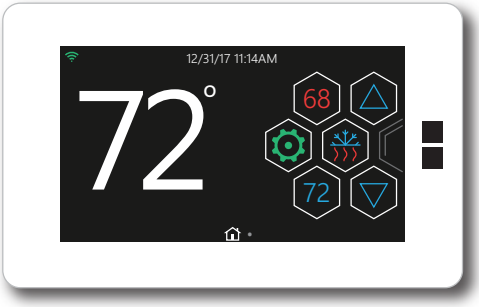
INSTALLATION MANUAL

Hx3™ TOUCH SCREEN THERMOSTAT

MODELS: S1-THXU430W



LIST OF SECTIONS

SECTION I: GENERAL

The Hx3™ Touch Screen Thermostat is designed to control communicating system components. In general, these components are the variable speed modulating furnace, 2-stage variable speed ECM furnace and variable speed air handler, premium 19 & 21 SEER air conditioners or premium 19 & 20 SEER heat pumps and variable capacity systems.

While the communicating system has been designed for easy installation, this document provides the installer with a more detailed explanation of the installation process.

To use the complete feature set available, the Hx3™ Touch Screen Thermostat must be connected to Wi-Fi.

For ease of installation and to ensure that the thermostat has the latest software update, please be sure that Wi-Fi access is available (via homeowner Wi-Fi network or mobile hotspot).

SECTION II: SAFETY CONSIDERATIONS

 This is a safety alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury and equipment damage.

Understand and pay particular attention to the signal words **DANGER**, **WARNING**, and **CAUTION**.

DANGER indicates an **imminently** hazardous situation, which, if not avoided, **will result in death or serious injury.**

WARNING indicates a **potentially** hazardous situation, which, if not avoided, **could result in death or serious injury**.

CAUTION indicates a potentially hazardous situation, which, if not avoided **may result in minor or moderate injury**. It is also used to alert against unsafe practices and hazards involving only property damage.

INSPECTION

The following list details the parts included in this kit. Examine the kit to ensure that all parts are present.

TABLE 1: Content List

Item	QTY.	Description
1	1	Thermostat Display
2	1	Thermostat Base
3	2	Wire Connectors
4	2	Screws
5	2	Drywall Anchors
6	1	User's Information Manual
7	1	Installation Manual

LIMITATIONS

The primary function of the thermostat is to command a system-containing communicating product.

Exceptions to this rule are:

- Installing a communicating variable speed modulating furnace with a non-communicating air conditioner. In this case, the variable speed modulating furnace relays 24 VAC outputs to the non-communicating air conditioner (per communicated commands by the thermostat).
- Installing communicating controls in non-communicating UPG products.
- Installing Communicating Interface Control (which converts communicating commands into 24VAC outputs).

CONVENTIONAL COMPATIBILITY CHECK

The Hx3™ Touch Screen Thermostat works with 24VAC systems and requires both the R & C 24V hot and common wires. This includes gas furnaces, air handlers, electric, oil, forced air, variable speed, heat pump and hydronic heat.

It can be configured for:

- Conventional up to 2H/2C and Heat Pump up to 4H/2C
- Heating: 1 & 2 stages (W1, W2)
- Cooling: 1 & 2 stages (Y1, Y2)
- Heat pump: w/ aux & emergency heat or fossil fuel
- (HUM, O/B, Y2, Y1, W1, W2)
- Fan Single Speed (G)
- Power (R, C) Dual fuel compatible (heat pump with gas furnace)
- Humidity Control (Humidify and Dehumidify)
- Outdoor Air Temperature or Remote Room Sensor (optional)

NOTICE

Dual fuel systems require the use of an optional outdoor air temperature sensor, if the room thermostat is used to control fossil fuel operation.

SECTION III: INSTALLATION

The intention of this document is to ensure proper connection and setup of the various communicating system components. These instructions should be used in conjunction with the instructions provided with indoor, outdoor and accessory equipment of which the thermostat will command.

This installation instruction contains information about setup, operation, and troubleshooting. Short videos illustrating the installation, setup, and configuration of the Hx3™ thermostat are available on Academy TV.

When installing this product, proceed as follows:

- Read all instructions carefully before beginning installation.

⚠ WARNING

Failure to follow these instructions can create hazardous situations or damage the product.

- Make certain the product is suitable for your application by checking all ratings on the product and in the instruction provided.
- Installers must be trained, experienced service technicians.

LOCATION

Install the thermostat at or around 5 ft. (1.5m) above the floor in an area with good circulation of room temperature. See Figure 1.

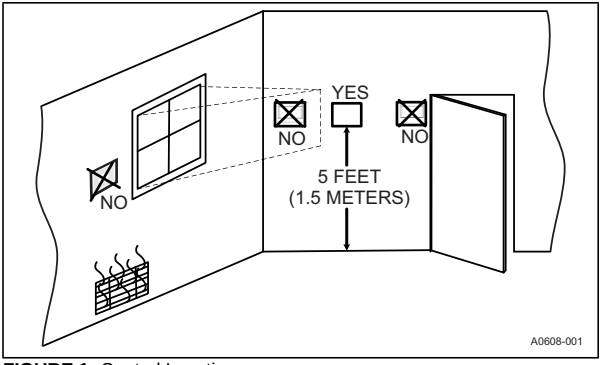


FIGURE 1: Control Location

Do not install the thermostat where it can be affected by:

- Drafts or dead spots behind doors and in corners.
- Hot or cold air from ducts.
- Radiant heat from sun or appliances.
- Concealed pipes and chimneys.
- Unconditioned areas, such as an outside wall.

MOUNTING THE THERMOSTAT

For most installations, mounting the thermostat can be done following some very basic installation steps, as outlined below. However, there may be some cases when the installer is not able to penetrate the wall where mounting the thermostat, or when the thermostat/control being replaced has left a larger hole than needed for installation of this control. For these and other cases, (including installation with a vertical j-box) an installer can obtain an accessory wall plate.

⚠ WARNING

Voltage Hazard: *Live wires can cause electrical shock or equipment damage. Disconnect power before beginning installation.*

1. Turn off all power to the equipment.
2. If an existing thermostat or control is being replaced:
   a. Disconnect the wires from the existing control.
   b. Remove the existing control from the wall.
   c. Properly discard or recycle the old control.

NOTICE

Mercury is a hazardous substance, if the existing thermostat or control contains any mercury, it MUST be disposed of properly. This thermostat does not contain mercury.

3. Mark on the wall where the thermostat will be mounted (standard height is 5 feet from the floor).

NOTICE

If an existing thermostat was in place, it may be ideal to use the same location for the thermostat.

INSTALLING A NEW THERMOSTAT

4. Position the thermostat base against the wall and determine if the thermostat base will completely cover the footprint of the current thermostat.
5. Position the thermostat base against the wall (or wall plate if used) and determine if the new screw locations align with prior locations.
6. If the base does not align with existing anchor holes, mark the new screw locations with a pencil.
   - Drywall: Drill 3/16” hole for the anchor & install.
   - Plaster: Drill 7/32” hole for the anchor & install.
7. If the Remote Sensor is to be used, pull wires through and connect to S1 and S2 terminals. Use Ambient Sensor (S1-02542683000).
8. Pull wires through the opening in the base and secure the base (and wall plate) to the wall using the provided screws.

9. Though not required for operation, it is recommended that the thermostat be level.
10. One by one, connect each wire by pushing down on the quick connect tab, inserting the wire into the connector opening, and releasing the tab to complete.
11. Ensure the Base is positioned with the UP arrow in the proper direction, see Figure 2.
12. Align the 4 positioning tabs with the 4 slots on the backside of the screen and gently press screen into place.
13. Fasten Screen to Base with the 2 retaining screws provided.

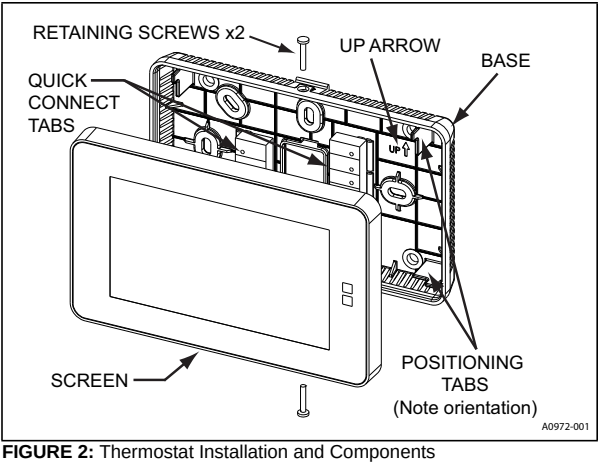


FIGURE 2: Thermostat Installation and Components

The thermostat may be wired conventionally. For wiring diagrams, see Section VIII: Wiring Diagrams.

SECTION IV: WIRING COMMUNICATION

⚠ WARNING

If using with variable capacity outdoor equipment, DO NOT connect to the "R" terminal of outdoor unit control board.

All wiring must comply with local electrical codes and ordinances. Refer to Table 2 for terminal designations.

TABLE 2: Terminal Designations

Signal	Definition	Label
Data	Non-inverted signal	A (+)
Low voltage power hot	24 VAC (Hot)	R
Low voltage power common and data ground	24 VAC (Common)	C
Data	Inverted signal	B (-)

WIRING REQUIREMENTS

Standard 18 AWG thermostat wires can be used to connect the communicating system.

Special (shielded) cable is not typically required. As with all communicating devices, it is a good idea to keep wiring at least one foot away from large inductive loads. Examples of large inductive loads include electronic air cleaners, motors, etc. If these wiring practices are ignored, it may introduce electrical interference (noise) which can cause erratic system operation.

NOTICE

There may be installation applications where large inductive loads cannot be avoided. In these cases use shielded wire to ensure proper system functionality.

SYSTEM WIRING OVERVIEW

IMPORTANT

The communicating system requires four wires to operate. If installing a communicating system, be sure to supply at least four wires to each unit/control. For a simple diagram of the ideal wiring path see Figure 3.

The system is connected by four wires. Two of the wires are used to bring power into the individual controls (R and C) and two of the wires are used for serial communication (A+ and B-).

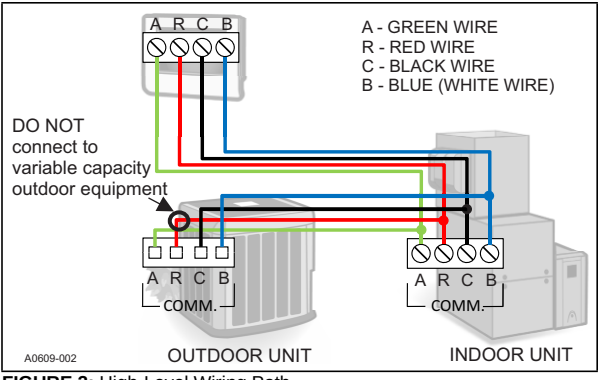


FIGURE 3: High-Level Wiring Path

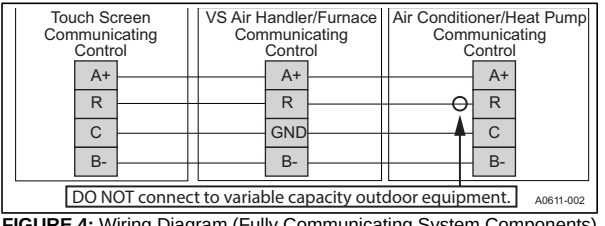


FIGURE 4: Wiring Diagram (Fully Communicating System Components)

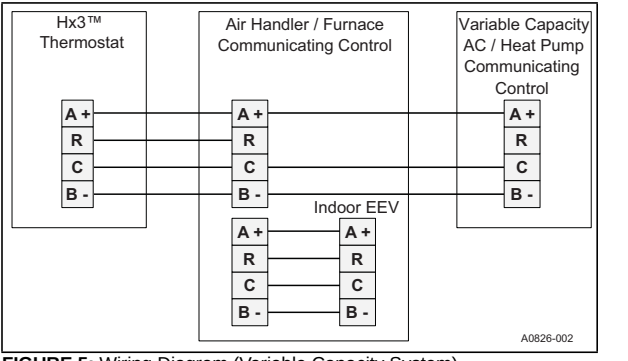


FIGURE 5: Wiring Diagram (Variable Capacity System)

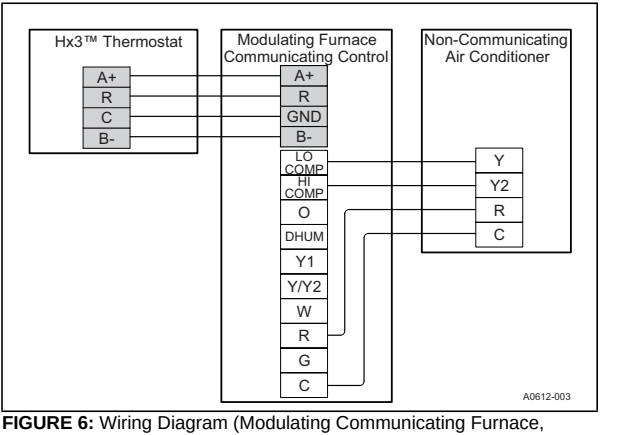


FIGURE 6: Wiring Diagram (Modulating Communicating Furnace, Non-Communicating AC)

Thermostat Wiring

WARNING

ELECTRICAL OPERATION HAZARD

Failure to follow this warning could result in personal injury, death, or equipment damage. Before installing, modifying, or servicing system, the main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.

