

Installation Manual  
ECO-0600  
Version 2.0.0



- Geothermal Control

ECO-0600

HBX Control Systems Inc.



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## HBX ECO-0600 GEOTHERMAL MODULE

The ECO-0600 is designed to be a stand-alone Outdoor Reset Control device. The purpose and function of the ECO-0600 is to provide control for Geothermal applications. It can manage single tank applications as well as applications with separate hot and cold tanks. The ECO-0600 can provide up to 4 heat pump stages and a backup boiler per module. The control also allows for expandability with more modules (ECO-0600) for a total of 16 total stages.



This control can also function as a stand alone system without WiFi capabilities.

## FEATURES

- App for Android or Apple Smartphone/tablet device for remote access with alarm email notification
- Control up to four (4) stages plus backup
- Rotate heat pumps based on time and cycles
- Single or Dual tank setup
- Wi-Fi enabled for remote access via the SensorLinX mobile app
- DHW control
- Control system, cold/tank pumps with post purge and exercising options
- Operate reversing valve and/or 3 way diverting valve
- Outdoor temperature reset with WWSD/CWSD options
- Auto changeover
- Priority setup



## SAFETY SYMBOLS

**Extreme Hazard**

This action poses a serious threat that could result in personal injury or death, as well as permanent damage to the equipment. Proceed with caution.

**Point of Interest**

This point clarifies pertinent information, or brings your attention to an action that may have adverse effects on the installation process.

**Moderate Hazard**

This action may cause personal injury or have adverse effects on the installation process if handled incorrectly.

**Drawing Reference**

Refer to the specified electrical or mechanical drawing at the back of the manual.

**Disconnect Power Source**

The presence of low voltage (24VAC) or high voltage (120VAC) could result in personal injury or permanent damage to components or equipment.

## SAFETY WARNINGS



**WARNING:** Non-serviceable product. Send to HBX Controls Inc. only for service.



**WARNING:** Only suitably qualified individuals with formal training in electrical and hydronic controls should attempt the installation of this equipment. Incorrect wiring and installation will affect the warranty provided with this unit. Wiring must be completed in accordance with the codes and practices applicable to the jurisdiction for the actual installation.



**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**EXTREME HAZARD:** This HBX control is a microprocessor based controller and as such is not to be regarded as a safety (limit) control. Please consult and install the heating or cooling appliance in accordance with the manufacturer's recommendations.



**WARNING:** Use only copper conductor supply wire suitable for at least 105 °C



**WARNING:** a) Use copper conductors only if the terminal is acceptable only for connections to copper wire; b) Use aluminum conductors only or use aluminum or copper-clad aluminum conductors only if the terminal is acceptable only for connection to aluminum wire; or c) use copper or aluminum conductors or use copper, copper-clad aluminum, or aluminum conductors if the terminal is acceptable for connection to either copper or aluminum wire.



**WARNING:** All circuits must have a common disconnect and be connected to the same pole of the disconnect.



**WARNING:** Wiring connected in the bottom wiring chamber must be rated to at least 300V.

## RECEIPT & INSPECTION

After receiving, inspect the unit for any possible physical damage that may have occurred during transportation. After unpacking the unit make sure the box contains:

- 1 x Terminal Screwdriver (2.5 mm)
- 1 x Manual
- 1x Remote outdoor outdoor sensor (OUT-0100)
- 2x Universal Sensor (029-0022)
- 2x Cable ties

## TECHNICAL DATA AND DIMENSIONS

### ECO-0600 TECHNICAL DATA



#### Specifications:

- 4 x thermistor Input (10k Ohm)
- 4 x Stage Relays 24VAC 2A Max
- 3 x AUX Relays
  - 120VAC 1/6hp FLA or LRA 5A Max (Pump)
  - 240VAC 1/2hp FLA or LRA 5A Max (Pump)
  - 120VAC/240VAC 5A Max (Other)
- 1x Input 120VAC +/- 10% 50/60Hz 250mA Max

**Combined relay power should not exceed 15A**

#### Weight:

0.750Kg

#### Dimensions:

131mm W x 246mm H x 66.71mm  
5.16in W x 9.83in H x 2.64in

#### ETL Listings:

Meets CSA C22.2 No. 24  
Meets UL Standard 873  
ETL Control No. 3068143

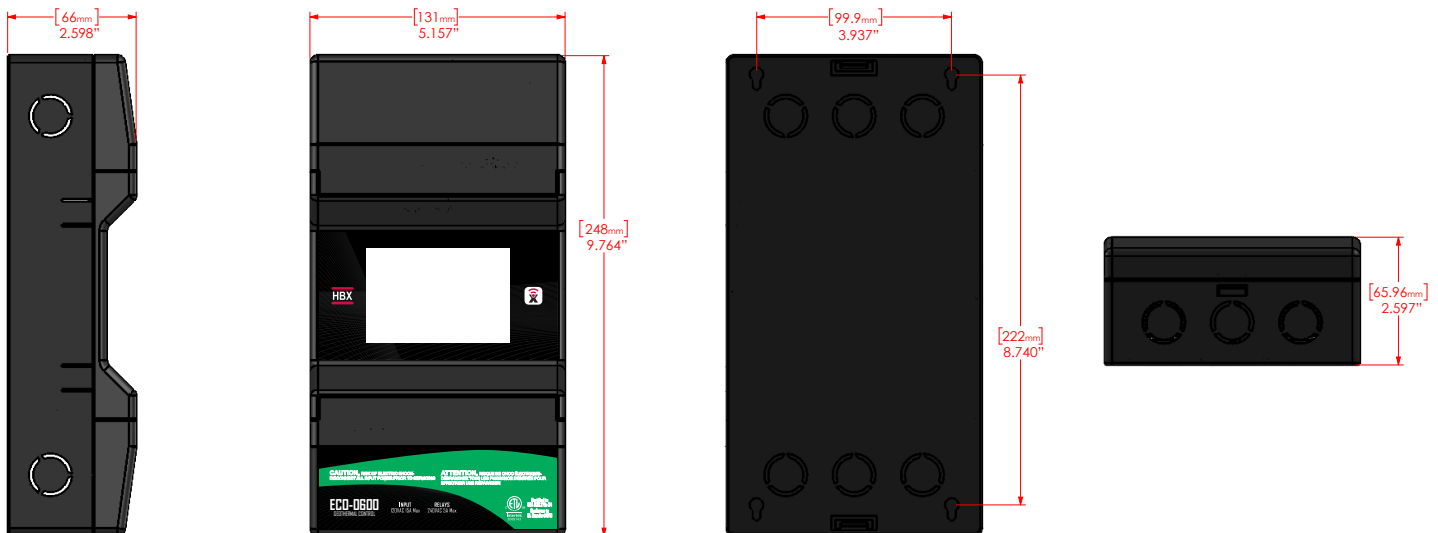
#### Storage:

50°F to 104°F (10°C to 40°C)

#### ECO-0600

WiFi: 2.4GHz Network Only  
FCC ID: 2AHMRESP125

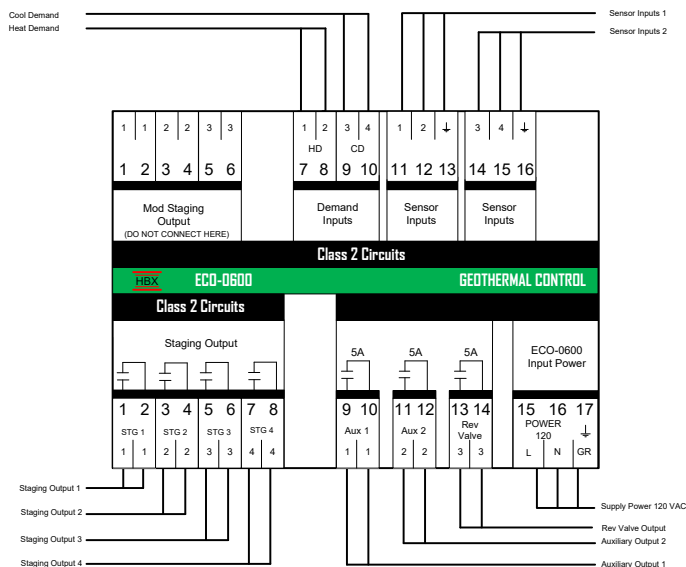
### DIMENSIONS



## WIRING AND INSTALLATION

### WIRING

We recommend all signal wiring to be a minimum of 18AWG shielded wire at a maximum of 500ft.



#### 1. DEMAND OUTPUTS

**7, 8: Demand Signal 1:** Apply a heat demand from a dry contact, or 24VAC.

**9, 10: Demand Signal 2:** Apply a cool demand from a dry contact, or 24 VAC.

A 24V demand input can only be accepted on version 2.07 or higher. Refer to diagram 5 for wiring

#### 2. SENSOR INPUTS

**11, 13:** Hot Tank temperature in dual tank mode, or Tank Temperature in single tank mode

**12, 13:** Cold Tank temperature. If the cold tank sensor is not connected, the control assumes single tank operation. If connected, the control will operate in dual tank mode.

**14, 16:** Outdoor temperature

**15, 16:** Used for DHW or setpoint

#### 3. STAGING OUTPUTS

**1,2:** Heat pump 1 output or Stage 5, 9, 13 (Secondary)

**3,4:** Heat pump 2 output or backup boiler (primary) or Stage 6, 10, 14 (Secondary)

**5,6:** Heat pump 3 output or backup boiler or Stage 7, 11, 15 (Secondary)

**7,8:** Heat pump 4 output or backup boiler or Stage 8, 12, 16 (Secondary)

The backup boiler output is determined following the last heat pump stage output

#### 5. RELAYS

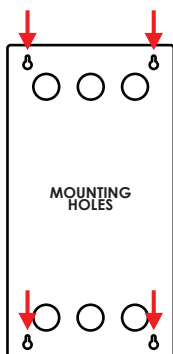
**9, 10:** Relay 1: Can be used as a system pump, hot tank pump, cold tank pump.

