart.</p>
438	73	Service Soon/Service Urgent	OD Inverter PFC Input Over-current	<p>The inverter has detected a power factor correction (PFC) circuit over-current condition.</p> <ul style="list-style-type: none"> The inverter has detected an PFC over current condition. This may be caused by a high load condition, high pressure, or outdoor fan failure. Outdoor control will display the code when the inverter has detected the error – service soon condition. After three minutes, the inverter will reset and the compressor will resume operation. If the error condition occurs 10 times within a 60 minute rolling time period, the outdoor unit control will lock out operation of the outdoor unit – service urgent condition. Possible issue is system running at high pressures. Check for high pressure trips or other alert codes in thermostat and outdoor control. Inverter LEDs will flash code 73. Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 73.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> Red LED: Seven Flashes Green LED: Three Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and Green LED is OFF.</p>	<p>Service soon priority condition is automatically cleared when the inverter sends a clear message.</p> <p>Service urgent priority condition will automatically clear when inverter is power cycled.</p>

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
440	13	Information Only-Dealer	OD Inverter Compressor Slowdown - High Heat-Sink temperature	<p>Compressor slowdown due to high heat sink temperature.</p> <ul style="list-style-type: none"> 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. The screws that hold the inverter to the inverter board may be loose causing poor contact between these two components. Tighten screws that hold the heat sink to the inverter control board. <p>NOTE: Wait five minutes for all capacitors to discharge before checking screws.</p> <ul style="list-style-type: none"> This error code is primarily for informational purposes as the inverter controls the compressor speed to operate within design parameters. Typically the inverter will make a minor speed reduction of 4 Hz (approximately a 5-6% speed reduction) for a brief period of time and to reduce the heat sink temperature and will then resume normal operation. This may occur at high outdoor temperatures (above 110°F) for brief periods of time (3 – 4 minutes) and is normal and expected operation of the inverter controlling the compressor safely within design parameters. The inverter finned aluminum heat sink is located on the back side of the inverter in the condenser air stream. If the alert code 440 occur frequently, especially at lower outdoor temperatures, check the heat sink for debris that may reduce heat transfer or possible obstructions that may impact air flow across the heat sink. The inverter will begin to briefly reduce the compressor speed when the heat sink temperature rises above 185°F and will allow the inverter to resume the requested compressor demand speed once the inverter heat sink reaches 176°F. The heat sink temperature, compressor speed in Hertz & the Inverter Compressor Speed Reduction status (“On” or “Off”) notification can be viewed under the outdoor unit Diagnostics section of the thermostat dealer control center. Inverter LEDs will flash code 13. Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 13.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> Red LED: One Flash Green LED: Three Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and green LED is OFF.</p>	Automatically clears when the condition no longer exists.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
441	14	Information Only-Dealer	OD Inverter Compressor Slowdown - High Compressor Current	<p>This alert code is for more information than an issue with the system.</p> <ul style="list-style-type: none"> When the inverter gets close to the current or heat sink temperature limit, it will limit the ramp rate. Instead of changing compressor speed at 1 hz/second, it changes to 5 hz/20 seconds. Compressor slowdown due to high compressor current. Compressor current is approaching limit. The compressor speed automatically slows. This error code is primarily for informational purposes as the inverter controls the compressor to operate within design parameters. Alert code 441 typically occurs at startup as the compressor current increases rapidly during startup. The inverter will reduce the compressor speed by 4 Hz and slow the compressor ramp up speed to the requested compressor demand speed (capacity). This is normal and expected operation of the inverter to control the inverter within design parameters. In most cases the alert code 441 notification does not require any additional service or diagnostic procedures. The control sets indoor CFM and outdoor RPM to values according to demand percentage rather than the actual Hz. Possible issue is system running at high pressures. Check for high pressure trips or other alert codes in thermostat and outdoor control. Inverter LEDs will flash code 14. Refer to the unit service documentation for detailed troubleshooting procedures. <p>Inverter flash code 14.</p> <p>The sequence is:</p> <ul style="list-style-type: none"> Red LED: One Flash Green LED: Four Flashes <p>NOTE: Inverter normal operations with no error code present is as follows. Red LED is ON and green LED is OFF.</p>	Automatically clears when the condition no longer exists.
442		Service Urgent	OD Compressor Top Cap Switch Strikes Lockout	<p>The top cap switch has opened five times within one hour. As a result, the outdoor unit is locked out.</p> <ul style="list-style-type: none"> This condition occurs when compressor thermal protection sensor opens five times within one hour. Outdoor unit will stop. 	To clear, disconnect power to outdoor unit and restart.
443		Service Urgent	OD MUC Unit Code To Inverter Model Mismatch	<p>The Lennox variable capacity unitary control (outdoor control) has incorrect appliance unit size code selected.</p> <ul style="list-style-type: none"> Check for proper configuring under unit size code used for outdoor unit (see unit configuration guide or in installation instructions). If replacing inverter, verify inverter model matches unit size. Remove the thermostat from the system while applying power and reprogramming. 	Automatically clears after the correct match is detected following a power reset.
444		Service Urgent	HP Reversing Valve Relay Or Solenoid Fault	Relay failure. Verify by call for heat pump heating. Check for 24VAC out from O .	Replace Outdoor Unit Control Board

