Installation Manual

ECO-0600

Version 2.0.0

• Geothermal Control

ECO-0600

HBX Control Systems Inc.

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Comfort
Control
Innovation

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.

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

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.

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

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

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.

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 condctors 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 Modulating Outputs 0-10VDC
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

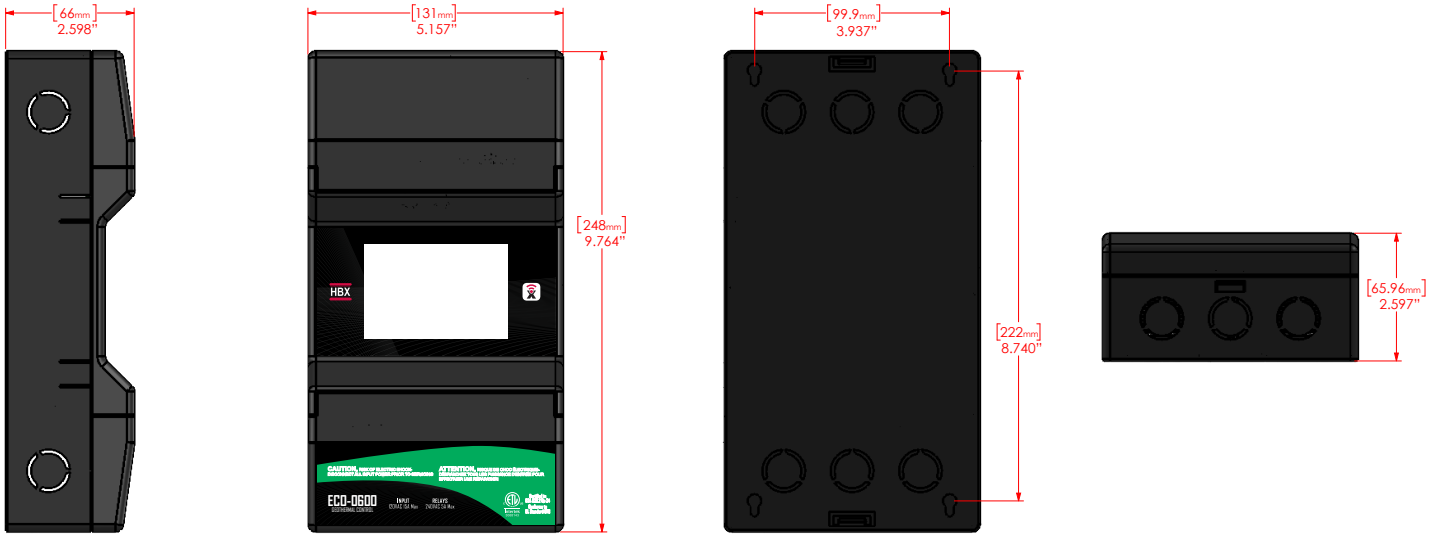
Dimensions:
131mm W x 246mm H x 66.71mm
5.16in W x 9.83in H x 2.64in

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

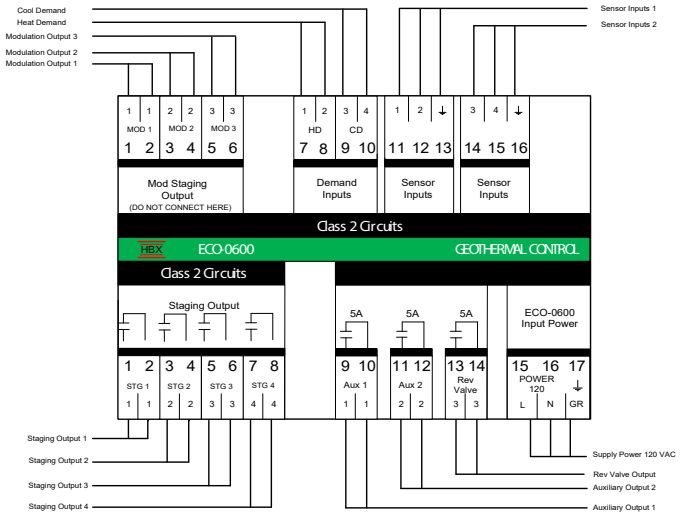
DIMENSIONS



WIRING AND INSTALLATION

WIRING

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



1. MODULATING OUTPUTS

1, 2: : (0-10VDC) modulating output 1
3, 4: : (0-10VDC) modulating output 2
5, 6: : (0-10VDC) modulating output 3

Modulating outputs are only useable and confirgurable on versions 2.11 and higher.

2. 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

3. 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

4. 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)

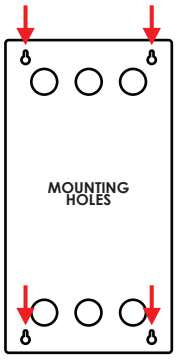
The backup boiler output is determined following the last heat pump stage output

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

1. **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

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

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

4. **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

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

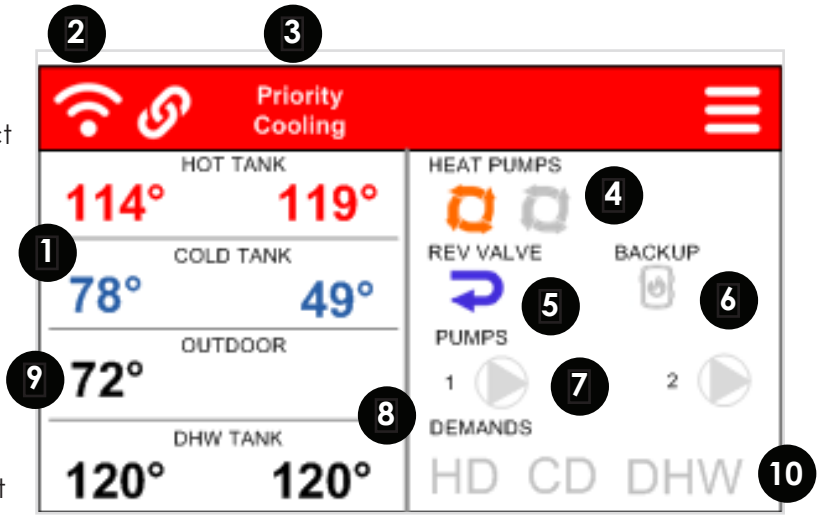
6. **BACKUP –** The Backup will activate based on the parameters under the Backup Setup. When the symbol is lit up this indicates that the Backup contacts are closed. If there is no Backup icon on the Main Screen then the Backup Setup as not been configured and is set to Off

7. **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

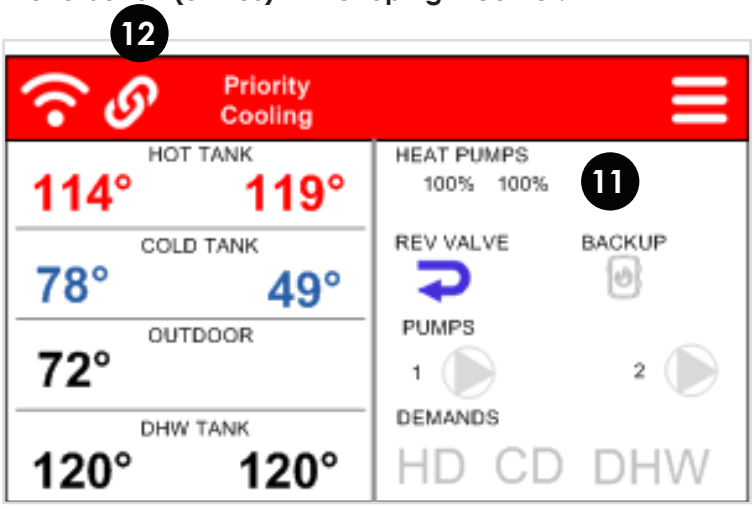
8. **DEMANDS -** When the delegated demand is active it will be lit up thus in turn the associated demand in the upper wiring chamber will be closed as well (tt1, tt2)

9. **OUTDOOR-** 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)

10. **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

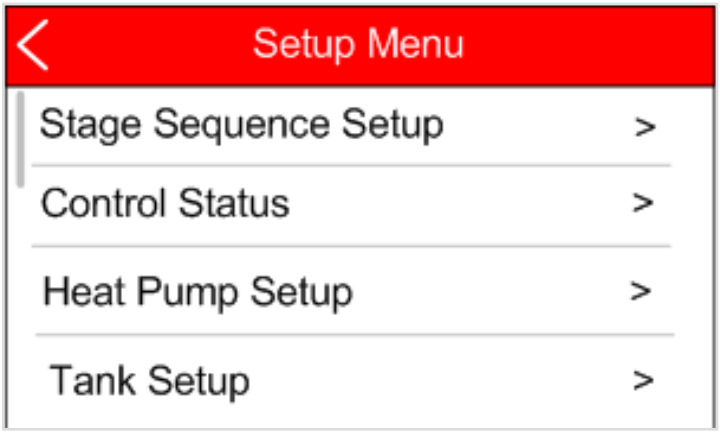


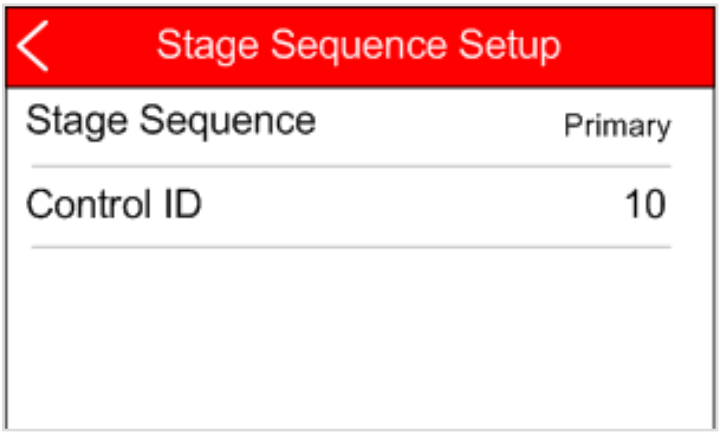
Accessing the menu of the ECO-0600 is done by pressing the menu button (3 lines) in the top right corner.

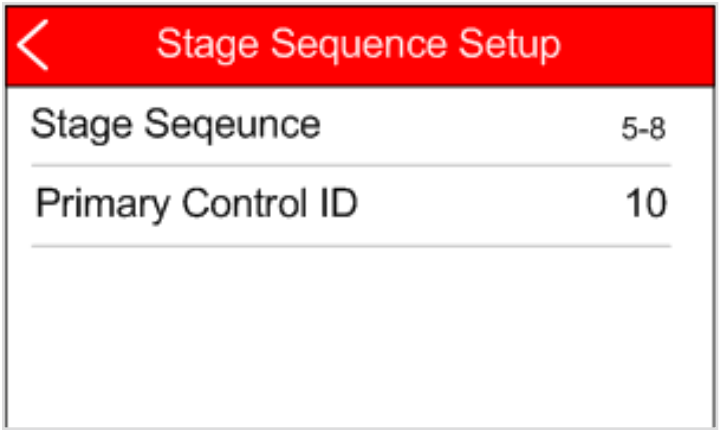


11. **MODULATING OUTPUTS -** indicates how many MOD Stages are selected and what percentage they're at.

