Installation Manual

SNO-0600

Version 1.0.0

• Snow Melt Control

SNO-0600

HBX Control Systems Inc.

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HBX SNO-0600 SNOW MELT MODULE

This manual will help with the installation, parameter setting, troubleshooting and general maintenance requirements for the controller. To guarantee the safe and reliable operation of this control, you must first read this manual in detail and take particular note to any and all warnings or caution directives prior to connecting to AC power. Please consult and install the heating appliance in accordance with manufacture's recommendations.

DESCRIPTION

The Wi-Fi enabled SNO-0600 Snow Melt Control operates Hydronic heating and electric equipment tom melt snow and/or ice from driveways, ramps, and walkway surfaces. The control consists of numerous exceptional features including settings for snowfall intensity as well as an adjustable delta T. The control can operate a single boiler and also control a main system pump to supply heat to the slab. The control allows for multiple mixing options including injection, floating action and modulating (0-10 VDC).
The SNO-0600 now features weather forecasting in its programming. This allows the control to receive your local weather forecast to turn on your system in the anticipation of a snow storm. This will reduce the need to idle your slab all the time in the winter and save you a significant amount of money on your utility bills.

Optical Snow Melt Sensing

The SNO-0600 control works in conjunction with the SNO-0110. The snow sensor utilizes optics rather than continuity based on/off sensors typically used by other manufactures. The sensor feedbacks snowfall rate and intensity while also providing slab temperature. This sensor technology allows the user to fine tune the type of conditions that initiate a snow melt mode on the control.

Remote Access Anytime, Anywhere

Used in conjunction with the free HBX Sensorlinx™ mobile app, users can control and monitor their snow melt system remotely from there smartphone devices with the ability to set snow fall rates, system targets, monitor equipment operation, and adjust weather forecasting demands.

FEATURES

- Remote access for Apple and Android devices via Sensorlinx mobile app
- Full-Colour touch screen display
- Weather forecasting
- Optical Snow Melt Sensing Technology
- Pre-Set Snow Fall Intensity Settings
- Boiler enable
- Modulating Mixing (0-10vdc)
- Injection pump or floating action valve control
- Multi-zone operation
- Testing function (Summer Installation)
- Warm and cold weather shutdown

QR CODE

Each SNO-0600 is labeled with a QR code, which when scanned will link to a digital version of this manual.

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

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.
The HBX SNO-0600 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. Use only copper conductor supply wire suitable for at least 105 °C All circuits must have a common disconnect and be connected to the same pole of the disconnect.

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

SNO-0600 TECHNICAL DATA

Specifications:
4 x thermistor Input (10k Ohm)
2 x Stage Relays 24VAC 2A Max
3 x AUX Relays
- 120VAC 1/6hp FLA or LRA 5A Max (Pump)
- 240VAC 1/2hp FLA or LRA 5A Max (Pump)
- 120VAC/240VAC 5A Max (Other)

1x Input 120VAC +/- 10% 50/60Hz 250mA Max

Combined relay power should not exceed 15A

Weight:
0.750Kg

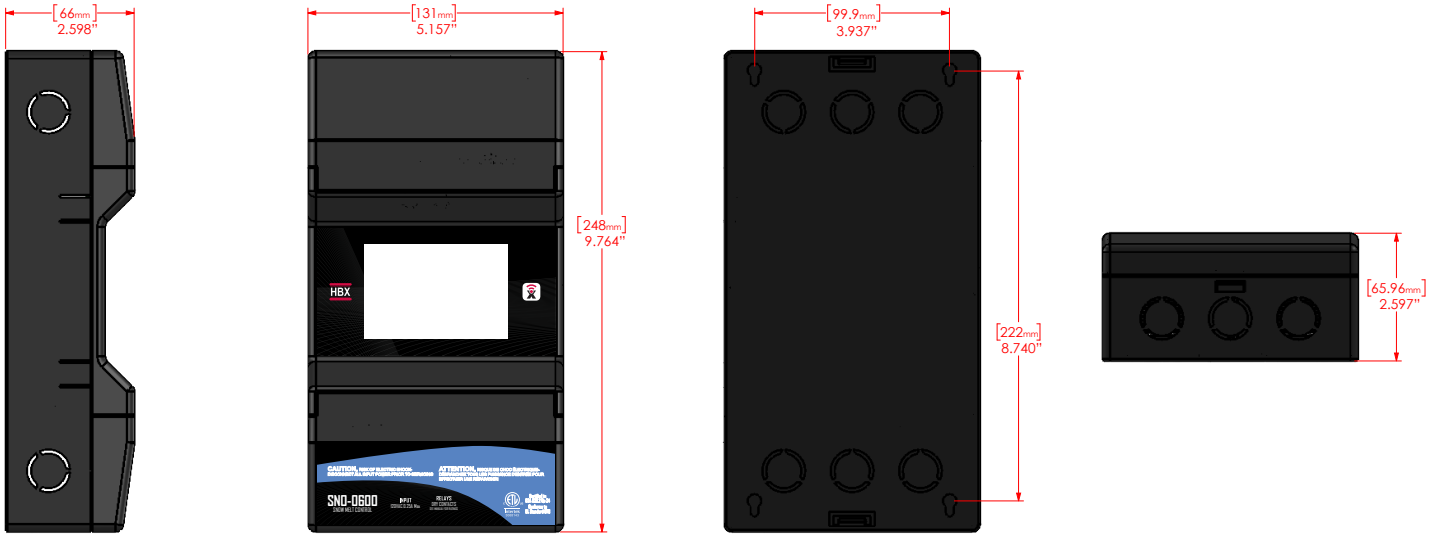
Dimensions:
131mm W x 246mm H x 66.71mm
5.16in W x 9.83in H x 2.64in

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

Storage:
50°F to 104°F (10°C to 40°C)

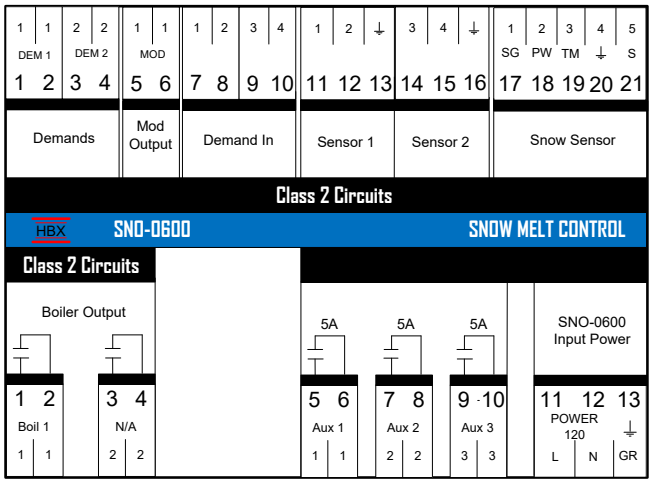
ECO-0600
WiFi: 2.4GHz Network Only
FCC ID: 2AHMRESP125

DIMENSIONS



WIRING AND INSTALLATION

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



1. DEMAND OUTPUTS

1,2: Dry contact 24VAC max
3,4: Dry contact 24VAC max

2. MODULATING OUTPUT

5,6: For modulating boiler or mixing device 0-10V DC output

3. DEMAND INPUTS

7,8: IDLE SLAB DEMAND INPUT Apply a snow melt demand from a dry contact to initiate an Idle demand.
9,10: MELT SLAB DEMAND INPUT Apply a snow melt demand from a dry contact to initiate an melt demand.

4. SENSOR INPUTS

11, 13: System Supply Sensor – Brass strap on sensor, to be installed on the supply to the snow melt manifold
12, 13: Return Sensor – Brass strap on sensor, to be installed on the return to the snow melt manifold.
15, 16: Outdoor temperature.

5. SNOWMELT OPTICAL SENSOR

17, 18, 19, 20, 21: Snow Melt Sensor: Green (17), Red (18), White (19), Black (20), Shield (21)

6. BOILER CONTACT

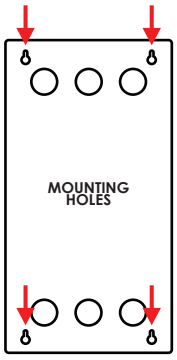
1, 2: Boiler Contact: Boiler enable contact
3,4: Non-Applicable: This contact does not have any functionality and may used in a future upgrade. Do not install anything to this contact.

6. AUXILIARY OUTPUTS

5, 6: Aux 1 - Can be used as an system pump, Floating action valve up, floating action valve down, pump test, App
7, 8: Aux 2 – Can be used as an Injection pump, system pump, Floating action valve up, floating action valve down, pump test, App
9, 10: Aux 3 - Can be used as an system pump, Floating action valve up, floating action valve down, pump test, App

7. INPUT POWER

11, 12, 13: This input is to power the SNO-0600. 0.25 Amps at 120 VAC is required to power this device



SNO-0600 Installation

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

SNO-0600 MAIN SCREEN

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

2 **SYSTEM SUPPLY –** Indicates the system supply temperature and target. If there is a demand for heating the box will be bordered with a red outline, and the boiler fire and associated pumps or mixing valve in the lower wiring chamber will be closed. When the box is bordered with a green line this will indicate that the supply temperature has been satisfied.