1. Turn off all power to the equipment.
2. Remove the thermostat front plate.
3. Match and connect the thermostat wires to the proper terminals on the thermostat mounting back plate.
4. Push any excess wire back into the wall.

NOTICE

Plugging the hole in the wall with nonflammable insulation can help prevent drafts from adversely affecting temperature control.

Outdoor Control Wiring

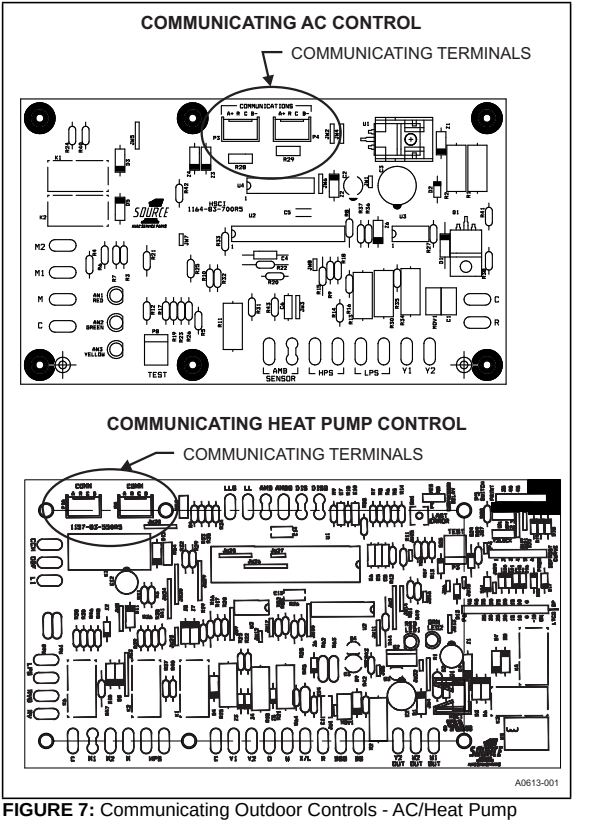


FIGURE 7: Communicating Outdoor Controls - AC/Heat Pump

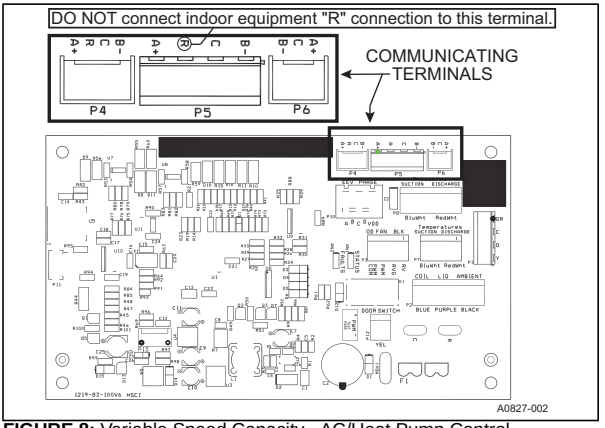


FIGURE 8: Variable Speed Capacity - AC/Heat Pump Control

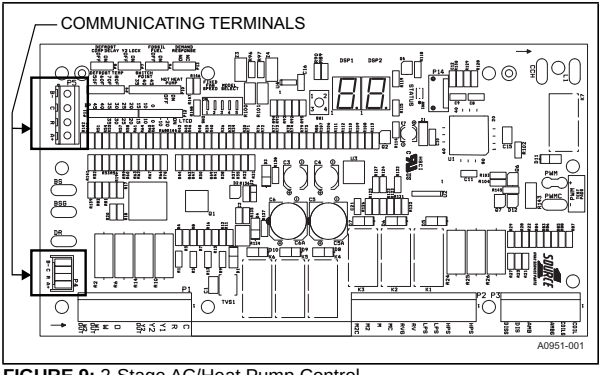


FIGURE 9: 2-Stage AC/Heat Pump Control

Communicating Non-Variable Capacity Models

Control wiring using communicating controls (non-variable capacity legacy outdoor models) shown in Figure 6.

⚠ WARNING

ELECTRICAL OPERATION HAZARD

Failure to follow this warning could result in personal injury, death, or equipment damage. Before installing, modifying, or servicing system, the main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.

These controls require the use of S1-02542694000 communicating wiring harness.

1. Disconnect all high voltage power from system.
2. Plug S1-02542694000 communicating harness into outdoor control board and route harness to the low voltage wiring compartment.
3. Remove conventional low voltage wiring leads from outdoor control board. Leave wiring leads with outdoor unit for future use.
4. Connect field low voltage thermostat wiring to communicating control harness using spring type wire connectors.
5. Push excess wiring into the outdoor unit low voltage wiring compartment.

NOTICE

When connecting the loose ends of the wire harness, be sure to note color for each of the four wires (A+, R, C, B-).

6. Set the wires which are now connected (with wire connectors) into the junction box of the control housing.
7. Set the appropriate outdoor jumper settings to ensure proper control functionality. See Table 3.

Control Wiring using Communicating Controls (Non-variable Capacity Outdoor Models)

1. Disconnect all high voltage power from system.
2. Outdoor unit contains a wire harness for conventional wiring and one for communicating wiring. Cut the plastic Molex connector off of the wire harness to be used and strip the wires approximately ½" inch.
3. Connect field low voltage thermostat wiring to the appropriate harness using spring type wire connectors.
4. Push excess wiring into the outdoor unit low voltage wiring compartment.
5. Set the appropriate outdoor jumper settings to ensure proper control functionality. See Table 3.

Control Wiring using Communicating Controls (Variable Capacity Outdoor Models)

1. Disconnect all high voltage power from system.
2. Outdoor unit contains a wire harness for communicating wiring. Cut the plastic Molex connector off of the wire harness and strip the wires approximately ½" inch.
3. Connect field low voltage thermostat wiring to the harness using spring type wire connectors. DO NOT indoor equipment "R" connection to the outdoor control board.
4. Push excess wiring into the outdoor unit low voltage wiring compartment.

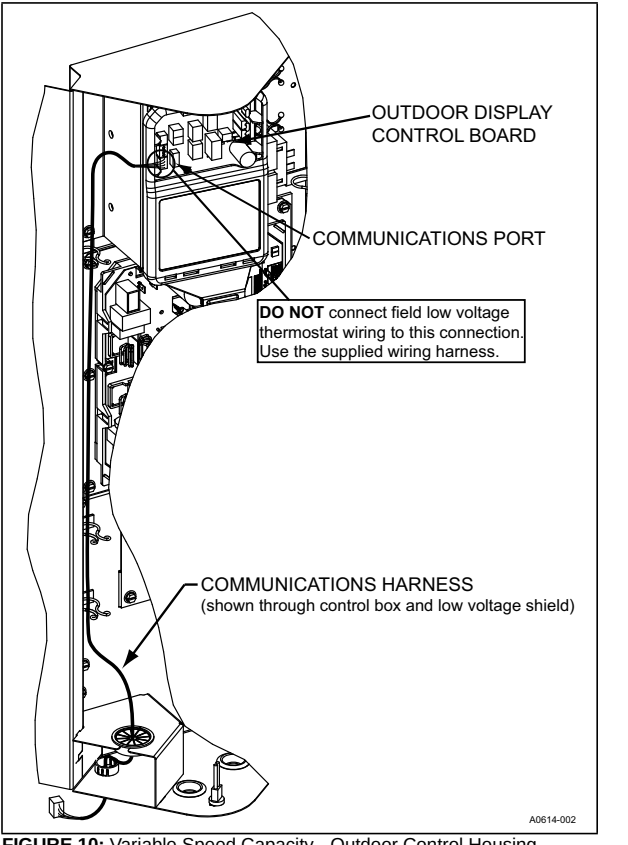


FIGURE 10: Variable Speed Capacity - Outdoor Control Housing

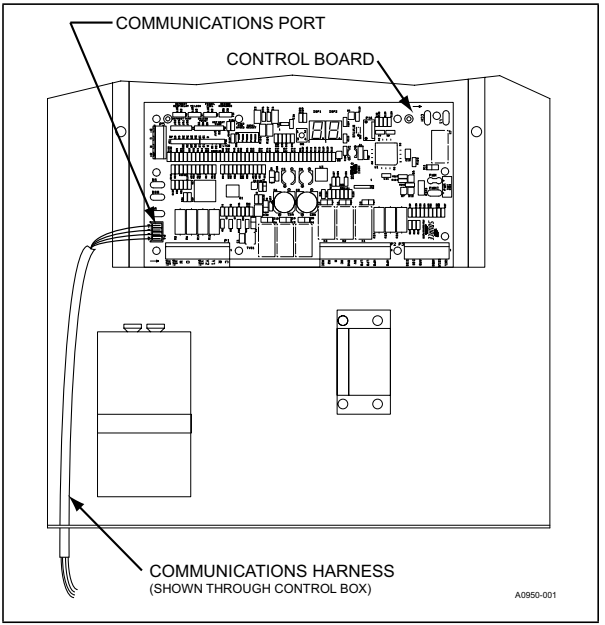


FIGURE 11: 2-Stage AC/Heat Pump - Outdoor Control Housing

TABLE 3: Outdoor Jumper Settings

Unit Control	Jumpers which must be set
Heat Pump	Fossil Fuel
Air Conditioner	No jumpers to set
Variable Speed Capacity AC/HP	No jumpers to set

Variable Capacity Models

1. Disconnect all high voltage power from the system.
2. Locate factory-installed low voltage wire harness at bottom of control box.
3. Connect low voltage wiring together using wire connectors. See wiring diagram shown in Figure 12.

⚠ WARNING

DO NOT connect the “R” terminal from the thermostat to the unit control board.

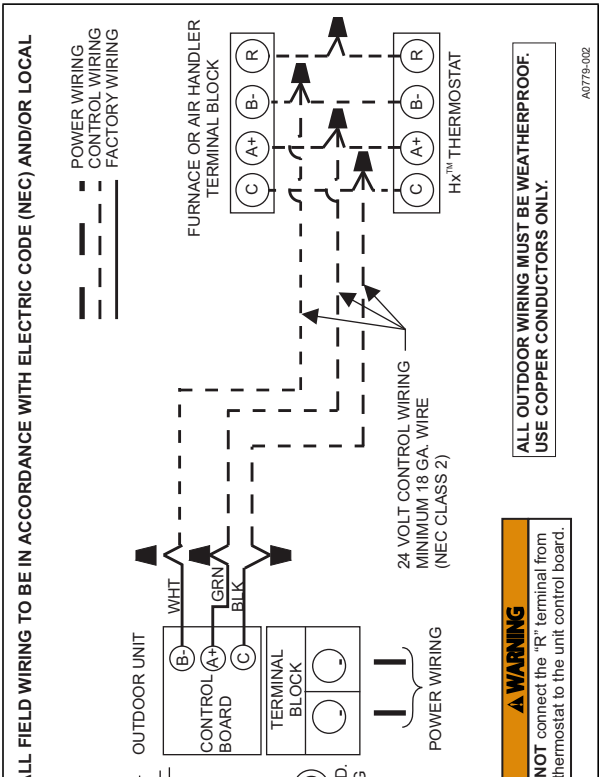


FIGURE 12: Typical Communicating Field Wiring (Variable Capacity Outdoor Unit)

Indoor Control Wiring

IMPORTANT

DO NOT place more than one wire under any single communication terminal screw (there are four communication terminal screws). If more than one wire must be connected to a terminal screw, attach only the terminal end of a one wire pigtail no longer than 6", and use a wire connector to connect the other end of the pigtail to the other wires. Failure to do this will result in nuisance communication error faults. See Figure 13.