12. **LINK -** indicates if a secondary is linked to the primary controller







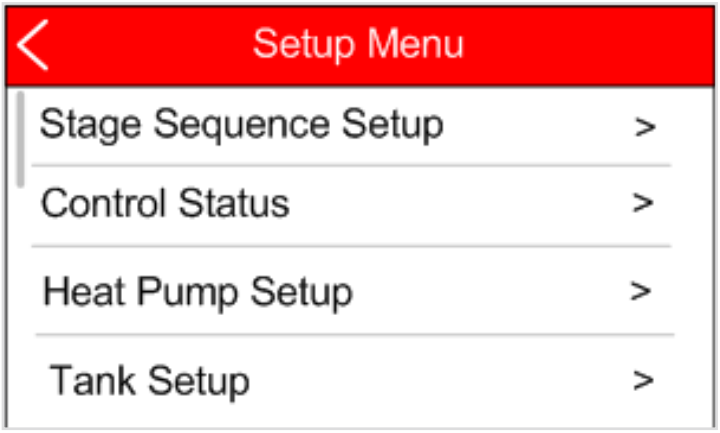
STAGE SEQUENCE SETUP

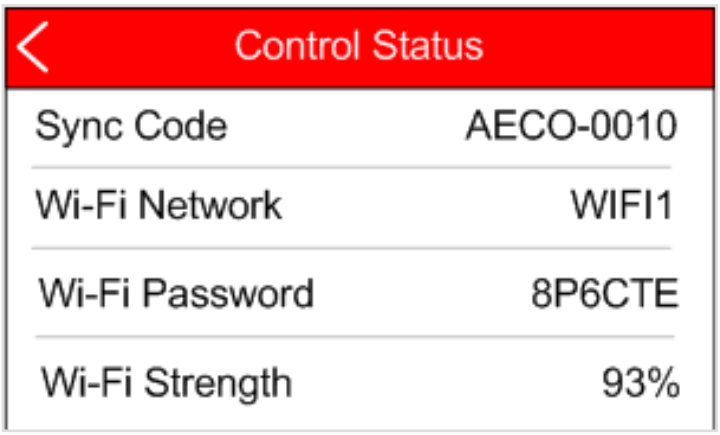
The ECO-0600 controller system is designed with expandability in mind, allowing users to add more staging capabilities between multiple controllers for enhanced control and efficiency. Specifically, it supports the use of up to four (4) individual controllers, which can be combined to manage a total of 16 heat pump stages along with 12 modulating stages, providing comprehensive system management for complex HVAC setups. When employing more than one ECO-0600 unit, it is essential to configure them to communicate wirelessly in a sequential order to ensure proper synchronization and operation across all controllers.

STAGE SEQUENCE SETUP: This particular setting within the system configuration menu enables you to select and define the stage sequence that your HVAC system will follow during operation. The first sequence is designated as Primary, which corresponds to stages 1 through 4, serving as the foundational control sequence for the entire setup.

- 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: When the Sequence is assigned to Primary, the number displayed under Control ID represents the unique identification number of this particular ECO-0600 controller unit. However, if the CPU Sequence is set to any other sequence besides Primary, the Control ID of that ECO-0600 can be configured to match the Control ID of the Primary ECO-0600. Doing so enables the controllers to automatically LINK, facilitating seamless wireless communication and coordination. Successful linking is visually confirmed when the Sequence Link symbol appears prominently on the top left corner of the Main Screen on both controllers involved in the network.





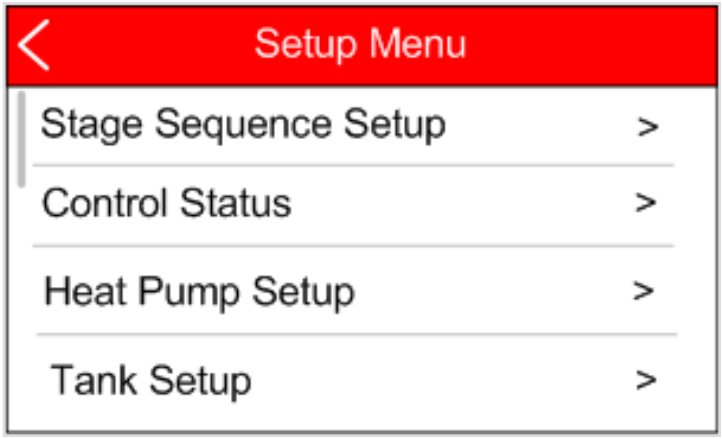
CONTROL STATUS

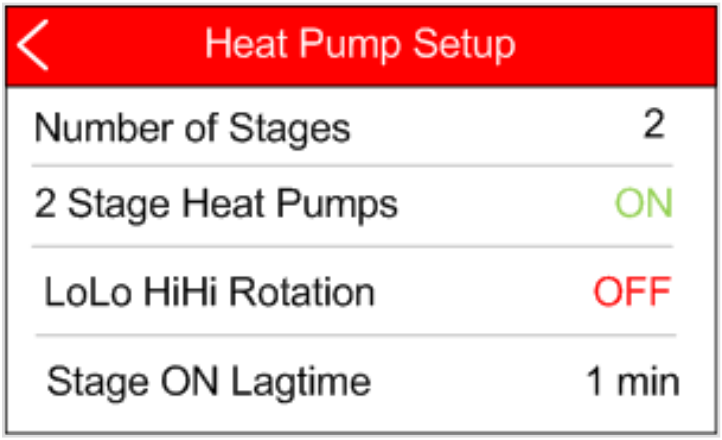
Sync Code - Sync Code of the ECO-0600

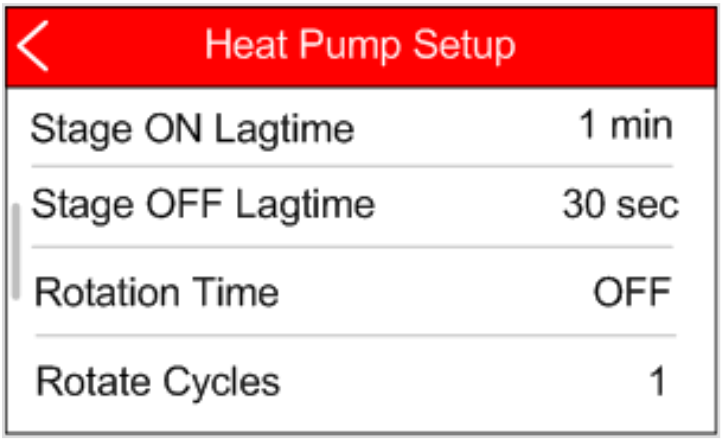
Wi-Fi Network – displays current SSID network connected to

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

Wi-Fi Strength – displays Signal strength of the network connected to. This number only updates in real time when activately connected to a network.







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. **(0 to 16) 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**

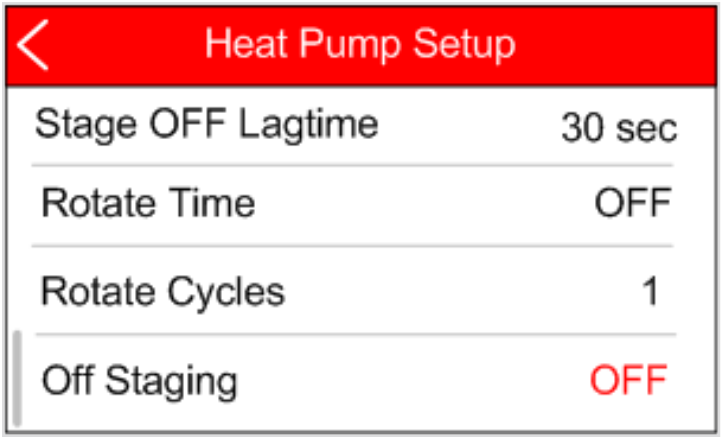
Off Staging – This feature is used to set how you would like to stage the heat pumps off. If set to OFF the heat pumps will stage off normally based off of tank temperature and differential settings or STAGE OFF Lagtime settings. If set to ON the heat pumps will all stage off at the same time, based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

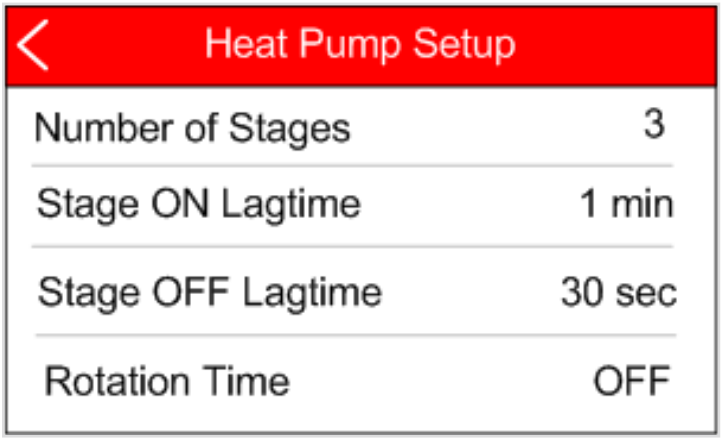
2 Stage Heat Pumps – This setting will appear when the Number of Stages is set to an even value. This setting can be utilized when using dual stage heat pumps or pumps with 2 compressors per unit. **(OFF/ON) Default: OFF**

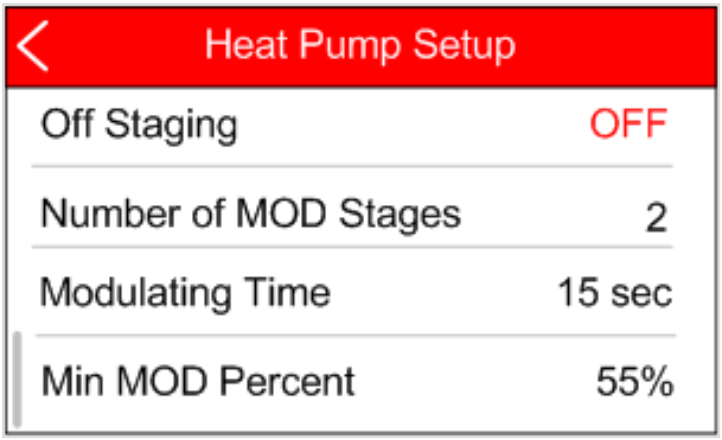
** Only available on version 2.0 or higher

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







HEAT PUMP SETUP - CONTINUED

Number of MOD Stages – This setting will allow you to select the number of (MOD) modulation stages that are attached to the control. If MOD stages are selected then the Number of Stages needs to be set to 0. A Backup being set with MOD stages on will be assigned to the Stage 1 contact. **(0 to 12) Default: 0**

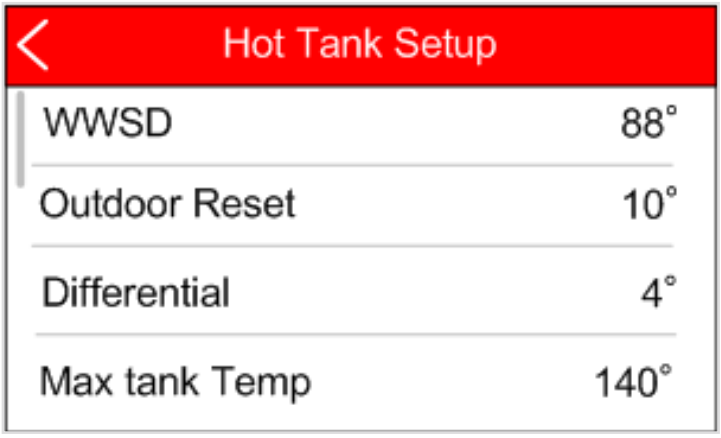
The following options are only visible when MOD Stages are set above 0.