3 **RETURN –** Indicates the system return temperature.

4 **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).

5 **SLAB TEMPERATURE –** Indicates the slab temperature and target. If there is a heating demand for the slab the box will be bordered with a red outline. When the box is bordered with a green line this will indicate that the slab temperature has been satisfied.

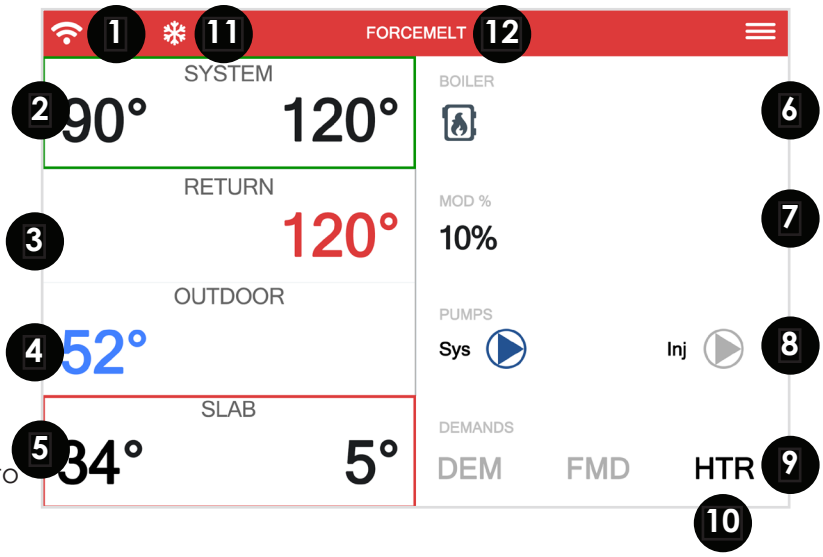
6 **BOILER –** Indicates if the boiler is on/off. When a boiler is activated by a heat demand the boiler will light up in respect to their classification.

7 **MODULATING MIXING –** Indicates the modulating mixing percentage that is being utilized in your system setup. When a modulating the mixing valve is activated by a heat demand the modulating 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 or 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.

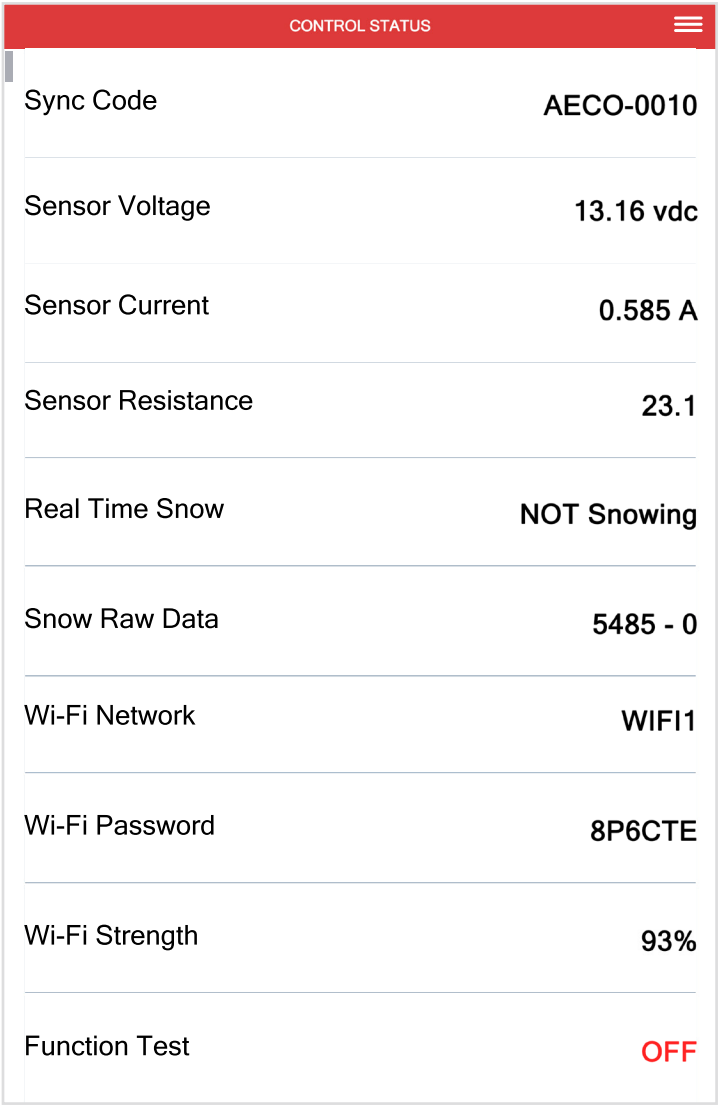
9 **DEMANDS –** When the delegated demand is active from (Demand IN) it will light up (DEM- Idle/standby)(Pins 7-8), (FMD – Force Melt Demand)(Pins 9-10) .

10 **HEATER –** Indicates the heater for the SNO-0110 is On.



11 **SNOW STATUS –** Indicates the snow sensor has detected snowfall

12 **MELT STATUS –** Indicates the mode the controller is in. Can display Idle, Forcemelt, OFF, Forecast or HTR-LOWC



CONTROL STATUS

SYNC CODE: Sync code of the SNO-0600.

SENSOR VOLTAGE: Displays the snow melt optical sensor voltage. This can be used for troubleshooting with HBX tech support.

SENSOR CURRENT: Displays the snow melt optical sensor current. This can be used for troubleshooting with HBX tech support.

SENSOR RESISTANCE: Displays the snow melt optical sensor resistance. This can be used for troubleshooting with HBX tech support.

REAL TIME SNOW: This allows you to view what the snow melt optical sensor is currently sensing as a snow fall rate.

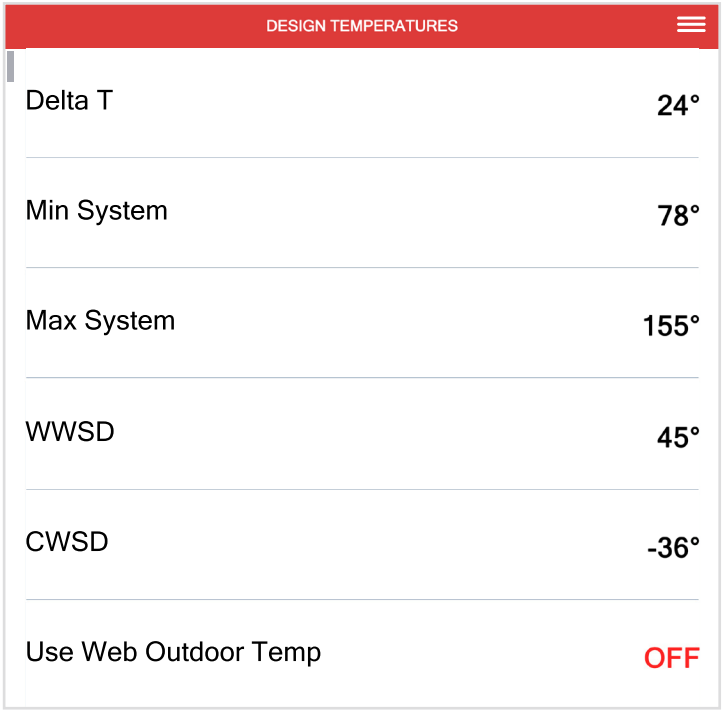
SNOW RAW DATA: This is information for the snow melt optical sensor. This can be used to troubleshooting with HBX tech support.

WIFI NETWORK: Displays the current SSID network that the control is connected to.

NETWORK PASSWORD: Displays the current SSID network password that the control is connected to.

WIFI STRENGTH: Displays the current SSID network strength connected to.

FUNCTION TEST: This setting will allow the user to pre-test the control during setup. It will set the outdoor temperature 10°F and the system temperature to 80°F so the system will test on initial installation and/or in warmer months. When set to on, the control will stay in this mode for a period of 30 minutes.



DESIGN TEMPERATURES

These settings are used to configure the design temperatures of the snow melt system.

DELTA T: Set this temperature to the ∆t you would like in the system. This will calculate the system target. The target is calculated by using system supply and system return temperatures: System Target = System return + System ∆t

(2°F to 100°F) Default: 25°F

MINIMUM SYSTEM TEMPERATURE: Set this to the minimum temperature you would like your entering water temperature in the slab to be. This is for the low temperature system loop.

(32°F to 210°F) Default: 50°F

MAXIMUM SYSTEM TEMPERATURE: Set this to the maximum temperature you would like your entering water temperature in the slab to be. This is for the low temperature system loop.

(32°F to 210°F) Default: 120°F

WARM WEATHER SHUTDOWN (WWSD): This is used to set the outdoor temperature in which the SNO-0600 will go into WWSD. If the outdoor temperature rises above this temperature, the control will turn OFF. In WWSD the boilers and all pumps will shut off, and slab temperature will not be maintained.