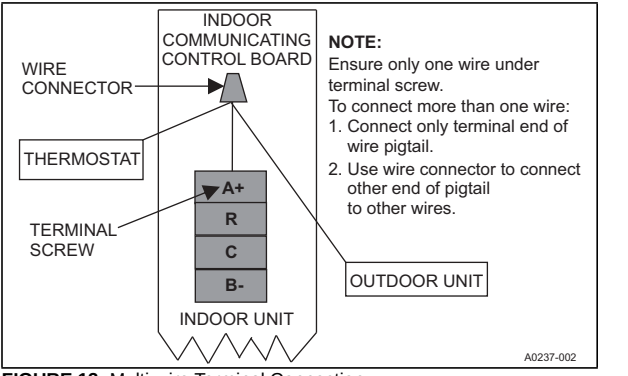


FIGURE 13: Multi-wire Terminal Connection

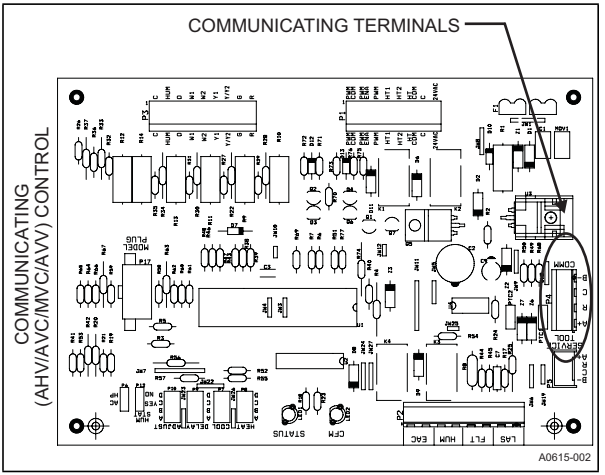


FIGURE 14: Communicating Indoor Controls - Air Handler

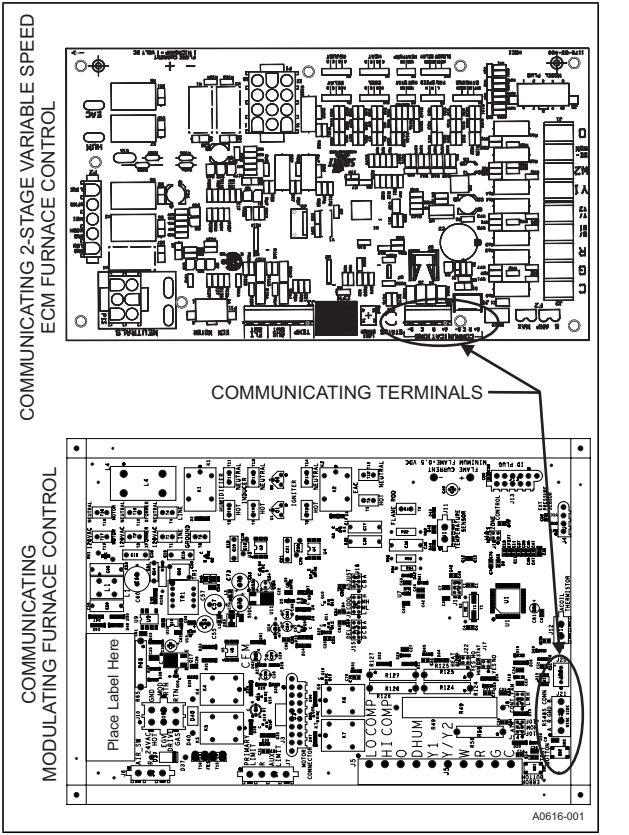


FIGURE 15: Communicating Indoor Controls - Furnaces

⚠ WARNING

ELECTRICAL OPERATION HAZARD

Failure to follow this warning could result in personal injury, death, or equipment damage. Before installing, modifying, or servicing system, the main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.

1. Disconnect all high voltage power from the system.
2. Screw the four wires from the thermostat and outdoor control to the communicating screw terminal (eight wires in all). Be sure that all wires are connected respectively (A+ = A+, R = R, C = C, B- = B-).

NOTICE

Variable Capacity AC & HP systems do not use an R wire to the outdoor unit and will have only 7 wires total.

NOTICE

The furnace control may be labeled so that C = GND.

Set the appropriate indoor jumper settings to ensure proper control functionality. See Table 4.

TABLE 4: Indoor Jumper Settings

Unit Control	Jumpers which must be set
Modulating Furnace	Heat Pump
	Humidistat
	Zone Control
Air Handler (AHV)	Heat
	Cool
	Delay
	Adjust
	Hum Stat
	AC/HP

TABLE 4: Indoor Jumper Settings

Unit Control	Jumpers which must be set
Air Handler (AVC, AVV, MVC)	Heat
	Cool
	Delay
	Adjust
	Hum Stat
	AC/HP
Air Handler (AV/MV)	Heat/No Heat
	Heat
	Cool
	Delay
	Adjust
	Hum Stat
	AC/HP
2-Stage Variable Speed Furnace	Heat
	Cool
	Delay
	Adjust
	Hum Stat
	Heat Pump

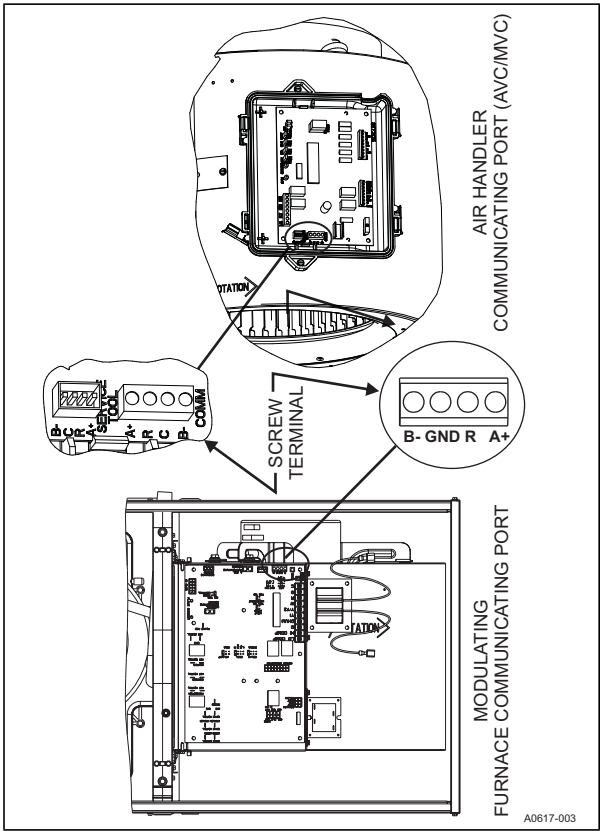


FIGURE 16: Indoor Screw Terminal Location

HUMIDIFIER CONNECTION

A bypass or fan powered humidifier may be installed with the communicating system. The installer should physically install the humidifier according to the instructions that are included with the humidifier. For information on the wiring of the humidifier, see diagrams below.

NOTICE

Do Not Use *a traditional humidistat to control humidifier operation. If a humidifier is installed, the thermostat will operate humidifier.*

Bypass Humidifier

Communicating Furnace

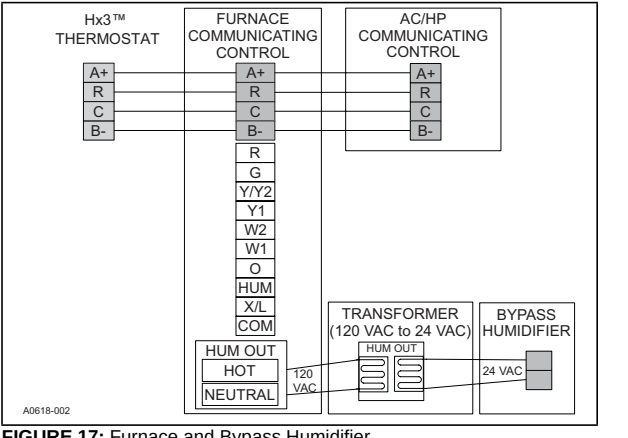


FIGURE 17: Furnace and Bypass Humidifier

NOTICE

Furnace or air handler humidifier terminals can be used to power a control relay if using a steam type humidifier. Line voltage power for a steam humidifier MUST be provided from an alternate power supply.

Communicating Air Handler

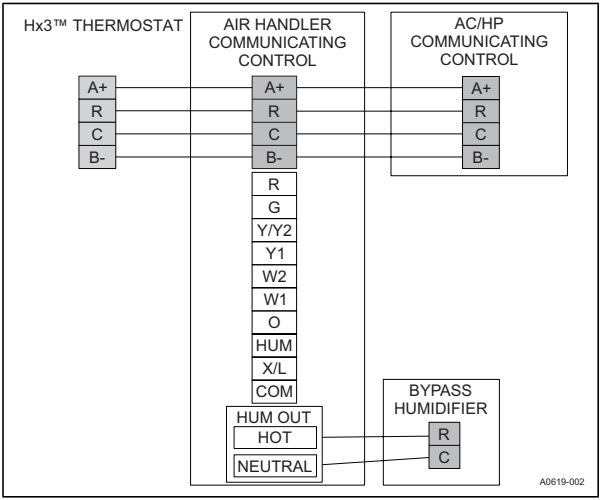


FIGURE 18: Air Handler and Bypass Humidifier

Fan Powered Humidifiers

Communicating Furnace

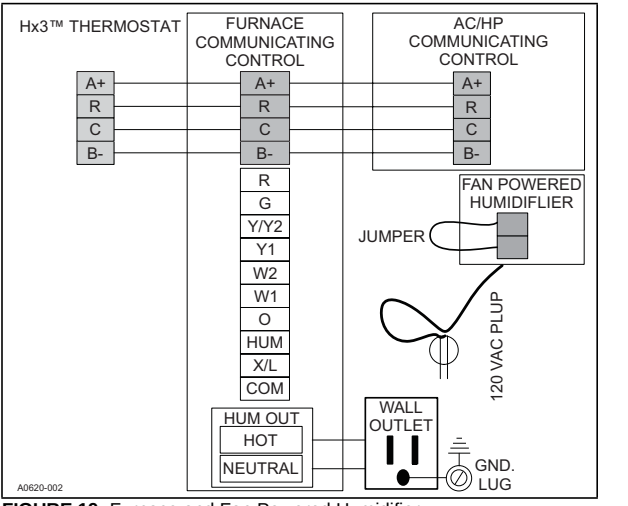


FIGURE 19: Furnace and Fan Powered Humidifier

⚠ WARNING

Do not exceed the recommended 1 Amp current limit on the 120 VAC HUM OUT connection or furnace control board damage will occur.

Communicating Air Handler

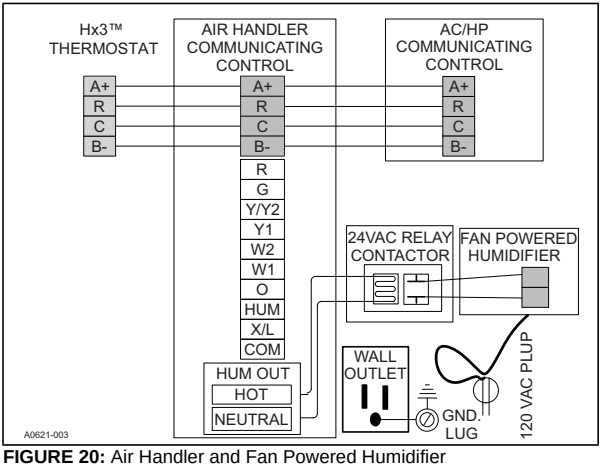


FIGURE 20: Air Handler and Fan Powered Humidifier

SECTION V: INITIAL POWER-UP

⚠ CAUTION

Failure to follow this caution may result in equipment damage.
Do not power the system until you have confirmed that the wiring has been completed correctly (per this document).

Before applying power, check to make sure that all wiring has been completed as instructed through the installation instructions of the equipment on the system.

Once power is applied, the installer should return to the thermostat to complete the installation process.

POWER-UP SEQUENCE

The Auto Setup screen displays upon initial power up, see Figure 21.

FIGURE 21: Power-Up - Auto Setup Screen

SYSTEM CONFIGURATION

After selecting the **Next** button, the touch-screen thermostat begins a routine to detect the system components and identify the indoor and outdoor communicating equipment. See Figure 22 - 25.

NOTICE

If OD unit is a variable capacity model, power should be applied to the outdoor unit prior to the indoor unit.