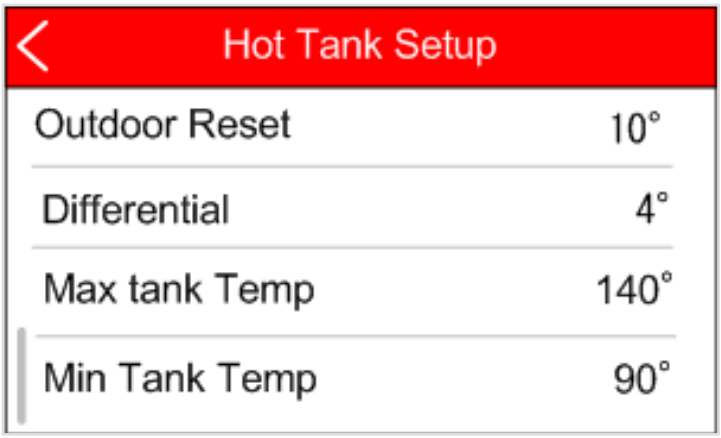
Modulating Time – this determines the time that the MOD stages will ramp up. For example if set to 10 seconds a MOD stage will increase its percent by 1 percent every 10 seconds. This only applies with ramping the percentage up not down. **(1-240 seconds)**

Min MOD Percent– this is the starting percentage that the MOD stages will begin at once they are called to turn on. They will go from 0% when off to the Min MOD Percent amount. **(1-99 %)**

Min MOD Holdtime – when MOD stages are set above 1 this setting will appear changing Stage ON Lagtime to Min MOD Holdtime instead. This will be the delay in minutes between when 1 MOD stage will start versus when the next MOD stage will come on. **(1- 240 Min)**

TANK SETUP





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, any heat demands will be locked out or shut off. In WWSD the heat pumps and backup boiler will shut off. DHW demands are not locked out when in WWSD.

(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. When the outdoor temperature is at or colder than the Outdoor Reset value the system will be at the Max Tank Temp.

*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

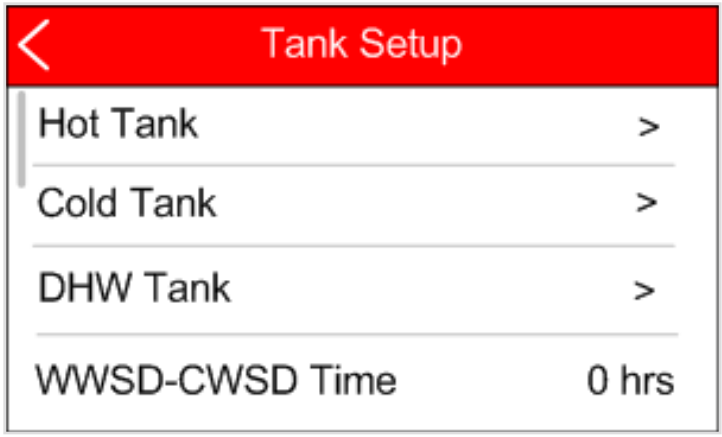
Min Tank Temp - This setting is the bottom of the heat curve. The target will hit this temperature as the Outdoor Temperature approaches the WWSD.

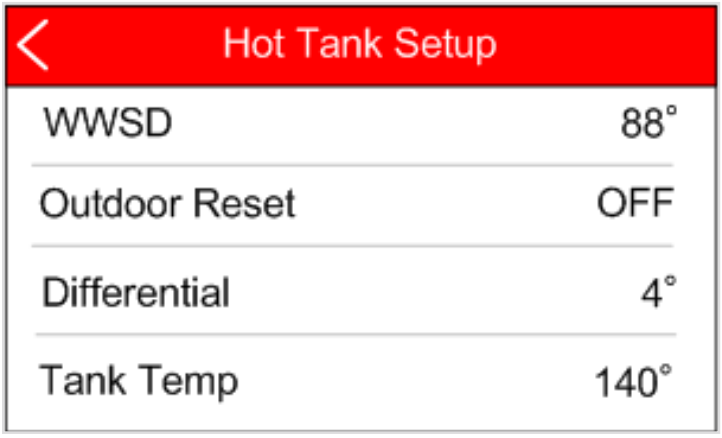
(2°F to 180°F) Default: 80°F

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 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. When set to OFF the Tank will follow one target continuously.

*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.

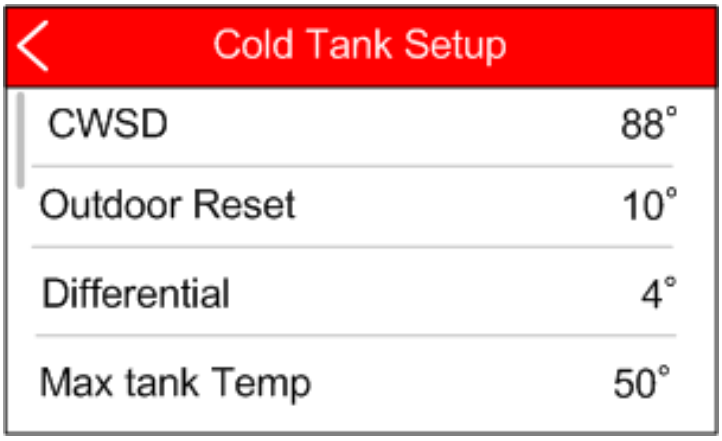
(2°F to 100°F) Default: 6°F

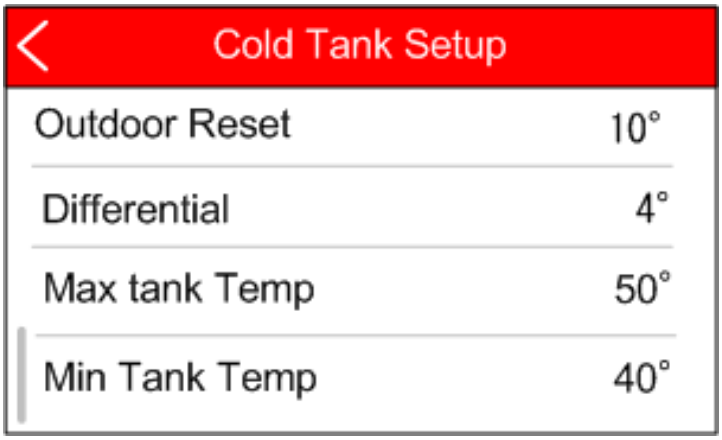
Tank Target Temperature - When a heat demand is present and the control is not in WWSD, the control will target this temperature for heating.

(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 WITH 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. When set to a value the Tank target will fluctuate between the Min and Max Tank Temp based on the outdoor temperature.

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

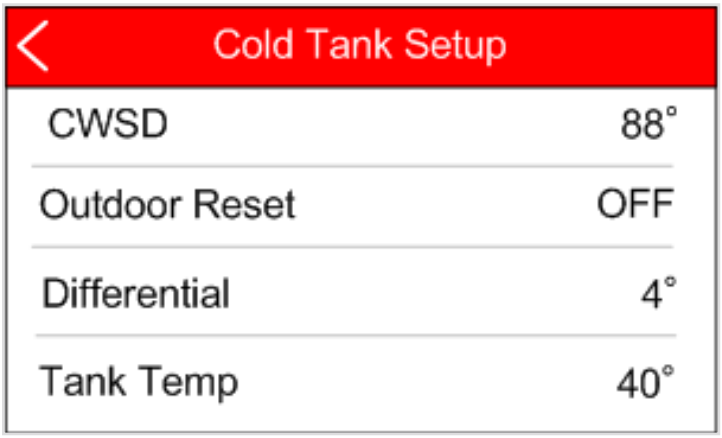
Min Tank Temp - This setting is the bottom of the cooling curve. The target will hit this temperature as the outdoor temperature approaches the Outdoor Design Temperature.

(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 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. When set to OFF the tank will follow one target continuously.

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.

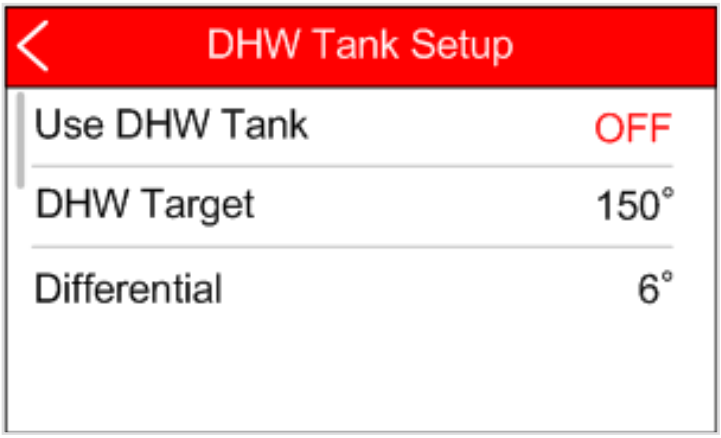
(2°F to 100°F) Default: 8°F

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

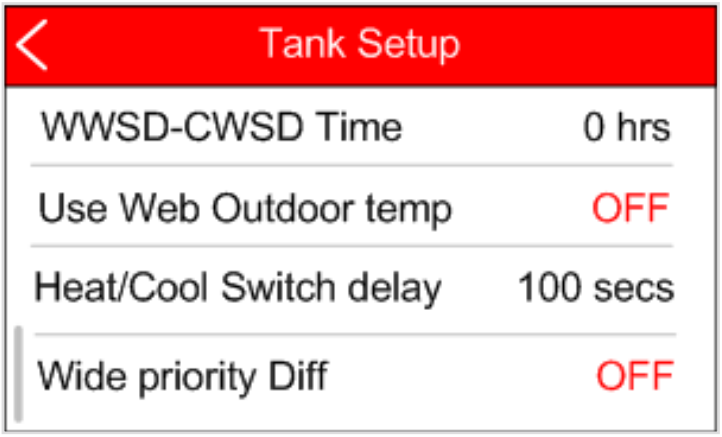
(2°F to 180°F) Default: 45°F

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

TANK SETUP



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 setpoint 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

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)

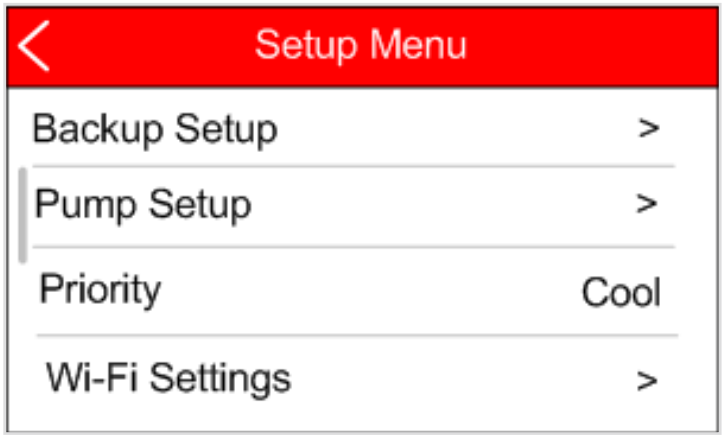
Heat/Cool Switch Delay - This will act as a delay between the control switching between Heat and cool calls and vise versa.