(2°F to 55°F) Default: 40°F

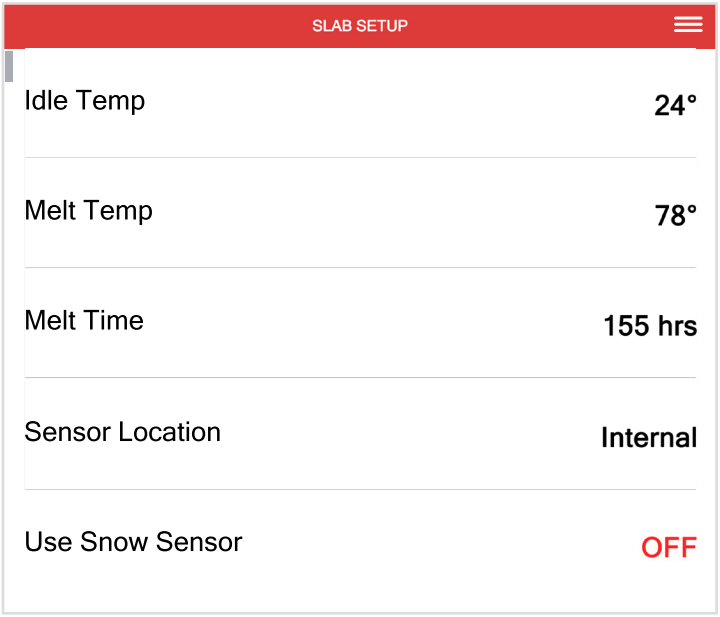
COLD WEATHER SHUTDOWN (CWSD): This is used to set the temperature in which the SNO-0600 will go into CWSD. If the outdoor temperature dips below this temperature, the control will turn OFF. In CWSD the boilers and all pumps will shut off, and slab temperature will not be maintained.

(-41°F to 40°F) Default: 0°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)

If the control disconnects from the Wi-Fi Network the control will maintain the current outdoor temperature for 2 hours. After 2 hours elapses the control will go into WWSD.



SLAB SETUP

These setting are used to configure your slab options.

IDLE TEMPERATURE: This is the slab setpoint when there is no snowfall present, and the control is operating between the WWSD and CWSD parameters.

(-40°F to 80°F, OFF) Default: 20°F

TO TURN IDLE TEMPERATURE OFF, SET TEMPERATURE BELOW -40 °F OR ABOVE 80 °F.

MELT TEMPERATURE: This is the slab setpoint when there is snowfall present, and the control is operating between the WWSD and CWSD parameters. This setpoint can also be triggered by a Force Melt either manually or through Forecasting.

(2°F to 100°F)

MELT TIME: This setting allows for the system to stay on even after no snow is present. This will melt any residual snow that has accumulated and not melted. This time is also used when a force melt demand is given. Once a force melt demand is given the control will stay in MELT mode for this amount of time.

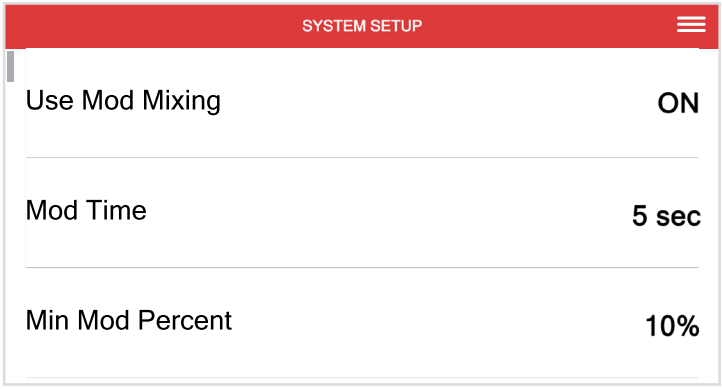
(1H to 99H) Default: 3H

SENSOR LOCATION: Set this to INT when the Snow/ Ice Optical Sensor is mounted in-slab, or set to REM when mounted remotely.

(INT or REM) Default: INT

USE SNOW SENSOR: This feature allows you to enable or disable the snow melt sensor functionality for the purpose to use the snow melt sensor remotely on weather forecasting.

(ON/OFF)



SYSTEM SETUP

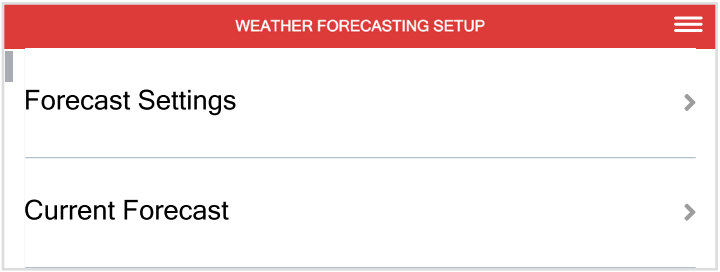
USE MODULATING MIXING: This will enable you to select modulating mixing within your systems setup. Modulating mixing will enable a (0-10VDC) signal to your device. The Modulating Output will stay activated 2 degrees above the System Target before it will modulate the value down.

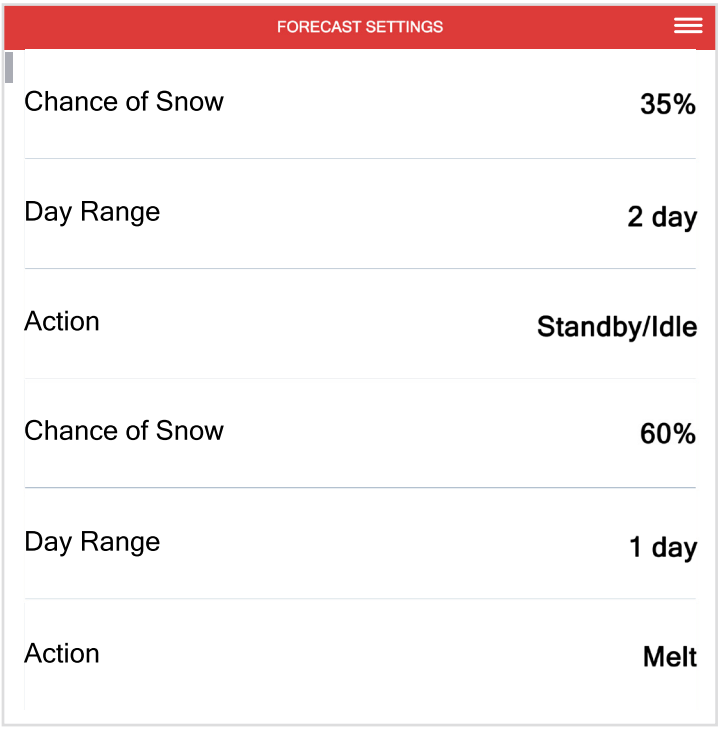
(ON/OFF)

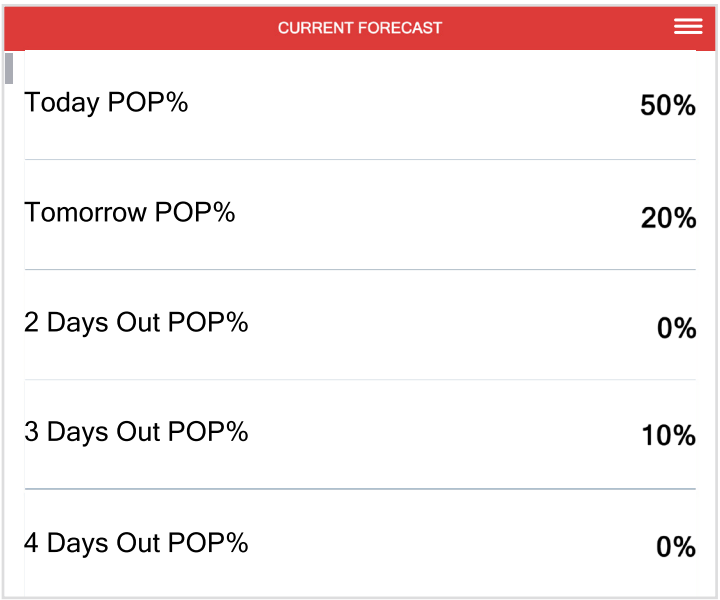
MODULATING TIME: This setting sets the time between the steps when the boiler needs to increase or decrease the firing rate. Each step is 1% for all situations.

(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.







WEATHER FORECASTING SETUP

These settings are used to configure your snow melt system operation based on your local weather forecast. 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 weather forecasting to work.

You can setup two (2) weather forecasting actions in this setup which can allow you're system to go into STANDBY/IDLE based on the forecast and/or have you're system go into MELT mode.

CHANCE OF SNOW: This option will allow the user to set the "Propability of Precipitation" (PoP) target. If the weather forecast (PoP) meets or exceeds the (PoP) target the control will go into either STANDBY/IDLE or MELT (SEE ACTION Settings).

