

Installation Manual
CPU-0600
Version 1.0.0



CPU-0600

HBX Control Systems Inc.



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CPU-0600 INTRODUCTION

The CPU-0600 is designed to be a stand-alone Outdoor Reset Control device. The purpose and function of the CPU-0600 is to provide control for multiple applications. The applications are selectable through a full touch screen display on the programming interface and consist of Boiler, Mixing, Differential Setpoint, Dual Setpoint and Pump Sequencer. The CPU-0600 is a Wi-Fi enabled control that allows access through the HBX Sensorlinx mobile app.

Boiler Control

The use of the CPU-0600 as a Boiler Control allows the capability to run up to four (4) On/Off boilers, and three (3) modulating boilers with DHW requirements. Expandability for more stages is possible with additional CPU-0600 controllers.

Mixing Control

As a Mixing Control, the CPU-0600 has the capability to run four (4) On/Off Boilers and three (3) modulating boiler. Mixing types include Modulating Mixing, Floating Action Valve and Injection Pump

Pump Sequencer

This control allows the system to sequence and cycle pumps, override pumps and turn the pump off when the outdoor temperature goes above a certain value (WWSD).

Differential Setpoint Control

The CPU-0600, when selected the control will allow to run a temperature differential for a setpoint.

Dual Setpoint

This mode is for use when one or two independent setpoints are needed in a system.



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



FEATURES

- Remote access for Apple® and Android™ devices via Sensorlinx mobile app
- Full-Colour touch screen display
- Control up to 4 on/off boiler stages per controller
- Control up to 3 modulating boilers (0-10 VDC) per controller
- Expandable up to 16 on/off boiler stages and/or 12 Modulating boilers.
- DHW control
- Boiler lead lag and rotation on time or cycles
- Boiler and DHW differential
- Multiple pump control options (system, boiler, DHW)
- Multiple mixing control options (Injection, Mod, Floating)
- Outdoor temperature reset with WWSD

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.



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

CPU-0600 TECHNICAL DATA



Specifications:

- 4 x thermistor Input (10k Ohm)
- 2 x Demand output relays 24VAC 2A
- 4 x Relay Outputs 240VAC 5A (Dry Contacts)
- 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:

0.408Kg

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:

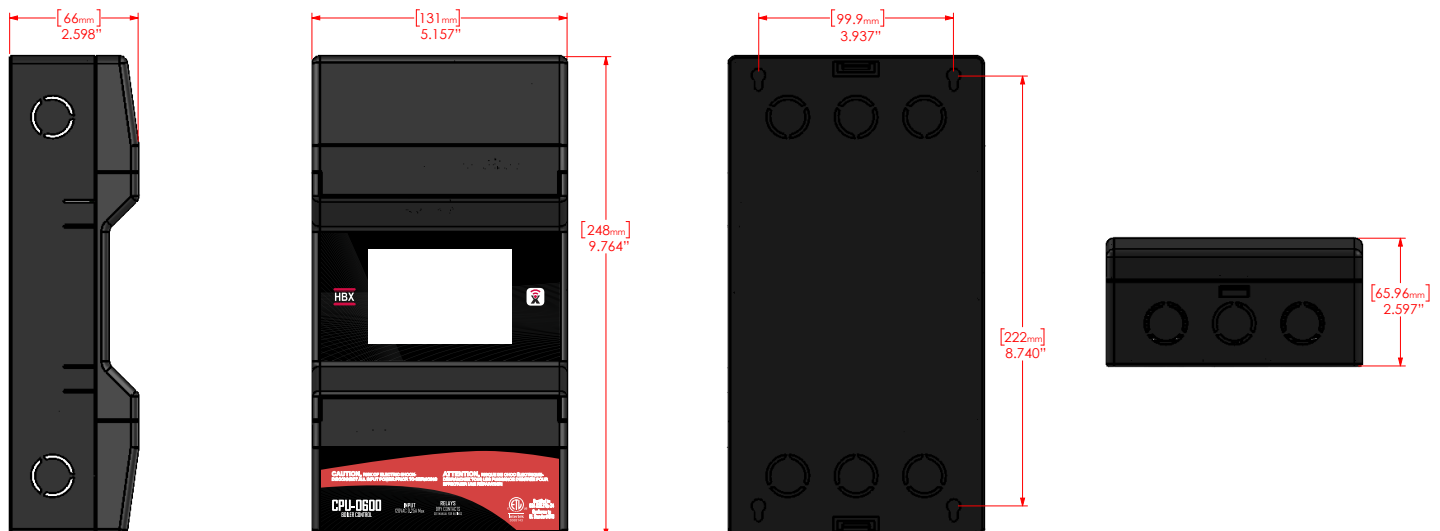
50°F to 104°F (10°C to 40°C)

CPU-0600

WiFi: 2.4GHz Network Only
FCC ID: 2AHMRESP125

Torque: 0.35 ft-lb max

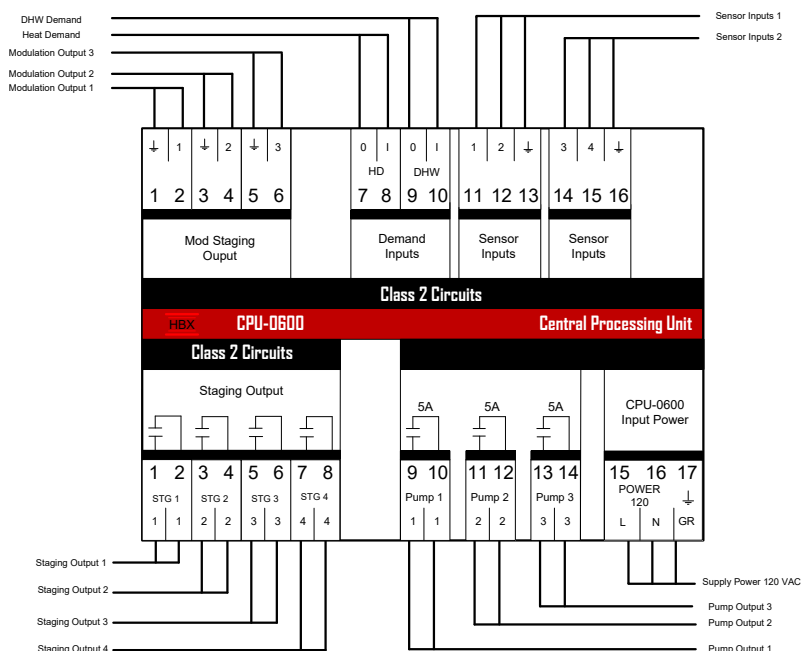
DIMENSIONS



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: (0-10 VC) Can be used for a modulating boiler or valve
- 3, 4: (0-10 VDC) Can be used for a modulating boiler or valve
- 5, 6: (0-10 VDC) Can be used for a modulating boiler or valve

2. DEMAND OUTPUTS

- 7,8: Demand signal 1: Apply a heat demand from a dry contact or 24v
- 9,10: Demand signal 2: Used for DHW or setpoint demand

3. SENSOR INPUTS

- 11, 12: Boiler Temperature in Staging Mode. Setpoint 1 temperature in DiFF/Dual Setpoint Mode.
- 12, 13: System temperature in Mixing Mode. Setpoint 2 temperature in DiFF/Dual Setpoint mode.
- 14, 15: Outdoor temperature.
- 15, 16: Used for DHW tank temperature.

4. STAGING OUTPUTS

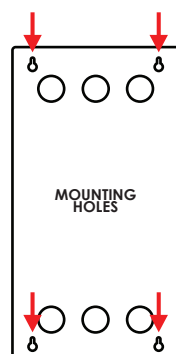
- 1, 2: Boiler Stage 1 (Primary) or Stage 5, 9, 13 (Secondary)
- 3, 4: Boiler Stage 2 (Primary) or Stage 6, 10, 14 (Secondary)
- 5, 6: Boiler Stage 3 (Primary) or Stage 7, 11, 15 (Secondary)
- 7, 9: Boiler Stage 4 (Primary) or Stage 8, 12, 16 (Secondary)

5. AUXILIARY OUTPUTS

- 9, 10: Aux 1 - Can be used as a system pump, Injection pump
- 11, 12: Aux 2 - Can be used as a system pump, DHW pump, Boiler pump, Valve up
- 13, 14: Aux 3 - Can be used as a system pump, DHW pump, Boiler pump, Valve down

6. INPUT POWER

- 15, 16, 17: 120 VAC +/- 10% 50/60Hz 15A Max



CPU-0600 Installation

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

CPU-0600 INSTALLATION

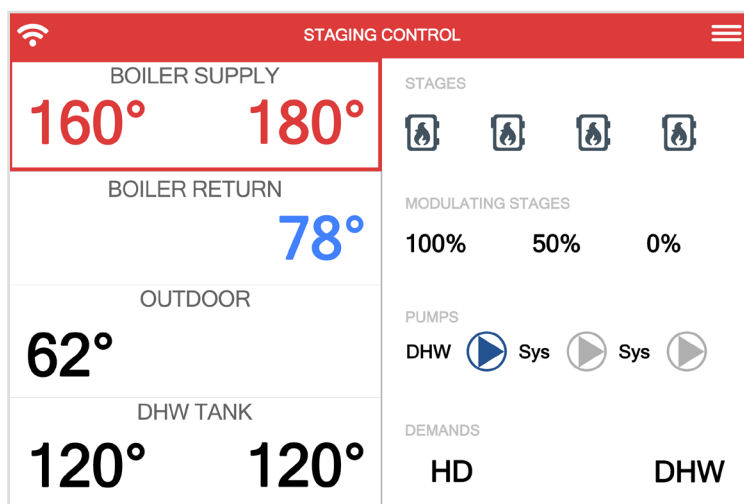
The CPU-0600 is designed to be wall mounted or installed in a separate electrical enclosure. The unit should be installed inside and protected from falling water and high humidity conditions. With all the covers in place, it is designed to protect any individual from accidental electrical shock. It is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

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

CONTROL MODE

The programming instructions for the CPU-0600 are broken down into the five control modes listed below. When the control is first plugged in you are asked to select which control mode you would like your CPU-0600 to operate in.

STAGING MODE (DEFAULT) – Programming for this mode can be found on pages 6 through 14. This mode is used when running boilers only. The boiler configurations available in this mode are three (3) modulating, On/Off boiler, two (2) stage On/Off boiler, three (3) stage On/Off boiler and four (4) On/Off boiler. Staging expandability is possible with additional CPU-0600 controllers. In this mode the control is able to control DHW and operate a boiler, system, and DHW pump(s).



In the event you select the wrong control mode, please cycle power to the controller and it will display the control mode option screen.

MIXING MODE – Programming for this mode can be found on pages 15 through 24. This mode is used when running mixing pumps or valves. Mixing configurations include PMLp, Modulating, and Floating Action Valve. In this mode the control can run up to four (4) on/ off boilers or three (3) mod boiler(s).

DIFFERENTIAL SETPOINT MODE – Programming for this mode can be found on pages 25 through 28. This mode is used when running a differential setpoint. In differential mode, the control will also send a modulating signal output based on how far the control is from the differential. This can be used to run a pump in modulating applications for constant flow.

DUAL SETPOINT MODE – Programming for this mode can be found on pages 29 through 31. This mode is used when one or two independent setpoints are needed. Each setpoint is set up individually and each has its own thermistor input and relay outputs: Each setpoint has its own normally open and normally closed contacts (which can be used for heating and/or cooling).

PUMP SEQUENCER MODE – Programming for this mode can be found on pages 32 through 34. This mode is used to provide pump control for two pumps in a duty, standby situation. This control allows the system to sequence and cycle pumps, override pumps and turn the pumps off when the outdoor temperature goes above a certain value (WWSD)



SensorLinx™ Mobile App

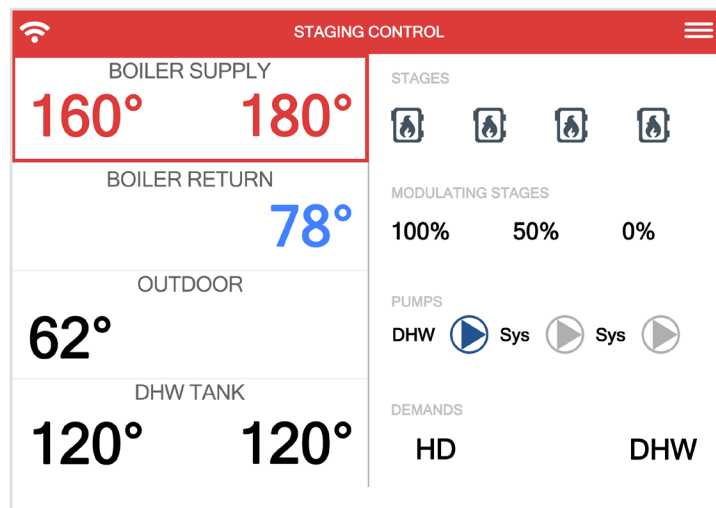
The Sensorlinx™ mobile app is available for Apple iOS (APP Store) and Android® devices (Google Play). The mobile app allows for remote monitoring and control for HBX Controls devices.

Now available on the Apple App Store and Google Play



STAGING MODE: MAIN SCREEN

- 1 **WI-FI** – Indicates that the control is connected to a 2.4 GHz Wi-Fi network.
- 2 **BOILER SUPPLY** – Indicates the boiler supply temperature and target. If there is a demand for heating the box will be bordered with a red outline, and the staging output(s) in the lower wiring chamber will be closed.
- 3 **BOILER RETURN** – Indicates the boiler return temperature.
- 4 **OUTDOOR** – The outdoor temperature will be displayed. This option will also display if the control is in WWSD (Warm Weather Shutdown).
- 5 **DHW TANK** – It will display the DHW temperature and target. If there is a demand for DHW the zone will be bordered with a red outline.
- 6 **STAGES** – Indicates how many boilers are being utilized in your system setup. When a boiler is activated by a heat demand the boiler will light up in respect to their classification.
- 7 **MODULATING STAGES** – Indicates how many modulating boilers are being utilized in your system setup. When a modulating boiler is activated by a heat demand the modulating boiler percentage will start at the minimum mod percentage (%). When there is no demand (off) the modulating percentage (%) will displayed as 0%.
- 8 **PUMPS** – When a pump is activated by a call you will see pump (P1) , (P2), (P3) light up in respect to their classification, their associated contacts PUMP 1, PUMP 2, PUMP 3 can be found in the lower wiring chamber will be closed.
- 9 **DEMANDS** – When the delegated demand is active it will light up (DEMAND 1 - HD) or (DEMAND 2 – DHW/SETPOINT) thus in turn the associated demand in the upper wiring chamber will be closed.