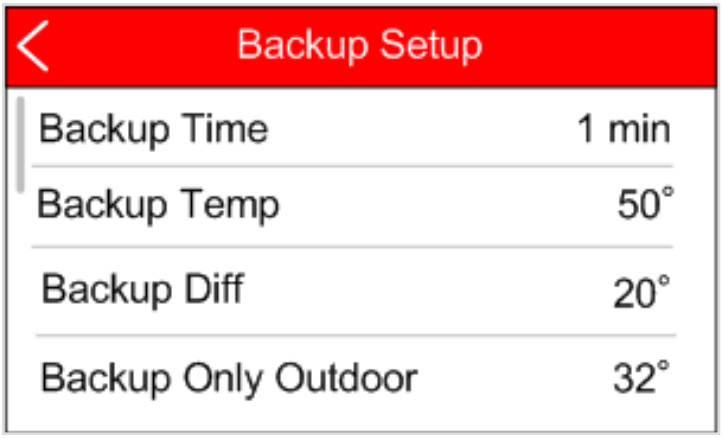
(30s to 600s)

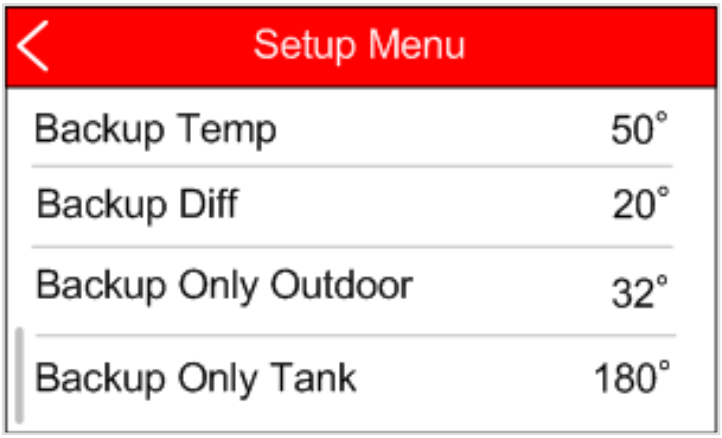
Wide Priority Diff - This will create a differential based on the differential set in the Hot and Cold tank setups when switching between heat and cool demands. If set to Off and there is both a Heat and Cool Demand present the Tank target will switch between demands once the target has been satisfied. 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 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. This can be enabled on either an HD or DHW call.

(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.

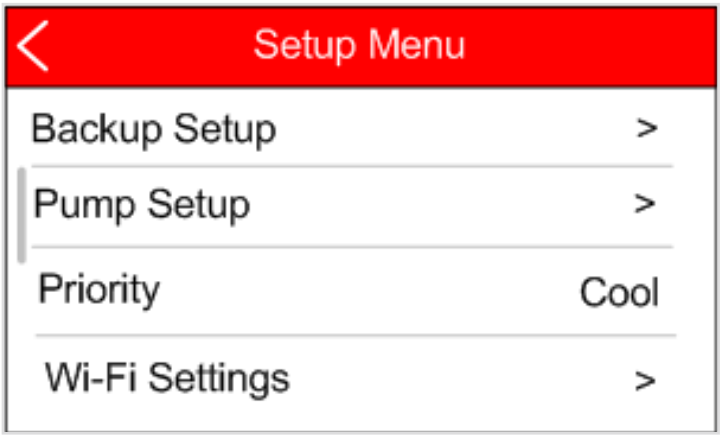
(eg. Tank temperature of 115°F and a backup differential of 10°F. The backup boiler will come on at 105°F providing all of the heat pumps are already on.)

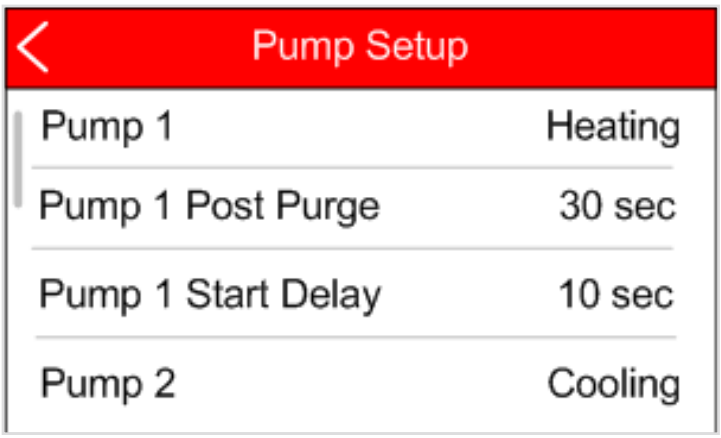
(OFF/2°F to 100°F) Default: OFF

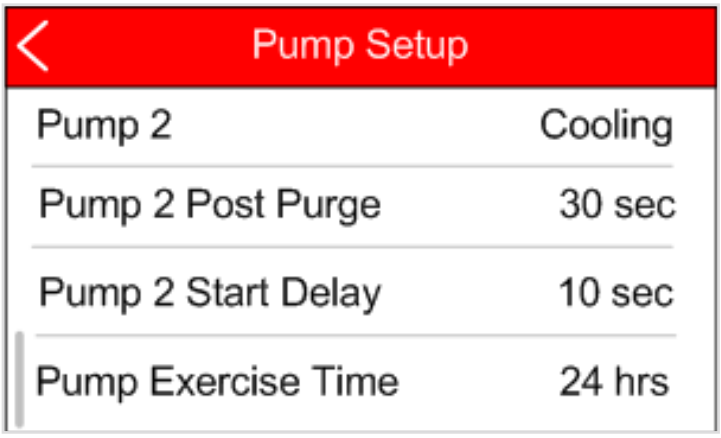
Backup Only Outdoor – This option allows you to set a temperature at which the backup will run at all times in favour of the heat pumps, the heat pumps will not run until the outside temperature rises above this setting. This will turn on the Backup for a Hot Tank or DHW call.

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.

PUMP SETUP







If DHW is set to ON or a Pump type is selected as DHW then the Post Purge on all pumps needs to be set at a minimum of 10 seconds or more.

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 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

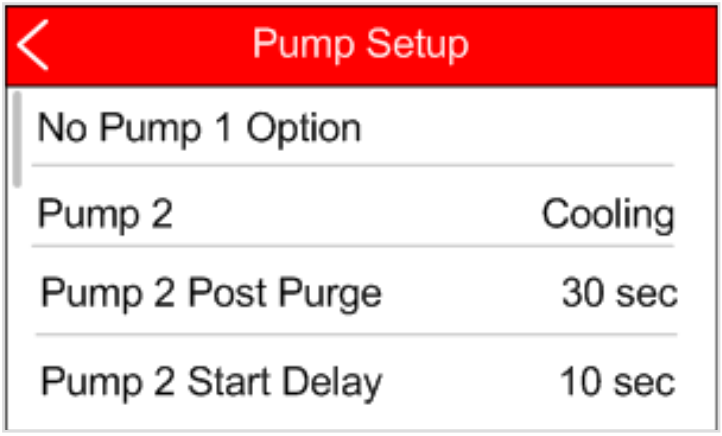
Pump 2 Start Delay – the amount of time if necessary for Pump 1 be delayed to run after the call associated with it has been activated

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



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. When either an HD or CD is present that isn't locked out in WWSD or CWSD the system pump will be on.

Heating System – will turn on when HD is present. Will shut off when in WWSD

Cooling System – will turn on when CD is present. Will shut off when in CWSD

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

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

Heating Pump – will turn on when HD is present and when the Hot Tank temperature is not at the Hot Tank Target. Will shut off when in WWSD

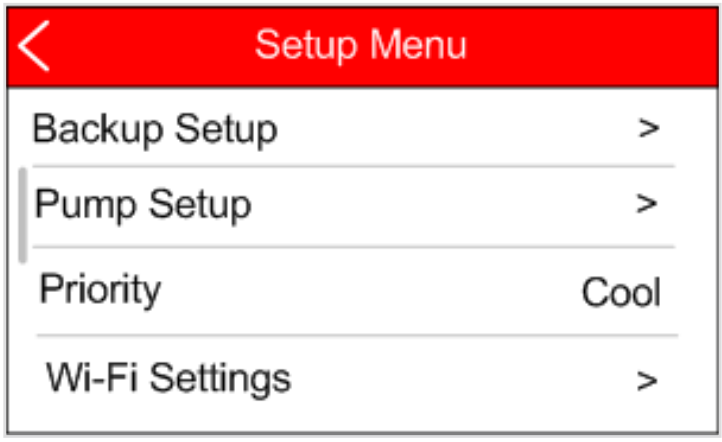
Cooling Pump – will turn on when CD is present and when the Cold Tank temperature is not at the Cold Tank Target. Will shut off when in CWSD

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

App – if the virtual app button is activated this pump contact will close. It will remain closed until the app button is pressed again. This app button can be accessed via the Sensorlinx App.

None – No pumps are being utilized in your system setup

SETUP MENU

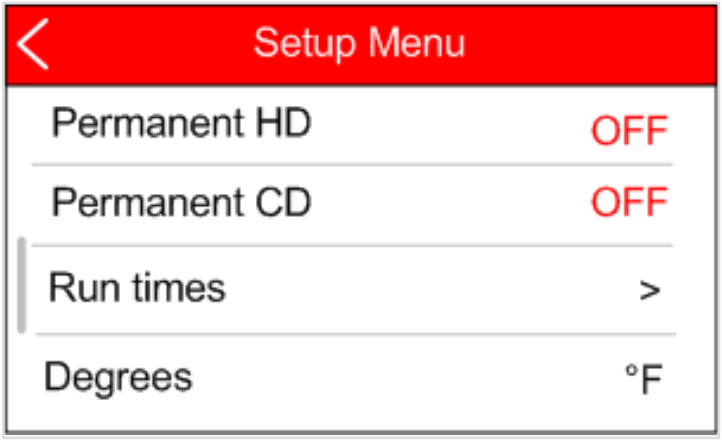


Priority - the priority will determine what mode is prioritized between heat, cool or auto. Priority doesn't lock the controller into one mode but will assign which demand type will be satisfied first if both a Heat and Cold demand are sent to the ECO-0600 at the same time.