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Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
446		Service Soon/Service Urgent	OD Low Suction Pressure Fault	Suction pressure < 40 psig in operation. Error code initially will be a service soon and will escalate to service urgent and stop system operation after five-strikes during a single thermostat demand. Recommend replacement of low pressure switch.	Recommend replacement of low pressure switch.
500		Service Soon	PA Differential Pressure Sensor Fault	<ul style="list-style-type: none"> Pressure sensor reports a fault for more than 5 minutes, or does not respond for more than 5 minutes. Device will not perform any pressure reading calculations until fault is recovered. Remaining filter life display will indicate “-“ while fault exists. 	Automatically clears 30 seconds after fault is recovered.
501		Service Soon	PA UV Sensor Fault	<ul style="list-style-type: none"> Ultra-violet (UV) sensor reports a fault for more than five minutes or UV sensor does not respond for more than 5 minutes. Device will not perform any UV lamp life remaining calculations until fault has recovered. Life remaining display shall indicate “-“ while fault exists. 	Automatically clears 30 seconds after fault is recovered.
502		Service Soon	PA UV Lamp Off	The light is determined to be off when the last three last light intensities measurements are below the set threshold.	Light is determined on after 1 set of five samples are above the set threshold.
503		Service Soon	PA Filter Life At 10%	Filter life remaining determined to be <=10%, but greater than 0%.	None. Replace and reset filter.
504		Service Soon	PA Filter Life At 0%	Filter life remaining determined to be 0%.	None. Replace and reset filter.
505		Service Soon	PA Model Selection Changed	Model Selection jumper has changed positions.	Jumper repositioned back to original jumper position or system rebooted.
506		Service Soon	PA Lamp At 0% life	Ultra violet lamp life is at 0%.	None. Replace and reset filter.
507		Service Soon	PA Filter Calibration Failure	<ul style="list-style-type: none"> Filter calibration determined failed due to all test cfm static pressures reading <= 7 Pa. Send alert code immediately. No filter tests or life calculation occur while this alert code is active. 	None. Replace and reset filter.
530		Service Soon	ZS Low Damper 24VAC Voltage	<ul style="list-style-type: none"> Check 24VAC voltage to all dampers. Check 24VAC damper transformer. Check connections. 	Replace transformer if applicable.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
532		Information Only-Dealer	ZS Zoning Pressure Switch Opened (High Pressure)	<p>Zoning Pressure Switch Opened (high pressure).</p> <ul style="list-style-type: none"> Compressor pressure is above the specified limit. Compressor is turned off. Zoning will be restored once the high pressure switch closes. <p>Occasionally we get this with an AC system and the fix is to just jump out the pressure switch terminals on the damper control module board.</p>	Automatically clears after compressor pressure is within limits.
542		Service Soon	ZS Zone 1 Temp Sensor Fault	<p>Possible Causes:</p> <ul style="list-style-type: none"> Zone temperature sensor reading out of range. Check for loose or incorrectly wired connections at the zone sensor or damper control module terminals. Open or short zone temperature sensor detected for more than five second. More than one zone sensor has the same assigned zone number. Check zone sensor(s) zone number assignment. <p>System Response:</p> <ul style="list-style-type: none"> Both types of zone sensors will display "--" as the indoor temperature on the main screen. Damper control module will operate in central mode (all dampers open) in both moderate and critical priority conditions. If after 10 minutes the condition does not change, the applicable alert code (542, 543, 544 or 545) is escalate by the Lennox communicating thermostat to service urgent. System will continue to operate in central mode. At the Lennox communicating thermostat, only zone 1 screen will be available. <p>NOTE: The Lennox communicating thermostat will display the alert code as "Problem (Zoning Control)". Email notifications will describe the issue as "Zone "X" Temp Sensor Problem."</p>	Automatically clears 30 seconds after condition no longer exist.
543	Service Soon	ZS Zone 2 Temp Sensor Fault			
544	Service Soon	ZS Zone 3 Temp Sensor Fault			
545	Service Soon	ZS Zone 4 Temp Sensor Fault			
546		Service Soon	ZS Parameters resetting from restored power	<p>An EEPROM is a memory device that stores and remembers the information even after power has been removed from the device. It saves settings that the user might have selected like to desired heating and cooling temperatures. When power is removed and then comes back on, the zone sensors (or thermostat for zone 1) remembers what the users setting were. Code 546 is given if the zone sensor notices that the EEPROM has an issue right after power is first applied. The system will set itself to energy save mode and continue to operation</p>	Zone sensor will have to be replaced.
547		Service Soon	ZS Parameters resetting from system interruption	<p>An EEPROM is a memory device that stores and remembers the information even after power has been removed from the device. It saves settings that the user might have selected like to desired heating and cooling temperatures. When power is removed and then comes back on, the zone sensor remembers what the users setting were. Code 547 is given if the zone sensor notices that the EEPROM has an issue sometime later after the product has been on for a while. It will not raise the issue until it needs to again read from the EEPROM memory when it is first powering to retrieve the necessary information. System will operate in a normal mode operator until power off.</p>	Zone sensor will have to be replaced.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
548		Service Soon	ZS Humidity Sensor Error	Without humidifiers or dehumidifiers, sensor reads out of range 0% to 100%. This message indicates humidity sensor has malfunctioned.	Zone sensor will have to be replaced or if sensor auto corrects itself the alert will be automatically cleared and system will return to normal operations.
551		Service Soon	ZS Zone Sensor Lost Communication	Any lost communication between any zone sensor and the damper control module will result in applicable alert code(s) being displayed (543, 544 or 545) at the thermostat. <ul style="list-style-type: none"> • A pop-up display on the thermostat will appear indicating a communication error. • Indoor temperature for the specific zone in error will displayed as "--" on the home screen. • When any zone sensor loses communication with the damper control module, the entire system will go into central mode (single temperature control). Check for loose, damage or incorrect wiring between damper control module and the zone sensor reporting alert code 551.	Once communication is reestablished the zone sensor will return to normal zone operations.
600		Information Only-Dealer	Load Shed Event	Compressor has been cycled OFF on utility load shedding. <ul style="list-style-type: none"> • Load shedding function provides a method for a local utility company to limit the maximum power level usage of the outdoor unit. • The feature is activated by applying 24VAC power across the L and C terminals on the outdoor control 	Automatically clears when L terminal is inactive.
601		Information Only-Dealer	OD Unit Low Ambient Operational Lockout	<ul style="list-style-type: none"> • Outdoor unit has been cycled off on low temperature protection. • Outdoor unit will not operate when the outdoor ambient is at or below 4°F (-15.6°C). • If the unit is satisfying a demand (running) and the outdoor ambient drops below 4°F (-15.6°C), the unit will continue to operate until the demand has been satisfied or the outdoor ambient drops to 15°F (-9.4°C) which will result in the unit being locked out (shut down). 	Automatically clears when low temperature condition no longer exists.
610		Service Urgent	Low Room Temperature Detected	This alert will automatically notified the user that a low room temperature condition exist. A notification is displayed on the HD display and email notification sent to homeowner and dealer. The freeze alert protection parameter range is 30°F to 50°F (-1.11 to 10.0°C). Default is 40°F (4.44°C). NOTE: Notification is dependent on the thermostat having a active Wi-Fi connection and the user account has been setup and includes a valid email address.	Automatically clears when condition is resolved.
611		Service Urgent	High Room Temperature Detected	This alert will automatically notified the user that a high room temperature condition exist. A notification is displayed on the HD display and email notification sent to homeowner and dealer. The heat alert protection parameter range is 80°F to 100°F (26.67 to 37.78°C). Default is 90°F (32.22°C). NOTE: Notification is dependent on the thermostat having a active Wi-Fi connection and the user account has been setup and includes a valid email address.	Automatically clears when condition is resolved.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
700		Service Urgent	Thermostat Temp Sensor Problem	<p>The HD display's internal temperature sensor is not operating correctly. To resolve this issue, try the following:</p> <ul style="list-style-type: none"> Remove HD display from mag-mount and reattaching. Seal hole in wall behind mag-mount to minimize exposure to unconditioned air from inside the wall. Run "reset all" under dealer control center. If issue persist, then replace the HD display. 	Automatically clears when the system detects that the issue no longer exists.
701		Service Urgent	Thermostat Temp Above Limit	<p>The thermostat is reading indoor temperatures above the pre-programmed limit. The thermostat has a built-in non-adjustable high limit of 99°F.</p> <ul style="list-style-type: none"> Cool thermostat. Adjust set point. Run reset all under dealer control center. Replace HD display or mag-mount, if needed. 	Automatically clears when the system detects that the issue no longer exists.
703		Service Soon	Thermostat Humid Sensor Problem	Thermostat Humid Sensor Problem. Sensor is damaged or data is corrupted possibly..	First try a system reset, then if persists the thermostat would need replacement.
900		Service Soon (moderate)	Temperature Control Problem	Something is causing the system not to be able to reach set point. Check for dirty coil, low refrigerant or verify the system is not under size for the application.	Automatically clears when the system detects that the issue no longer exists.
901		Service Soon (moderate)	Smart Alert Modes: Heating & Cooling	<p>This feature is disabled by default. Go to dealer control center and enable feature under Smart Hub.</p> <p>This alert occurs when temperature consistently diverges away from set-point in the following two conditions:</p> <ul style="list-style-type: none"> When system is running high stage/full speed. When the system is not providing demand when there is a call for one. Typically when system locked out. <p>The cooling capacity alert doesn't work in zoning.</p>	If alert code exist must be manually cleared by resetting power.
3000		Maintenance	Replace Filter 1	Not Applicable	Reset filter reminder for both
3001		Maintenance	Replace Filter 2	Not Applicable	