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

STAGING MODE: STAGE SEQUENCE SETUP

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

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) *CPU-0600 #2
- Secondary (Stages 9-12) *CPU-0600 #3
- Secondary (Stage 13-16) *CPU-0600 #4

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

STAGE SEQUENCER SETUP	
Stage Sequence	Primary
Control ID	12

STAGING MODE: CONTROL STATUS

- Sync Code: Sync code of the CPU-0600.
- Wi-Fi Network : displays current SSID network connected to
- Wi-Fi Password: displays network password connected to
- Wi-Fi Strength – displays Signal strength of the network connected to

CONTROL SETUP	
Sync Code	ACPU-1234
Wi-Fi Network	WIFI1
Wi-Fi Password	Password1
Wi-Fi Strength	94%

STAGING MODE: DESIGN TEMPERATURES

OUTDOOR RESET – This is used in the outdoor reset design calculation. This option should be set to reflect your specific city or region. (OFF/-40°F to 127°F)

BOILER SETPOINT – When a heat demand is present and the control is not in WWSD, the control will target this temperature for heating. (OFF/2°F to 210°F)

This option will appear when outdoor reset is set to OFF

MAX BOILER TEMP – This is used in the outdoor reset design calculation, and also serves as the maximum setting for the boiler. This is the maximum boiler temperature for the coldest day. (OFF/2°F to 210°F)

MIN BOILER TEMP: This is the minimum boiler temperature. Set this to the temperature you would like the boiler to be when the outdoor temperature approaches WWSD. (OFF/2°F to 210°F)

USE WEB OUTDOOR TEMP: 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)

WARM WEATHER SHUTDOWN (WWSD): This setting is used to set the temperature in which the CPU-0600 will go into WWSD. If the system rises above this temperature, the system will be shut off. In WWSD the boilers and all pumps will shut off.

(35°F to 120°F) Default: 70°F

WWSD TIME: This setting is used as a lag time for WWSD. This will hold the control from entering WWSD until this time has elapsed. The timer starts when the outdoor temperature hits WWSD. This setting is useful in the shoulder seasons when there are large outdoor temperature swings.

(0°F to 240°F) Default 0°F

DESIGN TEMPERATURES	
Outdoor Reset	OFF
Boiler Setpoint	180
Use Web Outdoor Temp	OFF
WWSD	74
WWSD Time	1 hrs

DESIGN TEMPERATURES	
Outdoor Reset	-10
Max Boiler Temp	180
Min Boiler Temp	80
Use Web Outdoor Temp	OFF
WWSD	74
WWSD Time	1 hrs

STAGING MODE: BOILER SETUP

NUMBER OF ON/OFF STAGES – This setting will allow you to select the number of boiler stages in your system (0-16)

DIFFERENTIAL – Adjust this setting to the desired differential for the boiler. This will center the differential around the setpoint.

(eg. 20°F would be 10°F Below and 10°F Above)
(2°F to 100°F)

2 STAGE BOILERS – This setting will allow you to select the number of 2 stages boiler in your system.

(ON/OFF)

LoLo/HiHi Rotation – The Lo/Lo - Hi/Hi function of the Control instructs a heating system containing two dual stage boilers to engage the first stage of each boiler prior to igniting the second stage of either boiler. The Control will turn on the second stages of the boilers as the call for heat is required.

(ON/OFF)

STAGE ON LAGTIME – When the boiler is set for more than 1 stage, this setting will be set for the minimum lagtime between boiler 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.

(1Min -240Min)

STAGE OFF LAGTIME – This feature is used to set how you would like to stage the boilers off When the boiler is set for more than 1 stage, this setting will be set for the minimum OFF lagtime between boiler stages.

(1S– 240S)

ROTATE TIME – The time of rotation between boilers. This setting is in hours of run time. This means that the boilers are going to rotate when the first boiler exceeds the second by the rotate time.

(OFF/1H to 240H)

BOILER SETUP	
Number of On/Off Stages	4
Differential	10
2 Stage Boilers	ON
LoLo HiHi Rotation	OFF
Stage On Lagtime	1min
Stage Off Lagtime	30sec
Rotate Time	3hrs
Rotate Cycles	OFF
Number of MOD Stages	0

STAGING MODE: BOILER SETUP

ROTATE CYCLES: Set the number of cycles at which you would like to rotate the boilers. One cycle is described as the boiler going on and then off.
(OFF/1 to 240)

NUMBER OF MOD STAGES – This setting will allow you to select the number of modulating stages.

MODULATING TIME – This setting sets the time between the steps when the boiler needs to increase or decrease the firing rate. Each step is 1% for all situations.
(1S to 240S)

MIN MOD PERCENT – This setting is used to set the lowest modulating level the boiler can go down to. This will also be the starting point whenever there is a new demand.
(1% to 99%)

MOD OUT SETPOINT – In this mode the 0-10VDC signal does not directly run the burner. The 0-10VDC signal is interpreted by the boiler as a setpoint. The boiler in this mode will modulate the burner to achieve that setpoint. ex: 4VDC is equal to 140°F
(ON/OFF)

BOILER SETUP	
Number of On/Off Stages	4
Differential	10
2 Stage Boilers	OFF
Stage On Lagtime	1min
Stage Off Lagtime	30sec
Rotate Time	3hrs
Rotate Cycles	OFF
Number of MOD Stages	2
Modulating Time	10sec
Min MOD Percent	50%
Mod Out Setpoint	OFF

If you select more than three (3) stages you will need additional(s) CPU-0600 as the CPU-0600 can do a maximum for three (3) modulating stages per controller.

If you are using modulating boilers and On/OFF boilers together in a system the modulating boiler(s) will stage first.

STAGING MODE: PUMP SETUP

This setting is used to configure the pump(s) component in your system.

- Pump 1- The chosen pump type will close the lower contact at 1-2 (PUMP1) when a demand is in place. Pump choice options: Boiler, System, DHW, App, None
- Pump 1 Post Purge (0 -240 seconds) the amount of time if necessary for Pump 1 to run after the call associated with it has been removed.
- Pump 1 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 1 be delayed to run after the call associated with it has been activated.
- Pump 2- The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place. Pump choice options: Boiler, System, DHW, App, None
- Pump 2 Post Purge (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- Pump 2 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- Pump 3- The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place. Pump choice options: Boiler, System, DHW, App, None
- Pump 3 Post Purge (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- Pump 3 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- Pump Exercise Time (0-240 Hrs) the amount of time that need to pass before the pumps will exercise the system pumps. (0 = no exercising)

PUMP SETUP	
Pump 1	System
Pump 1 Post Purge	60sec
Pump 1 Start Delay	0sec
Pump 2	Boiler
Pump 2 Post Purge	60sec
Pump 2 Start Delay	0sec
Pump 3	DHW
Pump 3 Post Purge	60sec
Pump 3 Start Delay	0sec
Pump Exercise Time	24hrs

PUMP OPTIONS

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

Boiler – If there are any heating 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

Any AUX contact set as DHW will need a Post Purge set of at least 10 seconds

STAGING MODE: DHW SETUP

USE DHW TANK – Once this option is enabled you will be able to program the remaining options for your DHW setup.

(ON/OFF)

FAST DHW – (Only Applies to Multiple Boiler Operation)
This option will allow all the boilers to come on immediately when there is a call for DHW. The boilers will still stage off at the normal differential. This option allows for faster DHW heating.

(ON/OFF)

DHW BOILER SETPOINT – This option allows you to set the maximum boiler temperature when the DHW demand is on. This will override the calculated boiler target from the designs.

(34°F to 200°F)

DHW TARGET – This option allows you to select your DHW target temperature in the tank.

(34°F to 200°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)

DHW INTERLOCK – This setting will disable the boiler pump to turn on when there is a DHW call.

(ON/OFF)

DHW PRIORITY – This selection will allow the DHW demand to override the heating system for a max of 60 minutes in order to satisfy the DHW demand. Once 60 minutes have passed and there is still unsatisfied heat demand, the control will automatically switch back to accommodate the demand for heat.

(ON/OFF)

DHW SETUP	
Use DHW Tank	ON
Fast DHW	OFF
DHW Boiler Setpoint	100F
DHW Target	130F
Differential	8F
DHW Interlock	OFF
DHW Priority	ON

STAGING MODE: SETUP MENU

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

(OFF/ON)

RUN TIMES – This setting will allow you to view your boiler(s) run times.

- **RESET RUN TIMES** – Selecting this option will clear the stage accumulated hours counter for your boiler(s).

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

SETUP MENU	
Permanent HD	OFF
Run Times	
Wi-Fi Settings	
Degrees	F

STAGE RUN TIMES	
Stage 1	100:00
Stage 2	80:00
Stage 3	60:00
Stage 4	40:00
Reset Run Times?	

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.

MIXING MODE: MAIN SCREEN

1 WI-FI – Indicates that the control is connected to a 2.4 GHz Wi-Fi network.

2 BOILER – Indicates the boiler temperature and target. If there is a demand for heating the box will be bordered with a red outline, and the staging output(s) in the lower wiring chamber will be closed.

3 SYSTEM – Indicates the system temperature and target. When in boiler protection the box will have a yellow outline.

4 OUTDOOR – The outdoor temperature will be displayed. This option will also display if the control is in WWSD (Warm Weather Shutdown).

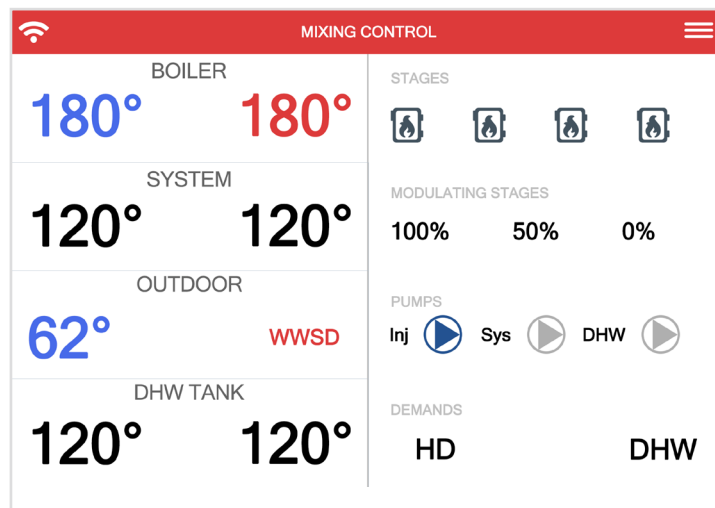
5 DHW TANK – It will display the DHW temperature and target. If there is a demand for DHW the zone will be bordered with a red outline.

6 STAGES – Indicates how many boilers are being utilized in your system setup. When a boiler is activated by a heat demand the boiler will light up in respect to their classification.

7 MODULATING STAGES - Indicates how many modulating boilers are being utilized in your system setup. When a modulating boiler is activated by a heat demand the modulating boiler percentage will start at the minimum mod percentage (%). When there is no demand (off) the modulating percentage (%) will displayed as 0%.

8 PUMPS/VALVE – When a pump/valve is activated by a call you will see pump (P1) ,(P2), (P3) light up in respect to their classification, their associated contacts PUMP 1, PUMP 2, PUMP 3 can be found in the lower wiring chamber will be closed.

9 DEMANDS - When the delegated demand is active it will light up (DEMAND 1 - HD) or (DEMAND 2 – DHW/SETPOINT) thus in turn the associated demand in the upper wiring chamber will be closed.



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

MIXING MODE: STAGE SEQUENCE SETUP

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

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) *CPU-0600 #2
- Secondary (Stages 9-12) *CPU-0600 #3
- Secondary (Stage 13-16) *CPU-0600 #4

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

MIXING MODE: CONTROL STATUS

- **Sync Code** - Sync code of the CPU-0600
- **Wi-Fi Network** - displays current SSID network connected to
- **Wi-Fi Password** - displays network password connected to
- **Wi-Fi Strength** - displays Signal strength of the network

STAGE SEQUENCER SETUP	
Stage Sequence	Primary
Control ID	12

CONTROL SETUP	
Sync Code	ACPU-1234
Wi-Fi Network	WIFI1
Wi-Fi Password	Password1
Wi-Fi Strength	94%

MIXING MODE: DESIGN TEMPERATURES

OUTDOOR RESET – This is used in the outdoor reset design calculation. This option should be set to reflect your specific city or region.

(OFF/-40°F to 127°F)

BOILER SETPOINT – When a heat demand is present and the control is not in WWSD, the control will target this temperature for heating. This option will appear when outdoor reset is set to off

(OFF/2°F to 210°F)

SYSTEM SETPOINT – : When a heat demand is present and the control is not in WWSD, the control will target this system temperature.

(20°F to 180°F)

MAX BOILER TEMP – This is used in the outdoor reset design calculation, and also serves as the maximum setting for the boiler. This is the maximum boiler temperature for the coldest day.

(OFF/2°F to 210°F)

MIN BOILER TEMP: This is the minimum boiler temperature. Set this to the temperature you would like the boiler to be when the outdoor temperature approaches WWSD.

(OFF/2°F to 210°F)

MAX SYSTEM TEMP: This is used to setup the maximum temperature for your low temperature system on the coldest day.

(20°F to 180°F)

MIN SYSTEM TEMP: This is used to setup the lowest temperature you would like in the low temperature system. The setpoint will hit this when the outdoor temperature approaches WWSD. (20°F to 180°F)
Default: 120°F

DESIGN TEMPERATURES	
Outdoor Reset	10
Max Boiler Temp	150
Min Boiler Temp	100
Max System Temp	90
Min System Temp	60
Use Web Outdoor Temp	OFF
WWSD	74
WWSD Time	1 hrs

MIXING MODE: DESIGN TEMPERATURES

USE WEB OUTDOOR TEMP: 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)

WARM WEATHER SHUTDOWN (WWSD): This setting is used to set the temperature in which the CPU-0600 will go into WWSD. If the system rises above this temperature, the system will be shut off. In WWSD the boilers and all pumps will shut off.

(35°F to 120°F) Default: 70°F

WWSD TIME: This setting is used as a lag time for WWSD. This will hold the control from entering WWSD until this time has elapsed. The timer starts when the outdoor temperature hits WWSD. This setting is useful in the shoulder seasons when there are large outdoor temperature swings.

(0°F to 240°F) Default: 0°F

DESIGN TEMPERATURES	
Outdoor Reset	OFF
Boiler Setpoint	110
System Setpoint	85
Use Web Outdoor Temp	OFF
WWSD	74
WWSD Time	1 hrs

If the control disconnects from the Wi-Fi after 2 hours or longer it will go to the coldest day of the year set in your outdoor reset design or maximum boiler temperature.

MIXING MODE: BOILER SETUP

NUMBER OF ON/OFF STAGES – This setting will allow you to select the number of boiler stages in your system.

(0-16)

DIFFERENTIAL – Adjust this setting to the desired differential for the boiler. This will center the differential around the setpoint.

(eg. 20°F would be 10°F Below and 10°F Above)

(2°F to 100°F)

2 STAGE BOILERS – This setting will allow you to select the number of 2 stages boiler in your system.

(ON/OFF)

LOLO/HIHI ROTATION – The Lo/Lo - Hi/Hi function of the Control instructs a heating system containing two dual stage boilers to engage the first stage of each boiler prior to igniting the second stage of either boiler. The Control will turn on the second stages of the boilers as the call for heat is required.

(ON/OFF)

STAGE OFF LAGTIME – When the boiler is set for more than 1 stage, this setting will be set for the minimum lagtime between boiler 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.

(1Min -240Min)

STAGE OFF LAGTIME – This feature is used to set how you would like to stage the boilers off. When the boiler is set for more than 1 stage, this setting will be set for the minimum OFF lagtime between boiler stages.

(1S-240S)

ROTATE TIME: The time of rotation between boilers. This setting is in hours of run time. This means that the boilers are going to rotate when the first boiler exceeds the second by the rotate time.

(OFF/1H to 240H)

BOILER SETUP	
Number of On/Off Stages	4
Differential	10
2 Stage Boilers	ON
LoLo HiHi Rotation	OFF
Stage On Lagtime	1min
Stage Off Lagtime	30sec
Rotate Time	3hrs
Rotate Cycles	OFF
Number of MOD Stages	0

MIXING MODE: BOILER SETUP

ROTATE CYCLES – Set the number of cycles at which you would like to rotate the boilers. One cycle is described as the boiler going on and then off.