**11, 12:** Relay 2: Can be used as a system pump, hot tank pump, cold tank pump.

**13, 14:** Relay 3: Used as a Reversing Valve and/or 3 way diverting valves.

#### 6. INPUT POWER

**15, 16, 17:** This input is to power the ECO-0600. 0.25 Amps at 120 VAC is required to power this device



#### ECO-0600 Installation

The ECO-0600 is designed to be wall mounted or installed in a separate electrical enclosure. The unit should be installed inside and protected from falling water and high humidity conditions. With all the covers in place, it is designed to protect any individual from accidental electrical shock. It is not suitable for installation in hazardous locations and should not be close to any electromagnetic fields.

- Identify the four mounting holes on the ECO-0600, mark on the wall the desired location of mounting
- Pre-drill, anchor and fasten four screws for mounting
- Hang ECO-0600 and fasten tight to desired locations
- Complete wiring connections in accordance with terminal locations

## ECO-0600 MAIN SCREEN

**HOT TANK/COLD TANK** – The ECO-0600 features a full LCD screen that will display the hot and cold tank temperatures along with the outdoor temperature. If there is a demand for heating or cooling the corresponding tank zone will be bordered with a green box, and the staging output(s) in the lower wiring chamber will be closed

1

**Wi-Fi** – Indicates that the control is connected to a 2.4 GHz Wi-Fi network

2

**PRIORITY** – Indicates if there is a priority for heating or cooling

3

**HEAT PUMPS** – Indicates how many heat pumps are being utilized in your system setup. When a heat pump is activated by a call the heat pump will light up in respect to their classification

4

**REV VALVE** – When a cooling demand is activated the Rev Valve will light up to indicated it is on

5

**BACKUP** – The Backup will activate based on the parameters under the Backup Setup. When the symbol is lit up this indicates that the Backup contacts are closed. If there is no Backup icon on the Main Screen then the Backup Setup as not been configured and is set to Off

6

**PUMPS** – When a pump is activated by a call you will see the first pump (P1) and or second pump (P2) light up in respect to their classification, their associated contacts PUMP 1 and/or PUMP 2 can be found in the lower wiring chamber will be closed

7

**DEMANDS** - When the delegated demand is active it will be lit up thus in turn the associated demand in the upper wiring chamber will be closed as well (tt1, tt2)

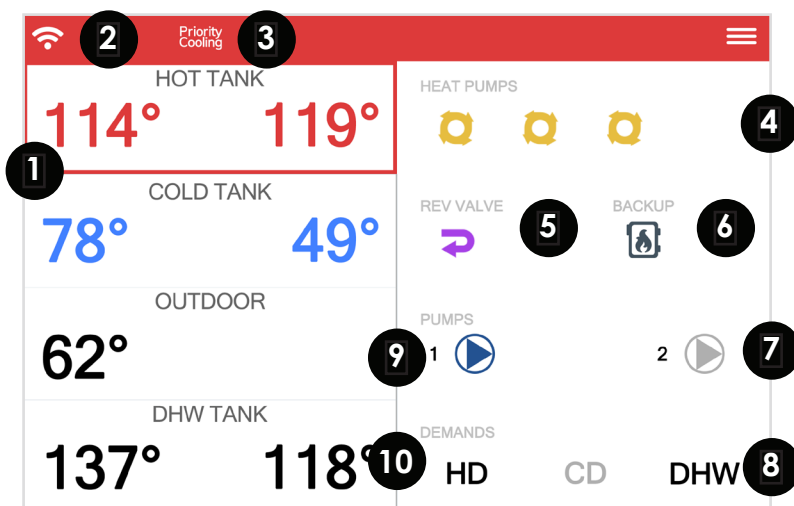
8

**DEMANDS** - The outdoor temperature will be displayed. This option will also display if the control is in WWSD (Warm Weather Shutdown) or CWSD (Cold Weather Shutdown)

9

**DHW TANK** - If DHW is set to on. It will display the DHW temperature. If there is a demand for DHW the zone will be bordered with a green box

10



Accessing the menu of the ECO-0600 is done by pressing the menu button (3 lines) in the top right corner.



STAGE SEQUENCE SETUP	
Stage Sequence	Primary
Control ID	93

## STAGE SEQUENCE SETUP

The ECO-0600 allows for expandability for more staging between controllers. A maximum of four (4) controllers can be utilized for a maximum of 16 heat pump stages. When using more than one ECO-0600, to allow them to communicate wirelessly between each other, they will need to follow a sequential order.

STAGE SEQUENCE SETUP	
Stage Sequence	5-8
Control ID	93

**STAGE SEQUENCE SETUP:** This setting will allow you to select the stage sequence in your systems setup.

The first sequence is labelled Primary and represents sequence 1-4.

- Primary (Stages 1-4)
- Secondary (Stages 5-8) \*ECO-0600 #2
- Secondary (Stages 9-12) \*ECO-0600 #3
- Secondary (Stage 13-16) \*ECO-0600 #4

**CONTROL ID:** If the Sequence was set to the Primary then the number under Control ID will represent this ECO-0600's ID. If the CPU Sequence was set to any sequence other than Primary, that ECO-0600's Control ID can be set to match the value of the Primary ECO-0600 Control ID and the ECO-0600's will then LINK automatically. The ECO-0600's will be LINKED when the Sequence Link symbol appears on the top left of the Main Screen for both controllers.



CONTROL STATUS



Sync Code	ASNO-0010
Wi-Fi Network	WIFI1
Wi-Fi Password	8P6CTE
Wi-Fi Strength	93%

## CONTROL STATUS

**Sync Code** - Sync Code of the ECO-0600

**Wi-Fi Network** – displays current SSID network connected to

**Wi-Fi Password** – displays password of current network connected to

**Wi-Fi Strength** – displays Signal strength of the network connected to

HEAT PUMP SETUP	
Number of Stages	2
Stage ON Lagtime	0 min
Stage OFF Lagtime	0 sec
Rotate Time	0 hrs
Rotate Cycles	0
Off Staging	OFF

## HEAT PUMP SETUP

**Number of Stages** – This setting will allow you to select the number of heat pump stages that are attached to the control. If Backup is being used, you can only have a maximum of 3 stages. If Backup is being used with 4 stages of heat pumps then Pump Output 1 will be used for the Backup. **(1 to 4) Default: 1**

**Stage ON Lagtime** – When the heat pump is set for more than 1 stage, this setting will be set for the minimum lagtime between heat pump stages. This is a time delay between stages. Even if the differential has been exceeded this time must elapse before that stage can come on. **(1-240 Min)**

**Stage Off Lagtime** – This feature is used to set how you would like to stage the heat pumps off. When the heat pump is set for more than 1 stage, this setting will be set for the minimum OFF lagtime between heat pump stages.

**Rotate Time** – Rotate Time The time of rotation between heat pumps. This setting is in hours of run time. This means that the heat pumps are going to rotate when the first heat pump exceeds the second by the rotate time. **(OFF/1H to 240H) Default: OFF**

**Rotate Cycles** – Set the number of cycles at which you would like to rotate the heat pumps. One cycle is described as the heat pump going on and then off. **(OFF/1 to 240) Default: OFF**

**Off Staging** – This feature is used to set how you would like to stage the heat pumps off. If set to OFF the heat pumps will stage off normally based off of tank temperature and differential settings or STAGE OFF Lagtime settings. If set to ON the heat pumps will all stage off at the same time, based off of tank temperature and differential settings. **(OFF/ON) Default: OFF**

**2 Stage Heat Pumps** – This setting will appear when the Number of Stages is set to an even value. This setting can be utilized when using dual stage heat pumps or pumps with 2 compressors per unit. **(OFF/ON) Default: OFF**

\*\* Only available on version 2.0 or higher

**LoLo Hi Hi Rotation** – This option is only selectable when 2 Stage Heat Pumps is set to On. This setting will enable for heat pumps with low fire and high fire compressors to engage the low stage first prior to the high. This is accounted for in rotation of heat pump stages as well so that the low fire stages still goes first when multiple 2 stage compressor heat pumps are used. **(OFF/ON) Default: OFF**

\*\* Only available on version 2.0 or higher

## TANK SETUP

HOT TANK SETUP	
WWSD	70°
Outdoor Reset	12°
Differential	8°
Max Tank Temp	150°
Min Tank Temp	140°

## HOT TANK SETUP WITH OUTDOOR RESET

**WWSD** - This setting is used to set the temperature in which the ECO-0600 will go into WWSD. If the outdoor temperature rises above this temperature, the system will be shut off. In WWSD the heat pumps and backup boiler will shut off.

(OFF/34°F to 180°F) Default: 65°F

**Outdoor Reset (Design)** – This is used in the outdoor reset design calculation. This option should be set to reflect your specific city or region. This option needs to be set OFF if you are not using outdoor reset.

\*With this option enabled, the Tank Temperature setting will be replaced by Min Tank and Max Tank Temperature settings.

(OFF/-40°F to 127°F) Default: OFF

**Differential** – Set this temperature to be the desired hot tank differential.

\*A differential of 4°F will allow for 2 degrees above and/or 2 degrees below the desired temperature before a demand is present.

(2°F to 100°F) Default: 6°F

**Min Tank Temp** - This setting is the bottom of the heat curve. The target will hit this temperature as the Outdoor Temperature approaches the WWSD.

(2°F to 180°F) Default: 80°F

**Max Tank Temp** - This setting is the top of the heat curve. The target will hit this temperature as the Outdoor Temperature approaches the Design Outdoor Temperature.