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.

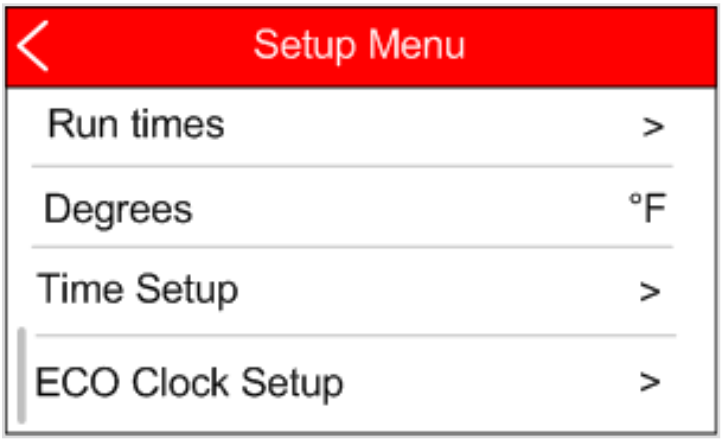


Permanent HD - This setting indicates that the ECO-0600 is in a permanent heat demand. This can be used instead of attaching a thermostat.

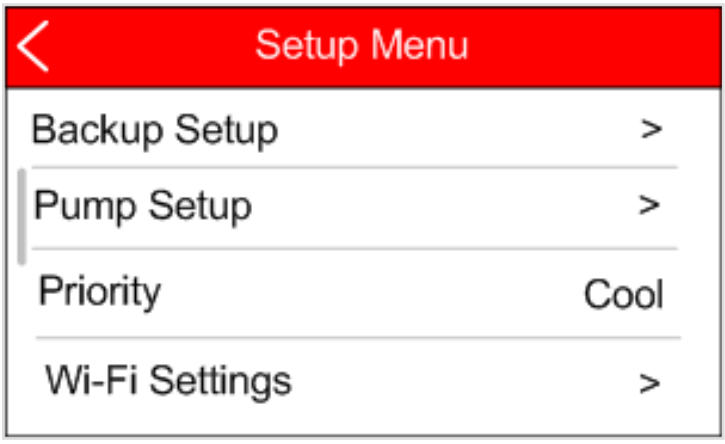
(OFF/ON) Default: OFF

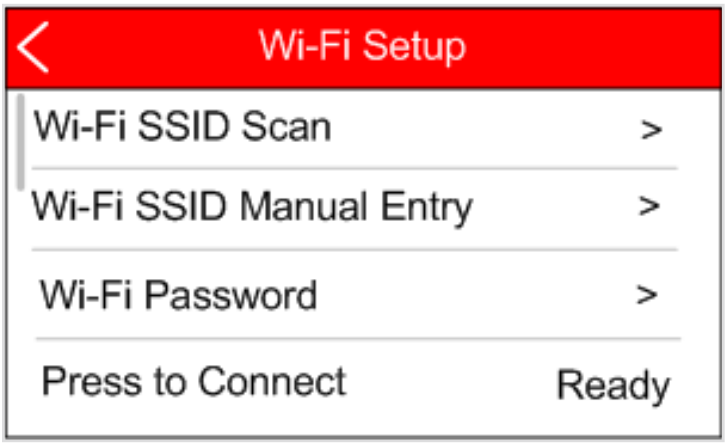
Permanent CD - This setting indicates that the ECO-0600 is in a permanent cool demand. This can be used instead of attaching a thermostat.

(OFF/ON) Default: OFF



Degrees - Use this setting to change the display format from Celsius (°C) to Fahrenheit (°F). This changes the type of degrees displayed on the controller. (°F/°C) Default: °F





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.

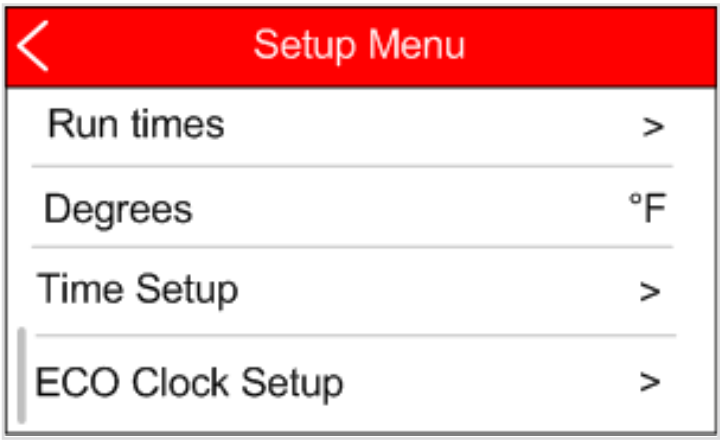
Wi-Fi SSID Scan – Pressing this will allow the ECO-0600 to actively scan for all available networks that you can choose from, and then you may select the 2.4 GHz network that you wish to connect to.

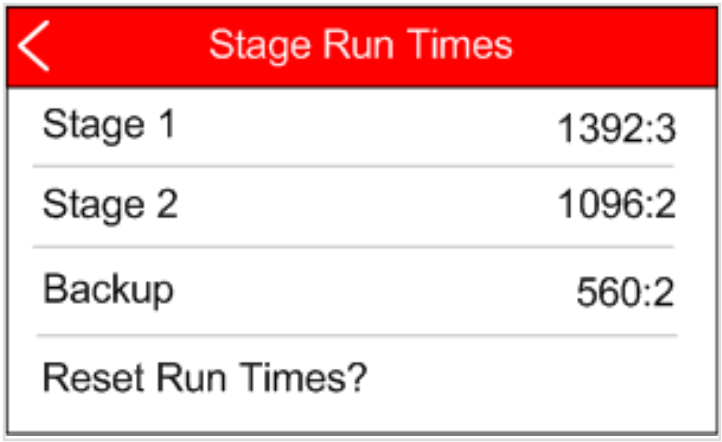
Wi-Fi SSID Manual Entry – This is where you can manually input the 2.4GHz SSID network that you want to connect to, use this method if the network does not auto populate when you perform the Wi-Fi SSID Scan. Ensure that you input this network exactly how it would appear, including spaces, numbers, capital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

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 1600 on your network router.

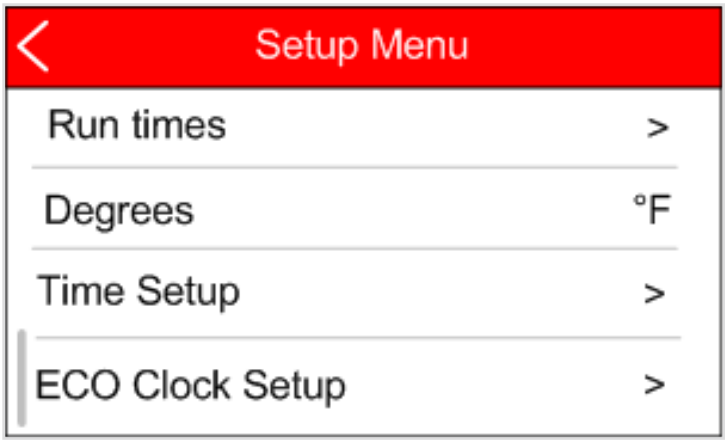


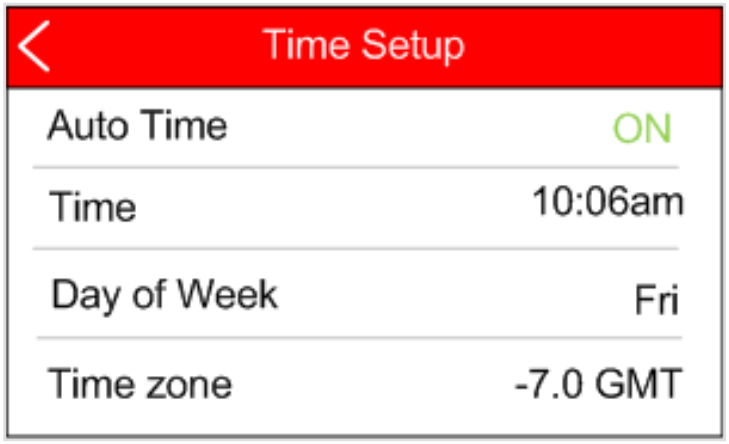


RUN TIMES

This setting will allow you to view your heat pump(S) and/or backup boiler run times. It will count the stages in hours and minutes.

Reset Run Times – Selecting this option will clear the stage accumulated hours counter for heat pump(s) and/or backup boiler and set it to 0 hours.





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)

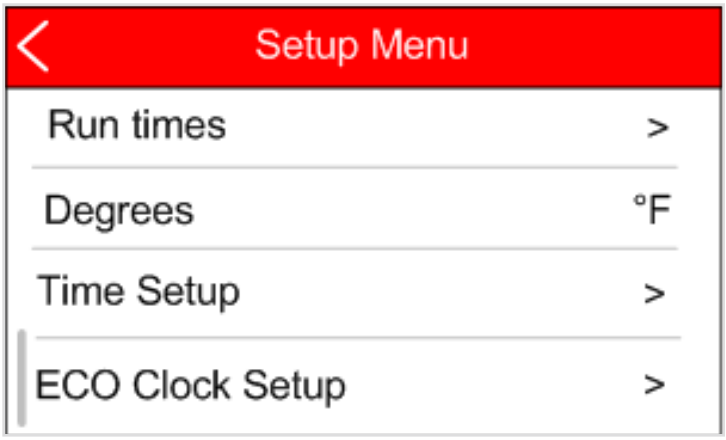
Time Zone – Select the time zone for your area.