(OFF/1 to 240)

NUMBER OF MOD STAGES – This setting will allow you to select the number of modulating stages.

MODULATING TIME – This setting sets the time between the steps when the boiler needs to increase or decrease the firing rate. Each step is 1% for all situations.

(1S to 240S)

MIN MOD PERCENT – This setting is used to set the lowest modulating level the boiler can go down to. This will also be the starting point whenever there is a new demand.

(1% to 99%)

MOD OUT SETPOINT – In this mode the 0-10VDC signal does not directly run the burner. The 0-10VDC signal is interpreted by the boiler as a setpoint. The boiler in this mode will modulate the burner to achieve that setpoint. ex: 4VDC is equal to 140°F

(ON/OFF)

BOILER SETUP	
Number of On/Off Stages	4
Differential	10
2 Stage Boilers	OFF
Stage On Lagtime	1min
Stage Off Lagtime	30sec
Rotate Time	3hrs
Rotate Cycles	OFF
Number of MOD Stages	2
Modulating Time	10sec
Min MOD Percent	50%
Mod Out Setpoint	OFF

If you select more than three (3) stages you will need additional(s) CPU-0600 as the CPU-0600 can do a maximum for three (3) modulating stages per controller.

If you are using modulating boilers and On/OFF boilers together in a system the modulating boiler(s) will stage first.

MIXING MODE: MIXING SETUP

MIXING TYPE

INJECTION - Use this option when using a primary/secondary injection style piping. This selection will take hot water from the primary loop and inject it into the secondary loop, ensuring proper temperature control in the low temperature system.

(INJ/FLO/MOD)

Make sure you set an Injection pump in your pump setup.

FLOATING - Use this option when you are using a 3 or 4 way mixing valve. This will run your floating (power open/power close valve) and mix the temperature down in your low temperature system.

(INJ/FLO/MOD)

Make sure you set Floating Up and Floating Down in pump setup.

MODULATING OUTPUT SETUP - Use this option when you need to have a 0-10VDC signal to run your mixing device. This could be used for a modulating valve or to a VFD, to ensure the proper temperature in the low temperature system.

(INJ/FLO/MOD)

MOD TIME - This setting sets the time between the steps when the valve needs to increase or decrease the firing rate. Each step is 1% for all situations.

(1S to 240S)

MINIMUM MOD % - This setting is used to set the lowest modulating level the valve can go down to. This will also be the starting point whenever there is a new demand.

(1% to 99%)

BOILER PROTECTION - This setting will allow for boiler protection to be turned on or off. Boiler protection is when boiler supply temperature falls below your minimum boiler temperature setting and this will cause the mixing device to shut down.

(ON/OFF)

MIXING SETUP

Mixing Type	Injection
Boiler Protection	OFF

MIXING SETUP

Mixing Type	Floating
Boiler Protection	OFF

MIXING SETUP

Mixing Type	Modulating
Mixing Mod Time	10sec
Mixing Mod Min	50%
Boiler Protection	OFF

MIXING MODE: PUMP SETUP

This setting is used to configure the pump(s) component in your system.

- Pump 1- The chosen pump type will close the lower contact at 1-2 (PUMP1) when a demand is in place. Pump choice options: Boiler, System, DHW, App, None, Injection, Float Up, Float Dn, (only Pump 1 can be set for Injection).
- Pump 1 Post Purge (0 -240 seconds) the amount of time if necessary for Pump 1 to run after the call associated with it has been removed.
- Pump 1 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 1 be delayed to run after the call associated with it has been activated.
- Pump 2- The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place. Pump choice options: Boiler, System, DHW, App, None, Float Up, Float Dn
- Pump 2 Post Purge (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- Pump 2 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- Pump 3- The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place. Pump choice options: Boiler, System, DHW, App, None, Float Up, Float Dn
- Pump 3 Post Purge (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- Pump 3 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- Pump Exercise Time (0-240 Hrs) the amount of time that need to pass before the pumps will exercise the system pumps. (0 = no exercising)

There is no post purge, start delay, exercising options for Injection, Floating up and Floating down Valves.

PUMP SETUP	
Pump 1	Injection
Pump 1 Post Purge	60sec
Pump 1 Start Delay	0sec
Pump 2	Boiler
Pump 2 Post Purge	60sec
Pump 2 Start Delay	0sec
Pump 3	DHW
Pump 3 Post Purge	60sec
Pump 3 Start Delay	0sec
Pump Exercise Time	24hrs

PUMP OPTIONS

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

Boiler – If there are any heating 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

Any AUX contact set as DHW will need a Post Purge set of at least 10 seconds

MIXING MODE: DHW SETUP

USE DHW TANK – Once this option is enabled you will be able to program the remaining options for your DHW setup.

(ON/OFF)

FAST DHW – (Only Applies to Multiple Boiler Operation)
This option will allow all the boilers to come on immediately when there is a call for DHW. The boilers will still stage off at the normal differential. This option allows for faster DHW heating.

(ON/OFF)

DHW BOILER SETPOINT – This option allows you to set the maximum boiler temperature when the DHW demand is on. This will override the calculated boiler target from the designs.

(34°F to 200°F)

DHW TARGET – This option allows you to select your DHW target temperature in the tank.

(34°F to 200°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)

DHW INTERLOCK – This setting will disable the boiler pump to turn on when there is a DHW call.

(ON/OFF)

DHW PRIORITY – This selection will allow the DHW demand to override the heating system for a max of 60 minutes in order to satisfy the DHW demand. Once 60 minutes have passed and there is still unsatisfied heat demand, the control will automatically switch back to accommodate the demand for heat.

(ON/OFF)

DHW SETUP	
Use DHW Tank	ON
Fast DHW	OFF
DHW Boiler Setpoint	100F
DHW Target	130F
Differential	8F
DHW Interlock	OFF
DHW Priority	ON

MIXING MODE: SETUP MENU

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

(OFF/ON)

RUN TIMES – This setting will allow you to view your boiler(s) run times.

- **RESET RUN TIMES** – Selecting this option will clear the stage accumulated hours counter for your boiler(s).

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

SETUP MENU	
Permanent HD	OFF
Run Times	
Wi-Fi Settings	
Degrees	F

STAGE RUN TIMES	
Stage 1	100:00
Stage 2	80:00
Stage 3	60:00
Stage 4	40:00
Reset Run Times?	

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.

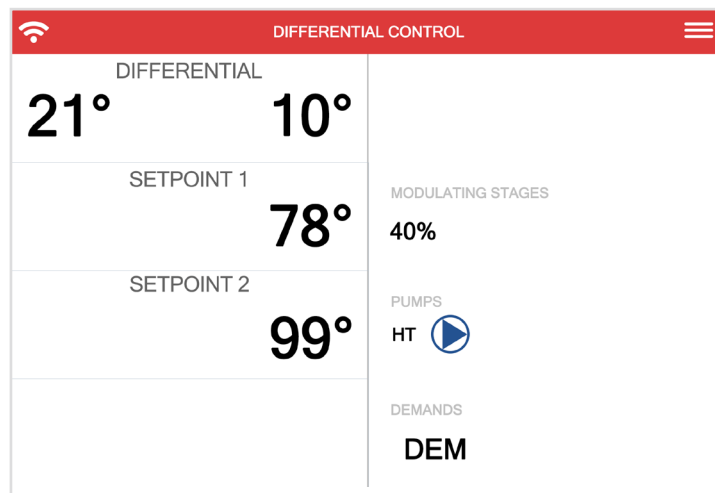
Wi-Fi SSID Manual Entry – This is where you can manually input the 2.4GHz SSID network that you want to connect to, use this method if the network does not auto populate when you perform the Wi-Fi SSID Scan. Ensure that you input this network exactly how it would appear, including spaces, numbers, capital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

DIFFERENTIAL SETPOINT MODE: MAIN SCREEN

- 1 **WI-FI** – Indicates that the control is connected to a 2.4 GHz Wi-Fi network.
- 2 **DIFFERENTIAL** – Indicates the temperature differential and differential target.
- 3 **SETPOINT 1** – Displays Setpoint 1 temperature.
- 4 **SETPOINT 2** – Displays Setpoint 2 temperature.
- 5 **DIFFERENTIAL MODULATING OUTPUT** – Displays a modulating signal output based on how far the control is from the differential.
- 6 **PUMPS** – When a pump is activated by a call you will see pump (P1) ,(P2), (P3) light up in respect to their classification, their associated contacts PUMP 1, PUMP 2, PUMP 3 can be found in the lower wiring chamber will be closed.
- 7 **DEMANDS** – When the delegated demand is active it will light up thus in turn the associated demand in the upper wiring chamber will be closed.



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

DIFFERENTIAL SETPOINT MODE: CONTROL STATUS

- **Sync Code** - Sync code of the CPU-0600
- **Wi-Fi Network** - displays current SSID network connected to
- **Wi-Fi Password** - displays network password connected to
- **Wi-Fi Strength** - displays Signal strength of the network

CONTROL SETUP	
Sync Code	ACPU-1234
Wi-Fi Network	WIFI1
Wi-Fi Password	Password1
Wi-Fi Strength	94%

DIFFERENTIAL SETPOINT MODE: DIFFERENTIAL SETUP

ON DIFFERENTIAL – Use this setting to set the differential between setpoint 1's temperature and setpoint 2's temperature. When the differential exceeds its target for heating or cooling it will activate the pump.

(1°F to 50°F)

Ex in heating.

Differential set for 10°F. The heating pump will activate when the differential is above 10°F.

The MOD percentage will ramp up when the differential is above the ON Differential.

OFF DIFFERENTIAL – Use this setting to set when you would like the differential to turn off.

(1°F to 50°F)

Ex in heating.

Differential set for 6°F. The heating pump will shut off when the differential goes below 6°F.

The MOD percentage will ramp down when the differential is below the OFF Differential.

MODULATING TIME – This setting sets the time between each step of the 0-10VDC output when the modulating output needs to increase or decrease.

(1S to 240S)

MIN MOD PERCENT – This setting is used to set the lowest modulation level the modulating output can go down to. It can also be used to set the minimum position on valves.

(1% to 99%)

PERMANENT DEMAND – This setting will allow for a permanent heating demand.

DIFFERENTIAL SETUP	
On Differential	10
Off Differential	2
Modulating Time	10sec
Min MOD Percent	50%
Permanent Demand	OFF

To control the MOD output so that the output ramps up and down around one target the ON and OFF Differential should be set at the same value.

DIFFERENTIAL SETPOINT MODE: PUMP SETUP

This setting is used to configure the pump(s) component in your system.

- **Pump 1** – The chosen pump type will close the lower contact at 1-2 (PUMP1) when a demand is in place.
- **Pump 1 Post Purge** – (0 -240 seconds) the amount of time if necessary for Pump 1 to run after the call associated with it has been removed.
- **Pump 1 Start Delay** – (0 -240 seconds) the amount of time if necessary for Pump 1 be delayed to run after the call associated with it has been activated.
- **Pump 2** – The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place.
- **Pump 2 Post Purge** – (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- **Pump 2 Start Delay** – (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- **Pump 3** – The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place.
- **Pump 3 Post Purge** – (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- **Pump 3 Start Delay** – (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- **Pump Exercise Time** – (0-240 Hrs) the amount of time that need to pass before the pumps will exercise the system pumps. (0 = no exercising)

PUMP SETUP	
Pump 1	Heating
Pump 1 Post Purge	60sec
Pump 1 Start Delay	0sec
Pump 2	Cooling
Pump 2 Post Purge	60sec
Pump 2 Start Delay	0sec
Pump 3	App
Pump 3 Post Purge	60sec
Pump 3 Start Delay	0sec
Pump Exercise Time	24hrs

PUMP OPTIONS

Heating – When the differential is above the differential target the pump contact will close

Cooling – When the differential is below the differential target 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

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.

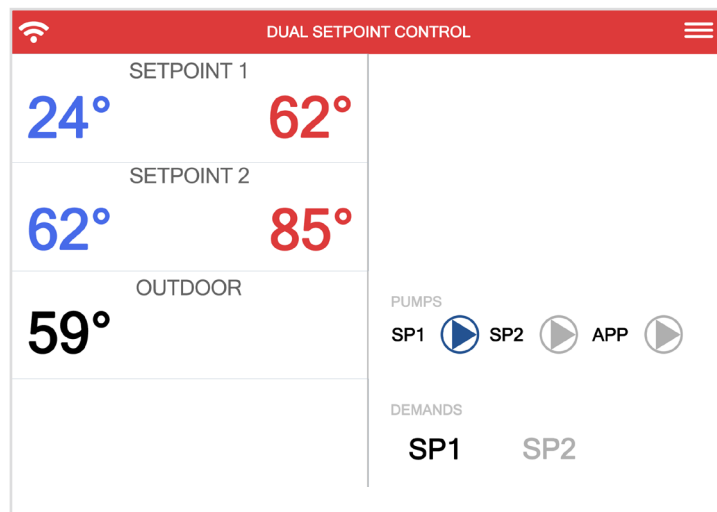
Wi-Fi SSID Manual Entry – This is where you can manually input the 2.4GHz SSID network that you want to connect to, use this method if the network does not auto populate when you perform the Wi-Fi SSID Scan. Ensure that you input this network exactly how it would appear, including spaces, numbers, capital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

DUAL SETPOINT MODE: MAIN SCREEN

- 1 **WI-FI** – Indicates that the control is connected to a 2.4 GHz Wi-Fi network.
- 2 **SETPOINT 1** – Displays Setpoint 1 temperature and target. When there is a demand the box will be bordered in red, and the staging output(s) in the lower wiring chamber will be closed.
- 3 **SETPOINT 2** – Display Setpoint 2 temperature and target. When there is a demand the box will be bordered in red, and the staging output(s) in the lower wiring chamber will be closed.
- 4 **OUTDOOR** – The outdoor temperature will be displayed.
- 5 **PUMPS** – When a pump is activated by a call you will see pump (P1) ,(P2), (P3) light up in respect to their classification, their associated contacts PUMP 1, PUMP 2, PUMP 3 can be found in the lower wiring chamber will be closed.
- 6 **DEMANDS** – When the delegated demand is active it will light up (SP1 & SP2) thus in turn the associated demand in the upper wiring chamber will be closed.



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

DUAL SETPOINT MODE: CONTROL STATUS

- **Sync Code** - Sync code of the CPU-0600
- **Wi-Fi Network** - displays current SSID network connected to
- **Wi-Fi Password** - displays network password connected to
- **Wi-Fi Strength** - displays Signal strength of the network

CONTROL SETUP	
Sync Code	ACPU-1234
Wi-Fi Network	WIFI1
Wi-Fi Password	Password1
Wi-Fi Strength	94%

DUAL SETPOINT MODE: DUAL SETPOINT SETUP

SETPOINT 1/2 TARGET – This is the target that the setpoint will follow for heating or cooling logic

SETPOINT 1/2 DIFFERENTIAL – This is a differential around the target. If 6 degrees is inputted this would be a plus/minus 3 degrees around the selected target.

6°F differential would be 6°F above and 6°F below the target

COOLING LOGIC – When a setpoint 1/2 has this toggle to ON the target for that setpoint will act for cooling where the setpoint turns on when higher than the target.

LAGTIME – This is a delay for when a demand for setpoint1/2 is registered on the controller and when the pumps will activate.