(2°F to 180°F) Default: 115°F

## TANK SETUP

HOT TANK SETUP	
WWSD	76°
Outdoor Reset	OFF
Differential	4°
Tank Temp	40°

## HOT TANK SETUP WITHOUT OUTDOOR RESET

**WWSD** - This setting is used to set the temperature in which the ECO-0600 will go into WWSD. If the outdoor temperature rises above this temperature, the system will be shut off. In WWSD the heat pumps and backup boiler will shut off.

(OFF/34°F to 180°F) Default: 65°F

**Outdoor Reset (Design)** - This is used in the outdoor reset design calculation. This option should be set to reflect your specific city or region. This option needs to be set OFF if you are not using outdoor reset.

\*With this option enabled, the Tank Temperature setting will be replaced by Min Tank and Max Tank Temperature settings.

(OFF/-40°F to 127°F) Default: OFF

**Differential** - Set this temperature to be the desired hot tank differential.

\*A differential of 4°F will allow for 2 degrees above and/or 2 degrees below the desired temperature before a demand is present.

(2°F to 100°F) Default: 6°F

**Tank Target Temperature** - When a heat demand is present and the control is not in WWSD, the control will target this temperature for heating.

(2°F to 180°F) Default: 115°F

If there is no thermistor attached to pins 14 and 15, the control assumes single tank operation.

## TANK SETUP

COLD TANK SETUP	
CWSD	70°
Outdoor Reset	12°
Differential	8°
Max Tank Temp	150°
Min Tank Temp	140°

### COLD TANK SETUP WITHOUT OUTDOOR RESET

**CWSD** - This setting is used to set the temperature in which the ECO-0600 will go into CWSD. If the outdoor temperature goes below this temperature, the system will be shut off. In CWSD the heat pumps will shut off.  
(OFF/32°F to 119°F) Default: 75°F

**Outdoor Reset (Design)** – This is used in the outdoor reset design calculation. This option should be set to reflect your specific city or region. This option needs to setup as OFF if you are not using outdoor reset.

With this option enabled, the Tank Temperature setting will be replaced by Min Tank and Max Tank Temperature settings.

(OFF/0°F to 119°F) Default: OFF

**Differential** – Set this temperature to be the desired cold tank differential. A differential of 4°F will allow for 2 degrees above and/or 2 degrees below the desired temperature before a demand is present.

(2°F to 100°F) Default: 8°F

**Min Tank Temp** - This setting is the bottom of the cooling curve. The target will hit this temperature as the outdoor temperature approaches the Outdoor Design Temperature.

(2°F to 180°F) Default: 45°F

**Max Tank Temp** - This setting is the top of the cooling curve. The target will hit this temperature as the Outdoor Temperature approaches the CWSD.

(2°F to 180°F) Default: 60°F

## TANK SETUP

COLD TANK SETUP	
CWSD	76°
Outdoor Reset	OFF
Differential	4°
Tank Temp	40°

### COLD TANK SETUP WITHOUT OUTDOOR RESET

**CWSD** - This setting is used to set the temperature in which the ECO-0600 will go into CWSD. If the outdoor temperature goes below this temperature, the system will be shut off. In CWSD the heat pumps will shut off. (OFF/32°F to 119°F) Default: 75°F

**Outdoor Reset (Design)** – This is used in the outdoor reset design calculation. This option should be set to reflect your specific city or region. This option needs to setup as OFF if you are not using outdoor reset.

With this option enabled, the Tank Temperature setting will be replaced by Min Tank and Max Tank Temperature settings.

(OFF/0°F to 119°F) Default: OFF

**Differential** – Set this temperature to be the desired cold tank differential. A differential of 4°F will allow for 2 degrees above and/or 2 degrees below the desired temperature before a demand is present.

(2°F to 100°F) Default: 8°F

**Tank Target Temperature** - When a cooling demand is present and the control is not in CWSD, the control will target this temperature for cooling.

(2°F to 180°F) Default: 45°F

\*If there is no thermistor attached to pins 14 and 15, the control assumes single tank operation.

## TANK SETUP

DHW TANK SETUP	
Use DHW Tank	OFF
DHW Target	34°
Differential	8°

A DHW call will have automatic priority over both HD and CD calls when set to Use DHW On. If a sensor is attached to 15-16 for DHW and Use DHW Tank is turned off this will turn the DHW sensor into a non-priority setting that will only active any AUX contact set to DHW. It will act independently of either HD or CD and cannot turn on any heat pumps.

## DHW TANK SETUP

**Use DHW Tank** - Once this option is enabled you will be able to program the remaining options for your DHW setup.

(OFF/ON) Default: OFF

**DHW Target** - This option allows you to select your DHW target temperature in the tank.

(35°F to 180°F) Default: 130°F

**Differential** - This is the differential for the DHW tank. Set this parameter to the desired differential for the DHW tank.

(2°F to 100°F) Default: 8°F

TANK SETUP	
Hot Tank	>
Cold Tank	>
DHW Tank	>
WWSD-CWSD Time	1 hrs
Use Web Outdoor	ON
Heat/Cool Switch Delay	30s
Wide Priority Diff	ON

**WWSD/CWSD Time** - This setting is used as a lagtime for CWSD and WWSD. This will hold the control from entering CWSD or WWSD until this time has elapsed. The timer starts when the outdoor temperature hits the CWSD or WWSD. This setting is useful in the shoulder seasons when there are large outdoor temperature swings.

(0H to 240H) Default: 0H

**Use Web Outdoor** - This setting can be used for outdoor temperature reading via the web instead of installing an outdoor sensor. The control must be connected to a Wi-Fi network and the user must set the controller to a building via the Sensorlinx mobile app for this setting to work.

(ON/OFF)

**Heat/Cool Switch Delay** - This will act as a delay between the control switching between Heat and cool calls and vise versa.

(30s to 600s)

**Wide Priority Diff** - This will create a differential based on the differential set in the Hot and Cold tank setups when switching between heat and cool demands. If set to Off and there is both a Heat and Cool Demand present the Tank target will switch between demands once the target has been satisfied. If set to On and there is both a Heat and Cool Demand present the Tank target will go past the target based on the differential value entered before switching to the other demand. This setting should not be used in single tank operations.

(ON/OFF)



## BACKUP SETUP

BACKUP SETUP	
Backup Time	OFF
Backup Temp	OFF
Backup Diff	OFF
Backup Only Outdoor	OFF
Backup Only Tank	OFF

**Backup Time** - This setting will be set for the minimum lag time between heat pump stages and the backup boiler. This is a time delay between the heat pump stages and the backup boiler. The backup time can bring on the backup even if differential and temperature are not in their range so long as the backup time has elapsed.

(OFF/1m to 240m) Default: OFF

**Backup Temp** - Set this temperature to the desired outdoor temperature that will allow the backup to come on. When the temperature resides above this value, the backup will not be allowed to come on. Only when the Outdoor Temperature falls below this value can the backup come on. This setting will override the backup time settings and bring the backup on instantaneously if the target is within its range to come on.

(OFF/2°F to 100°F) Default: OFF

**Backup Diff** - This setting can be used with the backup temperature and backup time or on its own to bring the backup on. This setting is used to set a differential on the tank at which you would like the backup to come on. This setting will override the backup time settings and bring the backup on instantaneously if the target is at or below the differential.

(eg. Tank temperature of 115°F and a backup differential of 10°F. The backup boiler will come on at 105°F providing all of the heat pumps are already on.)

(OFF/2°F to 100°F) Default: OFF

**Backup Only Outdoor** - This option allows you to set a temperature at which the backup will run at all times in favour of the heat pumps, the heat pumps will not run until the outside temperature rises above this setting. This will turn on the Backup for a Hot Tank or DHW call.

**Backup Only Tank** - Set this to the maximum tank temperature for the heat pumps to run at. Once this temperature has been exceeded, only the backup will heat the tank to the target temperature. To function properly, this temperature should be set lower than the hot tank target temperature. The tank temperature will be based on the Hot Tank during a heat call and the DHW during a DHW call.

## PUMP SETUP

PUMP SETUP	
Pump 1	Heating
Pump 1 Post Purge	0 sec
Pump 1 Start Delay	0 sec
Pump 2	Heating
Pump 2 Post Purge	0 sec
Pump 2 Start Delay	0 sec
Pump Exercise Time	1 hrs

**Pump 1** - The chosen pump type will close the lower contact at 1-2 (PUMP1) when a demand is in place. Pump choice options : System, Heating, Cooling, DHW, App, None

**Pump 1 Post Purge** – the amount of time if necessary for Pump 1 to run after the call associated with it has been removed.

Allowed Values: 0-240 Seconds

**Pump 1 Start Delay** – the amount of time if necessary for Pump 1 to be delayed to run after the call associated with it has been activated

Allowed Values: 0-240 Seconds

**Pump 2** - The chosen pump type will close the lower contact at 1-2 (PUMP1) when a demand is in place. Pump choice options : System, Heating, Cooling, DHW, App, None

**Pump 2 Post Purge** – the amount of time if necessary for Pump 1 to run after the call associated with it has been removed.

Allowed Values: 0-240 Seconds

**Pump 2 Start Delay** – the amount of time if necessary for Pump 1 to be delayed to run after the call associated with it has been activated

Allowed Values: 0-240 Seconds

**Pump Exercise Time** – The amount of time to exercise the pumps. The pump will run for the amount of time that is set in post purge for pump 1 and 2.

Allowed Values: 1-240 Seconds

## PUMP SETUP

PUMP SETUP

No Pump 1 Option

Pump 2	Heating
Pump 2 Post Purge	0 sec
Pump 2 Start Delay	0 sec

When four (4) heat pumps and a backup boiler is selected there will be no pump 1 option as the pump 1 relay will be controlling the backup boiler.