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
3002		Maintenance	Replace Humidifier Pad	Not Applicable	Reset Humidifier pad reminder
3003		Maintenance	Replace UV Bulb	Not Applicable	Reset UV Light reminder
3004		Maintenance	Maintenance Reminder	Not Applicable	Make service appointment with dealer and reset reminder
3005		Maintenance	Pure Air Maintenance	Not Applicable	Make service appointment for Pure Air maintenance with dealer and reset reminder
65537		Service Urgent	Missing Base	<ul style="list-style-type: none"> Base not detected and alarm 65538 has been raised over 30 times. Amber LED is displayed on smart hub. Mount and wire mag-mount before powering up smart hub. 	Automatically clears once is detected for two seconds.
65538		Information Only-Dealer	Missing Base	<ul style="list-style-type: none"> Base not detected for at least 30 seconds. Amber LED is displayed on smart hub. Mount and wire mag-mount before powering up smart hub. 	Automatically clears once is detected for two seconds.
65539		Service Urgent	Thermostat Lost Connection Or Internal Fault	<ul style="list-style-type: none"> HD wall display not detected for more than 30 seconds. Solid blue LED will appear on mag-mount if powered. Only on versions with mag-mount. Flashing blue LED will appear if not communicating with smart hub. Only on versions with mag-mount. Typically the thermostat will send a command to the unknown device and place it in a soft disable state. <p>The Lennox communicating control with the soft disable state will indicate so as follows:</p> <ul style="list-style-type: none"> On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. On the damper control module, the green LED will flash 3 seconds on and 1 second off. On the equipment interface module, the green LED will flash 3 seconds on and 1 second off. <p>Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.</p>	Automatically clears once is detected for two seconds.

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
65540		Information Only-Dealer	Missing HD wall display	<ul style="list-style-type: none"> • HD wall display not detected for less than 30 seconds. • Solid blue LED will appear on mag-mount if powered. Only on versions with mag-mount. • Blinking blue LED will appear if not communicating with smart hub. Only on versions with mag-mount. • Typically the thermostat will send a command to the unknown device and place it in a soft disable state. <p>The Lennox communicating control with the soft disable state will indicate so as follows:</p> <ul style="list-style-type: none"> • On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink three seconds on and one second off. • On the equipment interface module, the green LED will blink three seconds on and one second off. <p>Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.</p>	Automatically clears once is detected for two seconds.
65541		Information Only-Dealer	Download Failed	<ul style="list-style-type: none"> • Download for firmware failed. • Typically the thermostat will send a command to the unknown device and place it in a soft disable state. <p>The Lennox communicating control with the soft disable state will indicate so as follows:</p> <ul style="list-style-type: none"> • On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink three seconds on and one second off. • On the equipment interface module, the green LED will blink three seconds on and one second off. <p>Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.</p>	Not applicable.
65542		Information Only-Dealer	Update Failed	<ul style="list-style-type: none"> • Has verification failed. Update failed. • Solid blue LED will appear on mag-mount if powered. Only on versions with mag-mount. • Blinking blue LED will appear if not communicating with smart hub. Only on versions with mag-mount. • Typically the thermostat will send a command to the unknown device and place it in a soft disable state. <p>The Lennox communicating control with the soft disable state will indicate so as follows:</p> <ul style="list-style-type: none"> • On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink three seconds on and one second off. • On the equipment interface module, the green LED will blink three seconds on and one second off. <p>Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.</p>	<p>Not applicable.</p> <p>Automatically clears once is detected for two seconds.</p>