PERMANENT SP1/2 DEMAND – This creates a constant permanent demand.

DUAL SETPOINT SETUP	
Setpoint 1 Target	41
Setpoint 1 Differential	8
Cooling Logic	ON
Lagtime	1min
Permanent SP1 Demand	ON
Setpoint 2 Target	34
Setpoint 2 Differential	4
Cooling Logic	OFF
Lagtime	1min
Permanent SP2 Demand	ON

DUAL SETPOINT MODE: PUMP SETUP

This setting is used to configure the pump(s) component in your system.

- **Pump 1** – The chosen pump type will close the lower contact at 1-2 (PUMP1) when a demand is in place.
- **Pump 1 Post Purge** – (0 -240 seconds) the amount of time if necessary for Pump 1 to run after the call associated with it has been removed.
- **Pump 1 Start Delay** – (0 -240 seconds) the amount of time if necessary for Pump 1 be delayed to run after the call associated with it has been activated.
- **Pump 2** – The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place.
- **Pump 2 Post Purge** – (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- **Pump 2 Start Delay** – (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- **Pump 3** – The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place.
- **Pump 3 Post Purge** – (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- **Pump 3 Start Delay** – (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- **Pump Exercise Time** – (0-240 Hrs) the amount of time that need to pass before the pumps will exercise the system pumps. (0 = no exercising)

PUMP SETUP	
Pump 1	Setpoint 1
Pump 1 Post Purge	60sec
Pump 1 Start Delay	0sec
Pump 2	Setpoint 2
Pump 2 Post Purge	60sec
Pump 2 Start Delay	0sec
Pump 3	App
Pump 3 Post Purge	60sec
Pump 3 Start Delay	0sec
Pump Exercise Time	24hrs

PUMP OPTIONS

Setpoint 1 – If there are any heating or cooling calls the pump contact will close

Setpoint 2 – If there are any heating calls or cooling 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

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

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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.

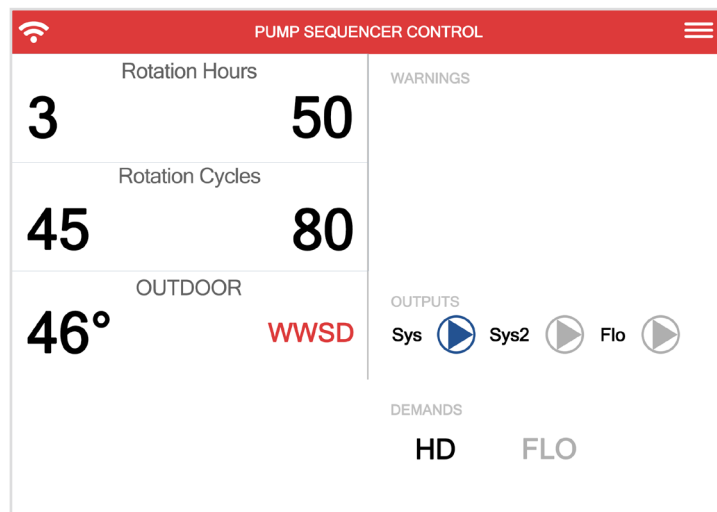
Wi-Fi SSID Manual Entry – This is where you can manually input the 2.4GHz SSID network that you want to connect to, use this method if the network does not auto populate when you perform the Wi-Fi SSID Scan. Ensure that you input this network exactly how it would appear, including spaces, numbers, capital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

PUMP SEQUENCER MODE: MAIN SCREEN

- 1 **WI-FI** – Indicates that the control is connected to a 2.4 GHz Wi-Fi network.
- 2 **ROTATION HOURS** – Indicates the pump runtime hours and rotation hour(s) target.
- 3 **ROTATION CYCLES** – Indicates the current number of cycles and target cycles.
- 4 **OUTDOOR** – The outdoor temperature will be displayed. This option will also display if the control is in WWSD (Warm Weather Shutdown).
- 5 **WARNINGS** – If there is no flow. The control will issue a warning for pumps 1 or pump 2.
- 6 **PUMPS** – When a pump is activated by a call you will see pump (P1) ,(P2), (P3) light up in respect to their classification, their associated contacts PUMP 1, PUMP 2, PUMP 3 can be found in the lower wiring chamber will be closed.
- 7 **DEMANDS** – When the delegated demand is active it will light up (SP1 & SP2) thus in turn the associated demand in the upper wiring chamber will be closed.



If the box is outlined in orange that indicates there is a no flow warning for pumps 1 or 2. After 10 attempts to start the pump the box will be outlined in red and will trigger the flow alarm.

DIFFERENTIAL SETPOINT MODE: CONTROL STATUS

- **Sync Code** - Sync code of the CPU-0600
- **Wi-Fi Network** - displays current SSID network connected to
- **Wi-Fi Password** - displays network password connected to
- **Wi-Fi Strength** - displays Signal strength of the network

CONTROL SETUP	
Sync Code	ACPU-1234
Wi-Fi Network	WIFI1
Wi-Fi Password	Password1
Wi-Fi Strength	94%

PUMP SEQUENCER MODE: PUMP SEQUENCER SETUP

MANUAL OVERRIDE 1 – This setting is used to put Pump 1 in manual override. When set to yes, the pump relay is permanently on.

(ON/OFF)

MANUAL OVERRIDE 2 – This setting is used to put Pump 2 in manual override. When set to yes, the pump relay is permanently on.

(ON/OFF)

SEQUENCE TIME – This setting is used to set the rotation for the pumps based off of runtime in hours. This means that the pump will rotate when the pump exceeds the runtime hours inputted.

(OFF/1 to 240H)

SEQUENCE CYCLES – This setting is used to set the number of demands that are given before the pumps will rotate. One cycle is described as the pump going on and then off.

(OFF/1 to 240 Cycles)

WARM WEATHER SHUTDOWN – This setting is used to set the temperature in which the CPU-0600 will go into WWSD. If the system rises above this temperature, the system will be shut off. In WWSD the boiler and all pumps will shut off.

(32F to 150°F)

PERMANENT DEMAND – This will allow for a permanent demand to control. This can be used instead of installing a thermostat or dry contact switch.

(ON/OFF)

PERMANENT FLOW DEMAND – This will allow for a permanent flow demand. This can be used instead of installing a flow switch.

(ON/OFF)

PUMP SEQUENCER SETUP	
Manual Override 1	OFF
Manual Override 2	OFF
Sequence Time	3hrs
Sequence Cycles	OFF
WWSD	75F
Permanent Demand	OFF
Permanent Flow Demand	ON

Use caution. Sequence Time and Sequence Cycles will override each other.
Use only one or the other

PUMP SEQUENCER MODE: PUMP SETUP

This setting is used to configure the pump(s) component in your system.

- 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, System 2, App, None
- Pump 1 Post Purge (0 -240 seconds) the amount of time if necessary for Pump 1 to run after the call associated with it has been removed.
- Pump 1 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 1 be delayed to run after the call associated with it has been activated.
- Pump 2- The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place. Pump choice options: System, System 2, App, None
- Pump 2 Post Purge (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- Pump 2 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- Pump 3- The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place. Pump choice options: System, System 2, App, Flow Alarm, None
- Pump 3 Post Purge (0 -240 seconds) the amount of time if necessary for Pump2 to run after the call associated with it has been removed.
- Pump 3 Start Delay (0 -240 seconds) the amount of time if necessary for Pump 2 be delayed to run after the call associated with it has been activated.
- Pump Exercise Time (0-240 Hrs) the amount of time that need to pass before the pumps will exercise the system pumps. (0 = no exercising)

PUMP SETUP	
Pump 1	System
Pump 1 Post Purge	60sec
Pump 1 Start Delay	0sec
Pump 2	System 2
Pump 2 Post Purge	60sec
Pump 2 Start Delay	0sec
Pump 3	Flow Alarm
Pump Exercise Time	24hrs

PUMP OPTIONS

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

System 2 – If there are any heating calls the pump contact will close

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

Flow Alarm – When no flow is detected the flow alarm will close. This happens after 10 no flow attempts on each pump

None – No pumps are being utilized in your system setup

There is no post purge, start delay, exercising options for Injection, Floating up and Floating down Valves.

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.

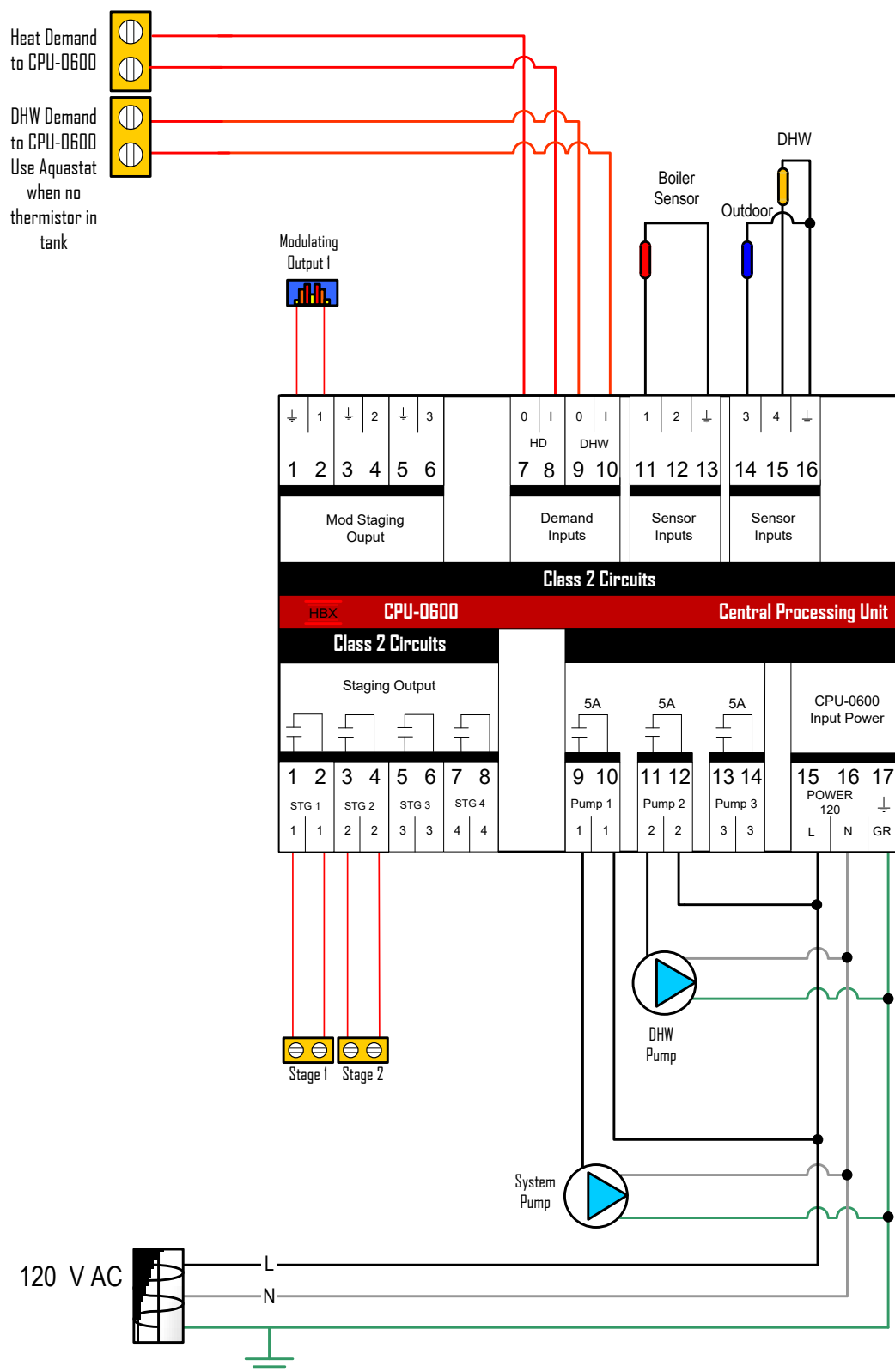
Wi-Fi SSID Scan – Pressing this will allow the ECO-0600 to actively scan for all available networks that you can choose from, and then you may select the 2.4 GHz network that you wish to connect to.

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.

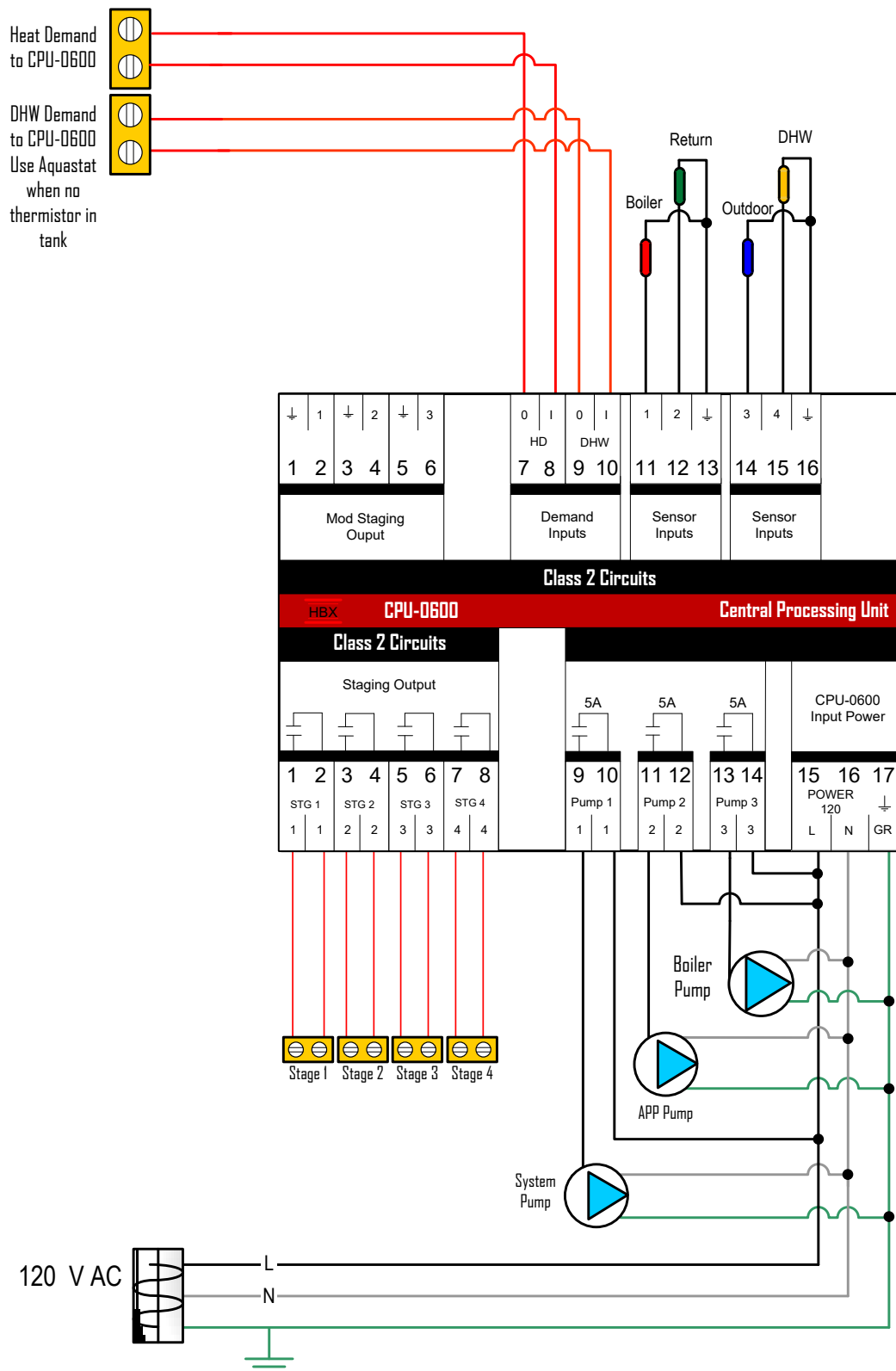
Wi-Fi Password - Input the password for the 2.4 GHz SSID network that you are connecting to. (capital letters, special characters, numbers and lower case characters all available).