## PUMP OPTIONS

**System** – If there are any heating or cooling calls the pump contact will close

**Heating System** – will turn on when HD is present and not in WWSD

**Cooling System** – will turn on when CD is present and not in CWSD

**Load** – turns on when there is a heating or cooling demand and target is not satisfied. Turns off on DHW

**Source** – turns on when there is heating or cooling demand and target is not satisfied. Stays on with DHW

**Heating Pump** – If there are any heating call and the heating target is above the actual temperature the pump contact will close

**Cooling Pump** – if there are any cooling calls the pump contact will close

**DHW** – if there is a DHW call the pump contact will close

**App** – if the virtual app switch is activated this pump contact will close

**None** – No pumps are being utilized in your system setup



## PRIORITY

SETUP MENU	
Backup Setup	>
Pump Setup	>
Priority	Auto
Wi-Fi Settings	>

**Heat** - The control will prioritize a heating demand over a cooling demand.

**Cooling** – The control will prioritize a cooling demand over a heating demand.

**Auto** – The control will automatically set the priority based off how close the outdoor temperature is to the WWSD/CWSD setpoint setting.

WI-FI SETUP	
Wi-Fi Password	>
Wi-Fi SSID Manual Entry	>
Wi-Fi SSID Scan	>
Connect Now	Ready



If the connection is successful the option will display "Server". If the connection is not successful the option will display ready. If it displays "Wi-Fi" you may need to open port 1314 on your network router.

## WI-FI SETTINGS

Once you have selected the appropriate network and you have entered the correct password for that 2.4GHz network, pressing Ready will establish a connection to the Wi-Fi network. Attempting to connect to Wi-Fi the display will say Updating Settings, before showing Connecting to Wi-Fi, Please Wait. The controller is now trying to connect to Wi-Fi and it may take upwards of 120 seconds. If the controller backs out of the Wi-Fi Settings then just re-enter the page and wait. After it has counted down it will display either Now Connected to, Server. It is now connected to its 2.4GHz network and the Wi-Fi symbol on the Main Screen will appear soon after. If the connection was unsuccessful it will display Press to Connect, Ready. Click on Ready and begin the connection process again. If Now Connected to, Wi-Fi is displayed you may need to open port 1314 on your network router.

**Wi-Fi SSID Scan** – Pressing this will allow the ECO-0600 to actively scan for all available networks that you can choose from, and then you may select the 2.4 GHz network that you wish to connect to.

**Wi-Fi SSID Manual Entry** – This is where you can manually input the 2.4GHz SSID network that you want to connect to, use this method if the network does not auto populate when you perform the Wi-Fi SSID Scan. Ensure that you input this network exactly how it would appear, including spaces, numbers, capital or lowercase letters and or special characters.

**Wi-Fi Password** - Input the password for the 2.4 GHz SSID network that you are connecting to. (capital letters, special characters, numbers and lower case characters all available).

**Press to Connect** - Once you have selected the appropriate network and you have entered the correct password for that 2.4GHz network, pressing Connect Now will establish a connection to the Wi-Fi network.

## SETUP MENU

Permanent HD	OFF
Permanent CD	ON
Run Times	>

## PERMANENT HD

This setting indicates that the ECO-0600 is in a permanent heat demand. This can be used instead of attaching a thermostat.

(OFF/ON) Default: OFF

## PERMANENT CD

This setting indicates that the ECO-0600 is in a permanent cool demand. This can be used instead of attaching a thermostat.

(OFF/ON) Default: OFF

## RUN TIMES

Heat Pump 1	0.0
Heat Pump 2	0.0
Reset Run Times	

## RUN TIMES

This setting will allow you to view your heat pump(S) and/or backup boiler run times.

**Reset Run Times** – Selecting this option will clear the stage accumulated hours counter for heat pump(s) and/or backup boiler

## TIME SETUP

Auto Time	ON
Time	10:06am
Day of Week	Mon
Timezone	GMT +6:00

## DEGREES

Use this setting to change the display format from Celsius (°C) to Fahrenheit (°F). (°F/°C) Default: °F

## TIME SETUP

**Auto Time** – When connected to a 2.4 GHz Network the time displayed on the THM-0600's will be associated with the time zone you have chosen.

**Time** – Manual time input (24 hour clock)

**Day of the Week** – Manual day input (Mon, Tue, Wed, Thur, Fri, Sat, Sun)

**Time Zone** – Select the time zone for your area.

ECO CLOCK SETUP

Weekday Setup

Weekend Setup

## ECO CLOCK SETUP

Allows you to lock out your heat pumps and run only the backup boiler on a timed schedule, allowing you to save on energy and lower your utility bills during peak time periods. Energy Clock is only applicable if Backup is selected in setup.

### WEEKDAY SETUP

Adjust time and demand type options for weekday setup. The ECO-0600 is flexible and can be programmed for different schedules to run your heat pumps or backup boiler only for weekdays.

**Device Set Time (1-4)** – Adjust the schedule times for your heating devices. Time can be adjusted in 15 minute increments.

**Heating Device** – Set which devices will activate at set times.

**Heat Pumps** – If Heat Pumps selected, control will operate Heat Pumps and Backup Boiler (Normal Operation) as programmed by user until next scheduled time

**Backup only** – If Backup Only selected, control will operate the Backup Boiler only during a heat call until next scheduled time

### WEEKEND SETUP

Adjust time and demand type options for weekend setup. The ECO-0600 is flexible and can be programmed for different schedules to run your heat pumps or backup boiler only for weekends.

**Device Set Time (1-4)** – Adjust the schedule times for your heating devices. Time can be adjusted in 15 minute increments.

**Heating Device** – Set which devices will activate at set times.

**Heat Pumps** – If Heat Pumps selected, control will operate Heat Pumps and Backup Boiler (Normal Operation) as programmed by user until next scheduled time

**Backup only** – If Backup Only selected, control will operate the Backup Boiler only during a heat call until next scheduled time

ECO CLOCK SETUP

5:00 AM

Heat Pumps

10:00 AM

Heat Pumps

12:00 PM

Heat Pumps

2:00 PM

Backup Only



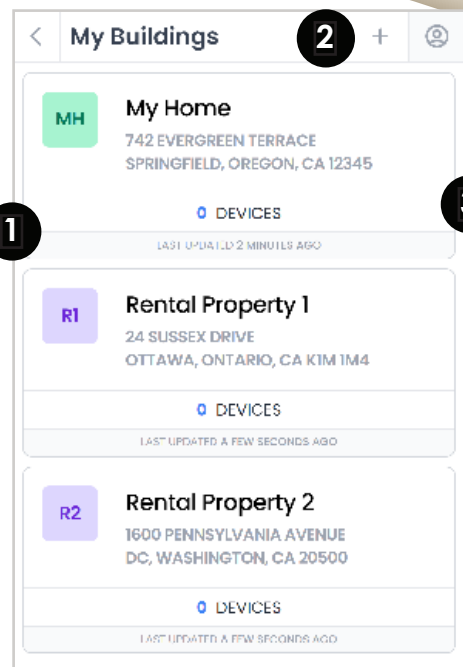


## SensorLinX™ Mobile App

The Sensorlinx™ mobile app is available for Apple iOS (APP Store) and Android® devices (Google Play). The mobile app allows for remote monitoring and control for HBX Controls devices.

**Now available on the Apple App Store and Google Play**

For detailed instructions on setting up the SensorLinX mobile app please refer to the SensorLinX app manual



## Creating & Managing Buildings

Under My Buildings will be a list of the available Building locations to choose from. Each building will have the total number of HBX devices linked to that building, name, and address.

To add a Building, go to the Plus Symbol on the right of My Buildings and this will go to the Create Building page. Each of the fields under Create Building must be filled out to proceed, but they can be altered later under the Building Icon. Pressing Cancel or hitting the back button will delete the previous information on the page and will go back to My Buildings.

Once a Building has been created you will be redirected to the Devices page. This page will show all the devices linked to the Building as well as the outside temperature and current forecast based on the address information you've entered. If no devices have been added yet it will say No devices and provide a button to Link Devices.

## Creating & Managing Devices

Link Devices will go to a page that will say Scan Device QR Code, Enter Manually and Finished. The QR Code on the physical device can be scanned under this screen to enter in the device's information or it can be entered in manually by using the Sync Code and Device PIN. Both the Sync Code and Device PIN will be on the device itself. Once the information has been added click Add Device and then Finish. The device added and any devices linked together will populate under Devices. If any of the devices do not appear under this page then go to the Plus Symbol next to the outside weather to add further devices.

Each device will have its targets, sensor readings and demands displayed on this page. Clicking on any device will allow for these targets and demands to be changed.

The name and type of the device

A green dot next to the device name will indicate that the device is connected and communicating to the network. A caution symbol next to the device name will indicate that the device is no longer communicating to the network.