Table 13. Alert Codes and Troubleshooting

GF= Gas Furnace, AH=Air Handler, ID=Indoor unit (GF or AH), HP=Heat Pump, AC=Air Conditioner, OD=Outdoor Unit (AC or HP), PA=Pure Air S, ZA=Zone system and TS=Thermostat					
Alert Code	Inverter Flash Code	Priority Condition	Actual Displayed Alert Text Under dealer control center > Notifications	Component or System Operational State and Troubleshooting Tip	How to clear alert code
65543		Information Only-Dealer	Firmware Updated	<ul style="list-style-type: none"> When new firmware has been successfully updated to the thermostat. Typically the thermostat will send a command to the unknown device and place it in a soft disable state. <p>The Lennox communicating control with the soft disable state will indicate so as follows:</p> <ul style="list-style-type: none"> On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. On the damper control module, the green LED will flash 3 seconds on and 1 second off. On the equipment interface module, the green LED will flash 3 seconds on and 1 second off. <p>Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.</p>	Clears automatically after successfully update.
65544		Information Only-Dealer	More Than 8 Tstats In A Group	<p>The system is limited to no more than eight (8) smart hubs assigned to one group. You can have up to nine groups (1-9) with five smart hubs assigned to each. If you have more than 8 smart hubs assigned to a single group, then alert code 65544 will be displayed.</p> <p>If you DO NOT exceed the five smart hubs per group limitation, you will NOT get an alert code 65544.</p> <p>EXAMPLE: <i>If you had two groups with six smart hubs assigned to each group, then you would get each minute twelve alert code 65544 notifications.</i></p>	Once the system detects that only five or less smart hubs are detected in one group will the alert code automatically clears.
65545		Service Soon	Cooling Capacity Alert	<p>Cooling operation may not be sufficient for the hottest days. Based on local conditions and climatological data for zip code.</p> <p>EXAMPLE: <i>Dirty Filter, Low refrigerant charge, TXV, etc. Symptom during mild temperatures may include; system running longer than normal but not showing any other symptoms.</i></p>	Auto cleared on next prediction
--		Service Soon	--	<p>Possible loose or mis-wired connections or two zone sensors are assigned the same zone number. Two dashes will be displayed on the S30 thermostat for indoor temperature and/or zone sensor. The system will go into central mode. Individual zone functions is disabled. Anytime the zone sensor loses communication with the damper control module, the entire system will go into central mode. If two sensors are assigned the same zone number, this could result in the double dashes to appear as well.</p>	If two zone sensors are assigned the same zone number, this could cause the double dashes to appear. If loose or mis-wired connection was confirmed, correct the issue and run the re-configuration procedure.

4. Electrical Troubleshooting

4.1. Overview

The purpose of the service and application note is to address electrical troubleshooting of various connections between Lennox communicating equipment and the applicable expected voltages. Use these voltages to:

- Resolve double dashes on in-zone sensors.
- Determine whether the wire is bad or the device is faulty.
- Determine which wire is bad in the bundle.
- Resolve “missing outdoor unit”.
- Resolve “can’t find Lennox communicating indoor unit”.

4.2. Definitions

- **Naked** = control has no wires on it at all
 - **Loaded** = voltage from **c** to **i-** / **i+** when all four wires are on
 - **Landed** = voltage from **c** to **i-** / **i+** without **r** wired on board
 - Transformer voltage is specific and best with three decimal places. For example 28.316
 - » Thousandths always bounces and is okay.
 - » Hundredths can bounce but not wide range
 - » Tenths should never bounce
1. If it does almost every time it is a float switch that is breaking **r** to the thermostat
 2. Complaint of system waiting
 3. History of active Alert Codes 105 and 120.
 4. Codes not related to equipment
 5. Blank screens
 6. Wi-Fi will not stay connected.

4.3. iComfort® S30 (Smart Hub 1.0)

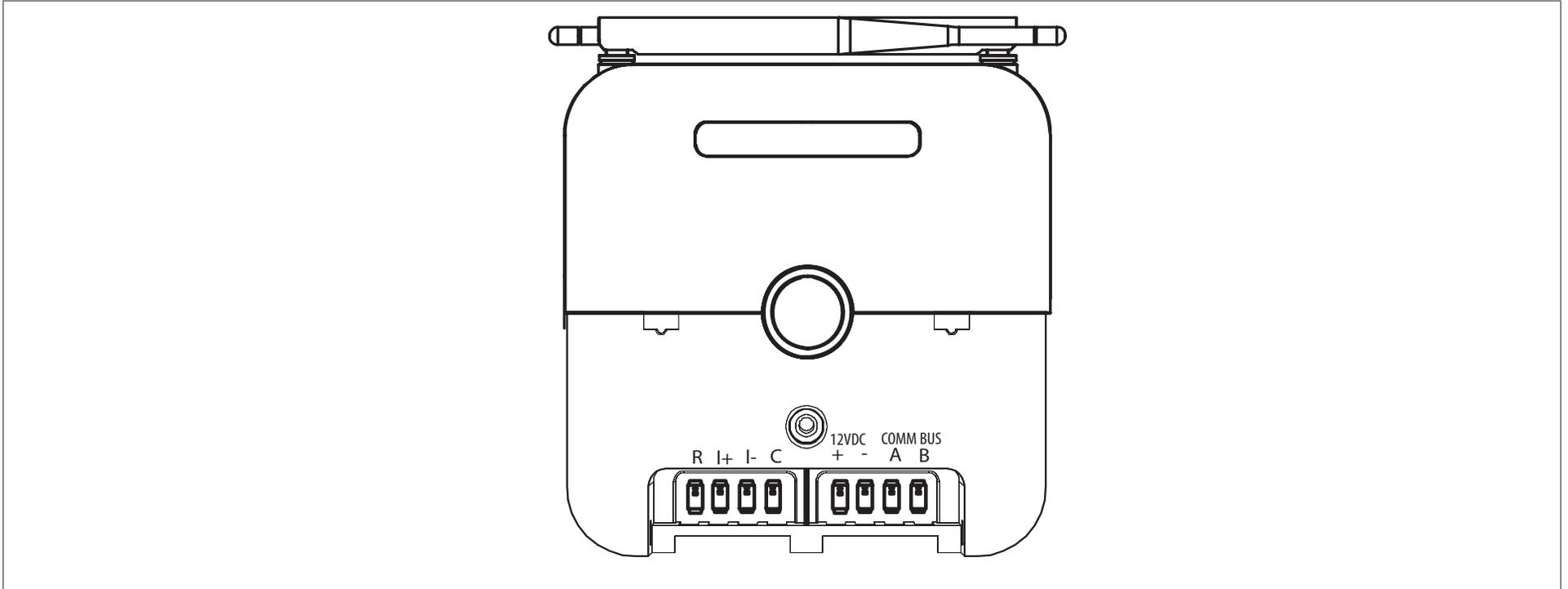


Figure 1. iComfort® S30 smart hub 1.0

TESTING:

- **Naked** = Control has no wires on it at all
- **Loaded** = Voltage from **c** to **i-** / **i+** when all four wires are ON
- **Landed** = Voltage from **c** to **i-** / **i+** without **r** wired on control.