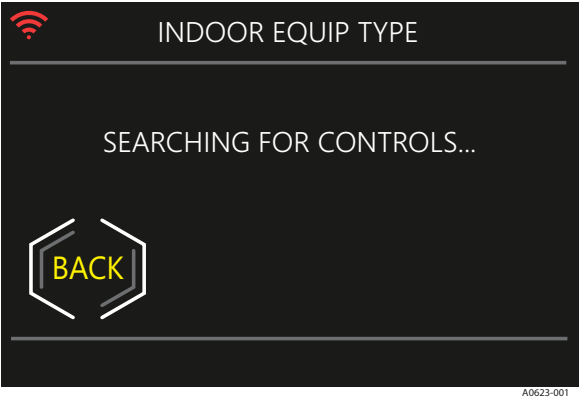


FIGURE 22: Control Search - Indoor Equipment

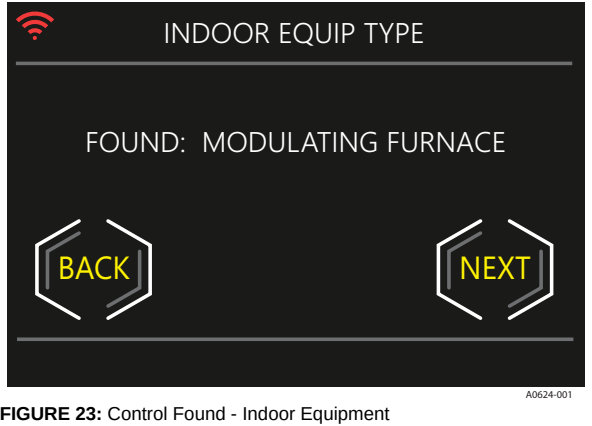


FIGURE 23: Control Found - Indoor Equipment

FIGURE 24: Control Search - Outdoor Equipment

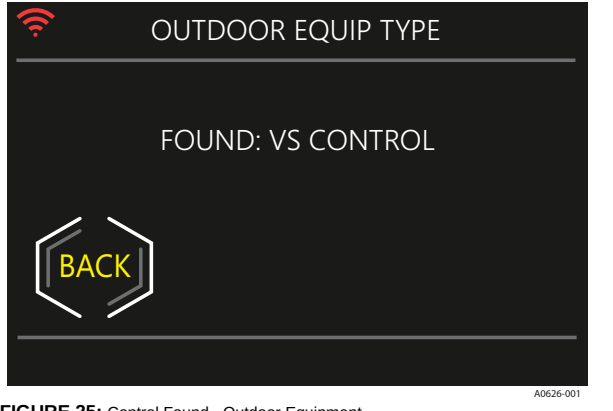


FIGURE 25: Control Found - Outdoor Equipment

Dependent upon the system that is being configured, the installer will be directed through different configuration screens.

In a communication system that includes a communicating variable speed air handler, heat kit configuration screens will appear.

See Figure 26 - 28.

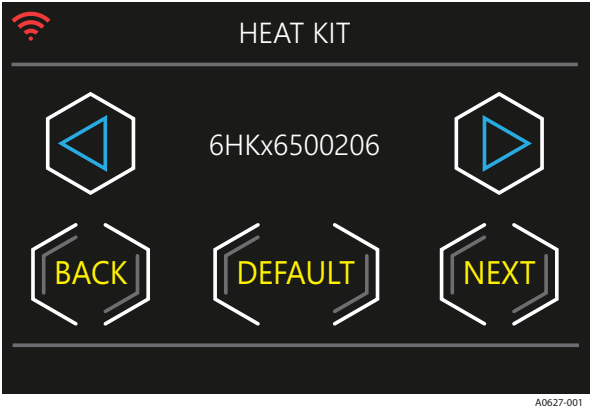


FIGURE 26: Heat Kit Configuration Screen 1

If a 13 KW or larger heat kit is selected, there will be 2 available stages of electric heat. The installer must select the amount of electric heat that will be applied during a first stage (W1) heat call. A second stage (W2) heat call will result in the entire available amount of electric heat to be applied. It is recommended to only use the appropriate amount of heat required on a first stage (W1) call to temper the air during an outdoor unit defrost cycle.

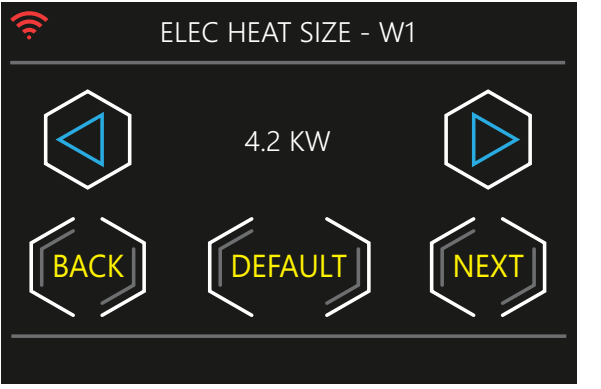


FIGURE 27: Heat Kit Configuration Screen 2

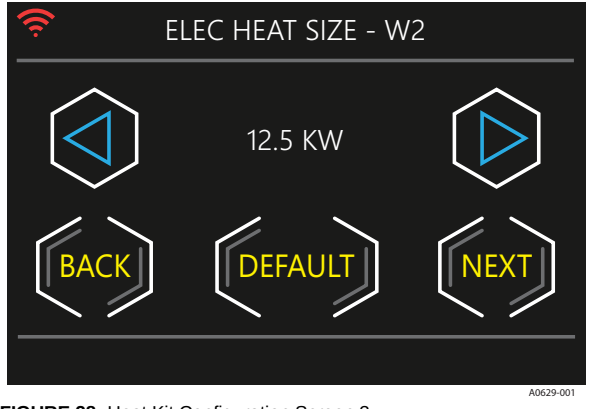


FIGURE 28: Heat Kit Configuration Screen 3

The System Summary screen appears during every system installation. This screen displays the equipment configuration.

NOTICE

The modulating furnace airflow during heating is still controlled by the ignition control not the thermostat.

SECTION VI: SERVICE MODE

ENTERING SYSTEM SETTINGS

To enter the system settings portion of the control, on the Settings screen press and hold (for 5 seconds) the **Service Van** button.
See Figure 29.

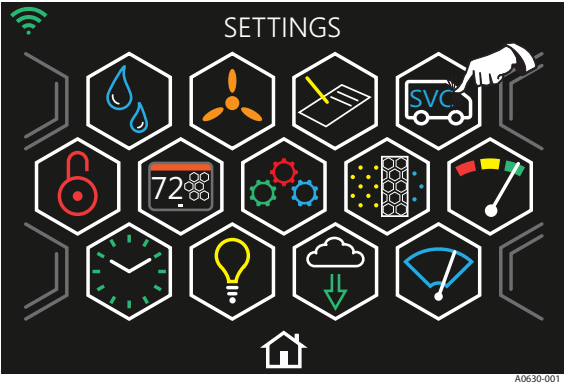


FIGURE 29: System Settings Access

⚠ CAUTION

Installer settings are designed for certified installation technicians and are not intended for homeowner use. Adverse system configurations, may result in equipment damage and may void equipment warranty.

SYSTEM SETTINGS

Depending on the equipment that has been installed, the System Settings screen displays different user options.

Demand Response

IMPORTANT

This setting is only available with Variable Capacity and 2-Stage AC/Heat Pump. See Table 6 and 7.

The Demand Response feature is located in the System Settings screen under installer settings. Demand Response allows the installer/utility service provider to choose how the thermostat operates when it is active. When Demand Response is active, the thermostat updates the setpoint to the selected temperature value.

The available options are 4°F, 6°F, 8°F, 10°F or Shut Down. The default setting is “4°F. The end user can make setpoint changes when Demand Response is active. However, the temperature selection differential must be maintained.

TABLE 5: System Settings

Variable	Default	Settings	Explanation
Auto Allowed	Yes	Yes or No	This enables or disables the ability of the Auto Mode Feature.
Prog or Non-Prog	Prog	Prog or Non-Prog	Allows the thermostat to run a schedule or not
Fahrenheit or Celsius	°F	°F or °C	Allows the thermostat temperatures to be displayed in Fahrenheit or Celsius
Smart Recovery	Yes	Yes or No	Smart recovery is used in programmable mode. The controller initiates equipment operation, if required before the start time of the program schedule day part. This is done to reach the program schedule event's desired temperature setpoint at the time the event occurs, rather than after.
Fan On with W	No	Yes or No	Supplies a fan output demand as soon as a W1 or W2 output demand is active.

TABLE 5: System Settings

Variable	Default	Settings	Explanation
Indoor Temp Offset	0°	-5°, -4°, -3°, -2°, -1°, 0°,1°, 2°, 3°, 4°, 5°	Allows the user to calibrate the displayed temperature from the measured temperature in the control.
Indoor Hum Offset	0%	-5%, -4%, -3%, -2%, -1%, 0%, 1%, 2%, 3%, 4%, 5%	Allows the user to calibrate the displayed humidity from the measured humidity in the control.
Auto Change-over	30 MIN	5 MIN, 10 MIN, 15 MIN, 20 MIN, 25 MIN, 30 MIN	Sets the minimum time between switching from heat-to-cool from cool-to-heat demands when operating in Auto Mode.
Cool Lockout	OFF	OFF, 55°F, 60°F, 65°F, 70°F, 75°F, 80°F	When enabled, will not allow cooling operation when the outdoor temperature drops below the setting.
Time Between Fuel Types	15 MIN	10 MIN, 15 MIN, 20 MIN, 25 MIN	Sets the minimum time limit between switching from one fuel type to another.
Cycles per Hour	4	4 or 6	This timer is set to 4 cycles per hour. 15 minutes must elapse from the start of one cycle before another can start. A setting of 6 cycles per hour requires 10 minutes before the next cycle.
Humidifier	No	Yes or No	The control will only activate the humidifier if there is a demand for both heating and humidity.
Dehumidifier	No	NO, OVERCOOL 1°F, OVERCOOL 2°F, OVERCOOL 3°F, WITH EQUIPMENT	OVERCOOL - The control will continue to run cooling up to 3°F below setpoint to meet the humidity setting of the home. WITH EQUIPMENT – This only applies to communicating systems. The Humidistat Jumper Setting (on the control or the thermostat) must be set to YES.The control will reduce the indoor airflow by 15% if there is a demand for both cooling and dehumidity.
Max Heat Setpoint	88°	50°F to 88°F	Choose the maximum heating setpoint that is available.
Min Cool Setpoint	52°F	52°F to 90°F	Choose the minimum cooling setpoint that is available

TABLE 5: System Settings

Variable	Default	Settings	Explanation
Stage Delay	10 MIN (120 MIN for Variable Speed)	2 MIN - 120 MIN (in 1 Minute increments)	The minimum amount of time the current stage must be energized before staging up to the next stage of capacity.
Forced Stage Up	30 MIN (360 MIN for Variable Speed)	OFF - 360 MIN (in 10 Minute increments)	If time in a current demanded stage reaches the forced stage up selected time, the thermostat will stage up to the next available stage of capacity (even if differential demand is not met).
Differential	0.5°F	0.3°F,0.4°F,0.5°F, 0.6°F,0.7°F,0.8°F,0.9°F,1.0°F,1.1°F,1.2°F,1.3°F,1.4°F,1.5°F, 1.6°F,1.7°F,1.8°F,1.9°F,2.0°F	This is the required difference between the current room temperature and the setpoint before demand is initiated. This value is additive fore each additional stage of equipment being demanded.
Air Filter Reminder	3000 HRS	OFF to 15,000 HRS	Defines a chosen number of hours before a System Event will occur to remind the homeowner to change the indoor air filter.
UV Lamp Reminder	OFF	OFF to 15,000 HRS	If a UV Lamp is installed, this enables a chosen number of hours before a System Event will occur to remind the homeowner to clean the UV Lamp.
EAC Reminder	OFF	OFF to 15,000 HRS	If an Electronic Air Cleaner (EAC) is installed, this enables a chosen number of hours before a System Event will occur to remind the homeowner to clean the EAC Reminder.
Line Frequency	60 HZ	50 HZ or 60 HZ	This is used to increment operation timers within the thermostat to ensure timing accuracy and to allow for preemptive control of a power-out situation for the thermostat.
Brands	York	None, York, Coleman, Luxaire, Champion, Fraser-Johnson	This displays on the Sleep Screen.

TABLE 5: System Settings

Variable	Default	Settings	Explanation
Efficiency Fault	Disabled	Disabled or Enabled	Faults that cause reduced system output but do not stop the equipment from running. Disabled faults will be logged but will not be displayed on the Home Screen Banner.
Warning Fault	Disabled	Disabled or Enabled	Disabled faults will be logged but will not be displayed on the Home Screen Banner.
Status Fault	Disabled	Disabled or Enabled	Fault that does not harm or stop equipment operation. Disabled faults will be logged but will not be displayed on the Home Screen Banner.
Delay Profiles	Normal	Normal, Humid, Dry, Temperate	This setting controls the indoor fan motor rampup and rampdown profiles in COOL mode. HUMID provides dehumidification at the start of the cooling cycle. DRY prevents dehumidification at the end of the cooling cycle. Fan speed in HEAT mode is not affected by this setting.
Humidistat Jumper	Yes	Yes or No	This setting will affect COOL Mode only. When the jumper is set to YES and there is a demand for dehumidification then the indoor CFM will be reduced by 15%.