(2%-100%)

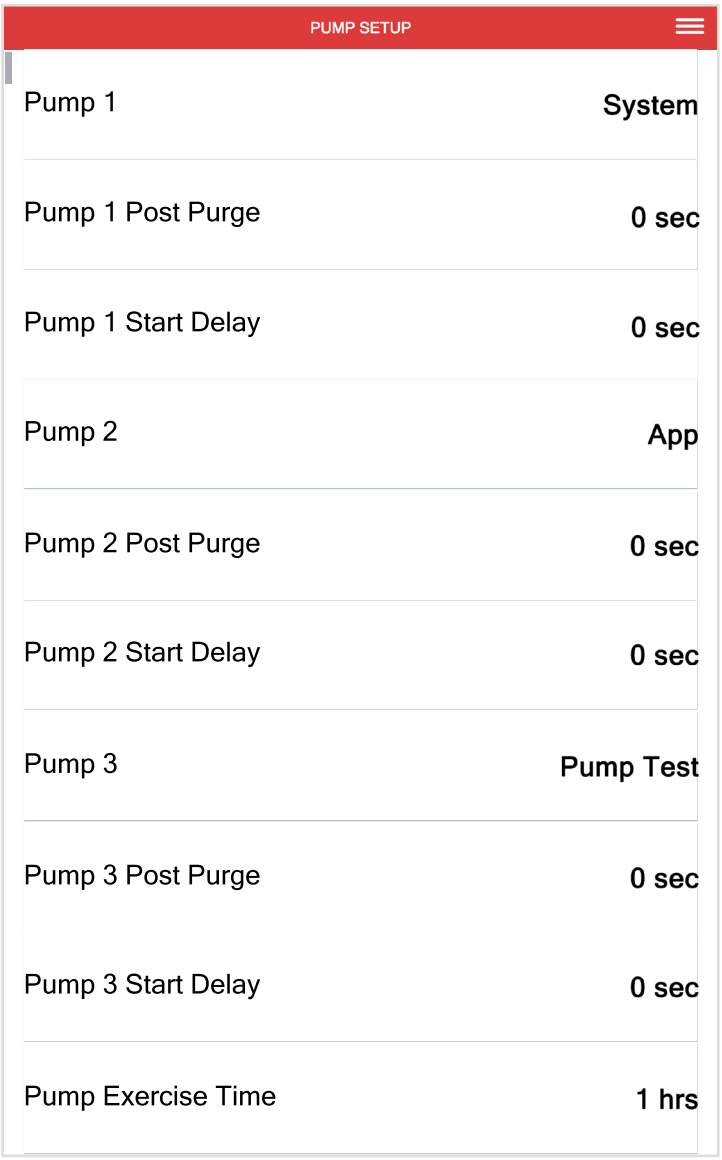
DAY RANGE: This option will allow the user the set the number of day(s) ahead of the weather forecasting (PoP) is calling for snow to start the selected Action (STANDBY/IDLE) or (MELT). You are able to set a maximum of 4 days in advanced to the (PoP) Weather Forecast.

(TODAY, 1 DAY, 2 DAY, 3 DAY, 4 DAY)

ACTION: This option will allow the user to have the snow melt system go into STANDBY/IDLE or MELT Mode. The action will only commence once the (PoP) target has been met or exceeded by the weather forecast. To disable the controller from being able to run in Forecasting Mode set Action to None.

(NONE, STANDBY/IDLE, MELT)

CURRENT FORECAST: This option allows the user to view current "Probability of Percipitation" (PoP) for their local weather forecast. You can view up to four (4) days in advance. 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 the view the current forecast.



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

Pump Test – Selecting this option the pump contact will close immediately. This option is used to test the pump outputs

Injection – This pump contact will close when the system temperature is below it's target. The Injection Pump will run 2 degrees over the System Target as a differential buffer.

Floating Up – This contact will close when the system temperature is below its target

Floating Down – This contact will close when the system temperature target is satisfied. The Float Up and Float Down will both turn off and run neither when the System reading is plus/minus 2 degrees around the System Target. This is a built in differential.

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

None – No pumps are being utilized in your system setup

PUMP SETUP

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, App, Floating Action Valve Up, Floating Action Valve Down, Pump Test, 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 3-4 (PUMP2) when a demand is in place. Pump choice options: Injection pump, System, App, Floating Action Valve Up, Floating Action Valve Down, Pump Test, 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 3 - The chosen pump type will close the lower contact at 3-4 (PUMP2) when a demand is in place. Pump choice options: System, App, Floating Action Valve Up, Floating Action Valve Down, Pump Test, None

Pump 3 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

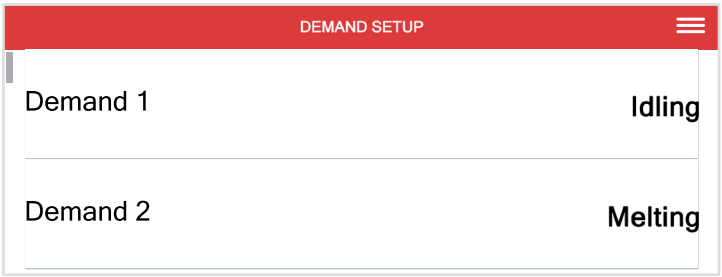
Pump 3 Start Delay – the amount of time if necessary for Pump 1 be delayed to run after the call associated with it has been activated

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: 0-240 Seconds

DEMAND SETUP



DEMAND 1: This feature will enable the demand 1 output to close based on the option selected.

(NONE, CURRENTLY SNOW, IDLING, MELTING, SNOW RATE EXCEEDED)

DEMAND 2: This feature will enable the demand 2 output to close based on the option selected.

(NONE, CURRENTLY SNOW, IDLING, MELTING, SNOW RATE EXCEEDED)

DEMAND OPTIONS

CURRENTLY SNOWING: If the sensor detects any snow the demand contact will close

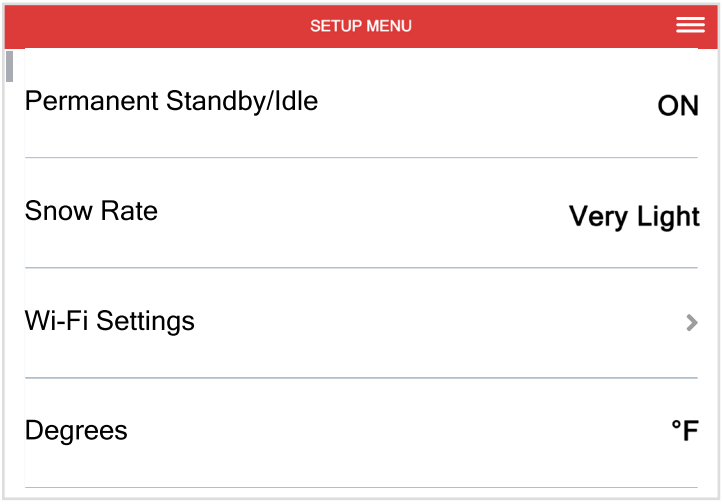
IDLING: If the control is in Idling Mode the demand contact will close

MELTING: If the control is Melt Mode the demand contact will close

SNOW RATE EXCEEDED: If the sensor detects more snow than the current snow rate setup the demand contact will close

NONE: will not close the contact on with any action.

PERMANENT STANDBY/IDLE



PERMANENT STANDBY/IDLE

ON: Selecting this option will enable STANDBY/IDLE to run all the time when the control is not in Warm or Cold weather shutdown. It will run the system at the Idle Temp during this time unless a Melt Mode is started manually or from snow detection.

OFF: Selecting this option will disable STANDBY/IDLE. If you would like your system to go into an idle or melt mode with this option set of OFF you will need to have a demand wired in demand input(s) DEM 1 (STANDBY/IDLE) and/or DEM 2 (MELT).

(ON/OFF)

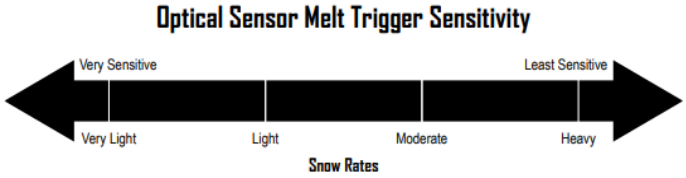
SNOW RATE

Very Light: This will set the control to trigger MELT mode when a Very Light snowfall is detected

Light: This will set the control to trigger MELT mode when a Light snowfall is detected

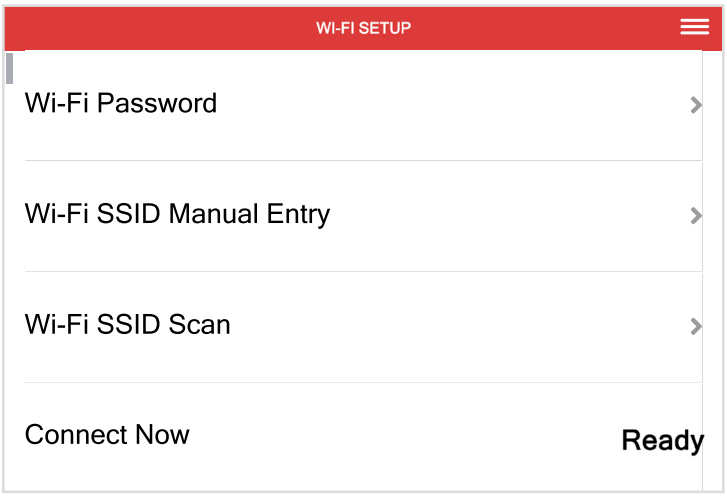
Moderate: This will set the control to trigger MELT mode when Moderate snowfall is detected

Heavy: This will set the control to trigger MELT mode when Heavy snowfall is detected



DEGREES

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



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 SNO-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).