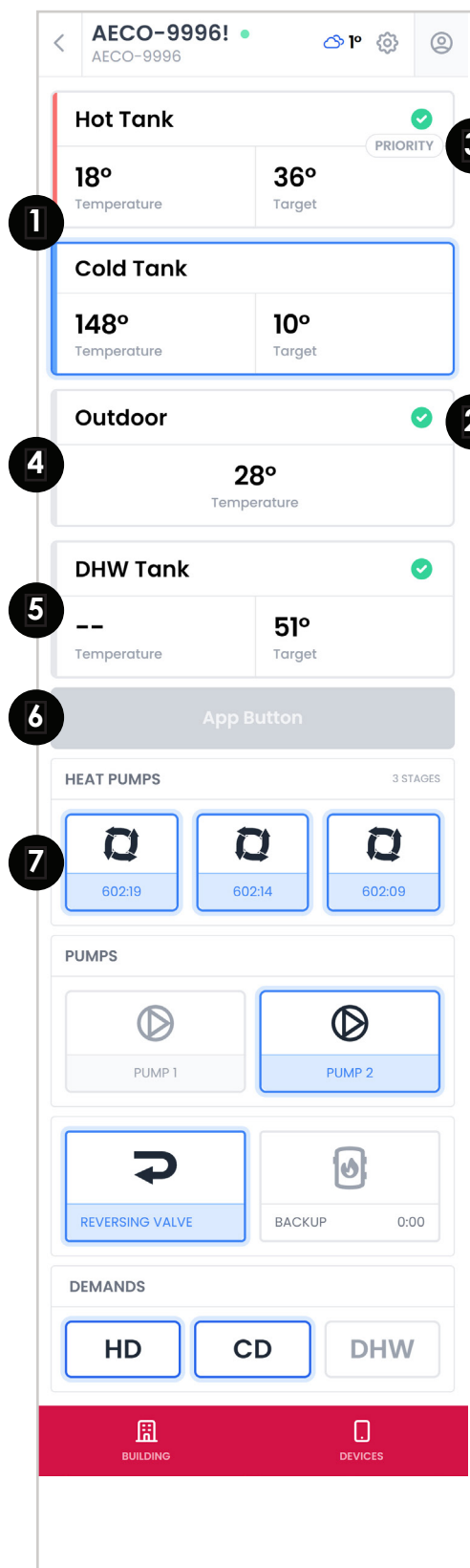
This will bring up with the Create Building page or the Link Device page to add additional buildings and devices.

This shows the outdoor temperature.

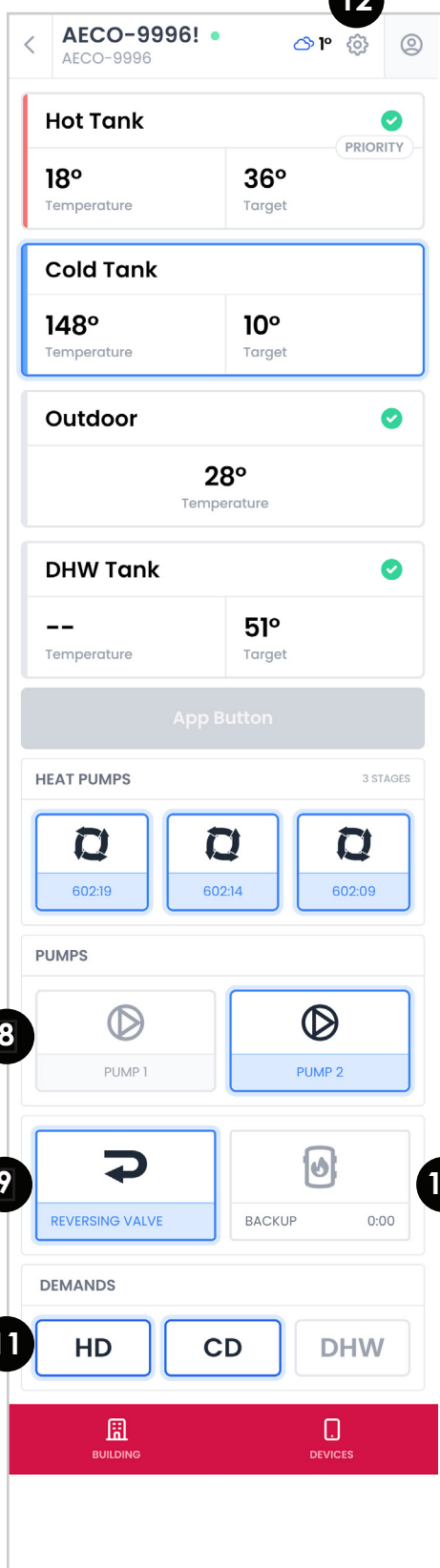
Goes to Account Settings. Changes to a user's account are made here.

The screenshot displays the HBX ECO-0600 Geothermal Control interface. The top section shows the 'Add Device' screen with a 'SYNC CODE' field containing 'AZON-0000' and a 'DEVICE PIN' field with four digits (0, 0, 0, 0). Below these fields is an 'Add Device' button. The bottom section shows the 'Devices' list for 'Matthew's Desk'. The list includes two devices: 'AZON 0002' and 'AZON-0007'. Each device entry shows 'ACTUAL' and 'TARGET' temperatures, a 'Zones' count, and a 'THM' (Thermal Head) status. The 'AZON 0002' device has a target of 29° and 1 zone. The 'AZON-0007' device has a target of 59° and 1 zone. Below these are two 'THM' entries for 'Front Hall' with target and room temperatures. The bottom of the screen features a red navigation bar with 'BUILDING' and 'DEVICES' icons.

## Controlling a ECO-0600 with the SensorLinX mobile app



- 1 Each Tank sensor (Hot, Cold or Tank) will be shown. This will indicate the current readings and the targets.
- 2 A green check mark will verify that a sensor is satisfied and does not need any heating or cooling
- 3 If there are multiple tanks (Cold Tank versus Hot Tank) then whichever tank has priority will be shown
- 4 The outdoor sensor reading will be shown
- 5 If a DHW sensor is connected then this will be shown under the Outdoor sensor reading, showing both the current temperature and the target
- 6 The APP Button (which will be named based on the Advanced Settings) will be on this page. Pressing it will activate the contacts on the ECO-0600 as per individual configuration
- 7 Each Heat Pump stage is shown. The number of stages will be next to the name while a blue highlighted and moving heat pump icon will indicate the pump is running. The run time will be shown underneath the heat pump icon



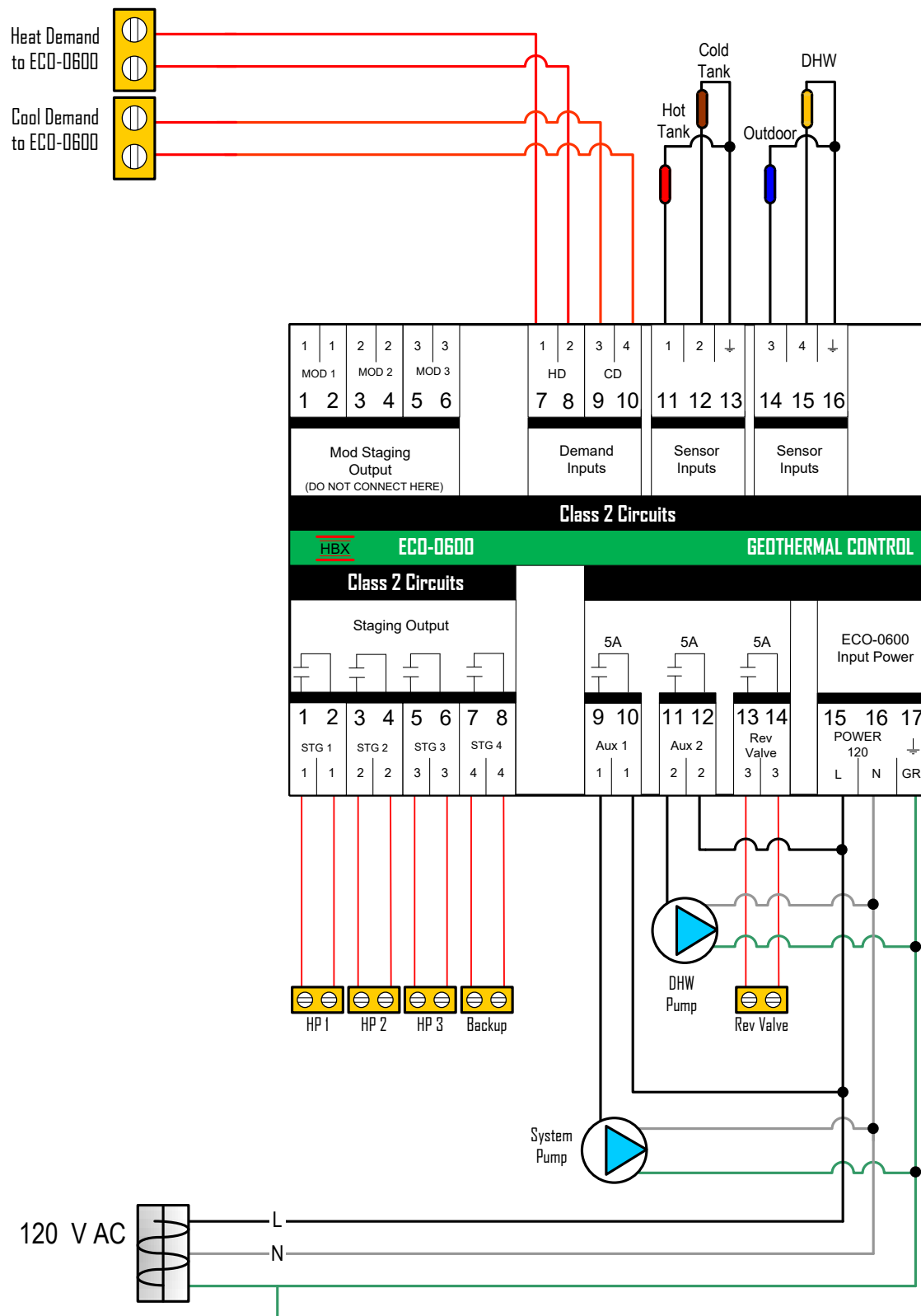
## Controlling a ECO-0600 with the SensorLinux mobile app