TABLE 6: System Settings: Variable Capacity Systems

Variable	Default	Settings	Explanation
AUX Heat Lockout	OFF	OFF, 5°F, 10°F, 15°F, 20°F, 25°F, 30°F, 35°F, 40°F, 45°F, 50°F, 55°F	If an auxiliary heat lock out temperature is selected and the outdoor ambient temperature is greater than the auxiliary heat lock out temperature, then the auxiliary heat (W1 & W2) outputs will not be energized.
HP Lockout	OFF	OFF, 5°F, 10°F, 15°F, 20°F, 25°F, 30°F, 35°F, 40°F, 45°F, 50°F, 55°F	If a setting of OFF is selected, The heating equipment cycle will always start with the heat pump regardless of the outdoor air temperature. If a lockout temperature is selected and the outdoor air temperature is less than the selected temperature, the heating cycle is started with the AUX Heat source. If the outdoor air temperature is equal to or greater than the selected temperature, the heating cycle is started with the heat pump.
Comfort/ Efficiency	Efficiency	Comfort or Efficiency	This is used to determine how quickly the compressor will ramp up to meet setpoint.
Heating Airflow Adjust	0%	-10%, -5%, 0%, 5%, 10%	Allows the heating airflow CFM to be adjusted by plus/minus 5 or 10%.
Cooling Airflow Adjust	0%	-10%, -5%, 0%, 5%, 10%	Allows the cooling airflow CFM to be adjusted by plus/minus 5 or 10%.
Climate	Normal	Normal, Humid, Dry	This setting adjusts the indoor fan motor maximum speed in COOL mode. Selecting HUMID will reduce max fan CFM by 10%. Selecting DRY will increase max fan speed by 10%. Fan speed in HEAT mode is not affected by this setting.
Defrost Temp	50°F	50°F, 60°F, 70°F, or 80°F	If necessary, increase this temperature setpoint for more aggressive defrost operation.
Demand Response	Disabled	Disabled, Enabled (Open), Enabled (Closed)	This is used to enable or disable the demand response feature.
Demand Resp Action	4°F	4°F, 6°F, 8°F, 10°F, Shut Down	When Demand Response is active, the setpoint will update to the selected temperature value or the equipment will shut down. The setpoint can be raised or lowered when the event is active, but the temperature selection differential must be maintained.

TABLE 7: System Settings: 2-Stage AC/HP Systems

Variable	Default	Settings	Explanation
Balance Point	35°F	0°F, 10°F, 15°F, 20°F, 25°F, 30°F, 35°F, 40°F, 45°F	This feature prevents the operation of auxiliary heat above the specified temperature.
Low Temperature Cut-out LTCO	ON	'ON '-20°F, -10°F 0°F, 10°F, 15°F, 20°F, 25°F, 30°F, 35°F	This feature prevents compressor operation below the specified temperature.
Switch Point	35°F	35°F, 40°F, 45°F	This setting works in conjunction with the forced second stage feature of the hot heat pump to allow more creature comfort.
Compressor Delay	OFF	OFF or ON	This feature allows for smooth transitions and proper cycling of the reversing valve.
Hot Heat Pump	OFF	OFF or ON	Enabling the Hot Heat Pump feature provides increased discharge air temperatures by reducing indoor blower speed while forcing the outdoor unit into a higher stage for increased comfort.
Y2 Lock	OFF	OFF or ON	This feature applies only to second stage compressor operation that is initiated based on the thermostat signals and does not apply to the Hot Heat Pump functionality.
Defrost Temp	70°F	50°F, 60°F, 70°F, 80°F	If necessary, increase this temperature setpoint for more aggressive defrost operation.
Fossil Fuel	OFF	OFF or ON	The jumper has an ON or OFF setting. The jumper will be in the ON position for a fossil fuel furnace installation.
Demand Response	Disabled	Disabled, Enabled (Open), Enabled (Closed)	This setting is used to enable or disable the demand response feature.
Demand Response Action	4°F	4°F, 6°F, 8°F, 10°F, Shut Down	When this feature is enabled, the thermostat will update the setpoint to the user selected temperature value.

TABLE 8: Float Switch Settings (AHV, AVC, MVC, AVV, and 2-Stage Variable Speed ECM Furnace)

Variable	Default	Settings	Explanation
Float Switch	Disabled	Enabled (Open), Enabled (Closed), Disabled	This setting allows the user to activate an optional condensate float switch (S1-ACS2). If a normally closed (NC) switch is used, select Enabled (Open). If a normally open (NO) switch is used, select Enabled (Closed).

TABLE 9: Auxiliary Settings (2-Stage Variable Speed ECM Furnace)

Variable	Default	Settings	Explanation
AUX Switch	Disabled	Enabled (Open), Enabled (Closed), Disabled	This screen allows the user to activate the optional dry relay contact which is supplied by the utility company.
AUX Switch: Heat	Stage Down	Stage Down or Shut Off Comp	This screen allows the user to determine the equipment functionality when the AUX Switch is activated.
AUX Switch: Cool	Stage Down	Stage Down or Shut Off Comp	This screen allows the user to determine the equipment functionality when the AUX Switch is activated.

FAULTS & SYSTEM EVENTS

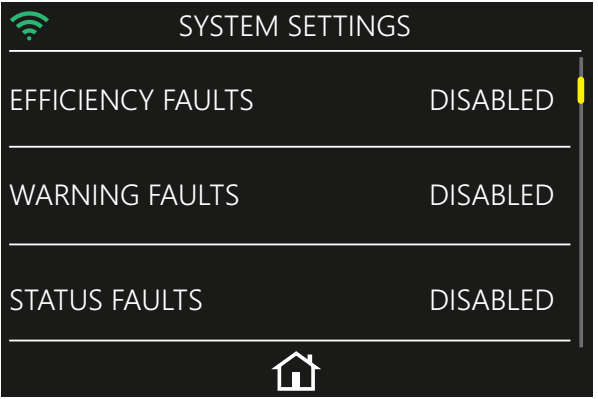


FIGURE 30: Fault Display Settings

This screen allows the user to activate whether faults display on the Home screen. Equipment faults will fall into one of the following four categories, see below.

TABLE 10: Fault Categories

Variable	Default	Settings	Explanation
Critical	N/A	N/A	Faults that stop equipment operation.
Efficiency	Disable	Disable or Enable	Faults that cause reduced system output but do not stop the equipment from running.
Warning	Disable	Disable or Enable	Faults could affect equipment operation. If not addressed, warning faults could lead to critical faults.
Status	Disable	Disable or Enable	Faults that do not harm or stop equipment operation.

TABLE 11: Critical Faults

CRITICAL Fault (Displayed Text)	Description
Thermostat	
COMM ERROR OD CTRL	There was no response from the device within 10 seconds of the primary control's query after having communicated prior
COMM ERROR ID CTRL	There was no response from the device within 10 seconds of the primary control's query after having communicated prior
COMM ERROR BACK PCB	Valid packet has not been received from back PCB within last 15 seconds
Air Handler (AHV, MV, AVC, MVC, AVV)	
INDOOR: NO MODEL PLUG	ID Plug is not present or not connected properly. Check for loose plug or loose wires in plug.
INDOOR: CONTROL FAILURE RECOVERY	Control recovered from internal error
INDOOR: CONTROL FAILURE	Control Failure
Modulating Furnace	
FURNACE: FLAME W/OUT POWER	Flame is sensed with no power being supplied to gas valve. This can be caused by a gas valve that is slow to close or that leaks gas through to the burners
FURNACE: HIGH LIMIT OPEN	High limit switch or 24 volt fuse is open. Can be caused by restricted airflow or open fuse
FURNACE: ROLLOUT OR AUX OPEN	Rollout or auxiliary switch open. Reset rollout switch if possible. Check limit switch in air blower housing
FURNACE GAS VALVE FAILURE	Current failure on modulating gas valve
FURNACE: SUPPLY PWR REVERSED	Incorrect line voltage polarity, improper grounding, or control transformer out of phase with line voltage power. Check the polarity of incoming power and grounding. Check transformer.
FURNACE: GAS VALVE CIRCUIT SHORT	Gas valve circuit shorted. Check gas valve wiring. If correct, replace gas valve
FURNACE: BLOWER FAILURE	Main blower failure

TABLE 11: Critical Faults

CRITICAL Fault (Displayed Text)	Description
FURNACE: NO MODEL PLUG	ID plug is not present or not connected properly. Check for loose plug or loose wires in plug
FURNACE: JUMPER ERROR	Jumper Error
FURNACE: PRESSURE SWITCH OPEN	Stuck open pressure switch indicates that the pressure switch is open when it should be closed
FURNACE: IGNITION FAILED	Lockout due to no ignition. Check gas supply, igniter, gas valve, and flame sensor
FURNACE: MULTI FLAME DROPOUTS	Lockout due to too many flame recycles. Can be caused by fault gas valve, low gas pressure, or dirty flame sensor
2-Stage Furnace	
FURNACE: FLAME W/OUT POWER	Flame sensed with gas valve off
FURNACE: LIMIT/ROLLOUT OPEN	Limit/Rollout switch open
FURNACE: LIMIT/ROLLOUT OPEN 15 MIN	Limit/Rollout switch open more than 15 minutes
FURNACE: PRESSURE SWITCH LOCKOUT	Pressure switch cycle lockout
FURNACE: SUPPLY PWR REVERSED	Incorrect line voltage polarity
FURNACE: GAS VALVE CIRCUIT SHORT	Gas valve circuit shorted
FURNACE: LIMIT/ROLLOUT OPEN 5 MIN	Limit/Rollout switch open from 5 to 15 minutes
FURNACE: NO MODEL PLUG	ID Plug missing or not connected properly
FURNACE: CONTROL FAILURE	Control Failure
FURNACE: PRESSURE SWITCH OPEN	Pressure switch open with inducer on
FURNACE: IGNITION FAILED	Lockout due to failed ignition
FURNACE: MULTI FLAME DROPOUTS	Lockout due to too many flame dropouts

TABLE 11: Critical Faults

CRITICAL Fault (Displayed Text)	Description
Indoor AUX	
INDOOR: CONTROL FAUILURE	Control Failure
INDOOR: LOW VOLTAGE (<16VAC)	Low voltage (below 16 VAC) stopped current relay outputs
INDOOR:X/L INPUT – FLASH 2	X/L Input Status
INDOOR:X/L INPUT – FLASH 4	X/L Input Status
Outdoor AUX	
OUTDOOR:HPS LOCKOUT	System in high pressure switch lockout
OUTDOOR:CONTROL FAILURE	Control Failure
OUTDOOR:LPS LOCKOUT	System in low pressure switch lockout
OUTDOOR:LOW VOLTAGE (< 16VAC)	Low voltage (below 16.0 VAC) stopped current relay outputs
OUTDOOR:COMPRESSOR MISWIRE	Compressor contactor miswire
YGVI	
OUTDOOR:HPS LOCKOUT-HP	High Pressure Switch fault. Last mode of operation was heat pump.
OUTDOOR:HPS LOCKOUT-DEFROST	High Pressure Switch fault. Last mode of operation was defrost.
OUTDOOR:CONTROL FAILURE	Control Failure
OUTDOOR:LPS LOCKOUT	Low Pressure Switch Lockout
OUTDOOR:LOW VOLTAGE (< 16VAC)	Low voltage (below 16.0 VAC) stopped current relay outputs
OUTDOOR:AMBIENT SENSOR SHORTED	Outdoor ambient temperature sensor failure (shorted)
OUTDOOR:AMBIENT SENSOR OPEN	Outdoor ambient temperature sensor failure (open)
OUTDOOR:LIQUID LINE SENSOR SHORT	Liquid line sensor failure (shorted)
OUTDOOR:LIQUID LINE SENSOR OPEN	Liquid line sensor failure (open)
OUTDOOR:HIGH DISCHARGE TEMP - SOFT LOCKOUT	High discharge line temperature