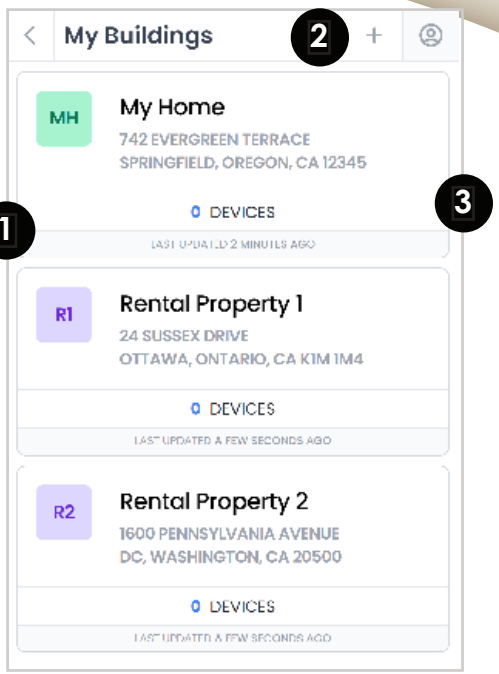
Press to Connect - Once you have selected the appropriate network and you have entered the correct password for that 2.4GHz network, pressing Connect Now will establish a connection to the Wi-Fi network.

SensorLinx™ Mobile App

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

Now available on the Apple App Store and Google Play

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

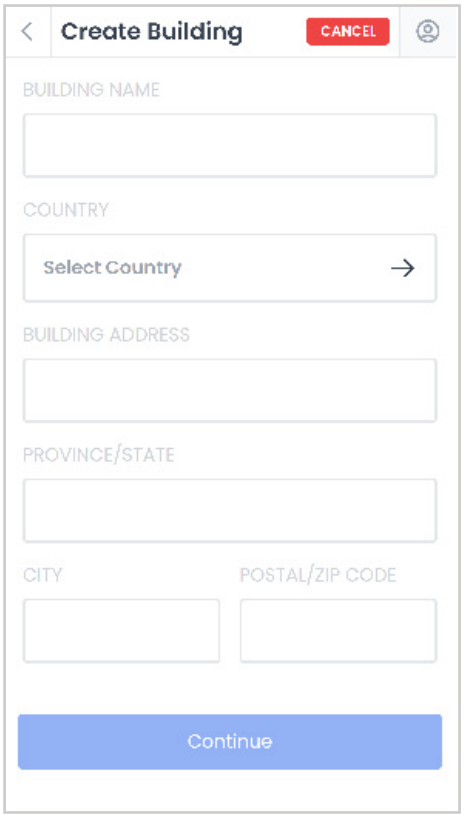


Creating & Managing Buildings

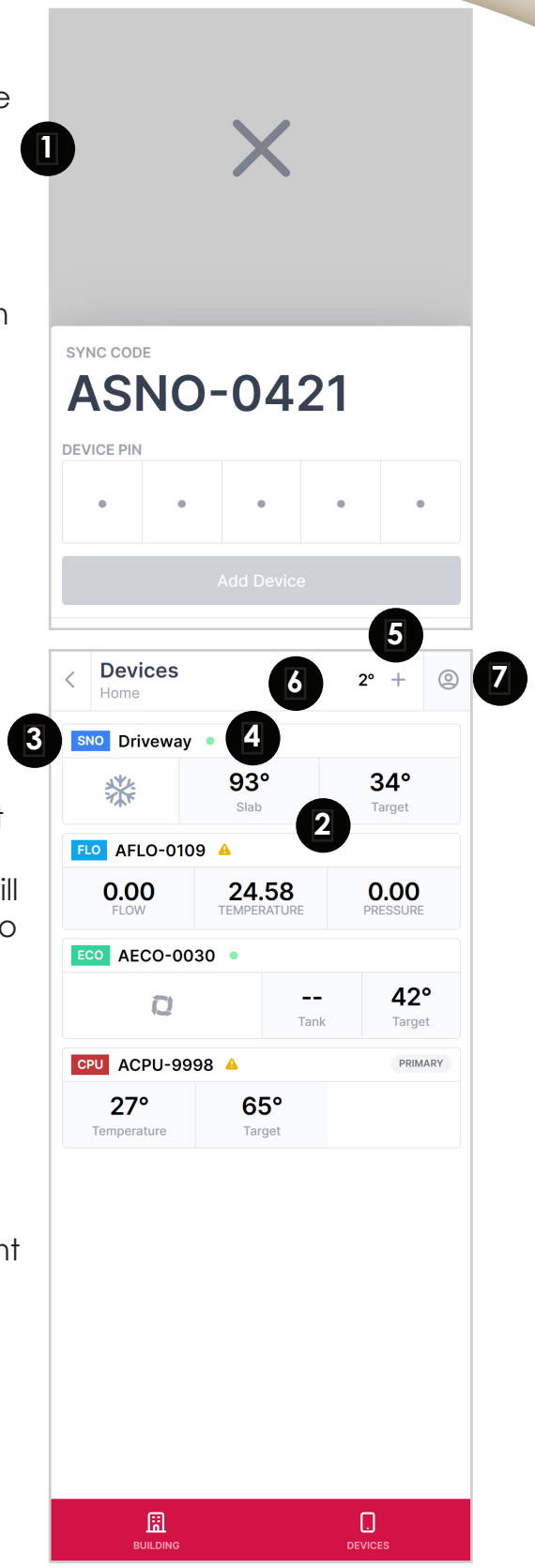
1 Under My Buildings will be a list of the available Building locations to choose from. Each building will have the total number of HBX devices linked to that building, name, and address.

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

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



Creating & Managing Devices



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

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

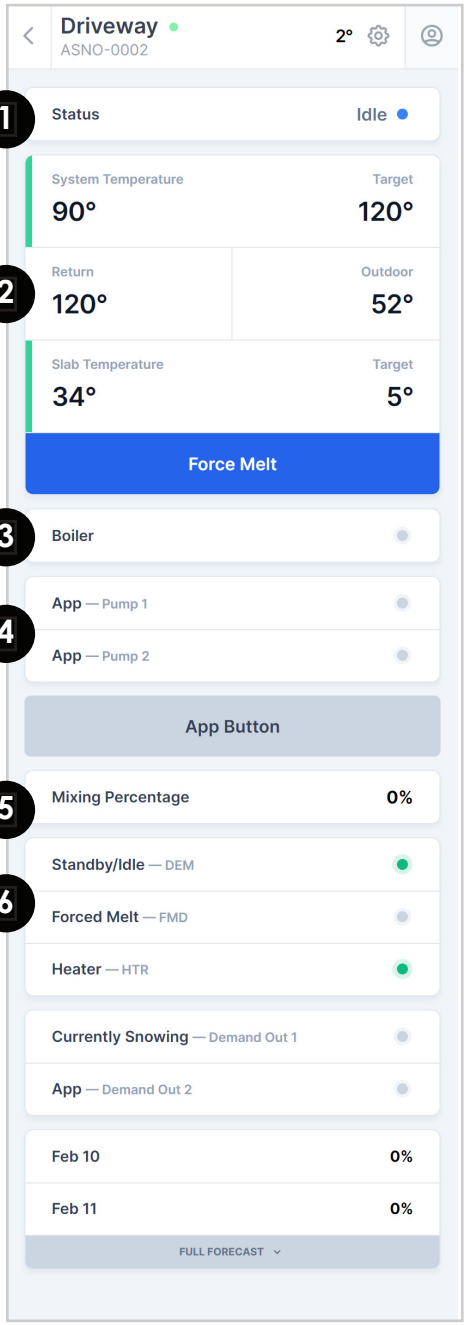
3 The name and type of the device

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

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

6 This shows the outdoor temperature.

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



Controlling a SNO-0600 with the SensorLinx mobile app

1 **Status** This will display the current operating mode that the snow melt system is in (OFF, STANDBY/IDLE, MELT).

When in melt mode the status will also indicate how many hours remaining are in MELT time.

Temperature Parameters

2 **System:** Display System temperature and target. (Red line on the right indicates there is a current heating demand to satisfy the target. Green line indicates the demand has been satisfied)
Return: Displays the current return temperature.
Outdoor: Displays the current outdoor temperature. The will also show WWSD/CWSD.
Slab: Display the current slab temperature and target.