- 8 Pumps show the current activity of the Pump Outputs. If they are highlighted with blue and showing as solid black then the pumps are running.
- 9 The reversing valve will be shown. If highlighted in blue then the valve is currently in an On position
- 10 If a Backup Boiler is being used it will be shown and will detail the run time of the Backup Boiler. A blue highlight indicates the Backup Boiler is running
- 11 The current Demands are shown where the activated ones will be Black and highlighted in blue. Demands that are not currently on the system will be greyed out

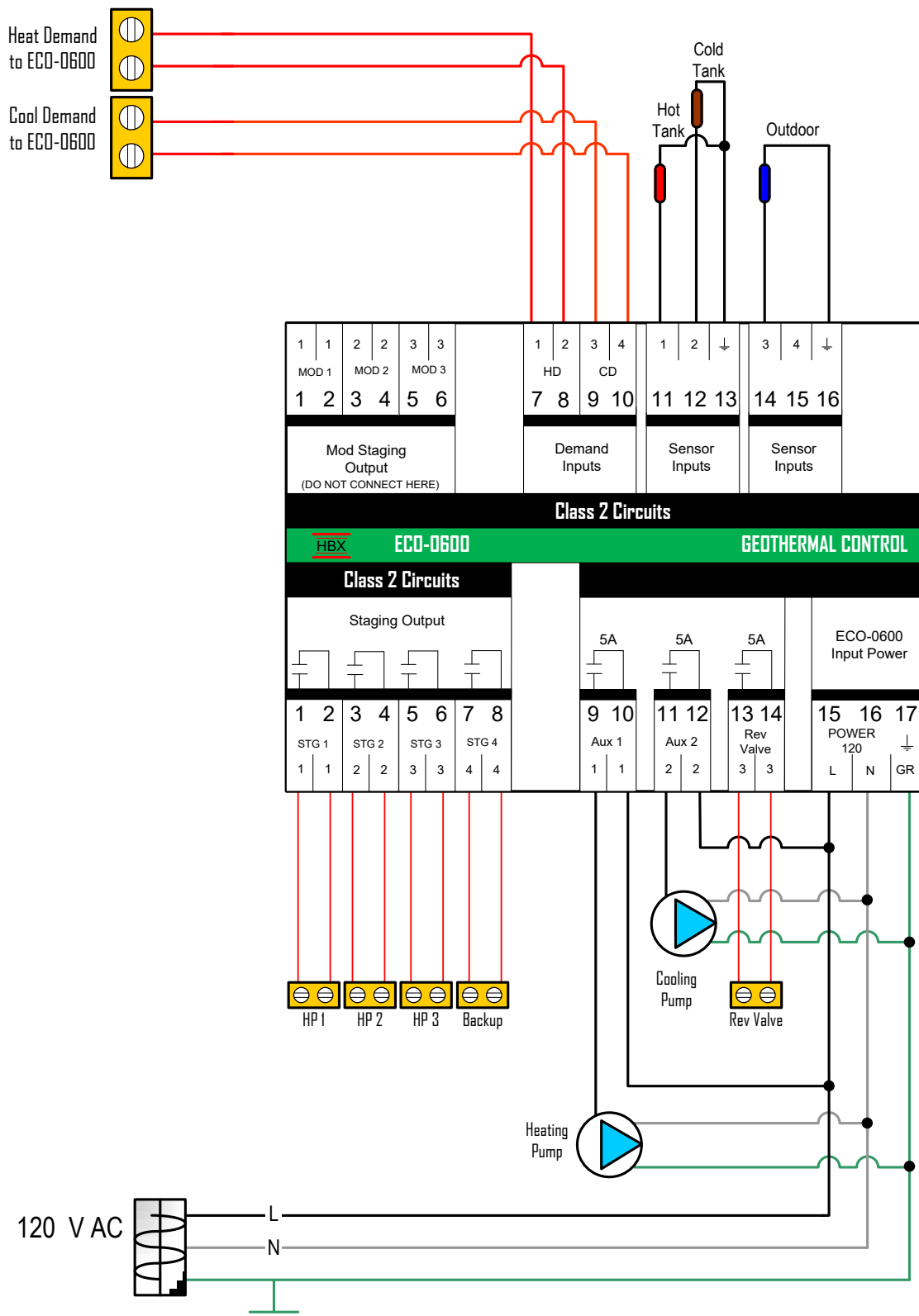
The Gear Symbol will allow for changes to the ECO-0600 controller. This will show a more complete list of the settings that are currently set on the ECO-0600. The device name can be changed in this section, in addition to the Tank Setups, Heat Pump Setup, Backup Setup, Pump Setup and other settings.