Most Common Readings (S30 smart hub 1.0 Power and Communication Terminals)

Terminals	Naked	Landed
I+ to C	3.5 VDC (I+ naked)	2.5 VDC
I- to C	1.5 VDC (I- naked)	2.5 VDC

Most Common Readings (S30 smart hub 1.0 Mag Mount Power and Communication Terminals)

Terminals	Voltage Reading
12 VDC + to -	12.4 VDC
12 VDC - to COMM BUS A	1.74 VDC
12 VDC - to COMM BUS B	1.74 VDC

4.4. iComfort® S30 (Smart Hub 2.0 and 3.0)

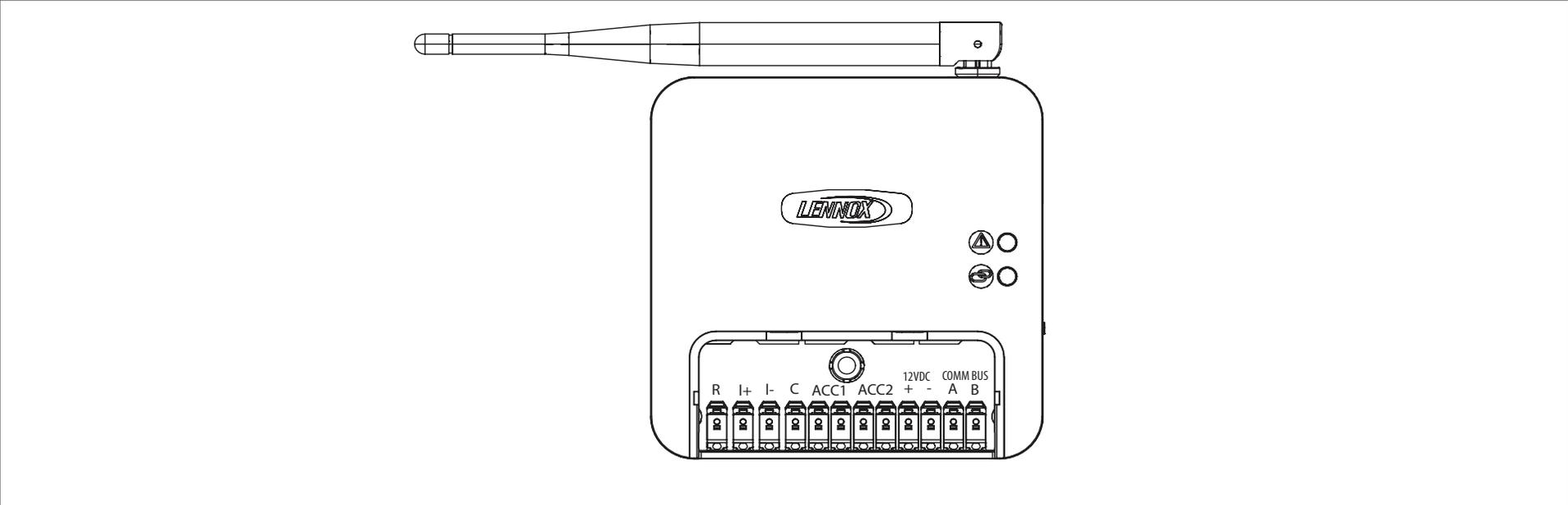


Figure 2. iComfort® S30 Smart Hub 2.0

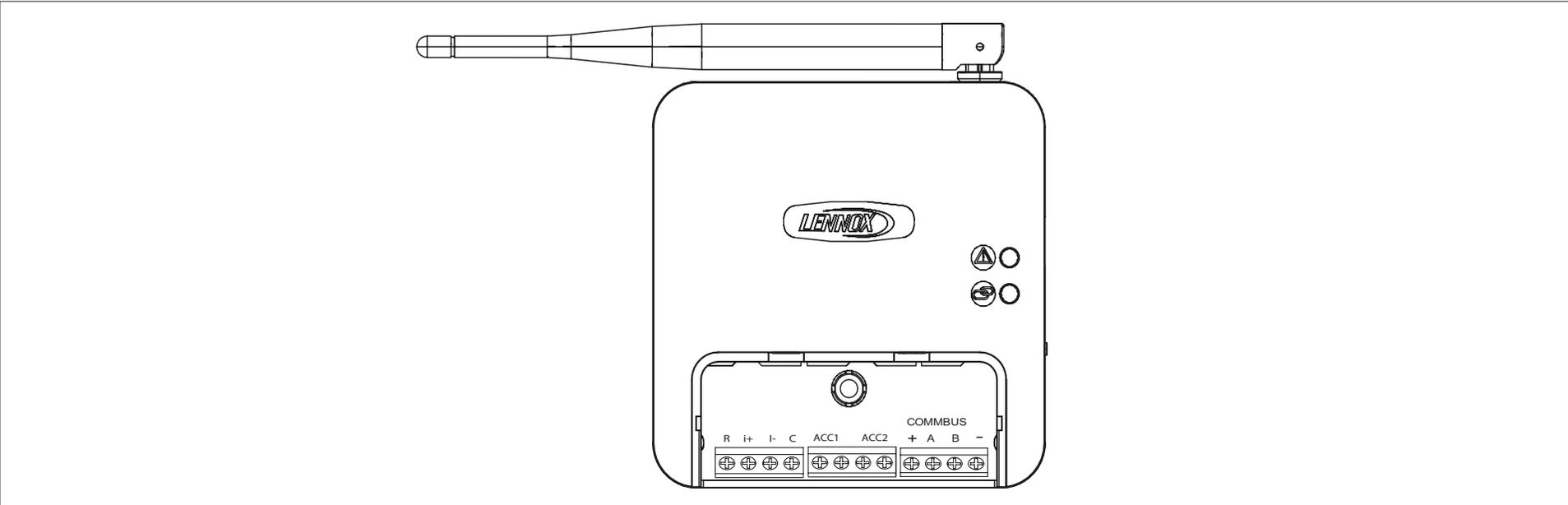


Figure 3. iComfort® S30 Smart Hub 3.0

4.5. iComfort® E30 (Smart Hub 1.0 and 2.0)