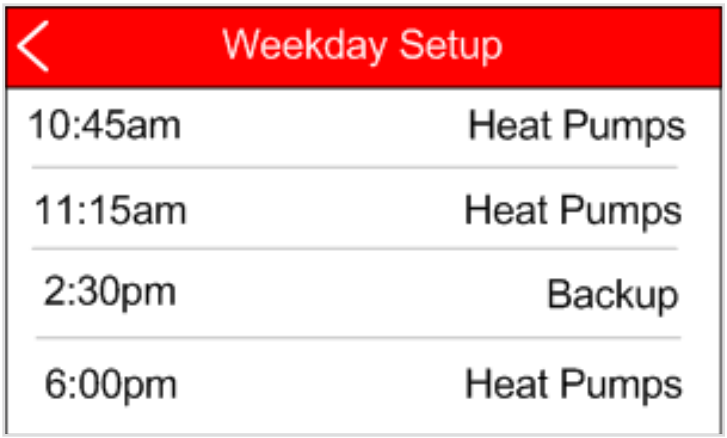
STANDARD TIMEZONES

Atlantic Standard Time	AST	GMT-4
Eastern Standard Time	EST	GMT-5
Central Standard Time	CST	GMT-6
Mountain Standard Time	MST	GMT-7
Pacific Standard Time	PST	GMT-8
Alaskan Standard Time	AST	GMT-9
Hawaiian Standard Time	HST	GMT-10

DAYLIGHT SAVINGS

Atlantic Daylight Time	ADT	GMT-3
Eastern Daylight Time	EDT	GMT-4
Central Daylight Time	CDT	GMT-5
Mountain Daylight Time	MDT	GMT-6
Pacific Daylight Time	PDT	GMT-7





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

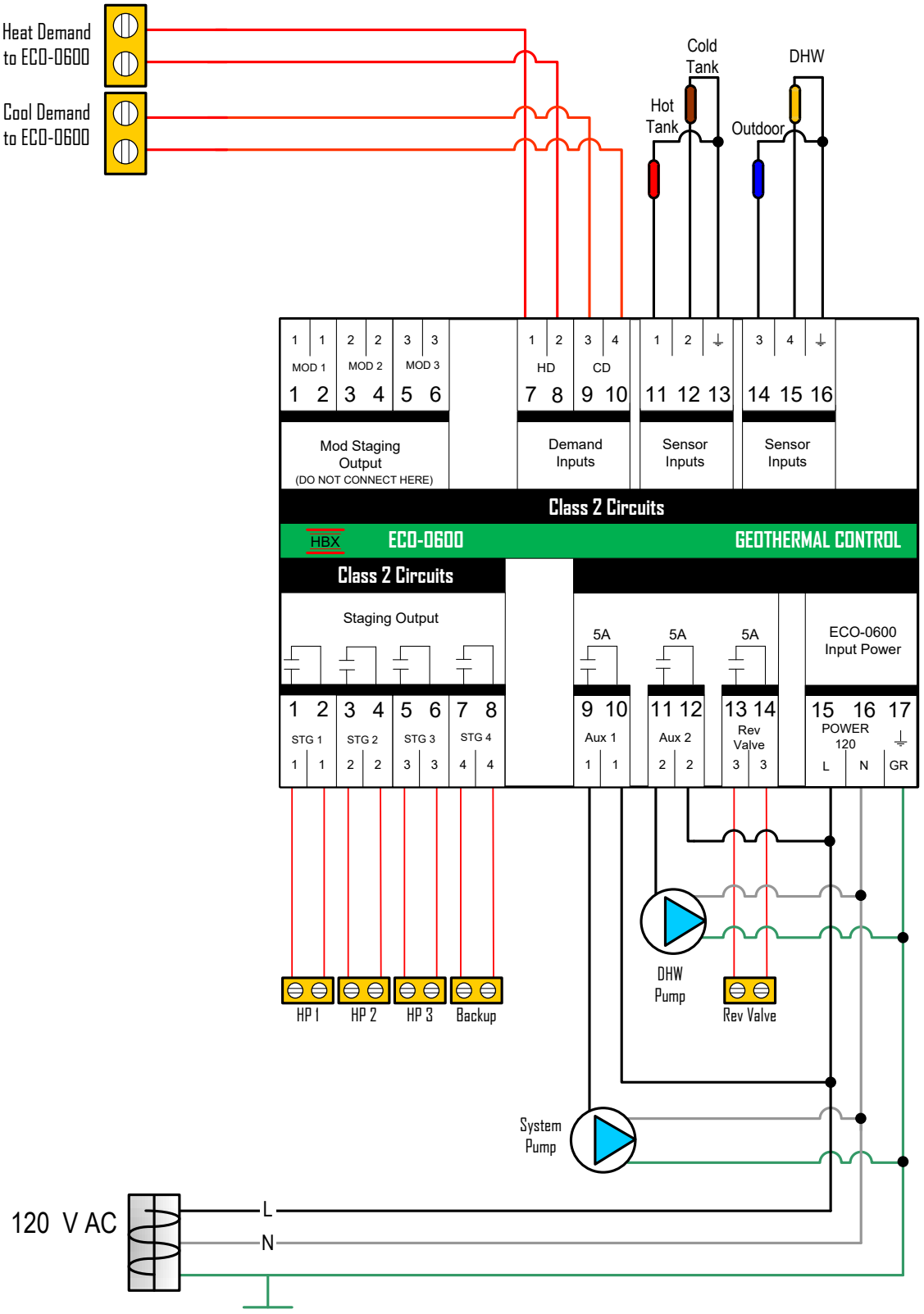
SensorLinx™ Mobile App

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.

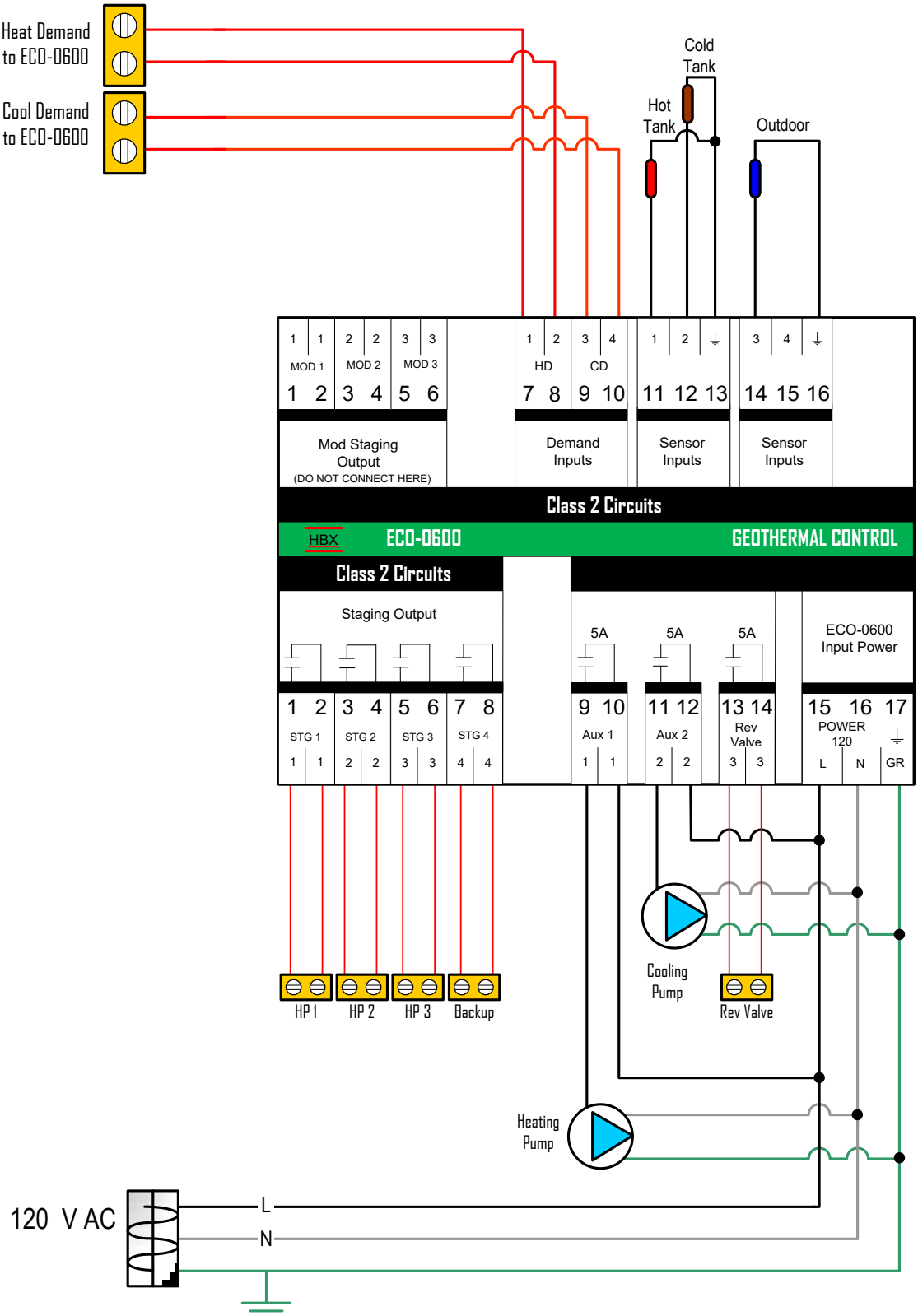
Now available on the Apple App Store and Google Play

For detailed instructions on setting up the SensorLinx mobile app please refer to the SensorLinx app manual which can be accessed via the following link.
manual.sensorlinx.co