12

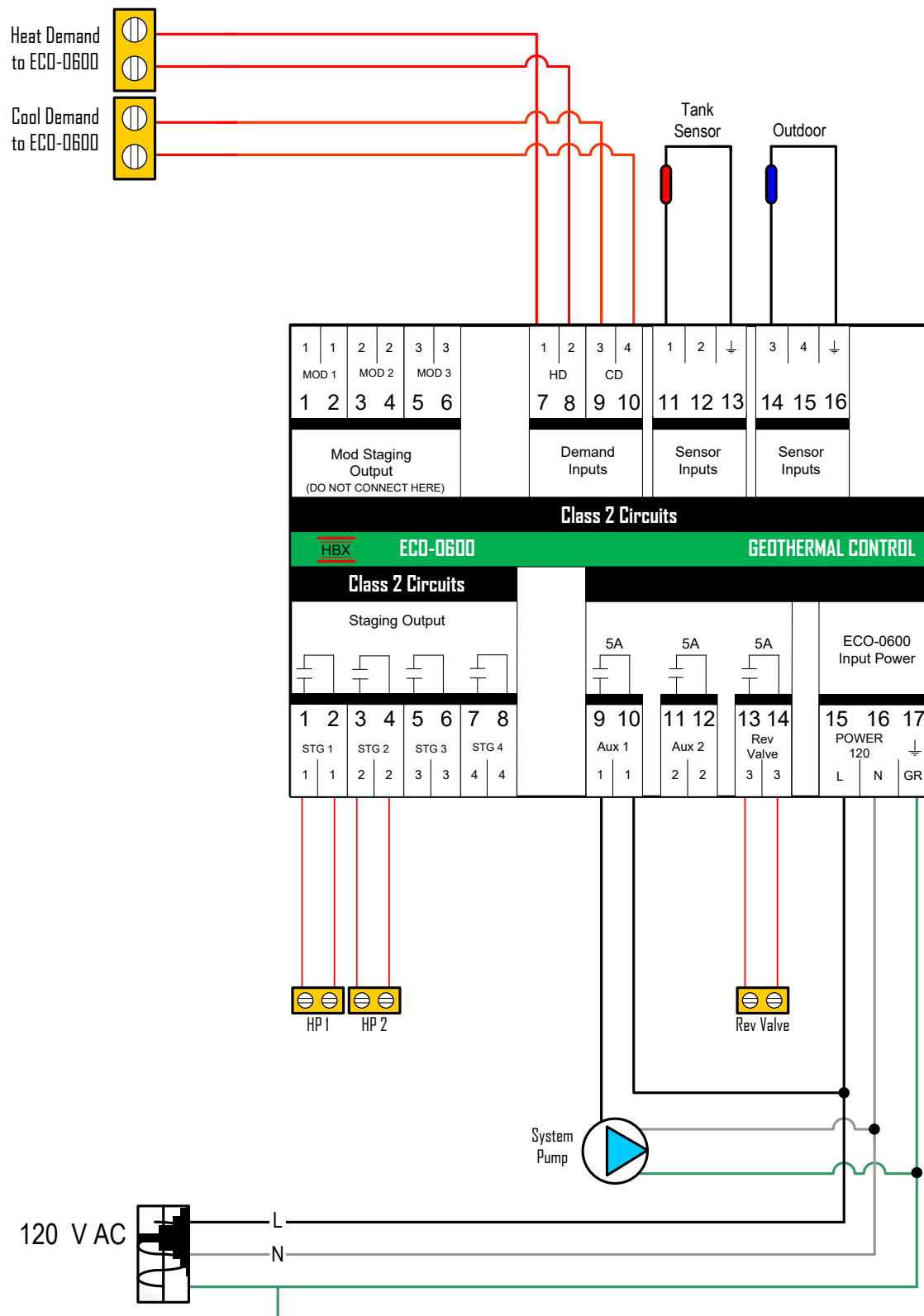
## WIRING DIAGRAM 1



## WIRING DIAGRAM 2

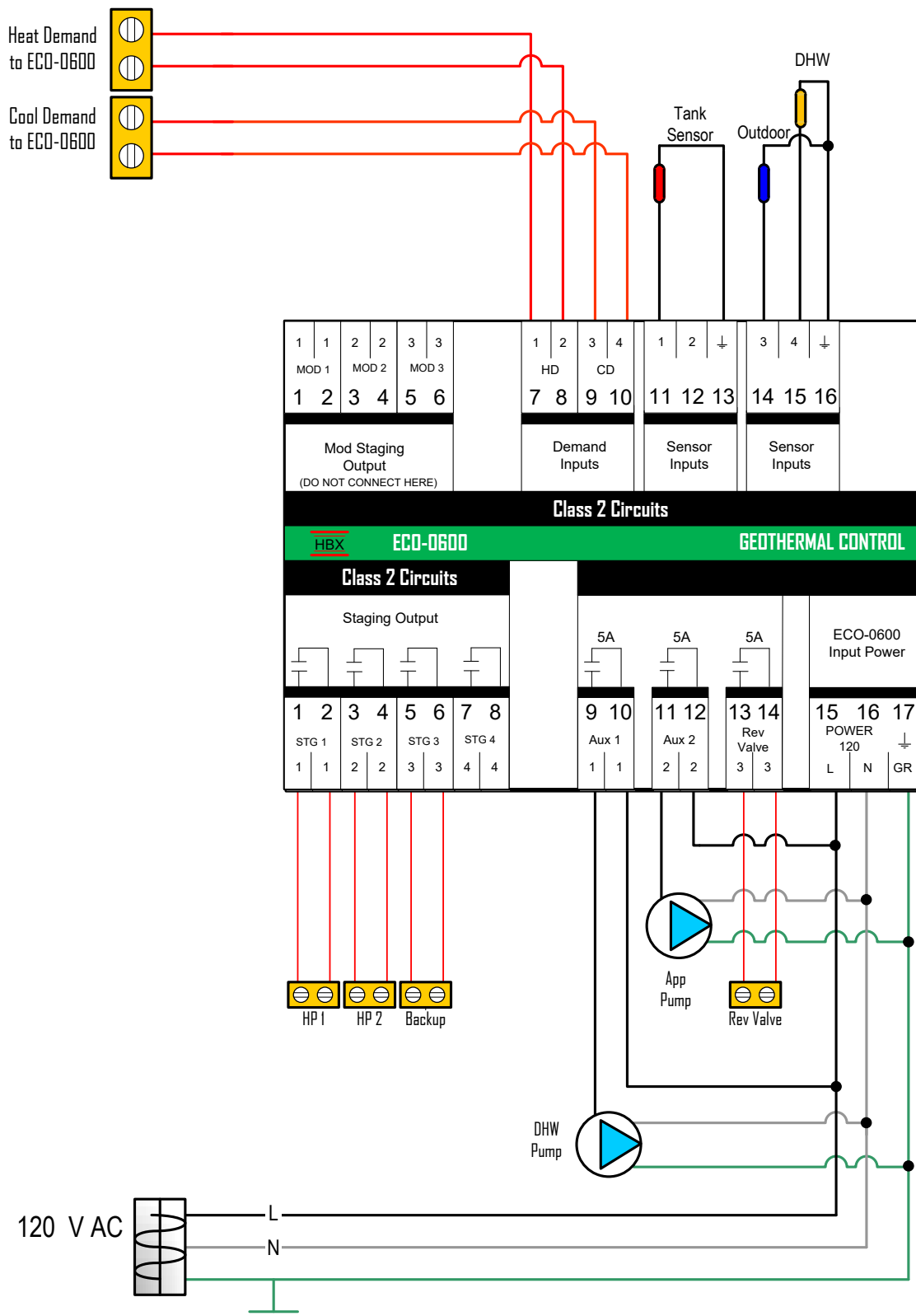


## WIRING DIAGRAM 3

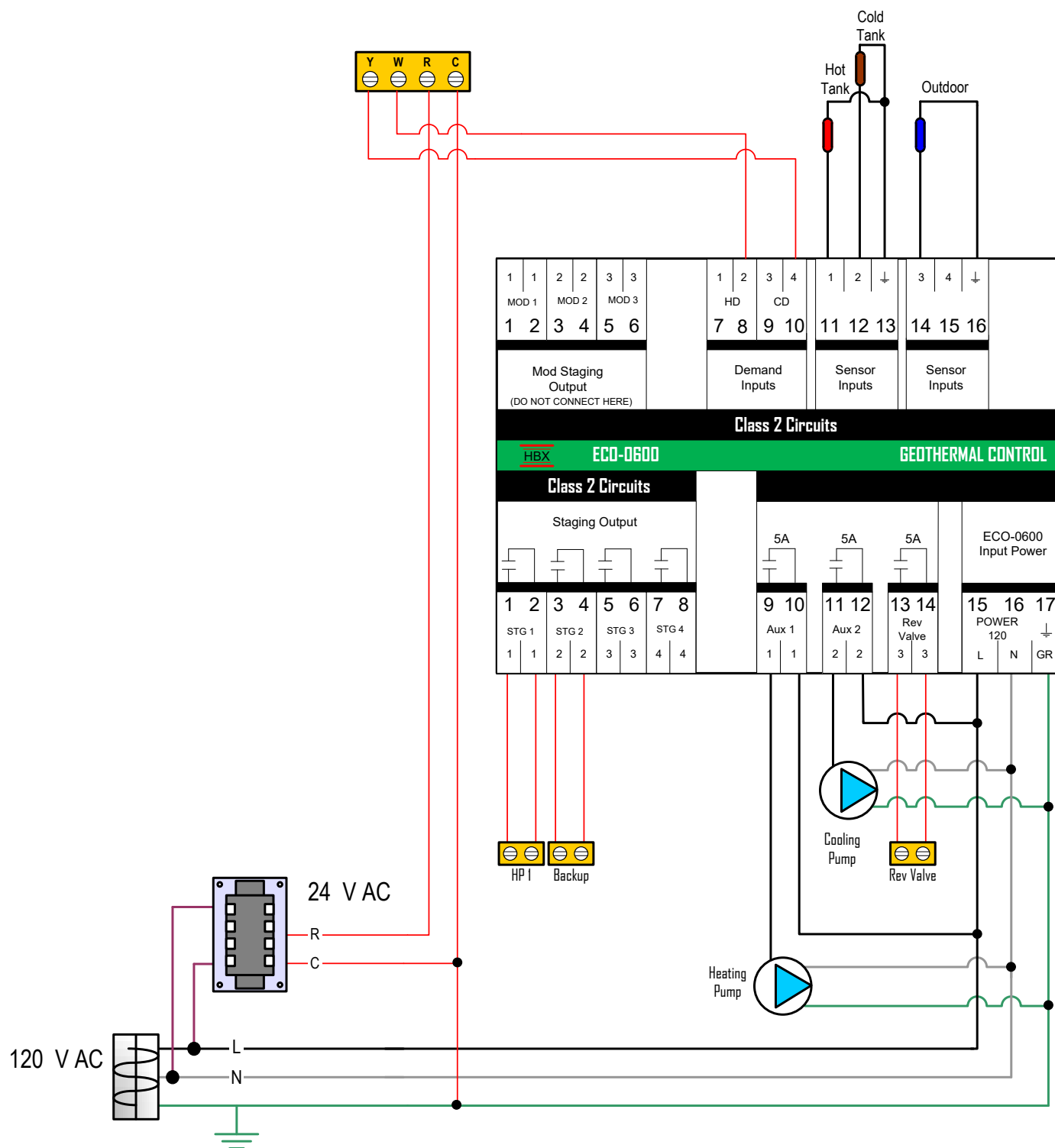




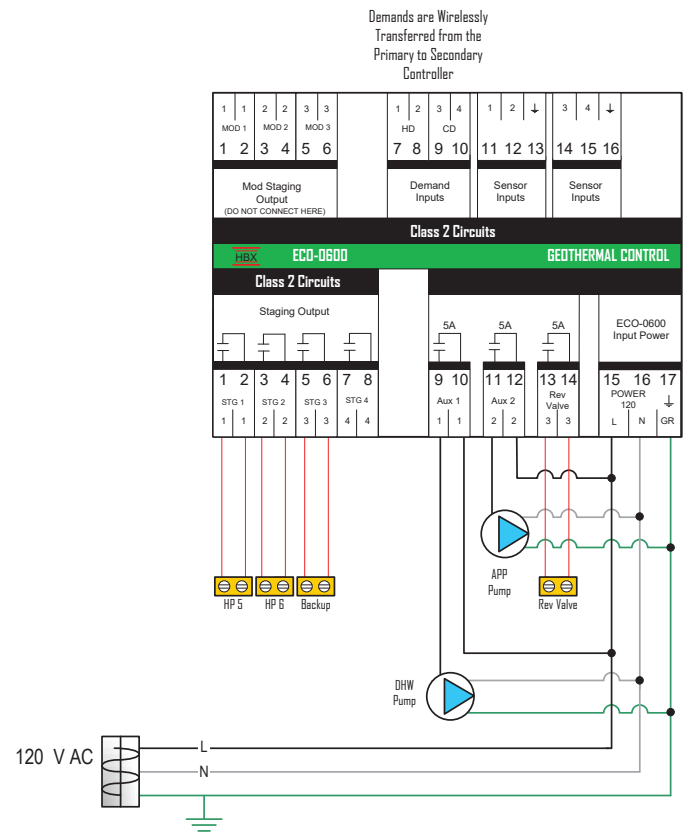
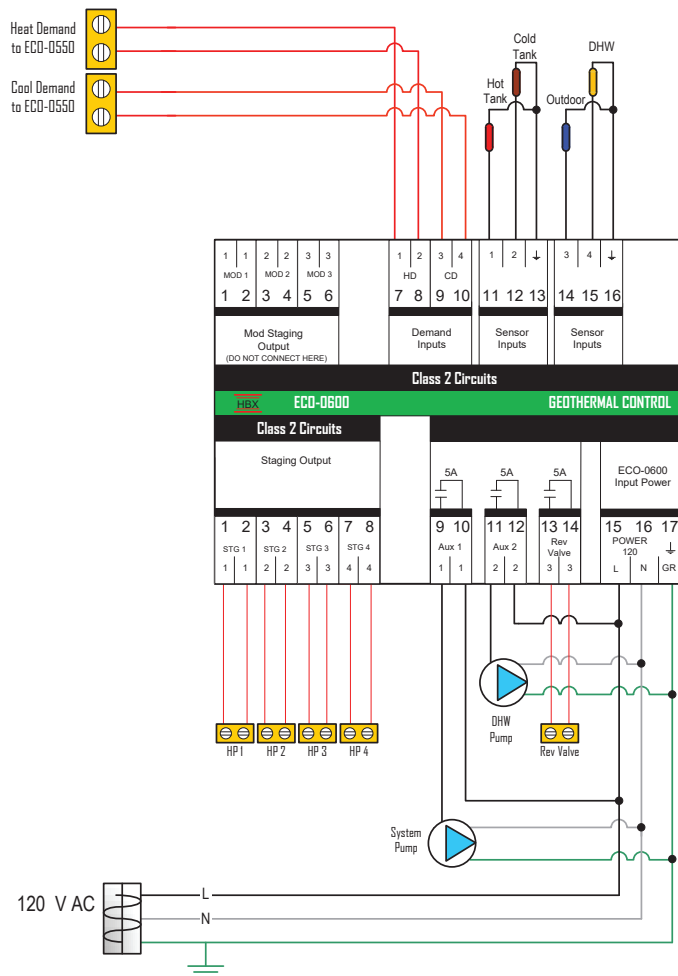
## WIRING DIAGRAM 4