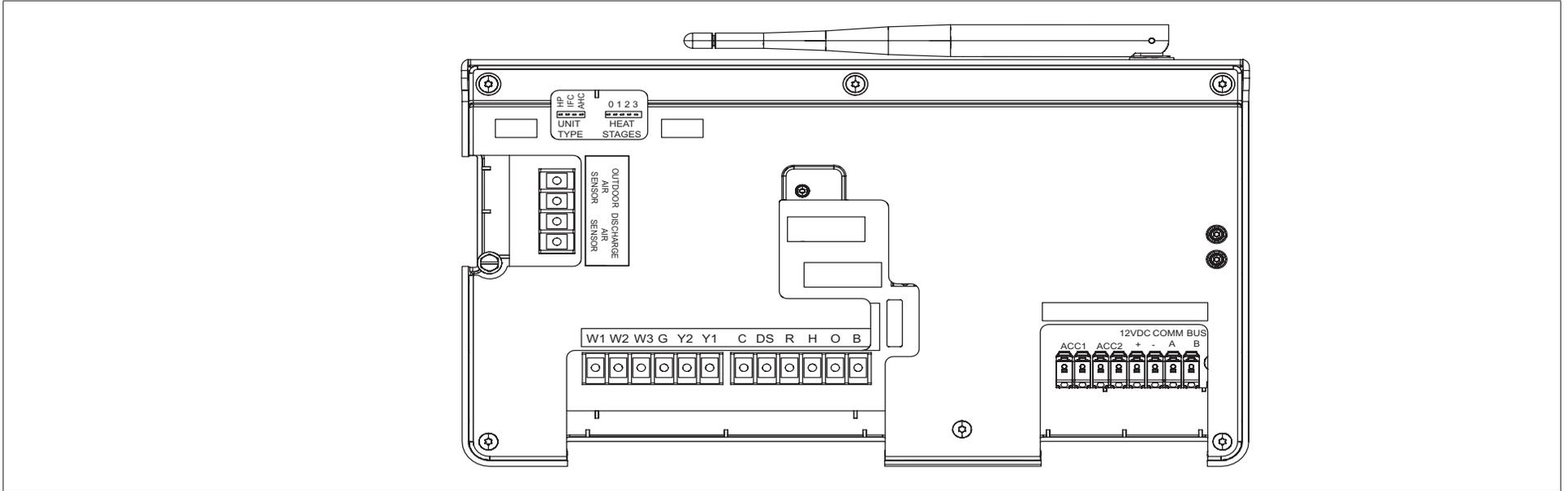


Figure 4. iComfort® E30 Smart Hub 1.0

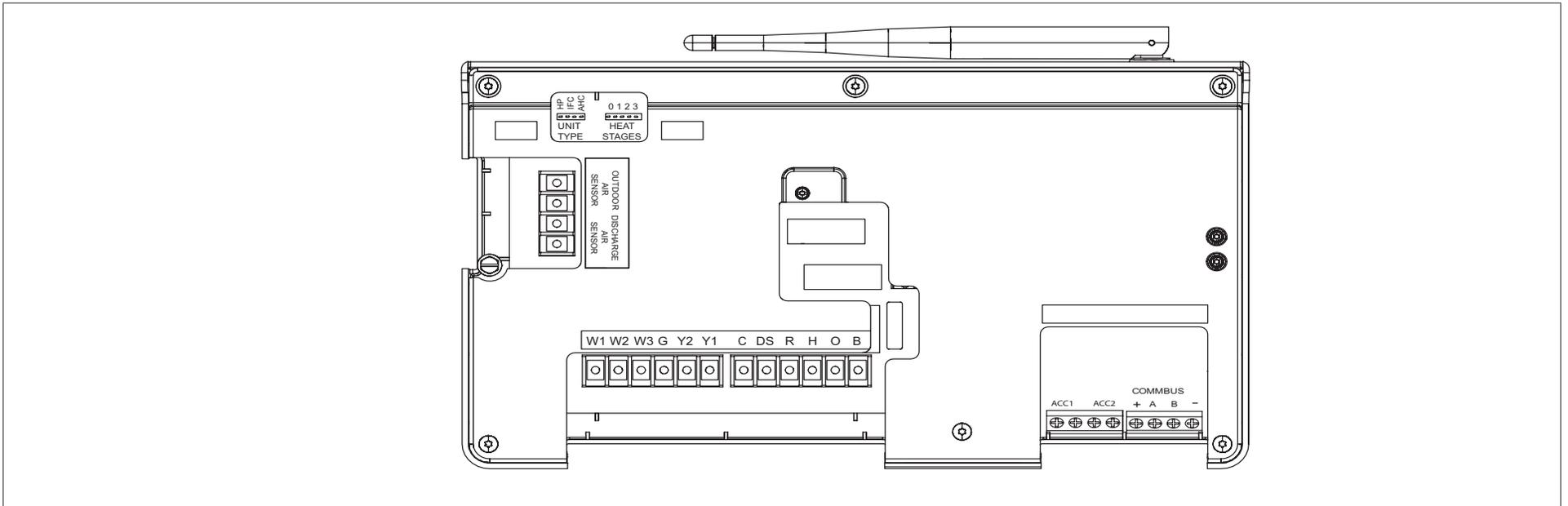


Figure 5. iComfort® E30 Smart Hub 2.0

TESTING:

- **Naked** = Control has no wires on it at all
- **Loaded** = Voltage from **c** to **i-** / **i+** when all four wires are ON
- **Landed** = Voltage from **c** to **i-** / **i+** without **r** wired on control.

Most Common Readings (E30 Smart Hub 2.0 and S30 Smart Hub 3.0 Power and Communication Terminals)

Terminals	Naked	Landed
I+ to C	3.5 VDC (I+ naked)	2.5 VDC
I- to C	1.5 VDC (I- naked)	2.5 VDC

Most Common Readings (E30 Smart Hub 1.0 and S30 Smart Hub 2.0 Mag Mount Power and Communication Terminals)

Terminals	Naked	Loaded	Landed
12 VDC + to -	11.68 VDC	11.68 VDC	12.0 VDC
12 VDC - to COMM BUS A	1.67 VDC	1.66 VDC	1.64 VDC
12 VDC - to COMM BUS B	1.58 VDC	1.41 VDC	1.57 VDC

4.6. Lennox Communicating Indoor / Outdoor Units and Equipment Interface Module

Various Equipment

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

5. Thermostat Wiring Termination in Communicating System

a. Wiring Terminations

Communicating systems 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 a wire nut to bundle the four unused wires at each end of the cable. Each bundle should also include an additional wire that should be connected on one end to the **C** terminal as shown in the figure below.