Red line on the right indicates there is a current heating demand to satisfy the target. Green line indicates the demand has been satisfied

3 **Boiler:** Displays if the boiler isON/OFF. (A green dot indicates that the device is on)

4 **Pumps:** Displays if selected pumps/valves are ON/OFF.

A green dot indicates that the device is on

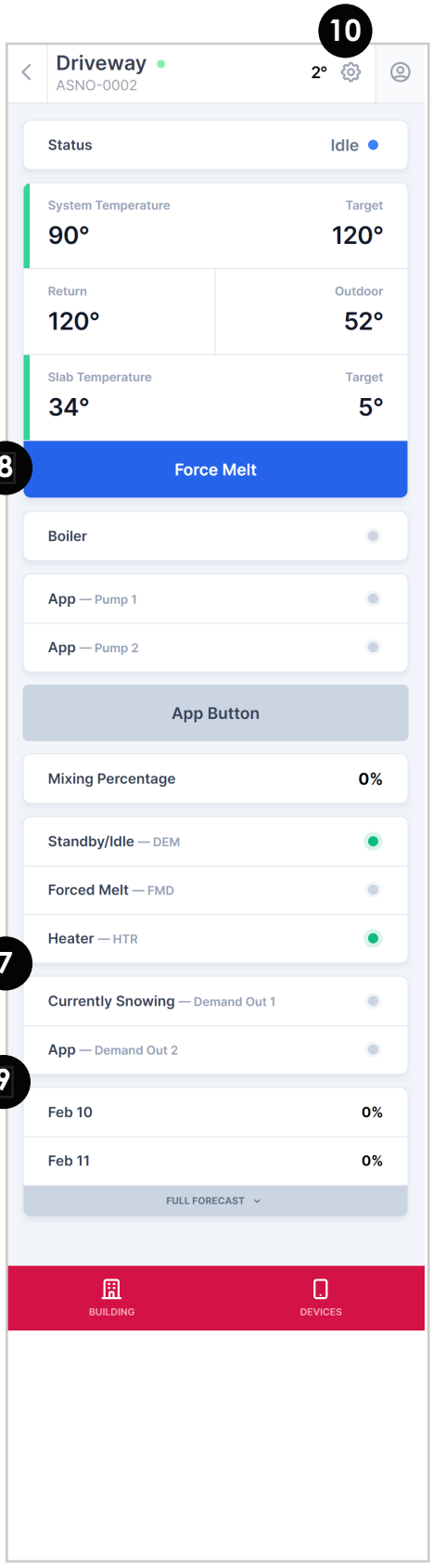
5 **Demands:** Displays if there is a current STANDBY/Idle & FORCED MELT demand.

A green dot indicates that the demand is on

6 **Heater:** Displays if the HEATER is on.

A green dot indicates that the demand is on)

Will also display a Low Current or Heater fault. Check sensor error description in troubleshooting.



Controlling a SNO-0600 with the SensorLinx mobile app

7 **Demand Out:** Displays if there is a current for demand 1 and demand 2 outputs. (A green dot indicates that the demand is on).

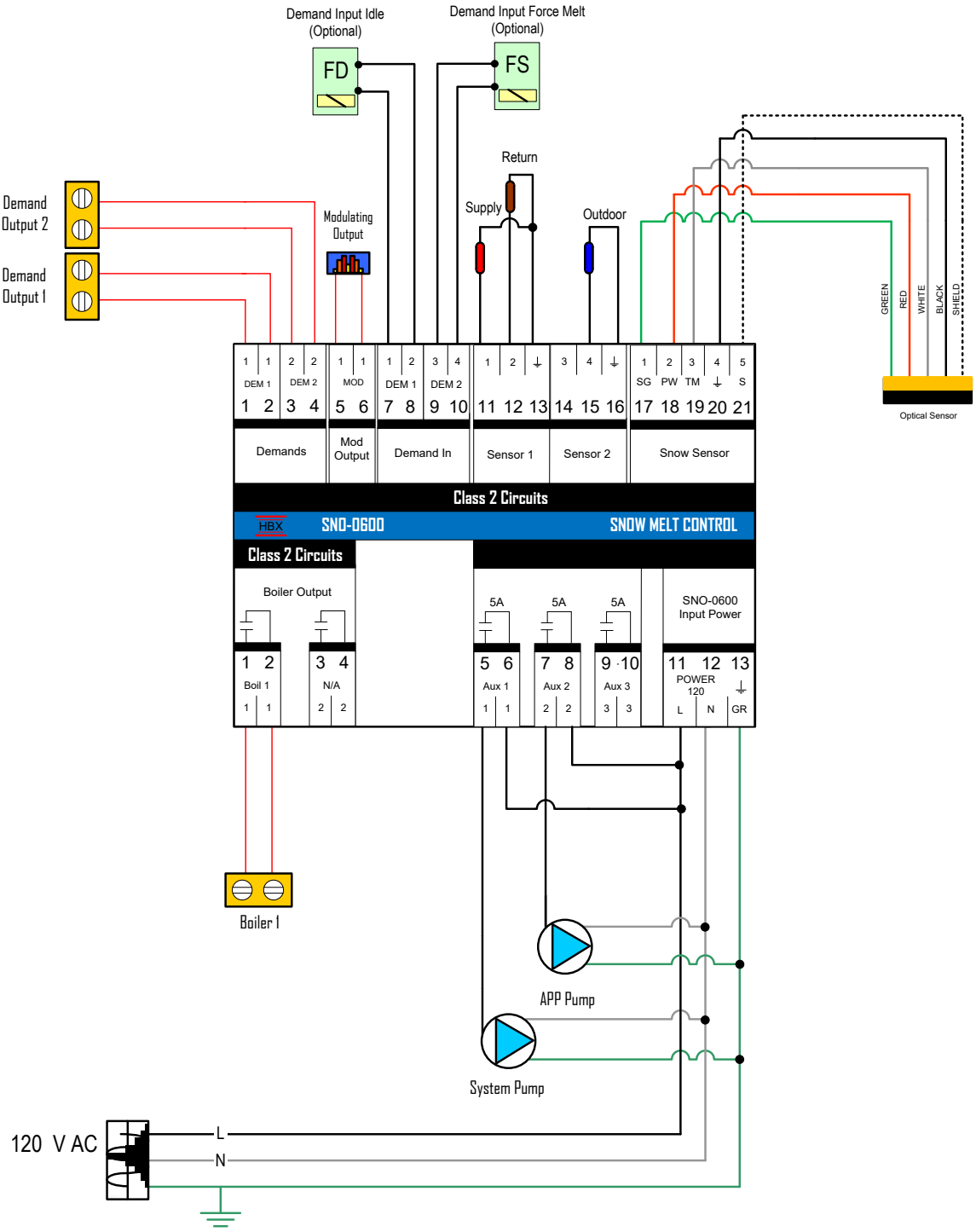
8 **Force Melt:** Selecting this will enable the control to automatically turn on your snow melt system into a MELT MODE. Once this has been selected the end user has the option to manually stop MELT MODE.

If the controller is running a Forecast Force Melt then it cannot be stopped by the stop Melt Mode function.