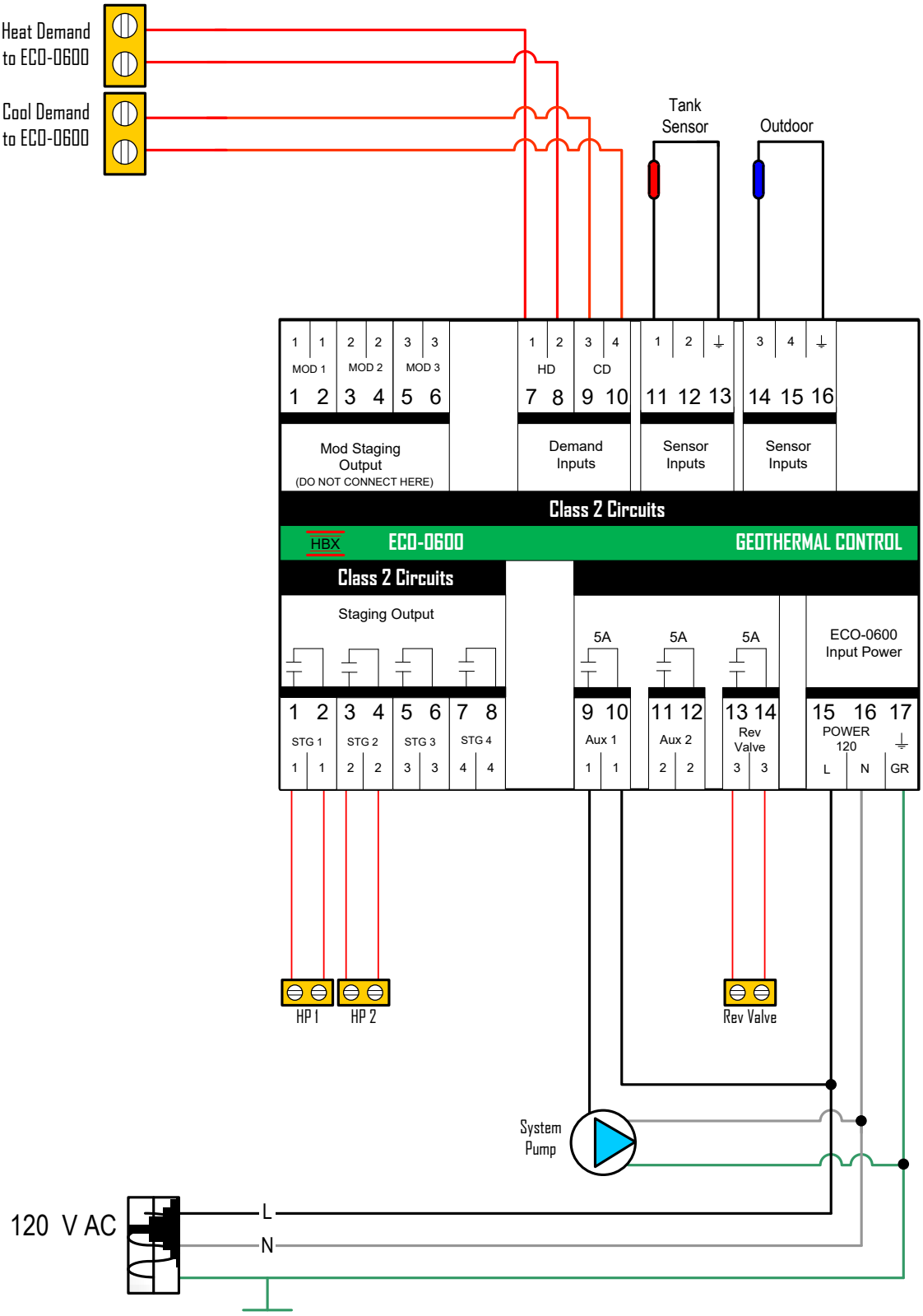
WIRING DIAGRAM 1



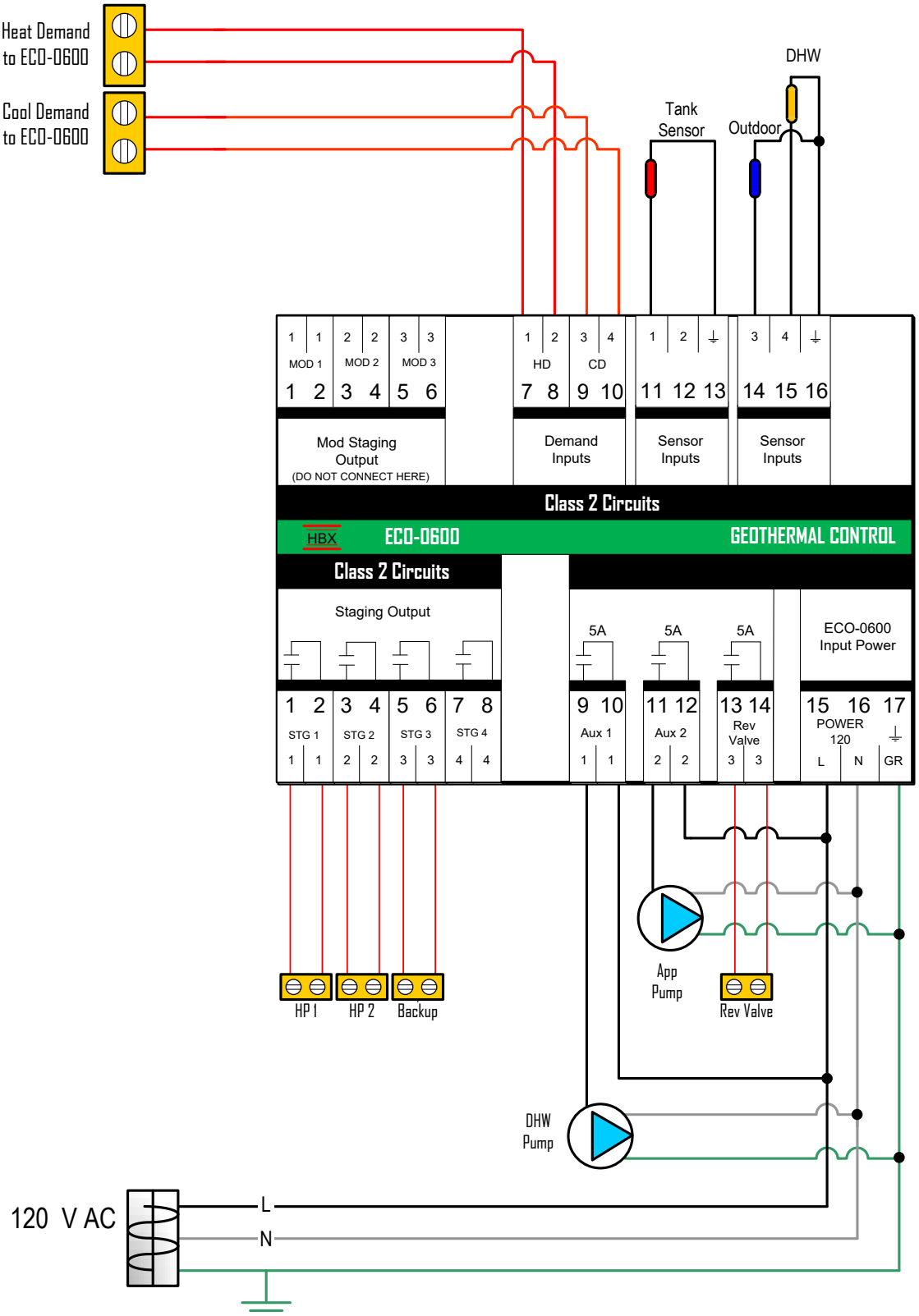
WIRING DIAGRAM 2



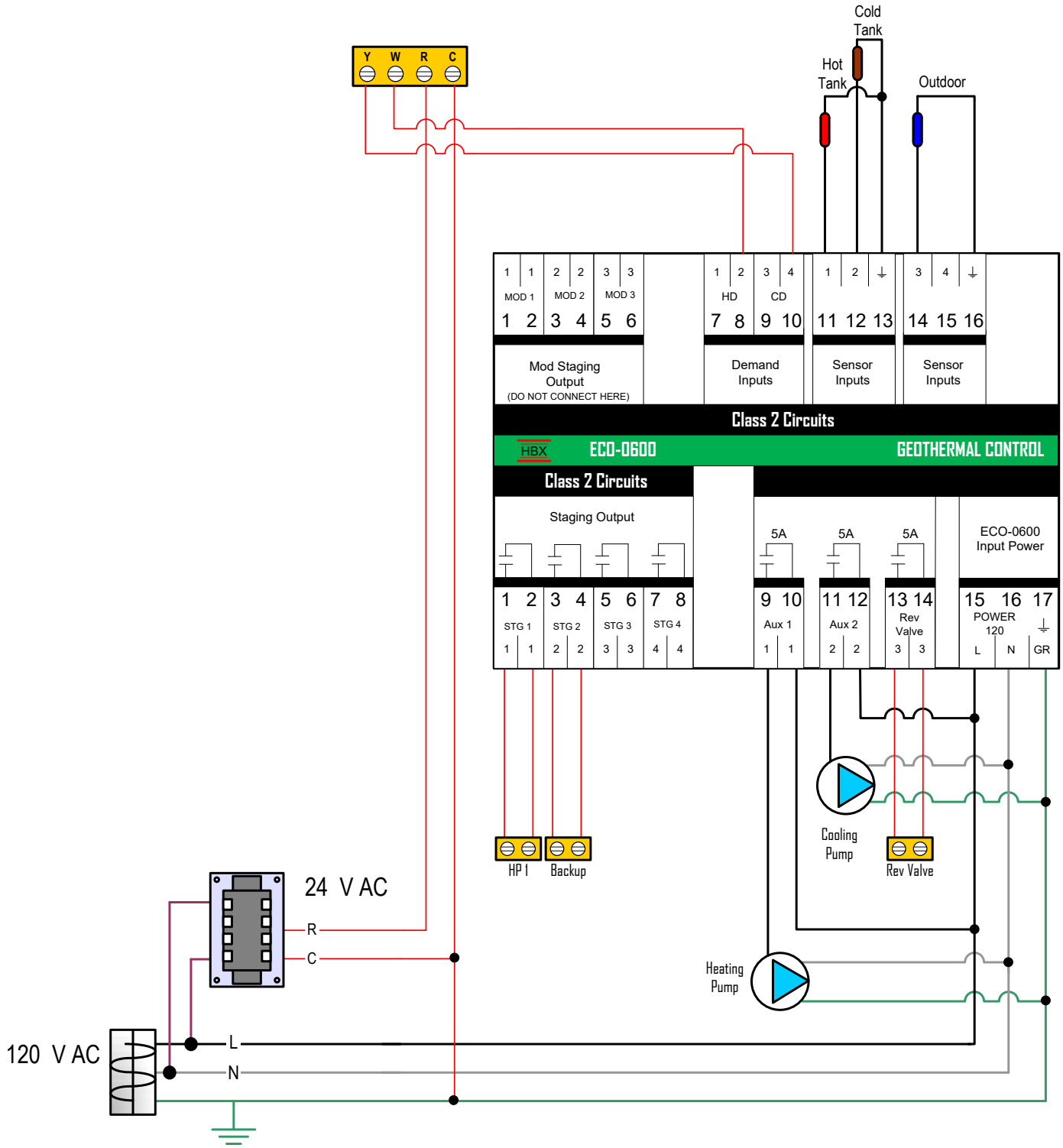
WIRING DIAGRAM 3



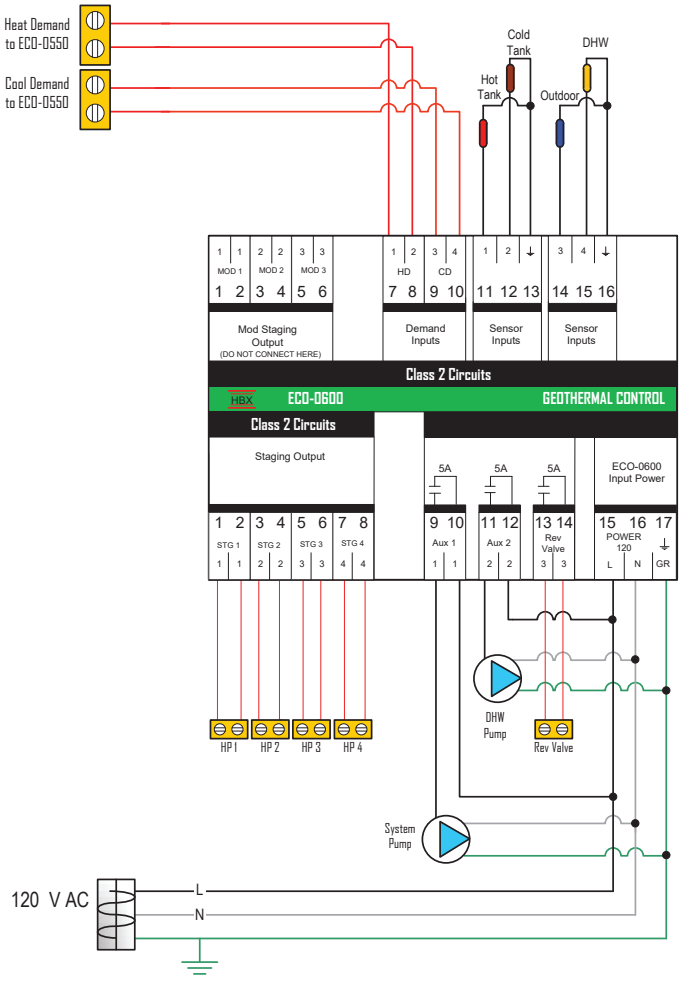
WIRING DIAGRAM 4

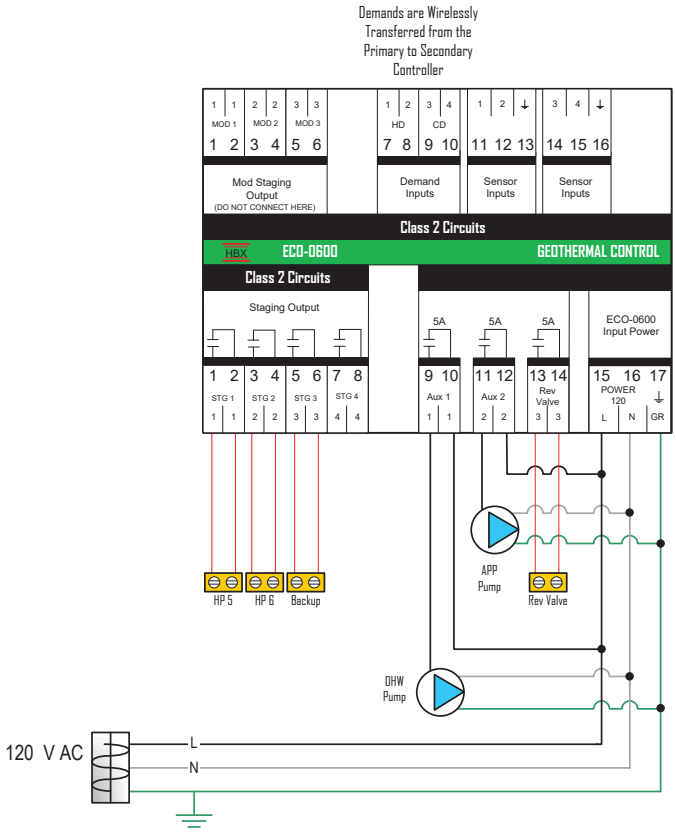


WIRING DIAGRAM 5

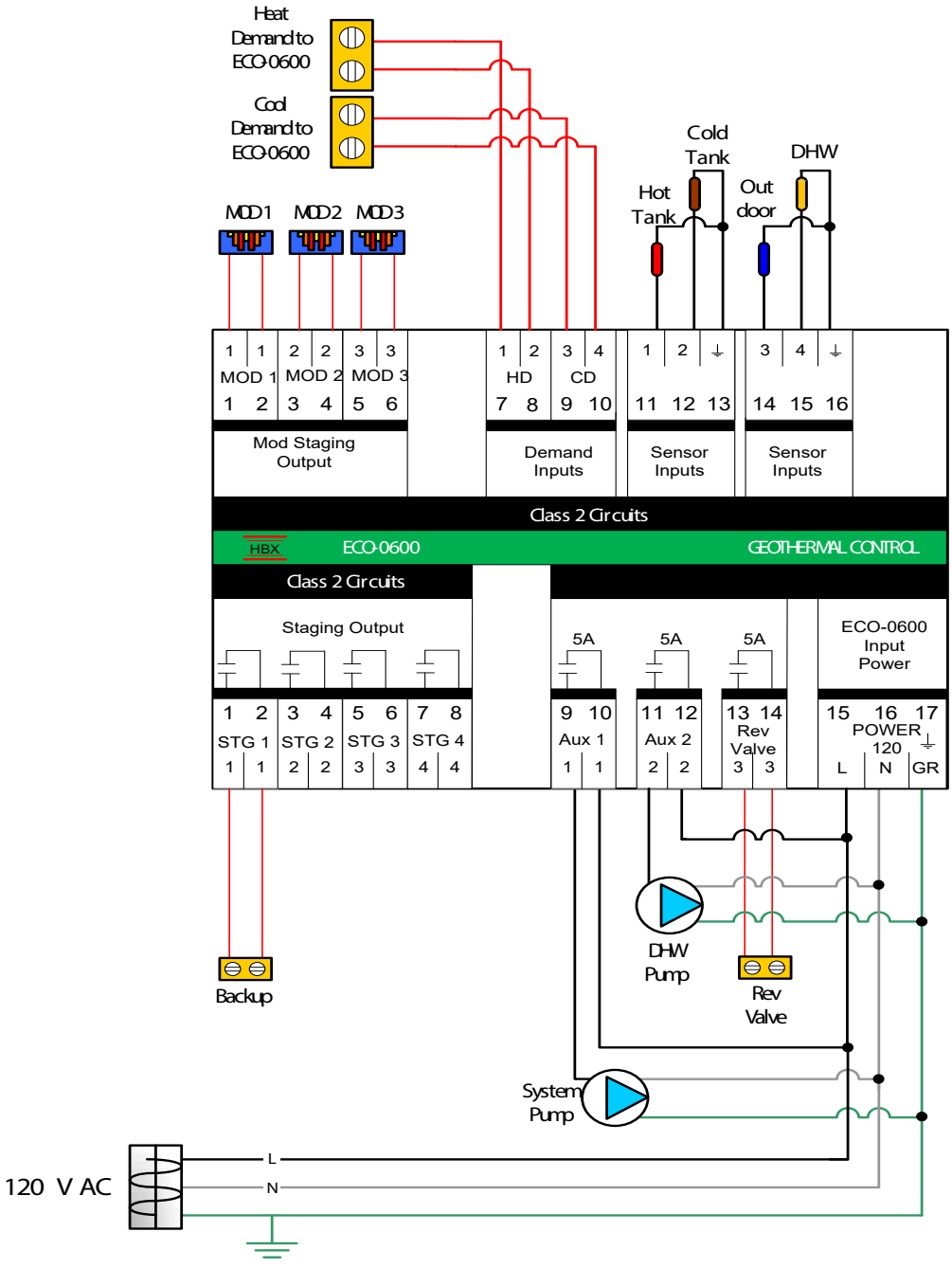


WIRING DIAGRAM 6





WIRING DIAGRAM 7



ECO-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
Heat Pumps shut off all at the same time	• Check OFF Staging options
Heat pumps not rotating	• Check rotation settings
System pump always running	• Control is wired for permanent heating (pins 7-8) or cooling (pins 9-10) demand.
Control won't go into heating or cooling	• Check if there is a demand on pin 7-8 (HD) and pins 9-10 (CD). • Check WWSD and CWSD settings
Heat pumps shutting off on high/ low pressure	• Check hot tank or cold tank setpoints. Make sure they do not exceed recommend heat pump limits.
Heat pumps cycling too frequently	• Check tank differential settings • Check heat pump lag time
Backup boilers not coming on	• Check wiring • Check backup settings. Ensure one backup setting is not set to off.
Backup boiler taking too long to come on	• Check backup settings