NOTE: Terminations are not required for non-communicating terminals.

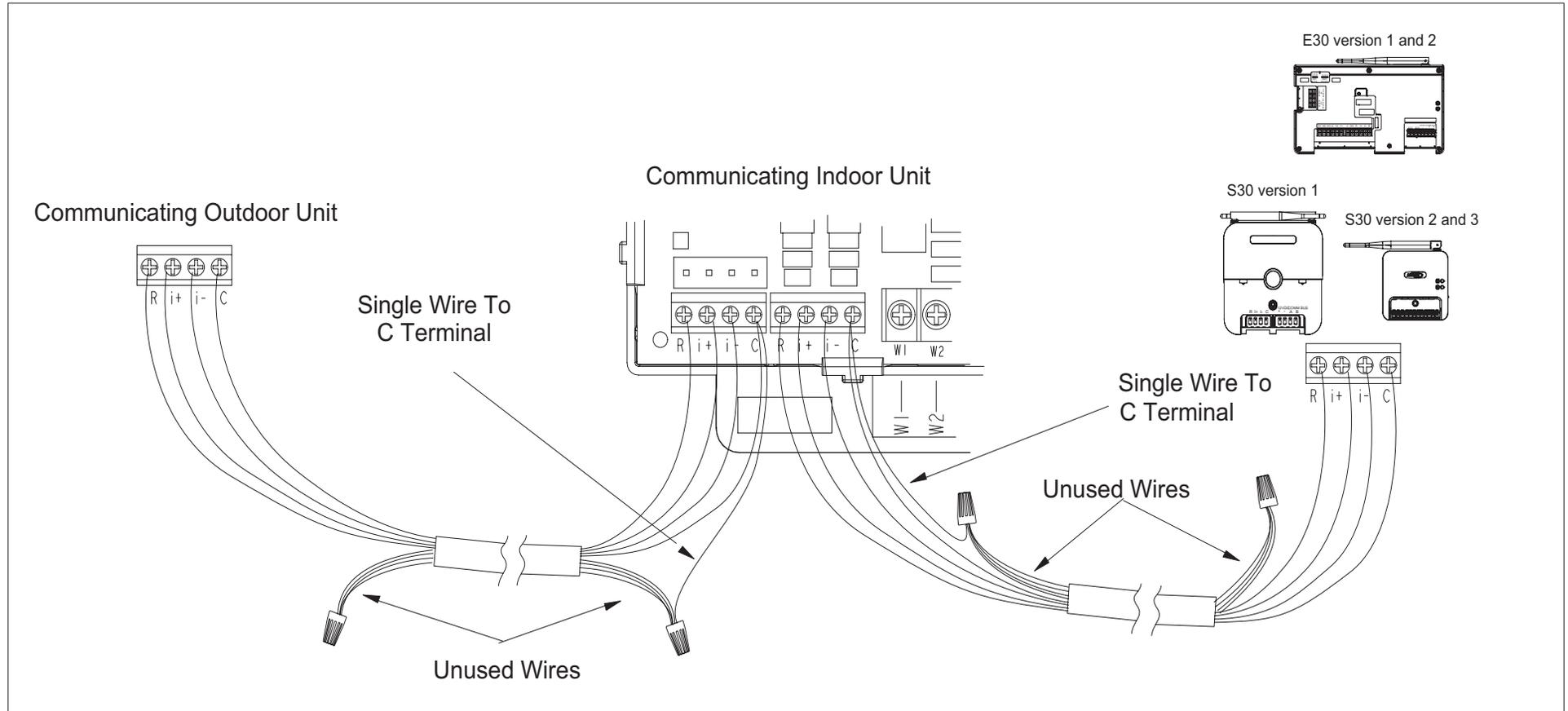


Figure 6. Extra Wiring Terminations

6. Wiring Type Requirements

Use 18 AWG un-shielded thermostat cable (field-provided) for non-communication wiring. We highly recommend using one-pair 22 AWG shielded thermostat cable for all communications terminals which will help eliminate any noise interference.

Table 14. S30 Ultra Smart Hub (3.0) Terminal Designations, Order and Wiring Requirements

Terminal Designation	Description	Thermostat Wiring
R	24VAC input	18AWG unshielded
C	24VAC return	
I+	RS-BUS I+	18 - 22AWG shielded (recommended)
I-	RS-BUS I-	
ACC1	Accessory 1 and 2 (typically can be used for 1 or 2 speed ventilators and fresh air damper)	18AWG unshielded
ACC2	NOTE: Requires Smart Hub Control Software Revision 03.50.xxx or higher.	
12+	12VDC output	18AWG unshielded
12-	12VDC return	
A	Communications bus A	18 - 22AWG shielded (recommended)
B	Communications bus B	

Use 18AWG un-shielded thermostat cable (field-provided) for power terminals (R, C, 12+ and 12-). We highly recommend using 18 - 22AWG shielded thermostat cable for communications terminals (I+, I-, A and B) which will help eliminate any noise interference.