TABLE 11: Critical Faults

CRITICAL Fault (Displayed Text)	Description
OUTDOOR:LOW DISCHARGE TEMP - SOFT LOCKOUT	Low discharge line temperature
OUTDOOR:HIGH DISCHARGE TEMP - HARD LOCKOUT	High discharge line temperature
OUTDOOR:LOW DISCHARGE TEMP - HARD LOCKOUT	Low discharge line temperature
OUTDOOR:DISCHARGE LINE SENSOR SHORT	Discharge line sensor failure (shorted)
OUTDOOR:BONNET SENSOR SHORT	Bonnet sensor failure (shorted)
OUTDOOR:FOSSIL FUEL CONFIG ERROR	Fossil Fuel Mode setting error. FFUEL jumper in the OFF position with bonnet sensor present
OUTDOOR:COMPRESSOR MISWIRE	Compressor contactor miswire
OUTDOOR:Y2 W/O Y1-SOFT LOCKOUT	Y2 present without Y1
OUTDOOR:NO DEFROST CURVE SELECTED	Defrost Curve Jumper Error. Invalid jumper setting preventing compressor operation.
Variable Capacity Outdoor Control	
OUTDOOR:CONTROL FAILURE	Control Failure
OUTDOOR:HPS SOFT LOCKOUT-NORMAL	High pressure switch lockout. Last mode of operation was normal compressor.
OUTDOOR:HPS HARD LOCKOUT-NORMAL	High pressure switch lockout. Last mode of operation was normal compressor.
OUTDOOR:HPS SOFT LOCKOUT-DEFROST	High pressure switch lockout. Last mode of operation was defrost.
OUTDOOR:HPS HARD LOCKOUT-DEFROST	High pressure switch lockout. Last mode of operation was defrost.
OUTDOOR:LOW VOLTAGE(< 19VAC)	Low Voltage (<19 VAC) stopped current relay outputs for > 2 seconds
OUTDOOR:COMM LOST INVERTER DRIVE	Inverter Control Communications Fault
OUTDOOR: COMM LOST-SYSTEM PRIMARY CONTROL	RS-485 Communications Lost

TABLE 11: Critical Faults

CRITICAL Fault (Displayed Text)	Description
OUTDOOR:AMBIENT SENSOR SHORTED	Outdoor ambient sensor failure (short)
OUTDOOR:AMBIENT SENSOR OPEN	Outdoor ambient sensor failure (open)
OUTDOOR:COIL TEMP SENSOR SHORTED	Coil sensor failure (short)
OUTDOOR:COIL TEMP SENSOR SHORTED-SOFT LOCKOUT	Coil sensor failure (short)
OUTDOOR:COIL TEMP SENSOR OPEN	Coil sensor failure (open)
OUTDOOR:COIL TEMP SENSOR OPEN-SOFT LOCKOUT	Coil sensor failure (open)
OUTDOOR:LIQUID TEMP SENSOR SHORTED	Liquid line temperature sensor failure (short)
OUTDOOR:LIQUID TEMP SENSOR SHORTED-SOFT LOCKOUT	Liquid line temperature sensor failure (short)
OUTDOOR:LIQUID TEMP SENSOR OPEN	Liquid line temperature sensor failure (open)
OUTDOOR:LIQUID TEMP SENSOR OPEN-SOFT LOCKOUT	Liquid line temperature sensor failure (open)
OUTDOOR:DISCHARGE TEMP SENSOR SHORTED	Discharge temperature sensor failure (short)
OUTDOOR:DISCHARGE TEMP SENSOR OPEN	Discharge temperature sensor failure (open)
OUTDOOR:DISCHARGE TEMP SENSOR OPEN-SOFT LOCKOUT	Discharge temperature sensor failure (open)
OUTDOOR:SUCTION TEMP SENSOR SHORTED	Suction temperature sensor failure (short)
OUTDOOR:SUCTION TEMP SENSOR SHORTED-SOFT LOCKOUT	Suction temperature sensor failure (short)
OUTDOOR:SUCTION TEMP SENSOR OPEN	Suction temperature sensor failure (open)
OUTDOOR:SUCTION TEMP SENSOR OPEN-SOFT LOCKOUT	Suction temperature sensor failure (open)
OUTDOOR:DISCHARGE PRESSURE SENSOR LOW VOLTAGE	Discharge pressure sensor failure (low voltage)

TABLE 11: Critical Faults

CRITICAL Fault (Displayed Text)	Description
OUTDOOR: DISCHARGE PRESSURE SENSOR LOW VOLTAGE-SOFT LOCKOUT	Discharge pressure sensor failure (low voltage)
OUTDOOR: DISCHARGE PRESSURE SENSOR HIGH VOLTAGE	Discharge pressure sensor failure (high voltage)
OUTDOOR: DISCHARGE PRESSURE SENSOR HIGH VOLTAGE-SOFT LOCKOUT	Discharge pressure sensor failure (high voltage)
OUTDOOR: SUCTION PRESSURE SENSOR LOW VOLTAGE-SOFT LOCKOUT	Suction pressure sensor failure (low voltage)
OUTDOOR: SUCTION PRESSURE SENSOR HIGH VOLTAGE-SOFT LOCKOUT	Suction pressure sensor failure (high voltage)
OUTDOOR: HIGH DISCHARGE TEMP	High discharge temperature
OUTDOOR: HIGH DISCHARGE TEMP - SOFT LOCKOUT	High discharge temperature
OUTDOOR: HIGH DISCHARGE TEMP - HARD LOCKOUT	High discharge temperature
OUTDOOR: LOW SUCTION PRESSURE	Low suction pressure
OUTDOOR: LOW SUCTION PRESSURE - SOFT LOCKOUT	Low suction pressure
OUTDOOR: LOW SUCTION PRESSURE - HARD LOCKOUT	Low suction pressure
OUTDOOR: MULTIPLE INVERTER FAULTS-SOFT LOCKOUT	Multiple Inverter Faults
VS Inverter Control	
INVERTER: COMPRESSOR PHASE OVER CURRENT	Compressor Phase Over Current
INVERTER: AC INPUT OVER CURRENT	AC Input Over Current
INVERTER: DC BUS OVER VOLTAGE	DC Bus Over Voltage

TABLE 11: Critical Faults

CRITICAL Fault (Displayed Text)	Description
INVERTER: DC BUS UNDER VOLTAGE	DC Bus Under Voltage
INVERTER: AC INPUT OVER VOLTAGE	AC Input Over Voltage
INVERTER: AC INPUT UNDER VOLTAGE	AC Input Under Voltage
INVERTER: POWER MODULE OVER TEMP	Power Module Over Temp
INVERTER: PFC-IGBT OVER TEMP	PFC-IGBT Over Temp
INVERTER: LOST ROTOR POSITION	Lost Rotor Position
INVERTER: COMPRESSOR PHASE CURRENT IMBALANCE	Compressor Phase Current Imbalance
INVERTER: MICROELECTRONIC FAULT	Microelectronic Fault
INVERTER: POWER MODULE TEMP LOW/SENSOR OPEN	Power Module Temp Low or Sensor Open Fault
INVERTER: COMM ERROR	Modbus Communication Lost
INVERTER: PFC MCU & DSP COMM ERROR	PFC MCU and DSP Communication Lost
INVERTER: COM MCU & DSP COMM ERROR	COM MCU and DSP Communication Lost
INVERTER: PFC-IGBT LOW TEMP/SENSOR OPEN	PFC-IGBT Temp Low or Sensor Open Fault
INVERTER: COMPRESSOR MODEL CONFIG ERROR	Compressor Model Configuration Error
INVERTER: HPS CONFIG ERROR	High Pressure Sensor Type Configuration Error
INVERTER: DLT CONFIG ERROR	DLT Sensor Configuration Error
INVERTER: FAULT LIMIT LOCKOUT	Fault Limit Lockout

TABLE 12: Efficiency Faults

EFFICIENCY Fault (Displayed Text)	Description
Thermostat	
ID TEMP SENSOR HIGH	Temperature reading > 122°F
ID TEMP SENSOR LOW	Temperature reading = 0 or reading not available
REMOTE SENSOR HIGH	Remote temperature > 122°F. Only flagged if remote sensor set to use as indoor temperature (REMOTE SENSOR setting set to INDOOR or AVERAGE)
REMOTE SENSOR LOW	Remote temperature = 0. Only flagged if remote sensor set to use as indoor temperature (REMOTE SENSOR setting set to INDOOR or AVERAGE)
HUM TEMP SENSOR HIGH	Humidity sensor temperature > 122°F. Only flagged if using hum temperature as a backup source during a fault condition with the primary temperature sensor
HUM TEMP SENSOR LOW	Humidity sensor temperature = 0. Only flagged if using hum temperature as a backup source during a fault condition with the primary temperature sensor
ID TEMP RANGE HIGH	Indoor temperature is > 99.0°F
ID TEMP RANGE LOW	Indoor temperature is < 40.0°F
HUM SENSOR FAILURE	Humidity sensor timed out. Humidity reading is > 99% or Humidity reading is 0.
HUMIDITY RANGE HIGH	Humidity reading is > 90%
HUMIDITY RANGE LOW	Humidity reading is < 10%
OUTDOOR SENSOR FAILURE	OD temp > 127 or < -60

TABLE 12: Efficiency Faults

EFFICIENCY Fault (Displayed Text)	Description
Modulating Furnace	
FURNACE: PRESSURE SWITCH CLOSED	Pressure switch closed with inducer pressure below pressure switch set-point (switch is closed when it should be open). Check pressure switch.
FURNACE: SOFT LIMIT WARNING	Soft limit warning
FURNACE: AIR BLOCKAGE WARNING	Air blockage warning
FURNACE: UNKNOWN FAILURE	Unknown failure
FURNACE: FLAME ROD AGE WARNING	Flame rod age warning
2-Stage Furnace	
FURNACE: PRESSURE SWITCH CLOSED	Pressure switch closed with inducer off
FURNACE: 2S PRESSURE SWITCH OPEN	2nd stage pressure switch open with high inducer on
FURNACE: FLAME ROD AGE WARNING	Flame rod warning
Outdoor AUX	
OUTDOOR:Y 2 W/O Y1-SOFT LOCKOUT	Y2 present without Y1
OUTDOOR: HPS OPEN W/O COMPRES-SOR	HPS open with no call for compressor
YGVI	
OUTDOOR: PIPE FREEZE TIMER EXPIRED	Pipe Freeze Protection Timer expiration
OUTDOOR: HPS OPEN W/O COMPRES-SOR	HPS open with no call for compressor
Variable Capacity Outdoor Control	
OUTDOOR: HPS OPEN	High-pressure switch fault (not in lockout yet)
OUTDOOR: PIPE FREEZE TIMER EXPIRED	Pipe Freeze Timer expiration
OUTDOOR: REPAIR MODE HEAT-HP	Conventional Y1 signal receive in HP mode
OUTDOOR: REPAIR MODE COOL-HP"	Conventional Y1 and O signals receive in HP mode

TABLE 12: Efficiency Faults

EFFICIENCY Fault (Displayed Text)	**Description**
OUTDOOR: REPAIR MODE COOL-AC	Conventional Y1 signal receive in AC mode
OUTDOOR: HIGH SUPERHEAT”	High Superheat
OUTDOOR: LOW SUPERHEAT	Low Superheat
OUTDOOR: HIGH SUBCOOL	High Subcool
OUTDOOR: LOW SUBCOOL	Low Subcool
Variable Capacity Inverter	
INVERTER: COMPRESSOR PHASE CURRENT FOLDBACK	Compressor Phase Current Foldback Timeout
INVERTER: AC INPUT CURRENT FOLDBACK	AC Input Current Foldback Timeout
INVERTER: POWER MODULE HIGH TEMP	Power Module Temp High
INVERTER: PFC-IGBT HIGH TEMP	PFC-IGBT High Temp
INVERTER: POWER MODULE TEMP FOLDBACK	Power Module Temp. Foldback Timeout

TABLE 13: Warning Faults

WARNING Fault (Displayed Text)	Description
Indoor AUX	
OUTDOOR: LOW VOLTAGE (< 19VAC)	Low voltage (below 19.2 VAC) preventing further relay outputs
AC Control	
OUTDOOR: LOW VOLTAGE (< 19VAC)	Low voltage (below 19.2 VAC) preventing further relay outputs
OUTDOOR: AMBIENT SENSOR SHORTED	Outdoor ambient temperature sensor failure (shorted)
OUTDOOR: AMBIENT SENSOR OPEN	Outdoor ambient temperature sensor failure (open)
YGVI	
OUTDOOR: LOW VOLTAGE (< 19VAC)	Low voltage (below 19.2 VAC) preventing further relay outputs
OUTDOOR: O INPUT-AC MODE	O signal received in AC Mode
OUTDOOR: W INPUT-AC MODE	W signal received in AC Mode
OUTDOOR: W & O INPUTS-AC MODE	W and O signals received in AC Mode
OUTDOOR: W & O INPUTS-HP MODE	W and O signals received in HP Mode
Variable Capacity Outdoor Control	
OUTDOOR: LOW VOLTAGE (< 22VAC)	Low Voltage (< 22.2VAC) preventing further relay outputs for > 2 seconds
OUTDOOR: O INPUT-AC MODE	O signal received in AC mode
OUTDOOR: W & O INPUTS-AC MODE	W and O signal received in AC mode
OUTDOOR: W & O INPUTS-HP MODE	W and O signal received in HP mode
OUTDOOR: LOW SUCTION PRESSURE	Low suction pressure
OUTDOOR: LOW DISCHARGE TEMP	Low discharge temperature
OUTDOOR: LOW SYSTEM CHARGE	Low system charge
OUTDOOR: HIGH SYSTEM CHARGE	High system charge