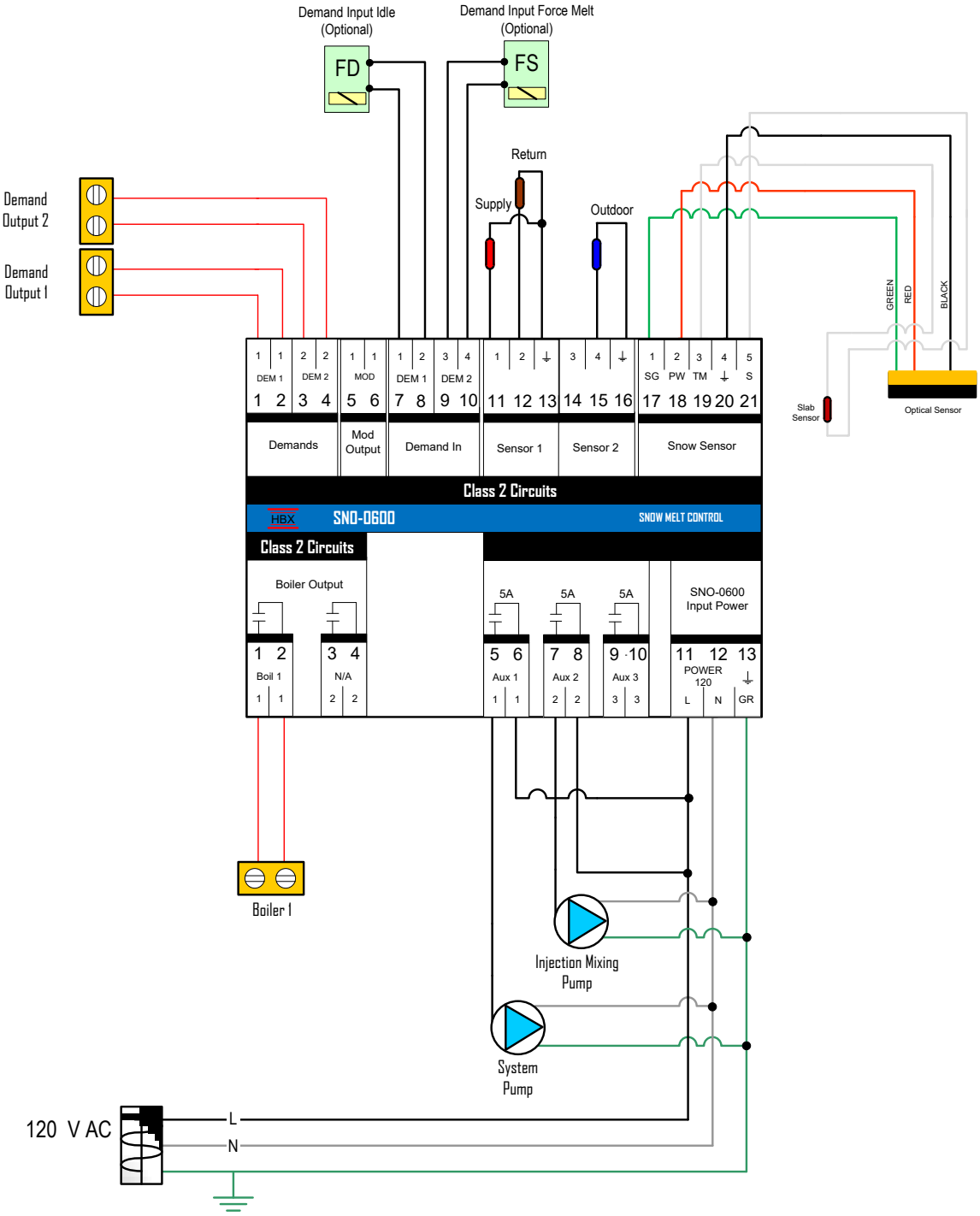
9 **Forecast:** Displays the forecast for the area for the current day as well as the next 5 days. It will show the percentage of precipitation as well as a snowflake icon and "Snow Expected" to indicate the days to possible snowfall.

10 **Settings:** The gear Symbol will allow for changes to the SNO-0600 controller. This will show a more complete list of the settings that are currently set on the SNO-0600.