Table 15. E30 Smart Hub (2.0) Terminal Designations, Order and Wiring Requirements

Terminal Designation	Description	Thermostat Wiring
ACC1	Accessory 1 and 2 (typically can be used for 1 or 2 speed ventilators and fresh air damper).	18AWG unshielded
ACC2	NOTE: Requires Smart Hub Control Software Revision 03.50.xxx or higher.	
12+	12VDC output	18AWG unshielded
12-	12VDC return	
A	Communications bus A	18- 22AWG shielded (recommended)
B	Communications bus B	

Table 16. Equipment Interface Module (EIM) Terminal Designations, Order and Wiring Requirements

Label	Function / Description	Thermostat Wiring
R	24VAC communication power Input	18AWG unshielded
C	24VAC communication common power Input	
i+	Communication high – data line	18 - 22AWG shielded (recommended)
i-	Communication low – data line	

Table 17. iHarmony Damper Control Module (DCM) Terminal Designations, Order and Wiring Requirements

Component to Component	Terminal	Wiring Cable Requirement	Wiring Type	Maximum Distance between Components
Damper Control Module to Indoor Unit or 17A20 Zone Sensor	R	24VAC input	18AWG unshielded	197 feet (50 meters)
	C	24VAC return		
	I+	RS-BUS I+	18 - 22AWG shielded (recommended)	
	I-	RS-BUS I-		
Damper Control Module to 50A93 Freezestat	Freezestat		18AWG, unshielded thermostat cable (field-provided)	197 feet (50 meters)
Damper Control Module to 93G35 Freezestat	Freezestat		197 feet (50 meters)	
Damper Control Module to 27W13 High Pressure Switch	Pressure Switch		18AWG, unshielded thermostat cable (field-provided)	197 feet (50 meters)
Damper Control Module to 88K3801 Discharge Air Temperature Sensor	DATS		18AWG, unshielded thermostat cable (field-provided). Use if less than 6 feet (2 meters) distance.	30 feet (9 meters) twisted pair wire. Suggest ordering cable 27M19 (yellow).
Damper Control Module to Dampers	Dampers		18AWG, unshielded thermostat cable (field-provided)	Check with damper manufacturer

Homeowner System Settings

Table 18. User Settings Menu Navigation

Level 1	Level 2	Level 3	Level 4	Level 5
Wi-Fi	Wi-fi (on or off)			
	Wi-fi network selection			
Away	Smart Away (on or off)			
	Away set-points adjustment			
Feels Like	Feels like temperature (on or off)			
Fan <i>NOTE: Fan mode Auto, ON, or OFF is set from the home screen under modes/schedules.</i>	Allergen Defender (on or off)			
	Circulate duration adjustment			
Heat & Cool	Wider set-point range (on or off)			
	Safety protection (on or off)			
Humidity	Humidity Control <i>NOTE: Humidification and dehumidification settings are dependent on hardware accessories installed.</i>	Off		
		Humidity	Dehumidification control center	Normal
				Max
				Dew point
		Humidification set-point		
		Dehumidify	Dehumidification control center	Normal
				Max
				Climate IQ (Auto)
			Overcooling	
		Dehumidification set-point		
		Humidify + Dehumidify	Dehumidification control center	Normal
				Max
				Dew point
			Dehumidification control center	Normal
Max				
Climate IQ (Auto)				
Overcooling				
Dew Point				
Humidification set-point (left) + Dehumidification set-point (right)				
iHarmony zoning	Zoning (on or off)			
	Zone 1 (master) - Select to rename zone.			
	Zone 2 - Select to rename zone.			
	Zone 3 - Select to rename zone.			
	Zone 4 - Select to rename zone.			

Table 18. User Settings Menu Navigation

Level 1	Level 2	Level 3	Level 4	Level 5	
Notifications	Replace filter 1	Disable			
	Replace filter 2	3 months			
	Replace UV bulb	6 months			
	Replace humidifier pad	12 months			
	PureAir maintenance	24 months			
	Maintenance Reminder	Custom > Set date			
Advanced Settings	View dealer control center (See table XX for further details.)				
	Restart	Restart smart hub			
		Restart Thermostat			
		Restart Both			
Pair smart hub to iComfort Dealer Mobile App					
General	About	iComfort	Thermostat Model Number		
			Thermostat Serial Number		
		Thermostat	Control Model Number		
			Control Serial Number		
			Control Hardware Revision		
			Control Software Revision		
			Serial Protocol Version		
			Software Update	Automatic Updates (on or off)	
			Check for Updates Now		
		smart hub	Control Model Number		
			Control Serial Number		
			Control Hardware Revision		
			Control Software Revision		
			MAC Address		
Software Update	Automatic Updates (on or off)				
	Check for Updates Now				

Table 18. User Settings Menu Navigation

Level 1	Level 2	Level 3	Level 4	Level 5	
General	Dealer Info	Name			
		Country/Region	United States, Canada or Australia		
		Address 1			
		Address 2			
		City			
		State	Select State		
		Zip/postal code			
		Phone			
		Email			
	Website				
	Dealer Info	Dealer Access		Remote View (on or off)	
				Remote Control (on or off)	
				Alerts and Notifications (on or off)	
	Screen Lock	Unlock			
		Partially Lock			
		Locked			
	Date & Time	24 hour time (yes or no)			
Language	English				
	French				
	Spanish				
Display	Outdoor Weather (on or off)				
	Outdoor Temperature Display	Internet (AccuWeather)			
		Sensor			
	Indoor Humidity (on or off)				
	PureAir S Life (on or off)				
	Proximity Sensor (on or off)				
	Screen Saver	Off			
		Weather			
		NOTE: Thermostat must be connect to the Internet.			
		Power Save			
		NOTE: Black screen, wakes up on proximity or touch.			
Screen Brightness	Photo				
	NOTE: Photo must be upload via consumer web portal or iComfort consumer mobile app.				
Temp Scale	Auto brightness (on or off)				
	Fahrenheit °F				
		Celsius °C			

Table 18. User Settings Menu Navigation

Level 1	Level 2	Level 3	Level 4	Level 5
Display	Clean Screen (30 second counter)			
Home Info	Home Name			
	Country/Region	United States, Canada or Australia		
	Address			
	Address 2			
	City			
	State	Select State		
	Zip/postal code			
	Remove Home			
Account <i>NOTE: Must be connected to Internet.</i>	Email			
	Password			
	Forgot Password	Please enter your email to retrieve your password		
	Sign In			
	Create New Account	New Account	First Name	
			Last Name	
			Phone	
		Login (email)		
	Set Password	Password		
		Verify Password		
	Receive Alerts and Reminders via Email (on or off)			
	Allow dealers to receive service alerts and if possible remotely fix the problem	Check Box		
	I agree to the Lennox EULA	Check Box		
Create account				
Generate Pin	Pin Number is Displayed.			
Homekit	Enter WAC mode			
	Auto WAC Mode (yes or no)			
	HomeKit Factory Reset			

7. Change Log

- 2/2021 - New version release which includes updated alert code information. Reclassified Alert Conditions which will be active in firmware release 3.81.
- 9/16/2021 - Updated priority conditions for alarm 417 to service soon.