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.

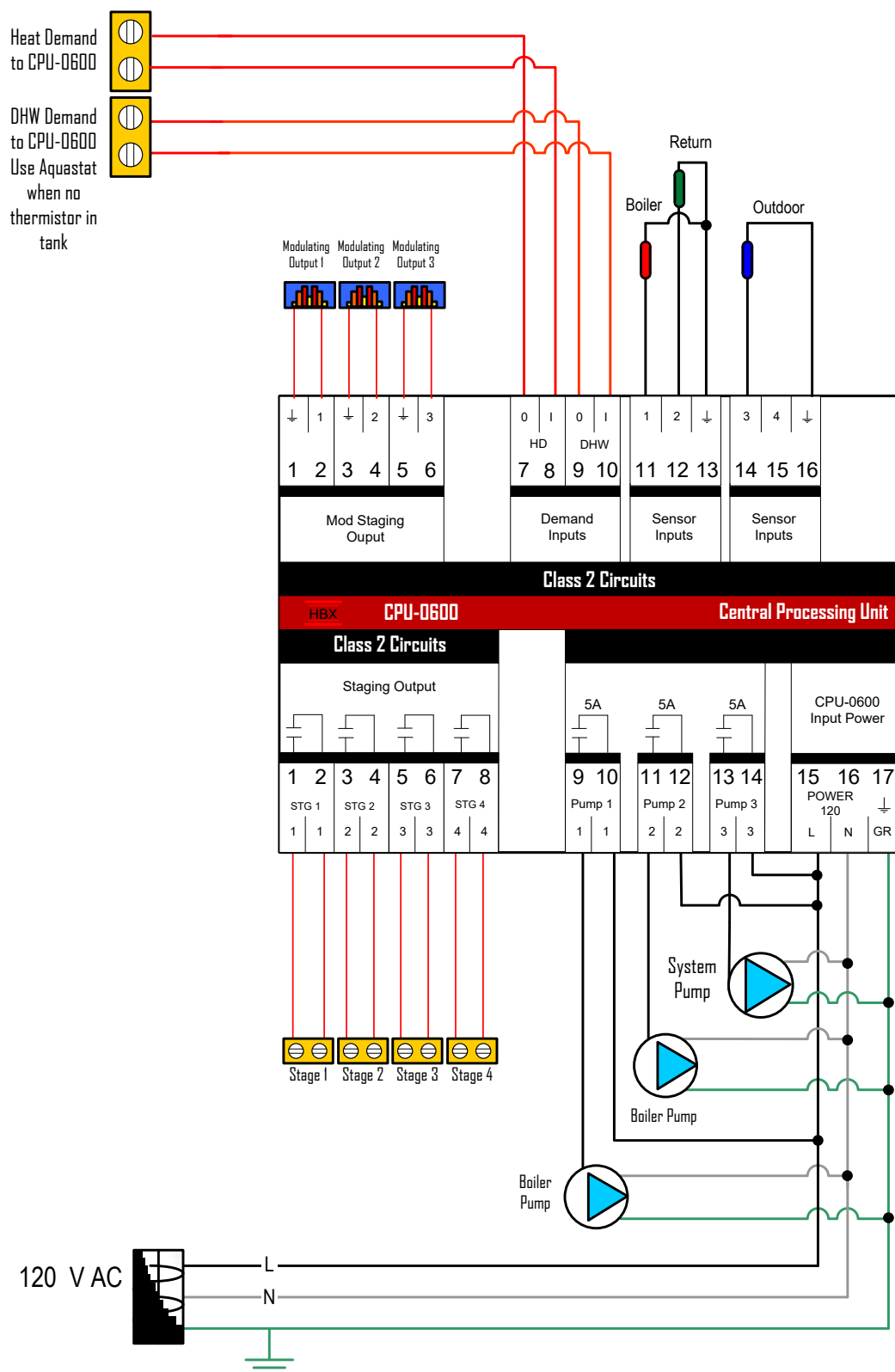
CPU-0600 2 ON/OFF WITH 1 MOD BOILER AND DHW



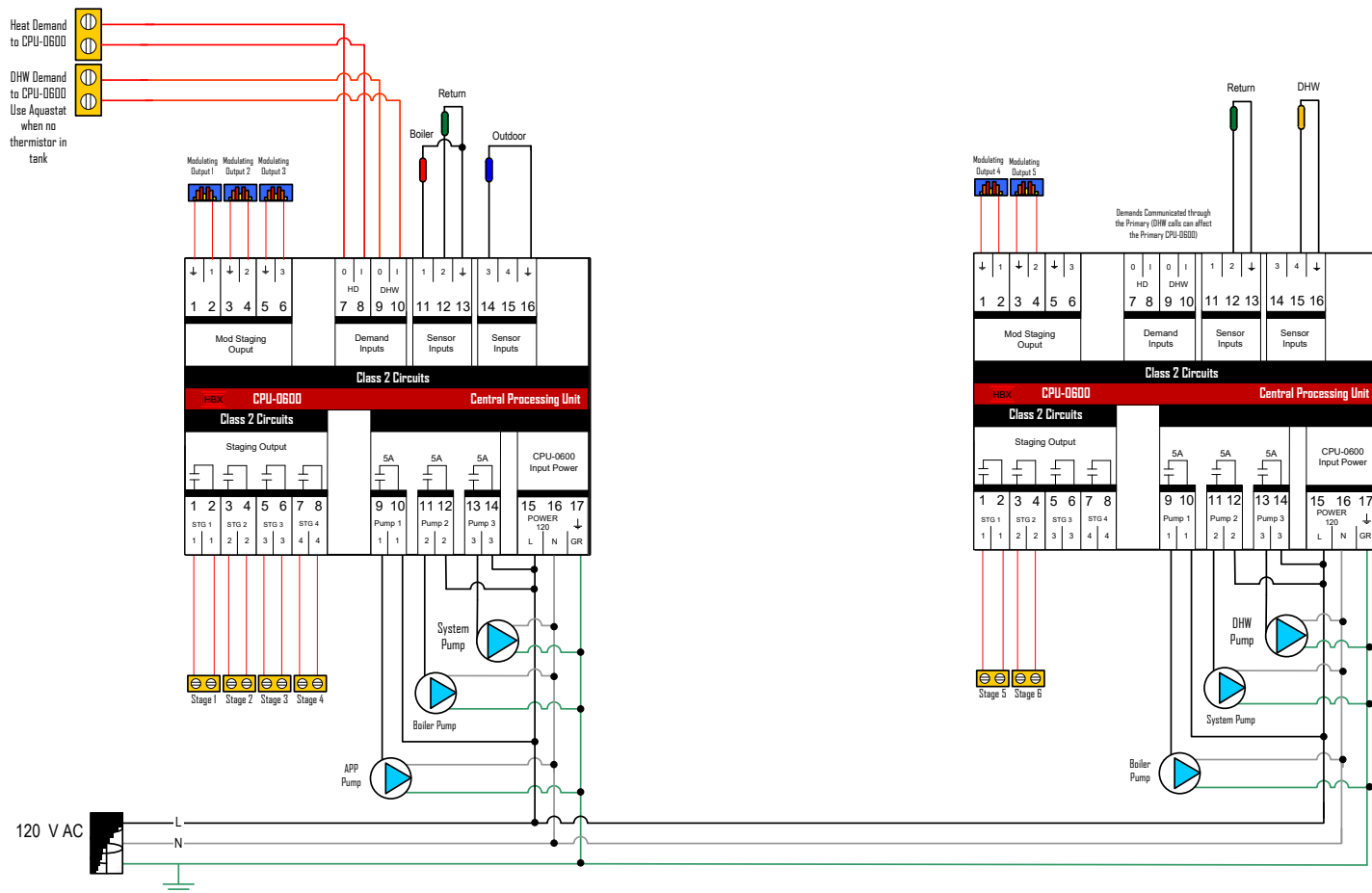
CPU-0600 4 ON/OFF STAGES



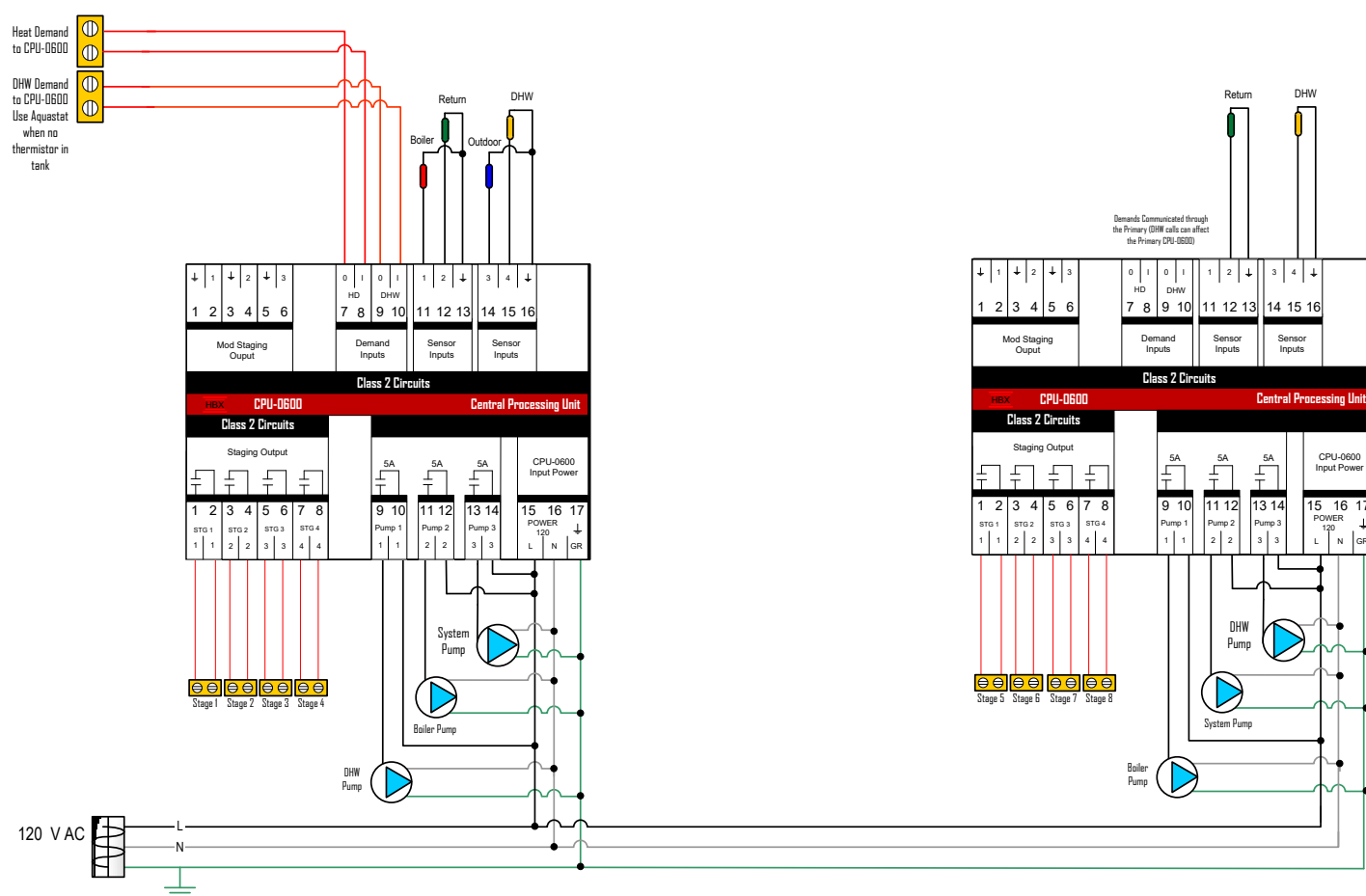
CPU-0600 4 ON/OFF WITH 3 MODULATING BOILERS



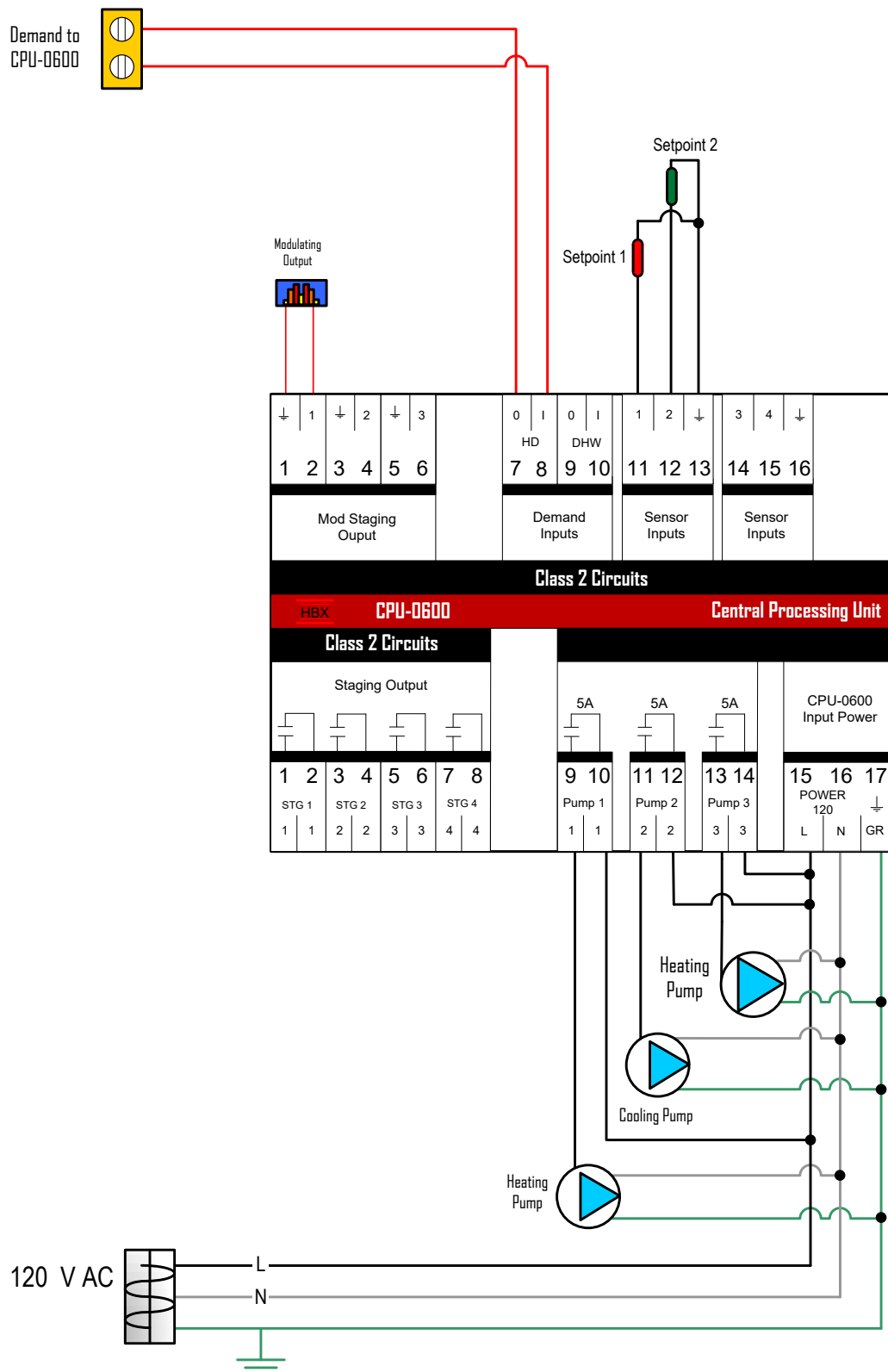
CPU-0600 7 ON/OFF WITH 5 MODULATING BOILERS