TABLE 14: Status Fault

STATUS Fault (Displayed Text)	Description
Thermostat	
NOT CONNECTED TO SERVER	Not connected to Ayla server
NOT CONNECTED TO ROUTER	Router signal strength is 0 bars (not connected)
WIFI HARDWARE FAULT	Communications error occurred with Wi-Fi module (resets after valid message received)
Indoor AUX	
INDOOR:X/L INPUT-FLASH 1	X/L Input Status
INDOOR:X/L INPUT-FLASH 4	X/L Input Status
INDOOR:X/L INPUT-FLASH 5	X/L Input Status
INDOOR:X/L INPUT-FLASH 6	X/L Input Status
INDOOR:X/L INPUT-FLASH 7	X/L Input Status
INDOOR:X/L INPUT-FLASH 8	X/L Input Status
INDOOR:X/L INPUT-FLASH 9	X/L Input Status
INDOOR:X/L INPUT-CONSTANT	X/L Input Status
2-Stage Furnace	
FURNACE: Y WITHOUT G	Y thermostat demand without a G
Variable Capacity Outdoor Control	
OUTDOOR:DEMAND RESPONSE	Demand Response
ID EEV	
ID EEV: INVALID PRESSURE TRANSDUCER	Invalid pressure transducer
ID EEV: INVALID SUCTION TEMP	Invalid suction temperature
ID EEV: FULLY OPEN IN SUPER-HEAT	Valve position to fully open while in superheat control mode
ID EEV: SUCTION PRESSURE OUT OF RANGE	Suction pressure out of range
ID EEV: COMMUNICATIONS LOST	RS-485 Communication not sensed

STATUS Fault (Displayed Text)	Description
Thermostat	
NOT CONNECTED TO SERVER	Not connected to Ayla server
NOT CONNECTED TO ROUTER	Router signal strength is 0 bars (not connected)
WIFI HARDWARE FAULT	Communications error occurred with Wi-Fi module (resets after valid message received)
Indoor AUX	
INDOOR:X/L INPUT-FLASH 1	X/L Input Status
INDOOR:X/L INPUT-FLASH 4	X/L Input Status
INDOOR:X/L INPUT-FLASH 5	X/L Input Status
INDOOR:X/L INPUT-FLASH 6	X/L Input Status
INDOOR:X/L INPUT-FLASH 7	X/L Input Status
INDOOR:X/L INPUT-FLASH 8	X/L Input Status
INDOOR:X/L INPUT-FLASH 9	X/L Input Status
INDOOR:X/L INPUT-CONSTANT	X/L Input Status
2-Stage Furnace	
FURNACE: Y WITHOUT G	Y thermostat demand without a G
Variable Capacity Outdoor Control	
OUTDOOR:DEMAND RESPONSE	Demand Response
ID EEV	
ID EEV: INVALID PRESSURE TRANSDUCER	Invalid pressure transducer
ID EEV: INVALID SUCTION TEMP	Invalid suction temperature
ID EEV: FULLY OPEN IN SUPERHEAT	Valve position to fully open while in superheat control mode
ID EEV: SUCTION PRESSURE OUT OF RANGE	Suction pressure out of range
ID EEV: COMMUNICATIONS LOST	RS-485 Communication not sensed

TABLE 15: 2-Stage AC/Heat Pump - Critical, Efficiency & Warning Faults

Fault (Displayed Text)	Description
Critical Fault	
OUTDOOR:CONTROL FAILURE	Control Failure
OUTDOOR: HPS SOFT LO-NORM	High pressure switch lockout. Last mode of operation was normal compressor.
OUTDOOR: HPS HARD LO-NORM	High pressure switch lockout. Last mode of operation was normal compressor.
OUTDOOR: HPS SOFT LO-DFST	High pressure switch lockout. Last mode of operation was defrost.
OUTDOOR: HPS HARD LO-DFST	High pressure switch lockout. Last mode of operation was defrost.
OUTDOOR:LPS SOFT LOCKOUT	Low Pressure Switch Lockout
OUTDOOR:LPS HARD LOCKOUT	Low Pressure Switch Lockout
OUTDOOR:LOW VOLTAGE<16V	Low voltage (below 16.0 VAC) stopped current relay outputs
OUTDOOR: AMB SENS SHORT-CL	Outdoor ambient sensor failure in cooling mode (short)
OUTDOOR: AMB SENS OPEN-CL	Outdoor ambient sensor failure in cooling mode (open)
OUTDOOR: AMB SENS SHORT-HT	Outdoor ambient sensor failure in heating mode (short)
OUTDOOR: AMB SENS SHORT-HT-SFT LO	Outdoor ambient sensor failure in heating mode (short)
OUTDOOR: AMB SENS OPEN-HT	Outdoor ambient sensor failure in heating mode (open)
OUTDOOR: AMB SENS OPEN-HT-SFT LO	Outdoor ambient sensor failure in heating mode (open)
OUTDOOR:COIL SENSOR SHORT	Coil (liquid line) sensor failure (shorted)
OUTDOOR:COIL SENSOR OPEN	Coil (liquid line) sensor failure (open)
OUTDOOR:DIS LINE SENS SHORT	Discharge line sensor failure (shorted)
OUTDOOR:DIS LINE SENS OPEN	Discharge line sensor failure (open)

TABLE 15: 2-Stage AC/Heat Pump - Critical, Efficiency & Warning Faults

Fault (Displayed Text)	Description
OUTDOOR:HI DISCHARGE TEMP	High discharge line temperature
OUTDOOR:LO DISCHARGE TEMP	Low discharge line temperature
OUTDOOR:HI DIS TEMP - SFT LO	High discharge line temperature
OUTDOOR:LO DIS TEMP - SFT LO	Low discharge line temperature
OUTDOOR:HI DIS TEMP - HRD LO	High discharge line temperature
OUTDOOR:LO DIS TEMP - HRD LO	Low discharge line temperature
OUTDOOR:BONNET SENS SHORT	Bonnet sensor failure (shorted)
OUTDOOR:Y2 W/O Y1-SOFT LO	Y2 present without Y1
OUTDOOR:FFUEL CONFIG ERROR	Fossil Fuel Mode setting error. FFUEL jumper in the OFF position with bonnet sensor present
OUTDOOR: AC NOW HP	System previously configured as AC, now HP
OUTDOOR: HP NOW AC	System previously configured as HP, now AC
OUTDOOR: HP NOW AC-HRD LO	System previously configured as HP, now AC
OUTDOOR: NO TONNAGE SET	Jumpers at 000 with no program loaded and no tonnage selected
OUTDOOR: COOLING LTCO	Cooling LTCO Active
Efficiency Fault	
OUTDOOR:HPS OPEN	High-pressure switch fault (not in lock-out yet)
OUTDOOR: PIPE FRZE TIMER EXP	Pipe freeze timer expiration
Warning Fault	
OUTDOOR:LOW VOLTAGE< 19V	Low voltage (below 19.2 VAC) preventing further relay outputs
OUTDOOR:O INPUT-AC MODE	O signal received in AC Mode
OUTDOOR:W & O INPUTS-AC	W signal received in AC Mode
OUTDOOR:W & O INPUTS-AC	W and O signals received in AC Mode
OUTDOOR:W & O INPUTS-HP	W and O signals received in HP Mode

Ventilation Settings

The Ventilation Settings screens are used to view and edit settings associated with home ventilator (ERV/HRV) devices. These screens are only accessible in systems which have an ERV/HRV Accessory control installed. The settings available are explained in the table below.

TABLE 16: System Events

System Events: Logged but NOT shown in banner	
Event (Displayed Text)	**Description**
SETUP CORRECTION	Setting was adjusted b/w it was out of range or issue w/ other related setting
OTA PASS (APPF)	Over-the-Air (OTA) software update for front PCB application successful
OTA PASS (APPB)	OTA software update for back PCB application successful
OTA PASS (BOOT)	OTA software update for boot loader application successful
OTA TIMED OUT	OTA software updated has timed out after 3 (15 minute) attempts
FRONT BOARD CHANGED	Front PCB has been changed with a new unconfigured front PCB
AIR FILTER RESET	Air Filter # hours remaining has been reset (from FILTER screen)
HUMIDIFIER FILTER RESET	Humidifier Filter # hours remaining has been reset (from FILTER screen)
UV LAMP RESET	UV Lamp # hours remaining has been reset (from FILTER screen)
EAC RESET	EAC # hours remaining has been reset (from FILTER screen)
STARTUP	Flagged at startup to indicate that thermostat has been reset
NFC EVENT SUCCESS	Successful NFC Read/Write has occurred
LOG CLEARED	Faults and events have been reset from the Log

TABLE 16: System Events

System Events: Logged and displayed in banner while condition exists	
AIR FILTER REMINDER	Air filter change reminder is active (run hours have expired)
HUMIDIFIER FILTER REMINDER	Humidifier filter change reminder is active (run hours have expired)
UV LAMP REMINDER	UV Lamp change reminder is active (run hours have expired)
EAC REMINDER	EAC change reminder is active (run hours have expired)

TABLE 17: Ventilation Settings

Variable	Default	Settings	Explanation
Ventilation Mode	Timed	Continuous, Timed or Off	This will determine how often the ventilation device will be opened
Ventilation Runtime per Cycle	20 min.	5-55 min in 5 min intervals	If ventilation mode is set to “Timed”, the control will allow ventilation per this setting per Ventilation Cycle Time.
Ventilation Cycle Time	1 hour	1-4 hours	If ventilation mode is set to “Timed”, the control will allow Ventilation Runtime per this setting.
Ventilation Limits	Disabled	Disabled, Default, and Manual	If there is a damper installed for ventilation purposes.
No Ventilation Above	100°F		The touch screen will not allow ventilation if the outdoor temperature exceeds this setting.
No Ventilation Below	0°F		The touch screen will not allow ventilation if the outdoor temperatures is below this setting.

There are additional settings for ventilation. These settings determine if the ventilator is opened during a call for conditioning. The thermostat will open ventilation any time there is a call for conditioning, that is when the outdoor temperature falls in the “Ventilation with a heating/cooling call”. Otherwise ventilation will run with the indoor blower as per the previously described settings.

The ventilation can be controlled per indoor humidity.

If the outdoor temperature is above 50°F and the indoor humidity rises above the desired setting, the touch screen can be set to disable ventilation.

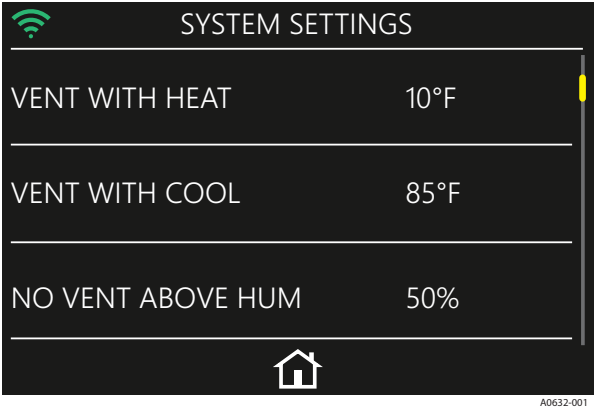


FIGURE 31: Ventilation Settings

Restore Defaults

To restore default settings, follow these steps:

1. Scroll to the bottom of the System Settings screen and select **Restore Defaults**. See Figure 32 on the next page.
2. Select and hold the **5** button for five seconds on the Restore Defaults screen. See Figure 33 on the next page.

To return to the System Settings screen without restoring default settings, on the Restore Defaults screen, select the CANCEL button.

NOTICE

When Restore Defaults is invoked, certain Hx™ Thermostat app settings will reset: ***Schedule Override Length****,* ***Away Mode Setpoints****, and* ***Service Reminders****.*

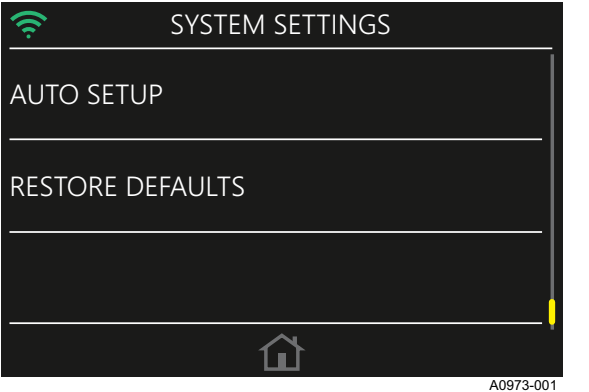


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FIGURE 32: Restore Defaults

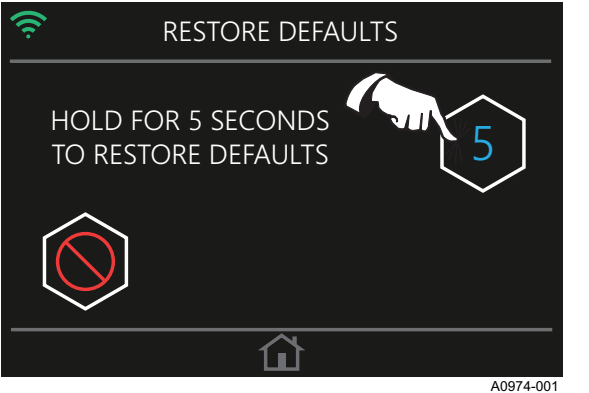

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FIGURE 33: Five-Second Hold

SECTION VII: SERVICE SETTINGS

Additional service information such as event and fault logs, and dealer content can be found by going to the Homeowner Settings screen.