No heat or Cool call	• Check demand inputs on pins (7-8) or pins (9-10) • Make sure control is not in WWSD/CWSD
Control not coming out of CWSD/ WWSD	• Check the CWSD/WWSD time
Abnormal tank target	• Check outdoor reset settings
Cold tank not showing on control display	• Check cold tank sensor is connected on pins (11-13)
Outdoor Sensor displays dashes on control display	• Check outdoor sensor is connected on pins (14-16) • Use Web Outdoor is toggled on with no active internet connection
Heat pump(s) in not turning on	• No heat/cool demand • Control is WWSD/CWSD

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	• No heat/cool demand
Reversing valve is not turning on	• Control is CWSD • No cool demand
No power	• Check wiring on pins 15,16,17
Can't connect to Wi-Fi	• Verify SSID and password • Must connect to the 2.4 GHz network • Ensure port 1314 is open • Check Wi-Fi connection strength
Outdoor temp shows error despite an outdoor sensor being wired in	• Use Web outdoor is turned on which is locking out the wired in demand. Turn this setting off.

For additional assistance with the ECO-0600, please contact 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.

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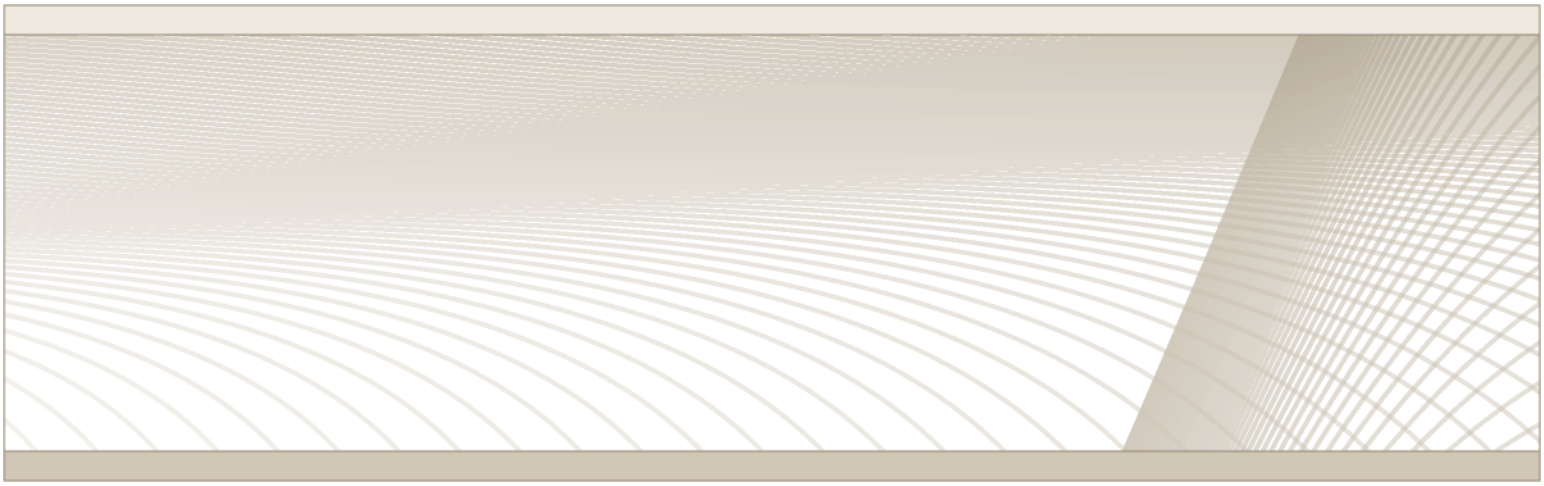

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