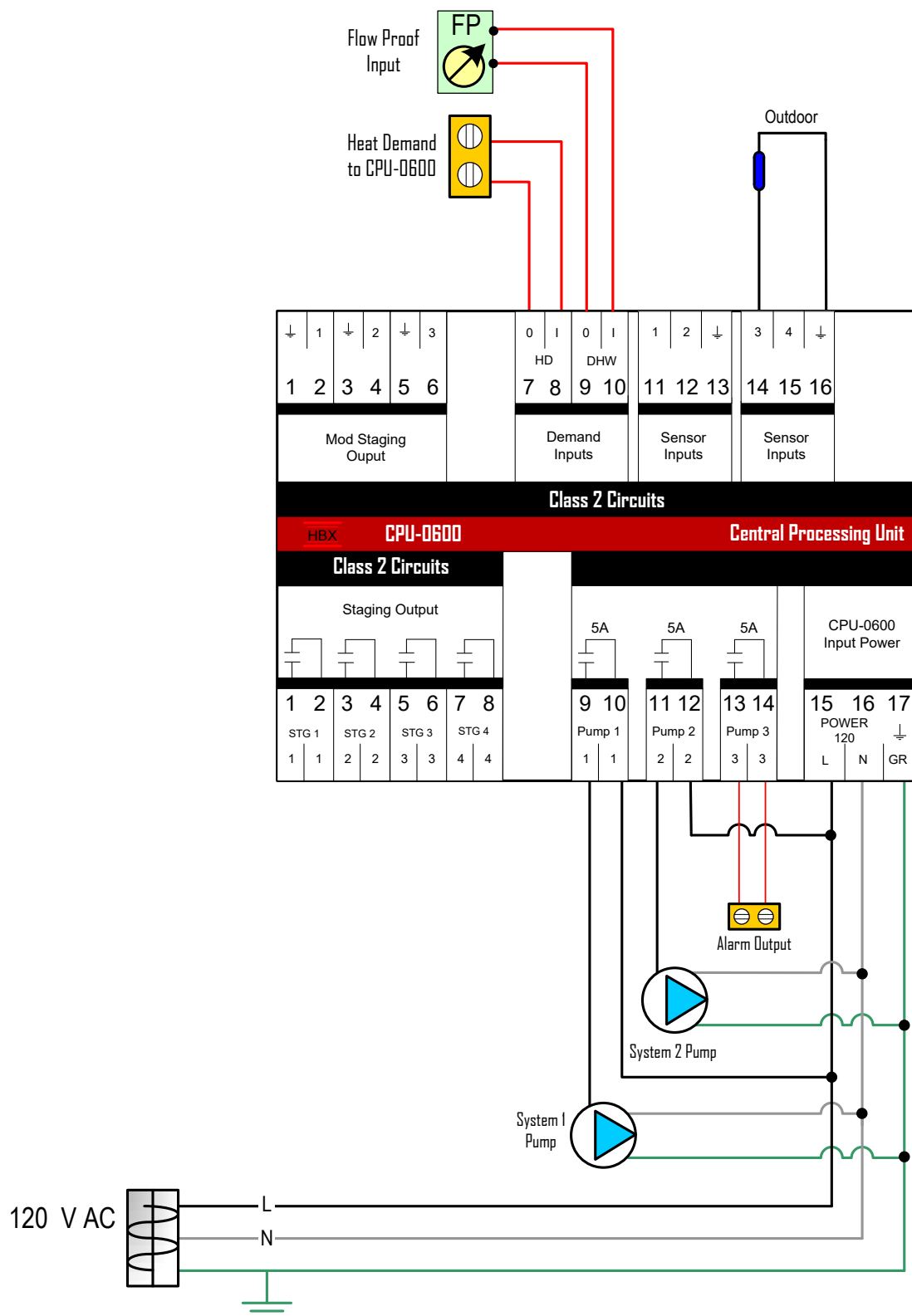
CPU-0600 8 ON/OFF BOILERS WITH 2 DHW



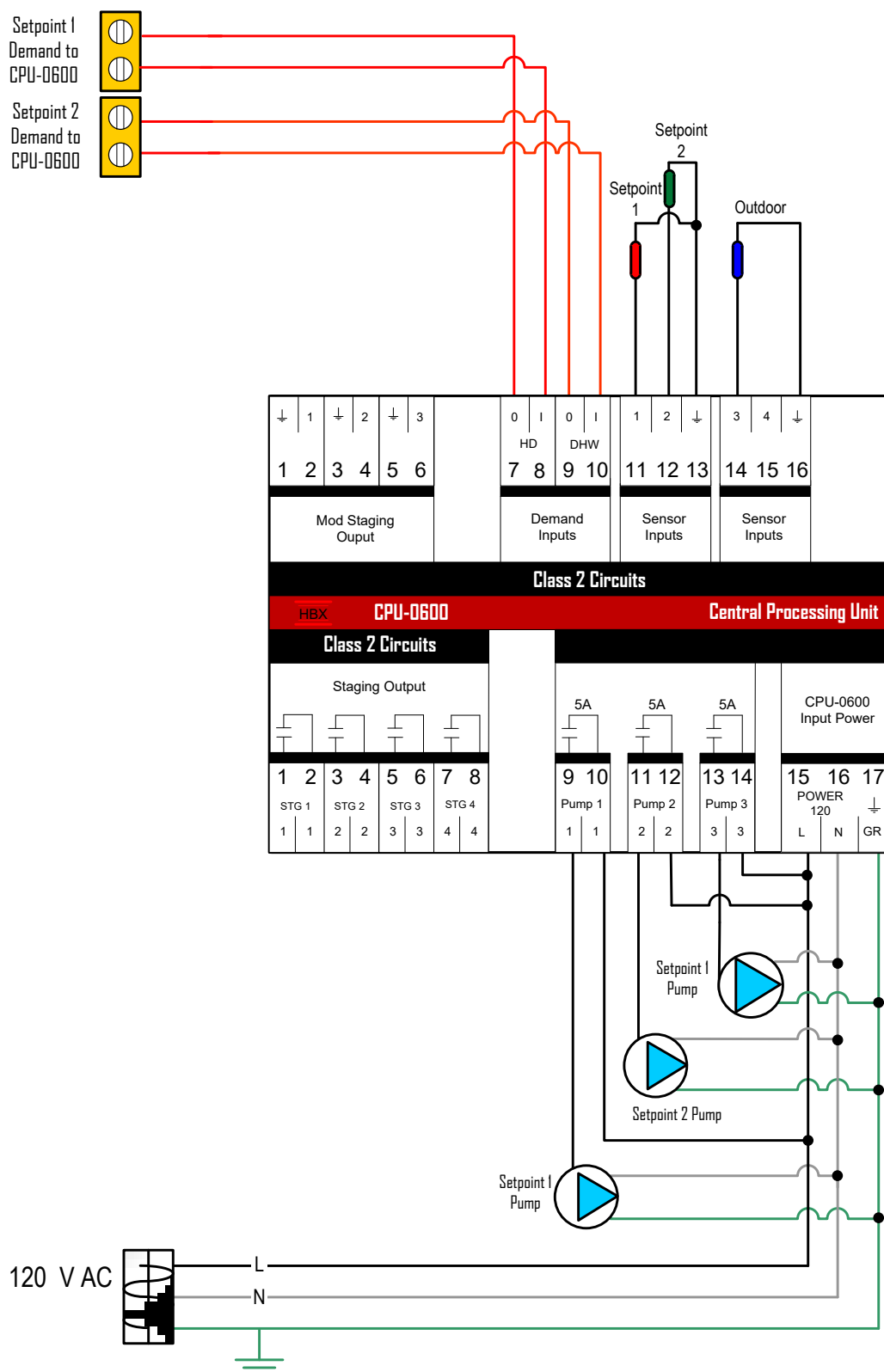
CPU-0600 DIFFERENTIAL



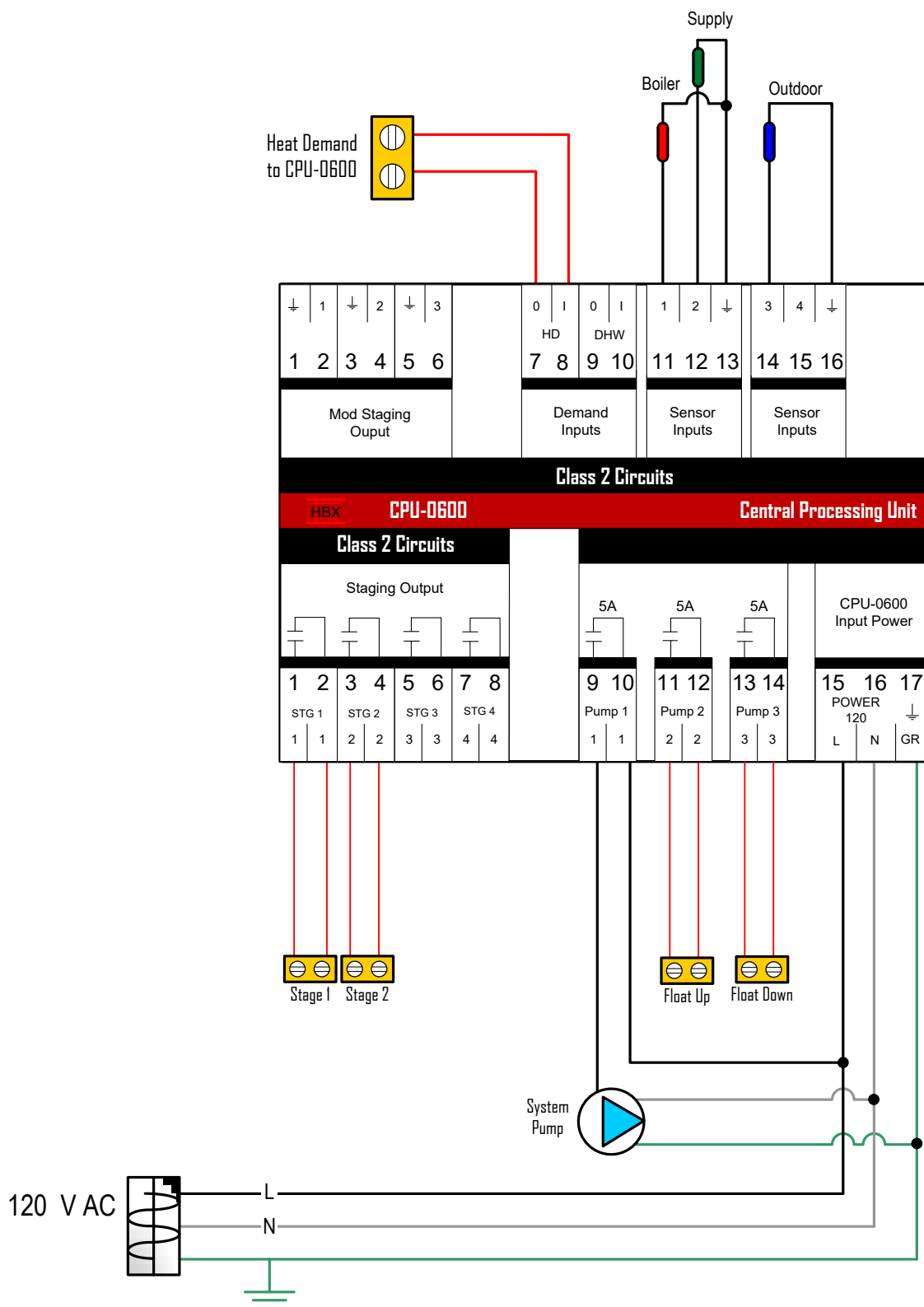
CPU-0600 PUMP SEQUENCER



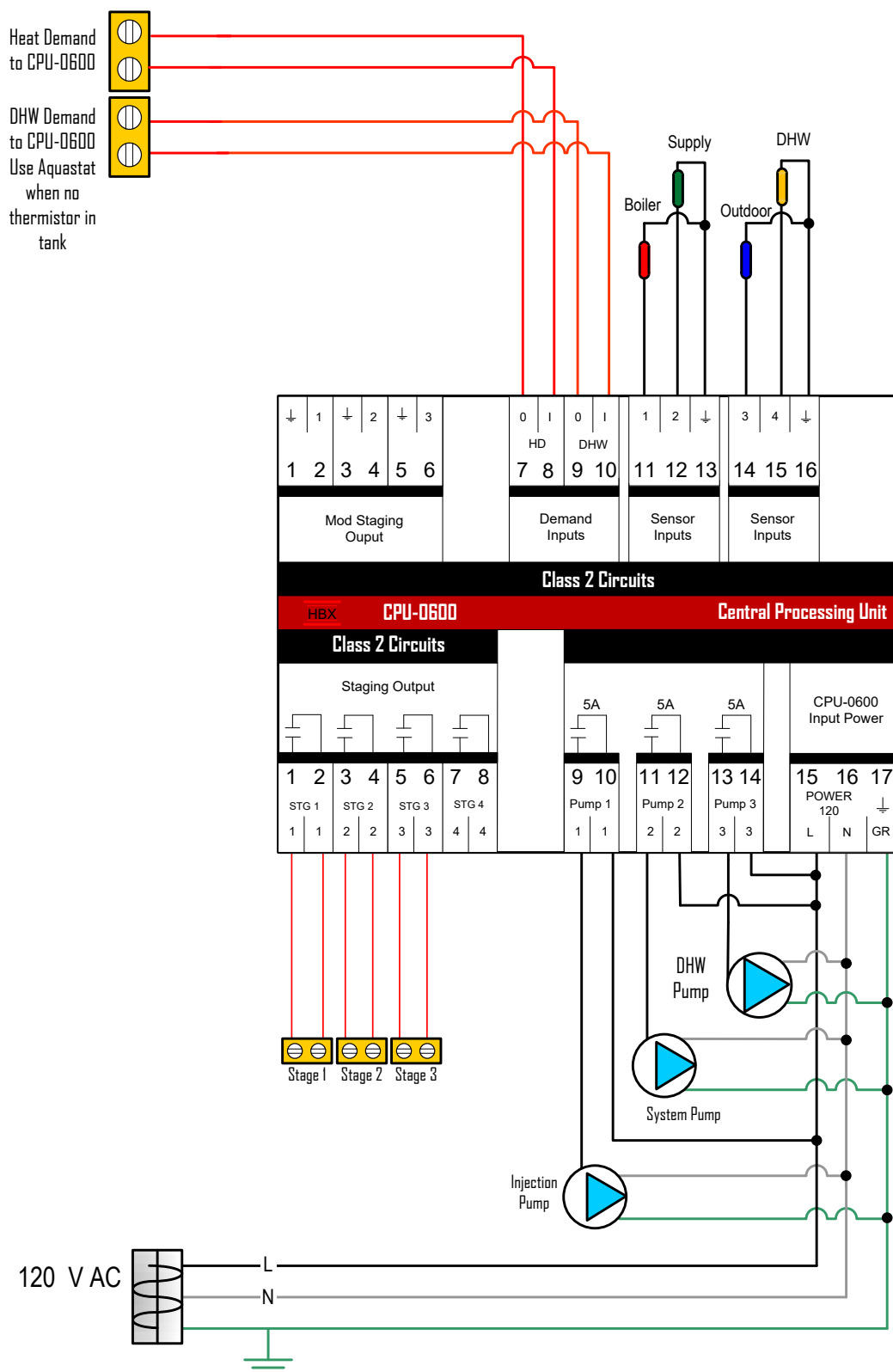
CPU-0600 DUAL SETPOINT



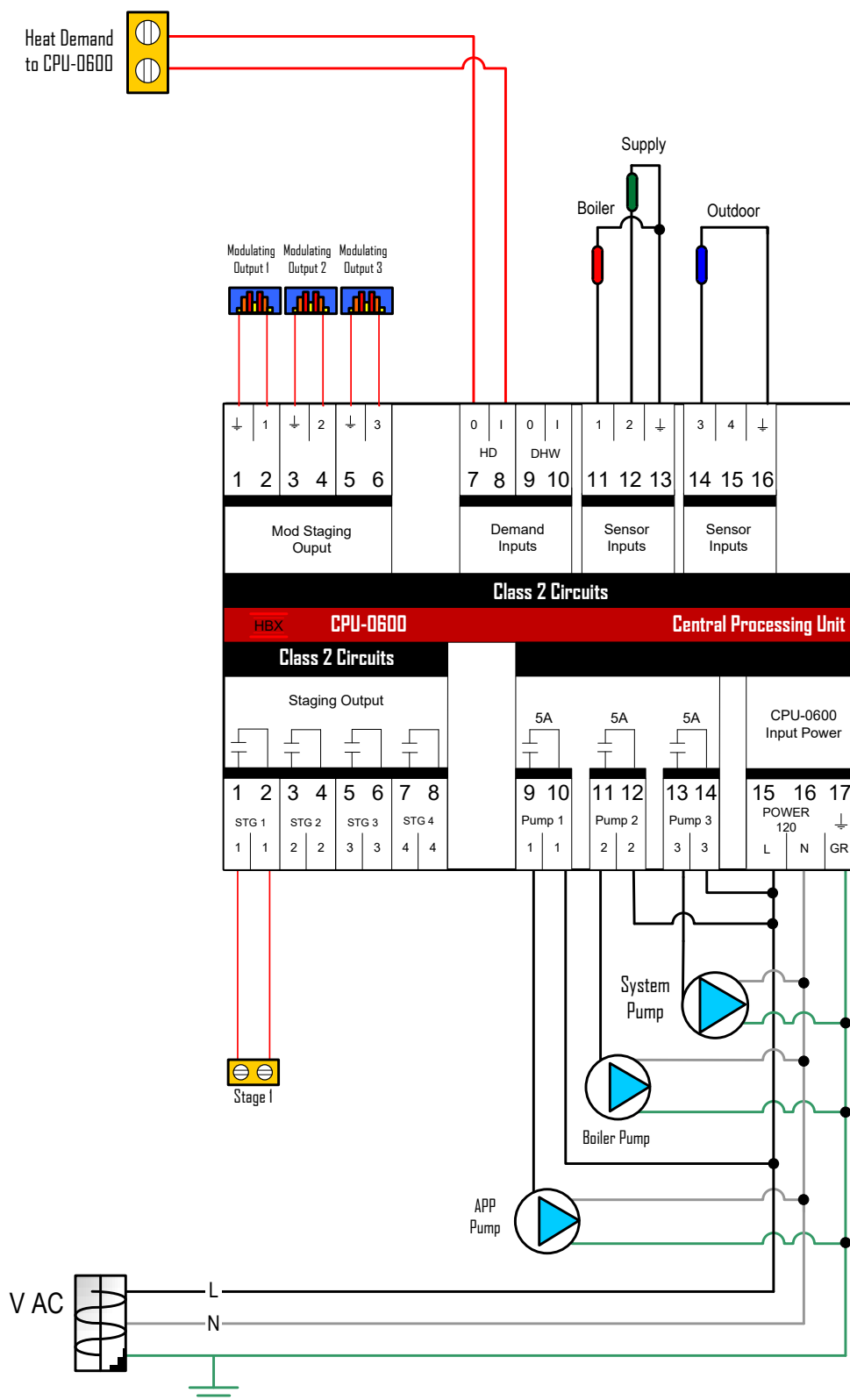