## WIRING DIAGRAM 5



## WIRING DIAGRAM 6



## ECO-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
Heat Pumps shut off all at the same time	<ul style="list-style-type: none"> <li>Check OFF Staging options</li> </ul>
Heat pumps not rotating	<ul style="list-style-type: none"> <li>Check rotation settings</li> </ul>
System pump always running	<ul style="list-style-type: none"> <li>Control is wired for permanent heating (pins 7-8) or cooling (pins 9-10) demand.</li> </ul>
Control won't go into heating or cooling	<ul style="list-style-type: none"> <li>Check if there is a demand on pin 7-8 (HD) and pins 9-10 (CD).</li> <li>Check WWSD and CWSD settings</li> </ul>
Heat pumps shutting off on high/ low pressure	<ul style="list-style-type: none"> <li>Check hot tank or cold tank setpoints. Make sure they do not exceed recommend heat pump limits.</li> </ul>
Heat pumps cycling too frequently	<ul style="list-style-type: none"> <li>Check tank differential settings</li> <li>Check heat pump lag time</li> </ul>
Backup boilers not coming on	<ul style="list-style-type: none"> <li>Check wiring</li> <li>Check backup settings. Ensure one backup setting is not set to off.</li> </ul>
Backup boiler taking too long to come on	<ul style="list-style-type: none"> <li>Check backup settings</li> </ul>
No heat or Cool call	<ul style="list-style-type: none"> <li>Check demand inputs on pins (7-8) or pins (9-10)</li> <li>Make sure control is not in WWSD/CWSD</li> </ul>
Control not coming out of CWSD/ WWSD	<ul style="list-style-type: none"> <li>Check the CWSD/WWSD time</li> </ul>
Abnormal tank target	<ul style="list-style-type: none"> <li>Check outdoor reset settings</li> </ul>
Cold tank not showing on control display	<ul style="list-style-type: none"> <li>Check cold tank sensor is connected on pins (11-13)</li> </ul>
Outdoor Sensor displays dashes on control display	<ul style="list-style-type: none"> <li>Check outdoor sensor is connected on pins (14-16)</li> <li>Use Web Outdoor is toggled on with no active internet connection</li> </ul>
Heat pump(s) in not turning on	<ul style="list-style-type: none"> <li>No heat/cool demand</li> <li>Control is WWSD/CWSD</li> </ul>

For additional assistance with the ECO-0600, please contact our Technical Support Department toll free at:

**+1 (855) 410-2341**



## ECO-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
System pump is not turning on	<ul style="list-style-type: none"><li>• No heat/cool demand</li></ul>
Reversing valve is not turning on	<ul style="list-style-type: none"><li>• Control is CWSD</li><li>• No cool demand</li></ul>
No power	<ul style="list-style-type: none"><li>• Check wiring on pins 15,16,17</li></ul>
Can't connect to Wi-Fi	<ul style="list-style-type: none"><li>• Verify SSID and password</li><li>• Must connect to the 2.4 GHz network</li><li>• Ensure port 1314 is open</li><li>• Check Wi-Fi connection strength</li></ul>
Outdoor temp shows error despite an outdoor sensor being wired in	<ul style="list-style-type: none"><li>• Use Web outdoor is turned on which is locking out the wired in demand. Turn this setting off.</li></ul>

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our Technical Support Department toll free at:

**+1 (855) 410-2341**

**Limited Warranty**

HBX Controls warrants each of its products to be free from defects in workmanship and materials under normal use and service for a period of 24 months from date of manufacture or 12 months from date of purchase from an HBX Authorized Dealer, if within the above documented period after date of manufacture.

If the product proves to be defective within the applicable warranty period, HBX on its sole discretion will repair or replace said product. Replacement product may be new or refurbished of equivalent or better specifications, relative to the defective product. Replacement product need not be of identical design or model. Any repair or replacement product pursuant to this warranty shall be warranted for not less than 90 days from date of such repair, irrespective of any earlier expiration of original warranty period. When HBX provides replacement, the defective product becomes the property of HBX Controls.

Warranty Service, within the applicable warranty period, may be obtained by contacting your nearest HBX Controls office via the original Authorized Agent and requesting a Return Material Authorization Number (RMA #). Proof of purchase in the form a dated invoice/receipt must be provided to expedite the issuance of a Factory RMA.

After an RMA number has been issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit. The RMA number must be visible on the outside of the package and a copy included inside the package. The package must be mailed or otherwise shipped back to HBX with all costs of mailing/shipping/insurance prepaid by the warranty claimant.

Any package/s returned to HBX without an approved and visible RMA number will be rejected and shipped back to purchaser at purchaser's expense. HBX reserves the right, if deemed necessary, to charge a reasonable levy for costs incurred, additional to mailing or shipping costs.

**Limitation of Warranties**

If the HBX product does not operate as warranted above the purchasers sole remedy shall be, at HBX's option, repair or replacement. The foregoing warranties and remedies are exclusive and in lieu of all other warranties, expressed or implied, either in fact or by operation of law, statutory or otherwise, including warranties of merchantability and fitness for a particular purpose/application. HBX neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale, installation maintenance or use of HBX Controls products.

HBX shall not be liable under this warranty; if its testing and examination discloses that the alleged defect in the product does not exist or was caused by the purchasers or third persons misuse, neglect, improper installation or testing, unauthorized attempts to repair or any other cause beyond the range of intended use, or by accident, fire, lightning or other hazard.

**Limitation of Liability**

In no event will HBX be liable for any damages, including loss of data, loss of profits, costs of cover or other incidental, consequential or indirect damages arising out of the installation, maintenance, commissioning, performance, failure or interruption of an HBX product, however caused and on any theory of liability. This limitation will apply even if HBX has been advised of the possibility of such damage.

**Local Law**

This limited warranty statement gives the purchaser specific legal rights. The purchaser may also have other rights which vary from state to state in the United States, from Province to Province in Canada and from Country to Country elsewhere in the world.

To the extent this Limited Warranty Statement is inconsistent with local law, this statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this statement may not apply to the purchaser. For example, some states in the United States, as well as some governments outside the United States (including Canadian Provinces), may:

Preclude the disclaimers and limitations in this statement from limiting the statutory rights of a consumer (e.g. United Kingdom);

Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations; or

Grant the purchaser additional warranty rights which the manufacturer cannot disclaim, or not allow limitations on the duration of implied warranties.



Control Systems Inc.

## HBX ECO-0600 Geothermal Control

Version 2.0.0

## NOTES

[illegible]





HBX ECO-0600 Geothermal Control  
Version 2.0.0

## NOTES

[illegible]



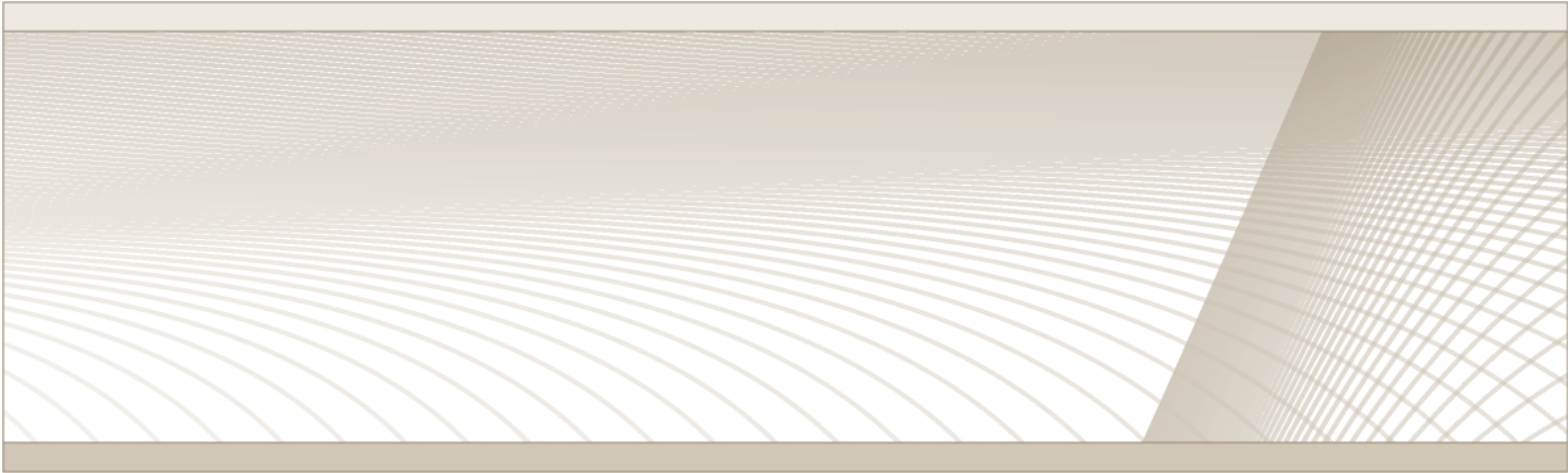
HBX ECO-0600 Geothermal Control  
Version 2.0.0

## NOTES

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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