LOG

Here the Event and Fault Log screen can be viewed. Pressing an entry displayed on the Log screen prompts a screen that shows when the event or fault last occurred, and how many times it has occurred. To delete all the displayed log entries, press **Reset Log**.

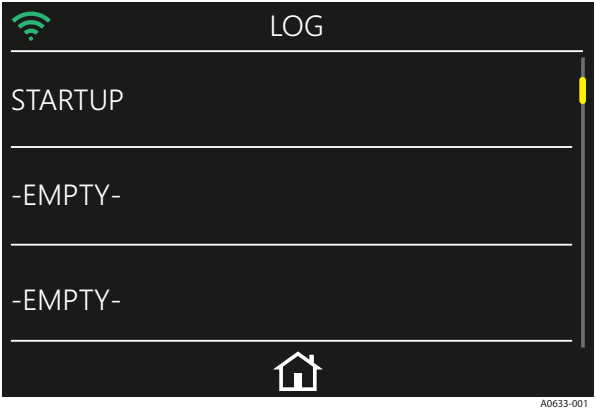


FIGURE 34: Event and Fault Log

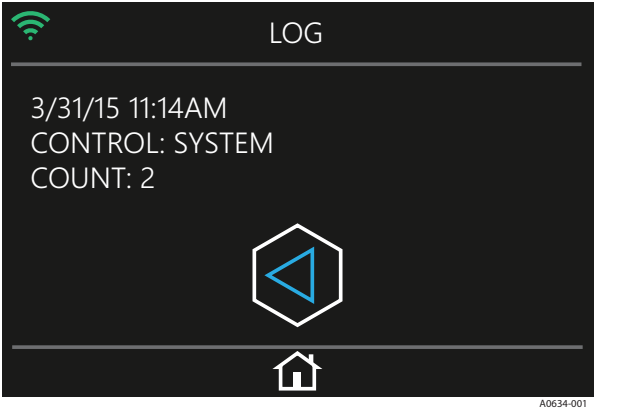


FIGURE 35: Event and Fault Occurrence Details

DEALER INFORMATION

The information displayed on this screen is editable via the Hx™ Thermostat app.

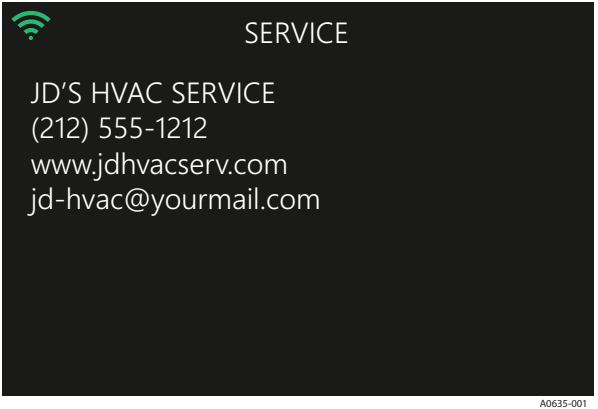


FIGURE 36: Dealer Information

FORCED OPERATION

Forced operation is possible by clearing any active delay timers as shown on the status screen. Pressing and holding **TIMERS** for 5 seconds clears timer countdown values for the ON timer, OFF timer, CYCLE timer and STAGE DELAY timer. Current lockouts will be actively displayed in this screen. Pressing and holding **LOCKOUT TIMERS** for 5 seconds clears the timer values for COOL timer, AUX HEAT timer and HP HEAT timer.

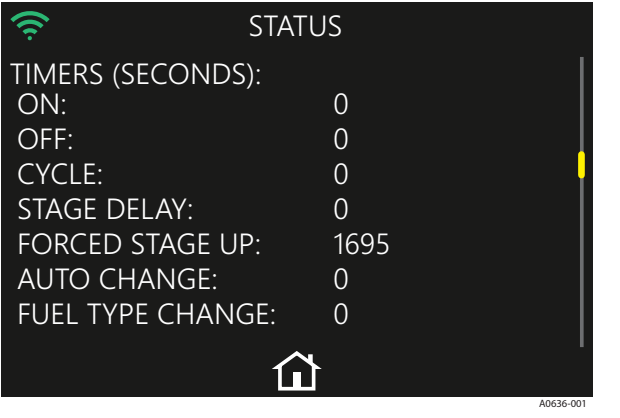
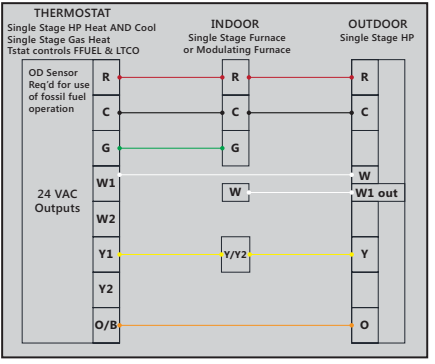
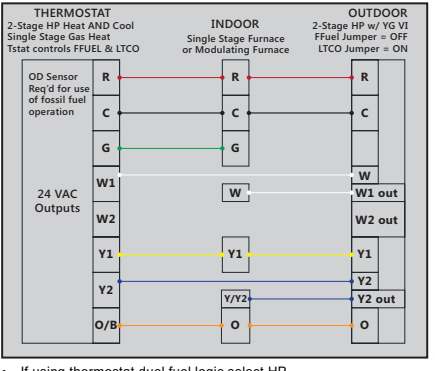


FIGURE 37: Forced Operation

SECTION VIII: WIRING DIAGRAMS

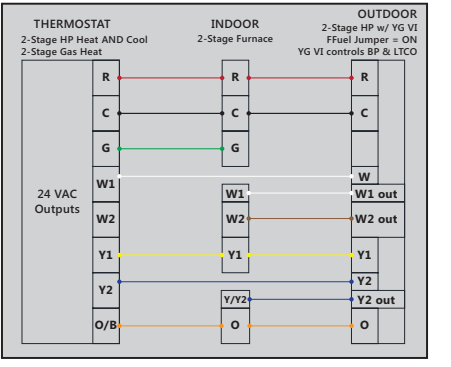
DUAL FUEL SYSTEMS (Furnace and Heat Pump)

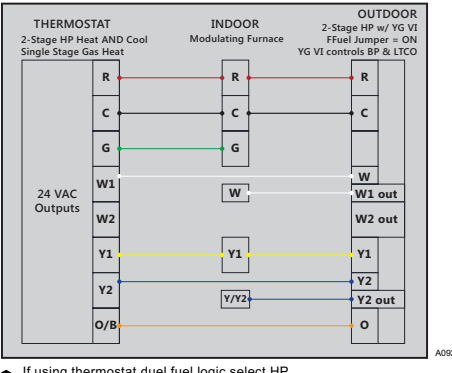




If using thermostat duel fuel logic select HP.
If using YG VI duel fuel logic or external fossil fuel kit, select YG VI.

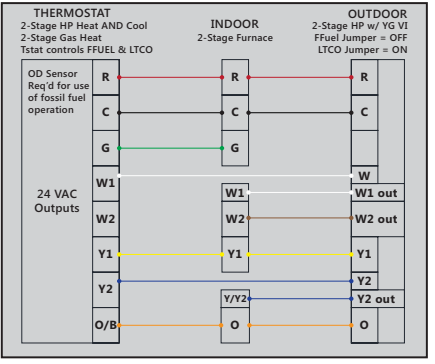
DUAL FUEL SYSTEMS
(Furnace and Heat Pump continued)



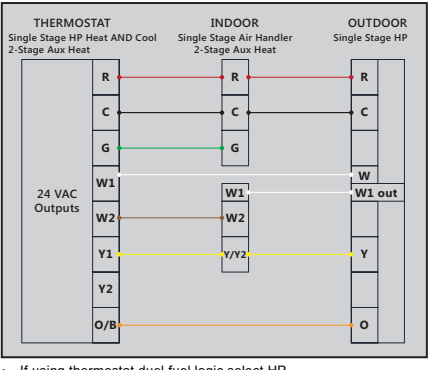


If using thermostat duel fuel logic select HP.
If using YG VI duel fuel logic or external fossil fuel kit, select YG VI.

DUAL FUEL SYSTEMS
(Furnace and Heat Pump continued)

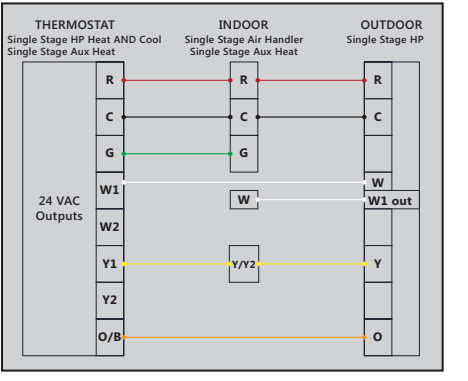


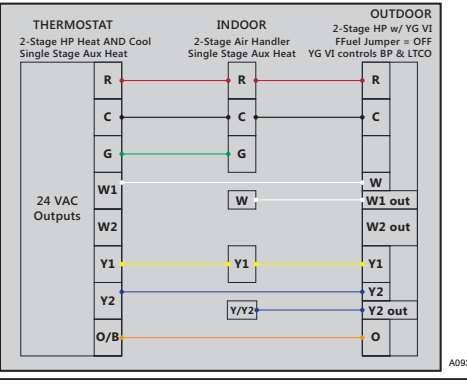
AIR HANDLER/HEAT PUMP SYSTEMS



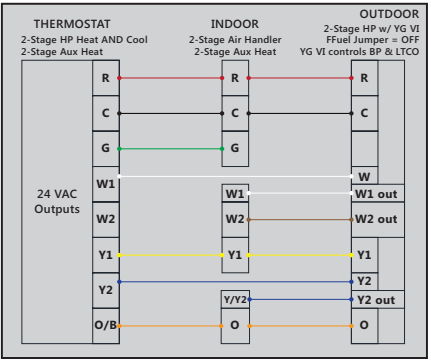
If using thermostat duel fuel logic select HP.
If using YG VI duel fuel logic or external fossil fuel kit, select YG VI.

AIR HANDLER/HEAT PUMP SYSTEMS (continued)



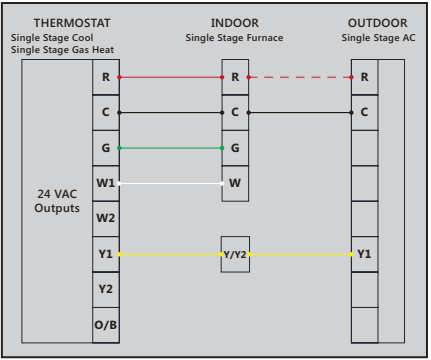


AIR HANDLER/HEAT PUMP SYSTEMS (continued)

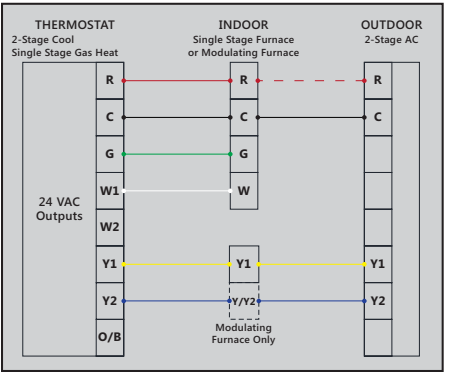


AC SYSTEMS Gas or Electric

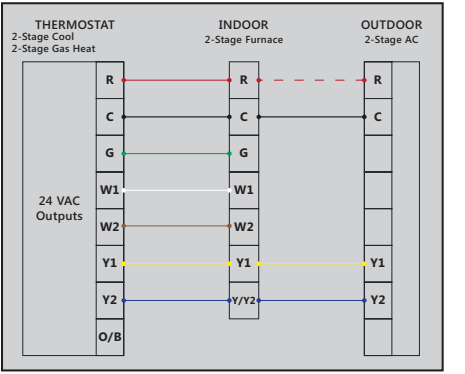
("R" connection —— = required, - - - = may be required)



AC SYSTEMS Gas or Electric (continued)



("R" connection ——= required, – – –= may be required)



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Supersedes: Nothing

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