CPU-0600 2 ON/OFF BOILERS WITH FLOATING ACTION VALVE



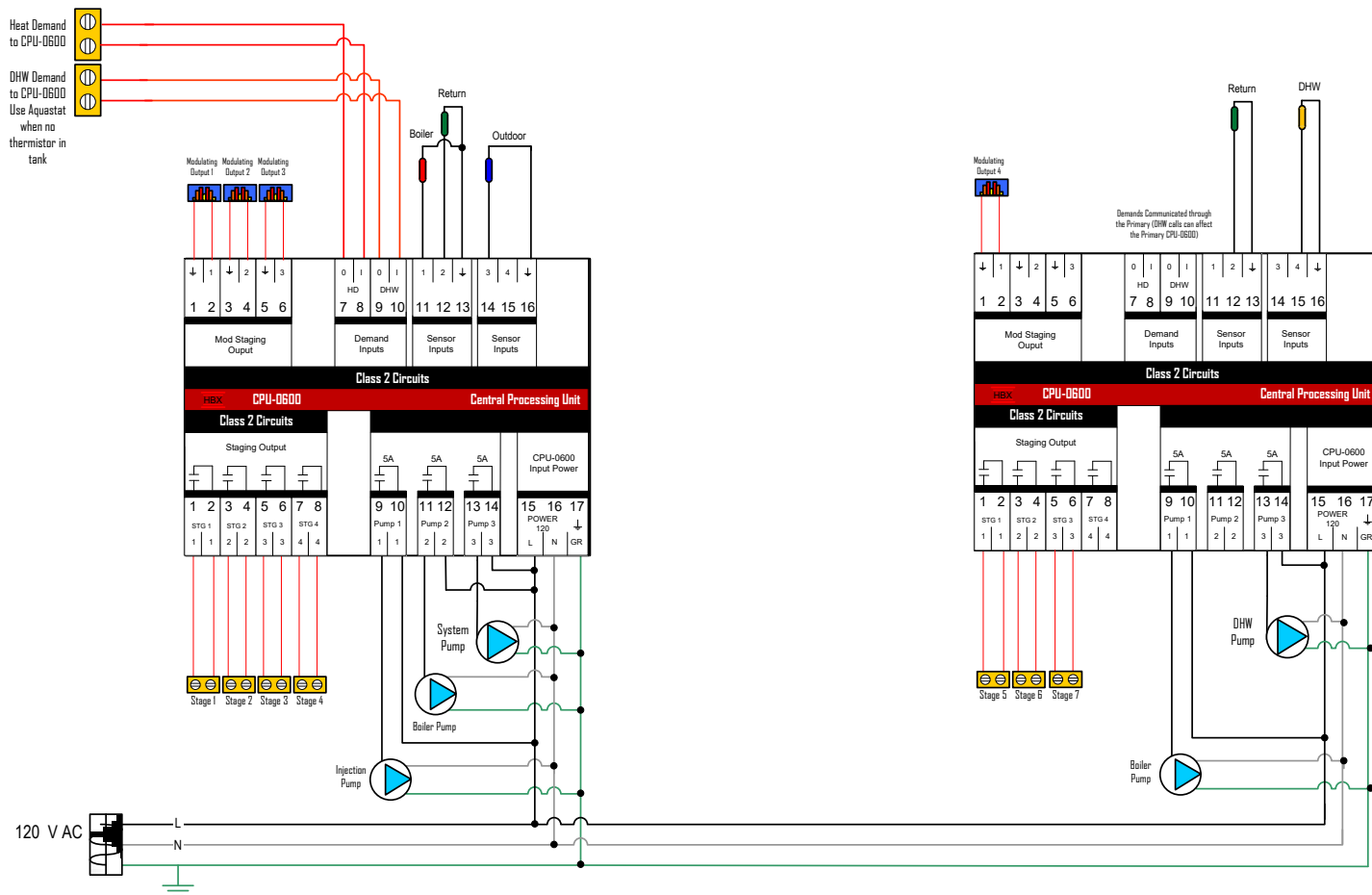
CPU-0600 3 ON/OFF BOILERS WITH DHW AND INJECTION PUMP



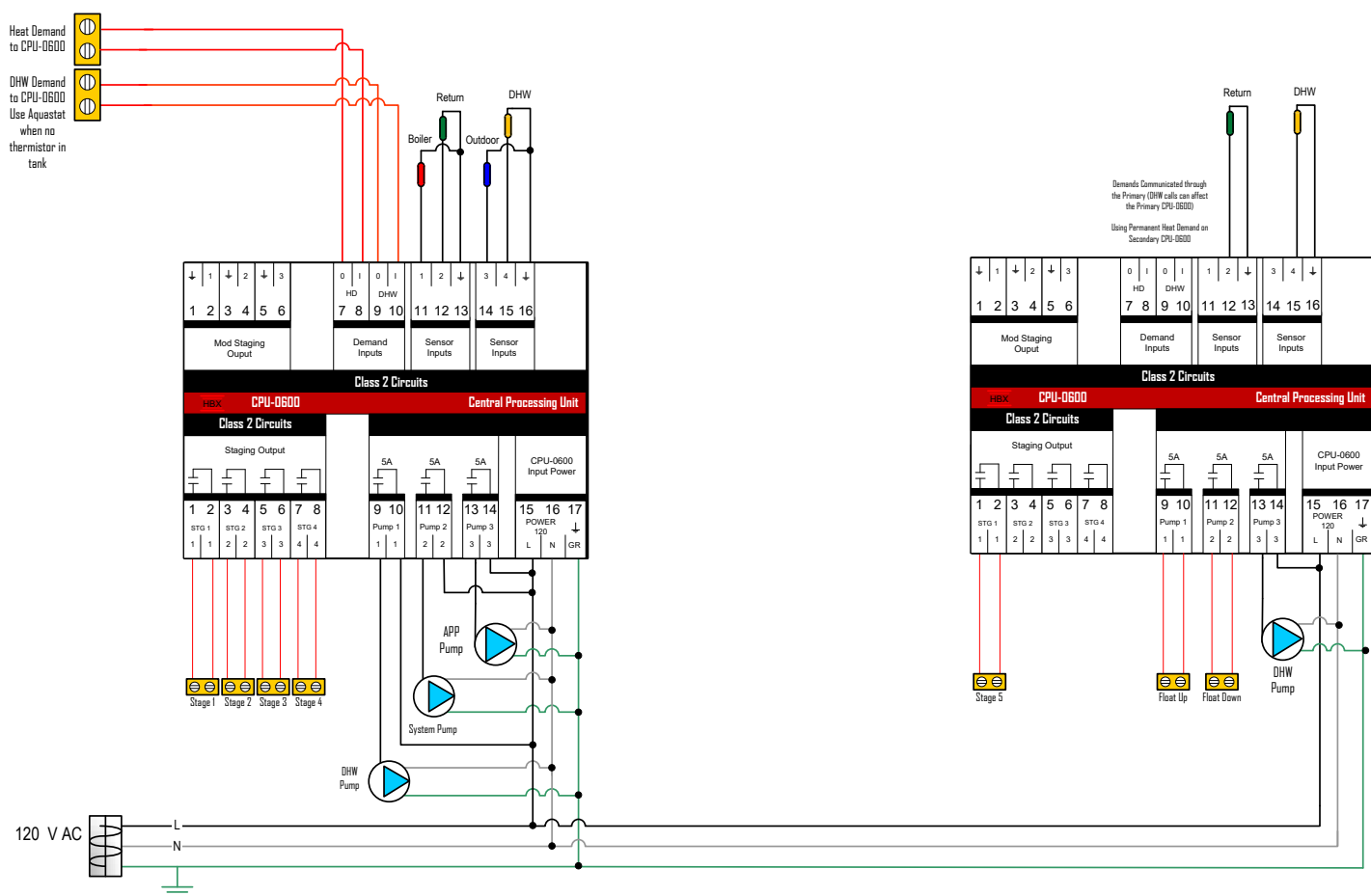
CPU-0600 SINGLE ON/OFF WITH 3 MODULATING BOILERS



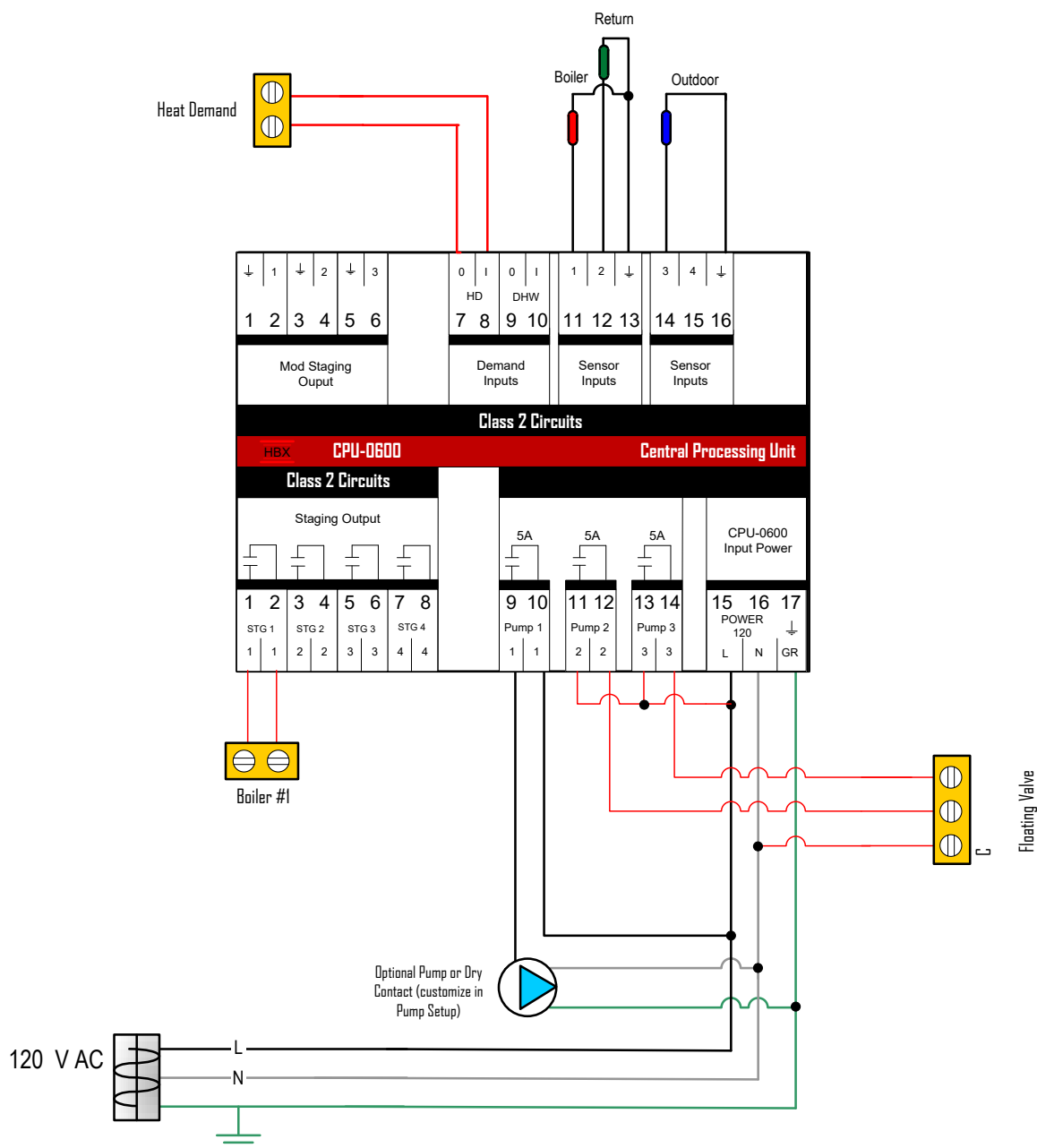
CPU-0600 7 ON/OFF WITH 4 MODULATING BOILERS WITH AN INJECTION PUMP