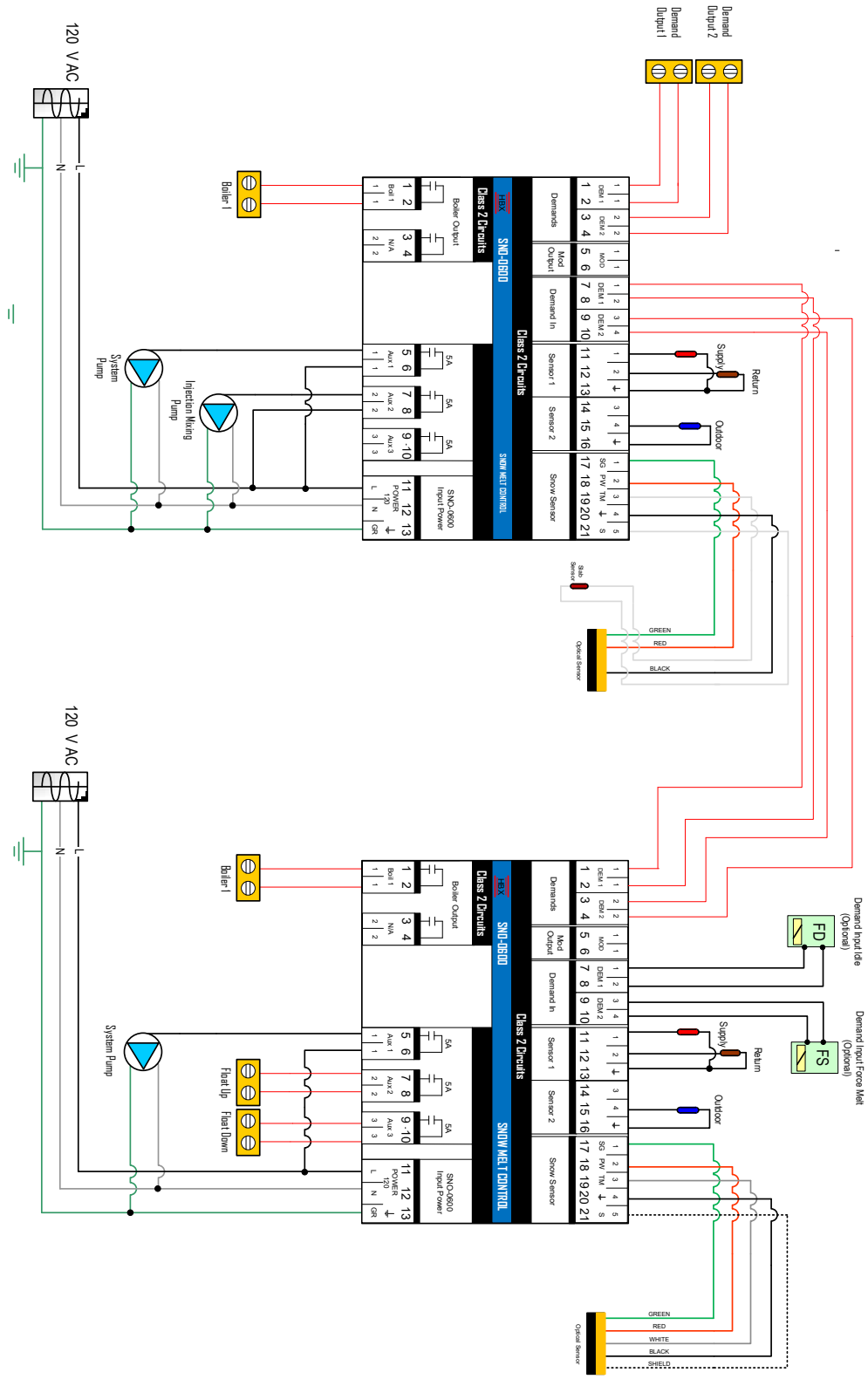
WIRING DIAGRAM 1



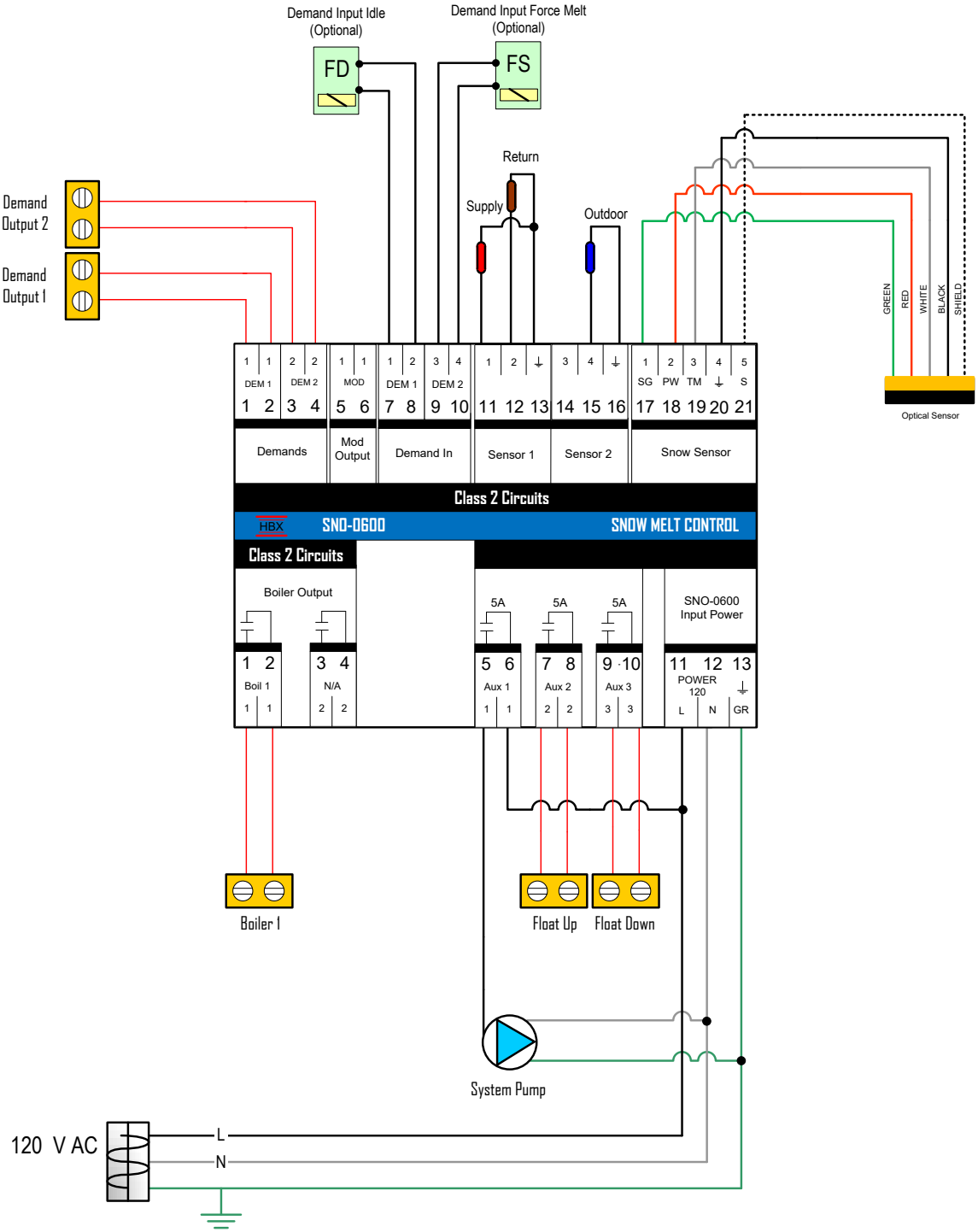
WIRING DIAGRAM 2



WIRING DIAGRAM 1



WIRING DIAGRAM 2



SNO-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
Cracked Sensor	• Improper drainage (see pg.6 SNO-0110 manual) • Improper Installation – too much tension on screw tightening, hammering sensor into socket • Resolution – Replace Sensor
Not Melting Any Snow	• Sensor not connected (supply, return, outdoor) • Damaged Sensor: check sensor for cracks or deformations • Incorrect settings: IDLE temperature is set incorrectly, MELT temperature is set incorrectly, MELT time is set incorrectly, one or design temperatures set incorrectly • Check if PERMENANT STANDBY/IDLE setting is OFF • Incorrect weather forecasting settings • Improper wiring • Improper SNO-0110 sensor location • Check WWSD or CWSD Settings
Residual Snow is Present After Demand Is Not Present	• Max System Temperature is too low and WWSD is set too high • MELT TIME is set too low
Slab Temperature Error	• Incorrect wiring (Shield wire not connected) • SNO-0110 (Heater) has not reached operating temperature. Wait at least 1 hour after installation • Sensor location in slab setup is set incorrectly. • Damaged sensor: check for cracks or deformations
Doesn't Detect Snow	• Damaged sensor: check for cracks or deformations • Improper wiring. see SNO-0110 troubleshooting section in manual. • Sensor location in slab setup is set incorrectly. • Snow rate setup is set too high. • No demand is present. • WWSD is set too low. • CWSD is set too high.
Control Screen Is Displaying "Control is Bootloading"	• Do not power down the control. This screen will disappeer after 15-30 minutes.

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

+1 (855) 410-2341

SNO-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
Error Showing On Screen	• Sensor is not installed. • Damaged Sensor: check for cracks or deformations (Slab temperature) • Slab setup is incorrect.
Injection Pump Not Turning On	• Check wiring • Make sure mixing is set to injection in PUMP SETUP
Buildup Of Snow To Start MELT	• Slab Snow Rate setup is too high • Delta T is set too low
Mixing Valve Not Turning On	• Check wiring • Make sure mixing is set to Floating Up and/or Floating Down in PUMP SETUP
System temperature fluctuating	• Check outdoor reset values
Snow Melt Is On When No Snow Present	• Damaged sensor: check for cracks or deformations • Check SNO-0110 troubleshooting manual • Check DEMAND SETUP settings
Snow Melt Not Automatically Starting	• No Demand present • Check PERMENANT STANDBY/IDLE is set to OFF • Check Snow Rate settings • Check WWSD/CWSD temperatures • Check wiring
System Pump Not turning On	• Check wiring • No demand present • Make sure System pump is set in PUMP SETUP
Boiler is Not Turning On	• No Demand present • Check wiring • Check WWSD/CWSD temperatures

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SNO-0600 TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSES & RESOLUTIONS
Slab Temperature Changes Drastically When It Comes In Or Out of WWSD/CWSD	• The optical sensor has a built in heater and when it is installed in the slab. without the Aux. slab sensor the control will minus off approximately 40F/22C off the actual slab temp to accommodate for the internal heater that has now started up. This heater can take up to 1 hour to reach it's setpoint, thus your slab will appear that it is much colder when it first turns on, the opposite is true when it goes into WWSD or CWSD the slab temp will jump by 40F/22C as the control removes the adjustment, and the heater will now slowly cool down which could take up to 1 hour.

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TESTING AND TROUBLESHOOTING PROCEDURE

SNO-0600/SNO-0110 - TESTING

1. Thermistor Test Resistance table for thermistors (outdoor, system)

Temperature		Resistance	Temperature		Resistance	Temperature		Resistance
°F	°C	Ω	°F	°C	Ω	°F	°C	Ω
- 22	- 30	177,000	- 0.4	- 18	86,463	21.2	- 6	44,617
- 18.4	- 28	156,404	3.2	- 16	77,162	24.8	- 4	40,153
- 14.8	- 26	138,482	6.8	- 14	68,957	28.4	- 2	36,182
- 11.2	- 24	122,807	10.4	- 12	61,711	32	0	32,654
- 7.6	- 22	109,075	14	- 10	55,319	35.6	2	29,498
- 4	- 20	97,060	17.6	- 8	49,640	39.2	4	26,686

2. Snowmelt Sensor Test I.

To test the sensor, ensure that the control is set for PERMANENT STANDBY/IDLE is set to ON, and also not in CWSD or WWSD. Put some water or snow on the sensor, and move it around with your hand or a cloth for about 30 seconds to 1 minute. This will trigger a Melt and the control will go through the Melt cycle. II.

Acceptable parameters for the SNO-0110 Optical Sensor :
*SNO-0110 information is found in the Control Stats menu.

Type	Acceptable Parameters
Voltage	11 – 15 VDC
Current	0.585 – 0.599 A
Resistance	19 – 24 OHMS

SENSOR ERRORS

HTR-LOWC: Low current is being drawn into the sensor and will not sense snow. Check the wiring of the control. Refer to testing procedure above, and inspect the SNO-0110 Sensor for signs of damage or improper drainage. Reset control when issue has been corrected to eliminate error code.

HTR-FAULT: High current is being drawn into the sensor and will not sense snow. Screen will flash orange, and fuse in control will trip. Check the wiring of the control. Refer to testing procedure above, and inspect the SNO-0110 Sensor for signs of damage or improper drainage. Reset control when issue has been corrected to eliminate error code.

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.

NOTES

NOTES

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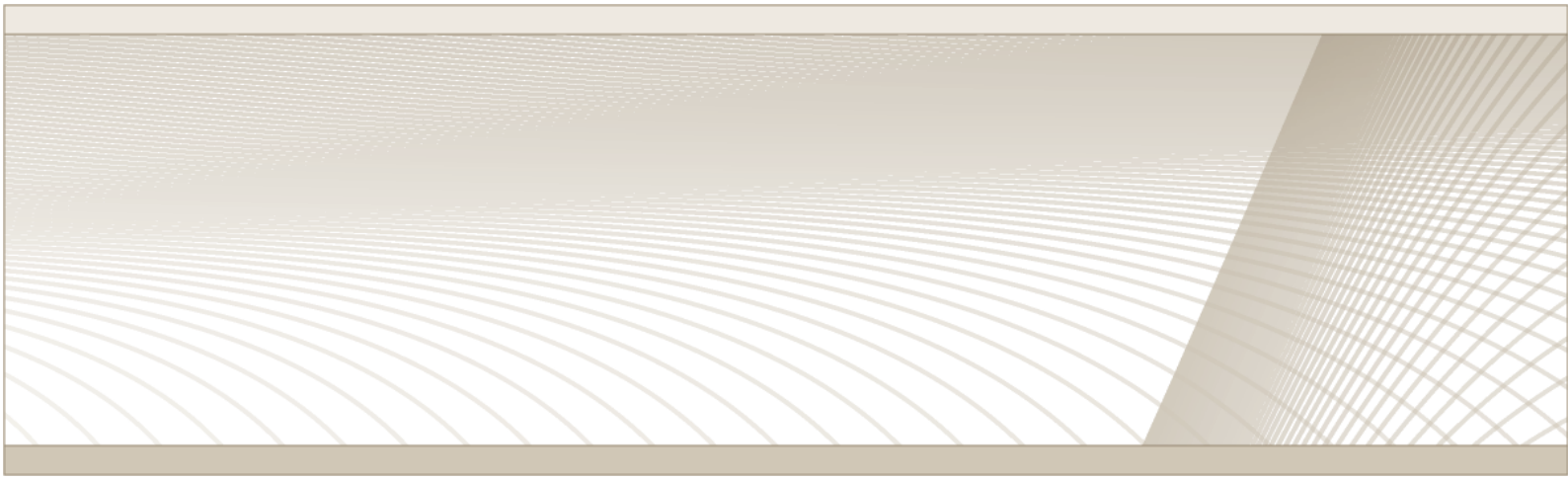
Email: info@hbxcontrols.com Web: www.hbxcontrols.com

Toll Free Technical Support: +1 (855) 410 2341



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