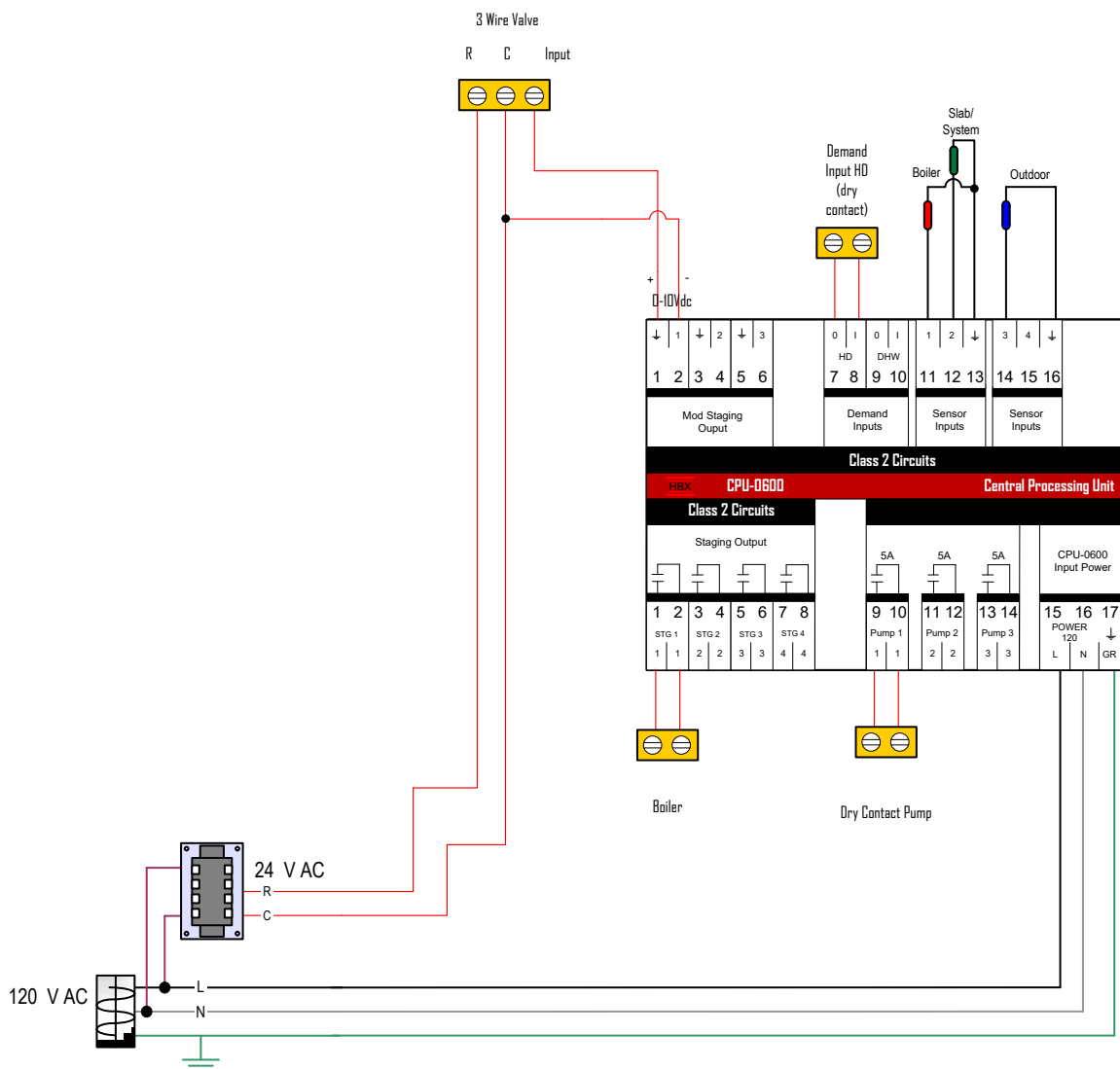
CPU-0600 5 ON/OFF BOILERS WITH 2 DHW AND A FLOATING ACTION VALVE



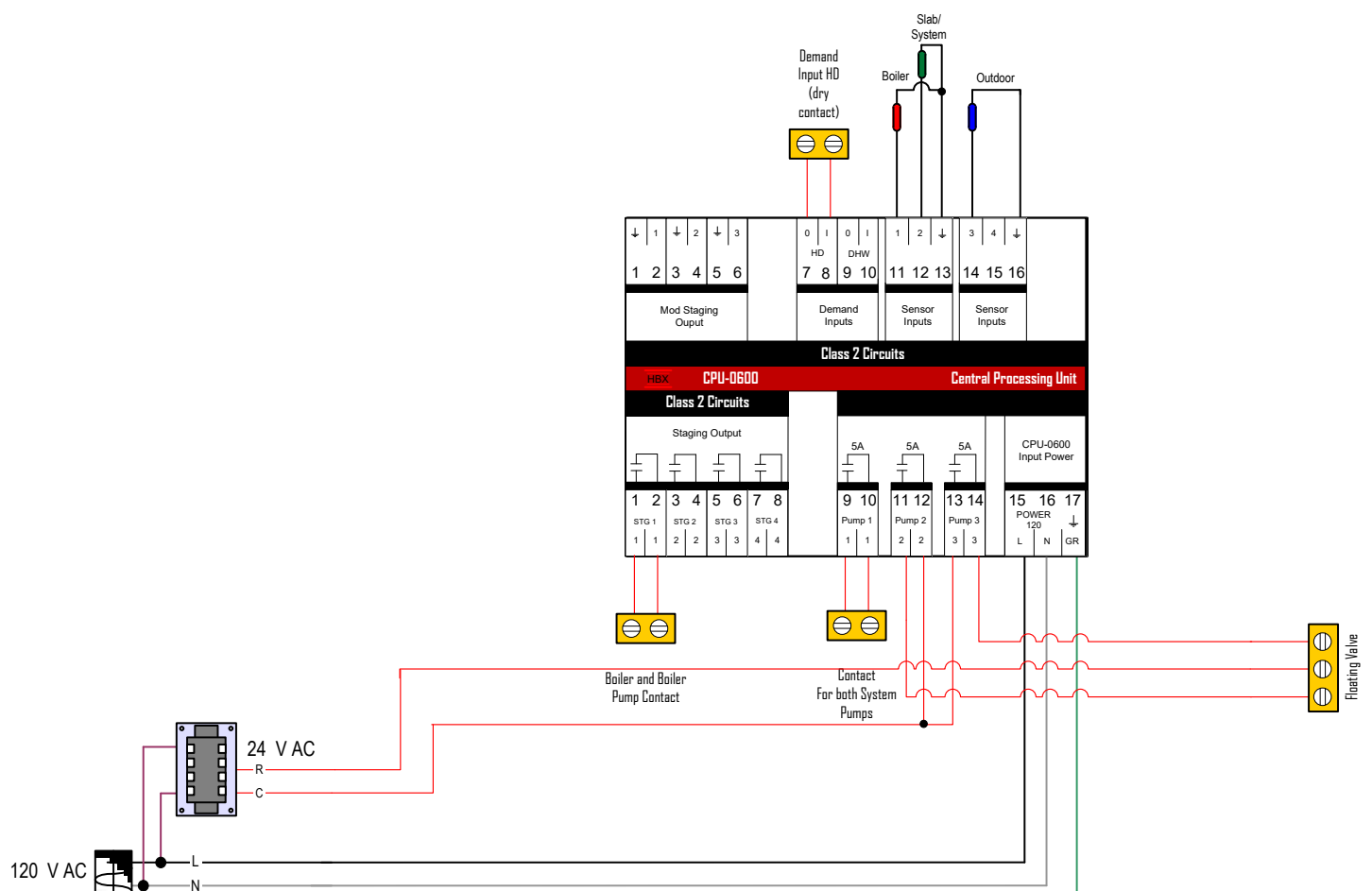
CPU-0600 FLOW VALVE 120



CPU-0600 FLOW VALVE 24V 0-10VDC



CPU-0600 FLOW VALVE 24V



CPU-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
Staging Mode	
Control won't turn on boiler(s)	<ul style="list-style-type: none"> Check if there is heating demand on pins 1-2 Check boiler setup settings Check WWSD Check wiring for demands and boiler outputs
Boiler Cycling too frequently	<ul style="list-style-type: none"> Check boiler differential settings Check boiler lag time
Abnormal boiler target	<ul style="list-style-type: none"> Check outdoor reset settings
Control won't go into heating	<ul style="list-style-type: none"> Check if there is a demand on pin 7-8 (HD) and pins 9-10 (DHW). Check WWSD
No heat demand is present	<ul style="list-style-type: none"> Check is there a demand on pins 7-8 Check if permanent heat demand is on
Control is WWSD when outside temperature is below WWSD	<ul style="list-style-type: none"> Check that outdoor sensor is connected to thermistor inputs Check outdoor sensor placement. Outdoor sensor should not be in direct sunlight.
Boiler/DHW/Outdoor temperatures showing dashes	<ul style="list-style-type: none"> Check if boiler/dhw/outdoor sensors are connected to thermistor inputs (check wiring)
Pump(s) not turning on	<ul style="list-style-type: none"> Check pump setup options to verify the correct pump are selected Verify heating or cooling demands are present Check WWSD Check wiring
Outdoor Sensor displays dashes on control display	<ul style="list-style-type: none"> Check outdoor sensor is connected on pins (14-16)
Heat pump(s) in not turning on	<ul style="list-style-type: none"> No heat demand Control is WWSD
Outdoor sensor shows error despite being wired in	<ul style="list-style-type: none"> Use Web outdoor is toggled on and is overriding the sensor. Turn this setting off

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

+1 (855) 410-2341

CPU-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
Mixing Mode	
Mixing device (injection, floating action, modulating valve) will not turn on	<ul style="list-style-type: none"> • Check wiring • Control is in boiler protection (you can turn this boiler protection off if needed)
System temperature fluctuating	<ul style="list-style-type: none"> • Check outdoor reset values
Control won't turn on boiler(s)	<ul style="list-style-type: none"> • Check if there is heating demand on pins 7-8 • Check boiler setup settings • Check WWSD • Check wiring for demands and boiler outputs
Pump(s) not turning on	<ul style="list-style-type: none"> • Check pump setup options to verify the correct pump are selected • Verify heating or cooling demands are present • Check WWSD • Check wiring
Boiler/DHW/System/Outdoor temperatures showing dashes	<ul style="list-style-type: none"> • Check if boiler/dhw/system/outdoor sensors are connected to thermistor inputs (check wiring)
Differential Setpoint Mode	
Control won't turn on pump(s)	<ul style="list-style-type: none"> • Check if there is demand on pins 7-8 • Check SP1 or SP2 differential settings • Check pump setup settings
Setpoint temperatures showing dashes	<ul style="list-style-type: none"> • Check setpoint sensor wiring
Outdoor sensor shows error despite being wired in	<ul style="list-style-type: none"> • Use Web outdoor is toggled on and is overriding the sensor. Turn this setting off

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CPU-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
Dual Setpoint Mode	
Setpoint temperatures showing dashes	<ul style="list-style-type: none">• Check setpoint sensor wiring
Setpoints cycling too frequently	<ul style="list-style-type: none">• Check differential settings
Heating Setpoint is not turning on	<ul style="list-style-type: none">• Check if cooling logic setting and turn it off
Pump Sequencer Mode	
Control won't turn on pumps	<ul style="list-style-type: none">• Check if there is demand on pins 7-8 and flow proof input on pins 9-10
Pump(s) are running all the time	<ul style="list-style-type: none">• Check if manual override settings
Pump(s) are not sequencing	<ul style="list-style-type: none">• Check sequencing settings for rotation hours or rotation cycles.

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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 CPU-0600 Control
Version 1.0.0

NOTES

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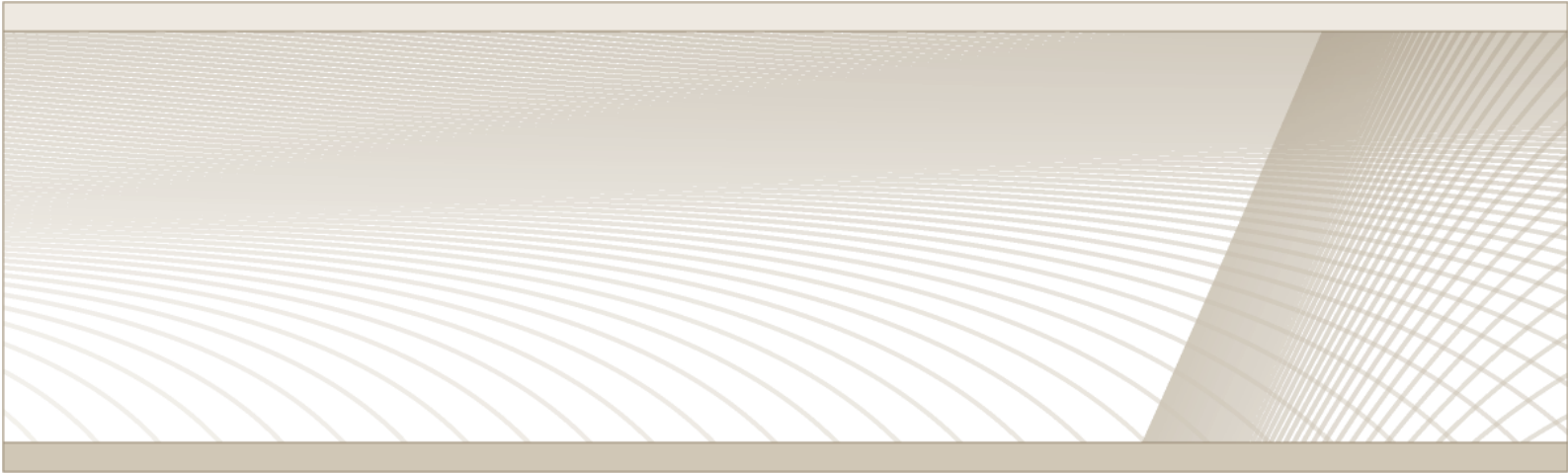
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