

## Tech Data

# Viega Wi-Fi Snow Melt Control



The Wi-Fi Snow Melt Control operates hydronic heating equipment designed to melt snow and/or ice from roads and walkway surfaces. The control works with the Snow/Ice Sensor or Aerial Snow Sensor to automatically detect snow or ice and operates a single boiler or steam valve to supply heat to the slab. Boiler return protection is provided to non-condensing boilers using a mixing valve or variable speed injection mixing pump. The tekmar Connect mobile app allows for remote operation and monitoring of the snow melting system from anywhere in the world.



This document is subject to updates. For the most current Viega technical literature please visit [www.viega.us](http://www.viega.us).



Viega products are designed to be installed by licensed and trained plumbing, mechanical, and electrical professionals who are familiar with Viega products and their installation. **Installation by non-professionals may void Viega LLC's warranty.**

## Dedicated Boiler

### Description

The Wi-Fi Snow Melt Control can operate a boiler that is dedicated to the snow melting system. The system is piped in primary-secondary to allow constant flow rates through the low-mass boiler and filled with glycol to prevent freezing.

- The system pump operates continuously when heating the slab during storm/idling/melting operation.
- The boiler pump cycles on and off together with the boiler.

- The slab temperature is controlled by modulating the boiler firing rate or cycling the boiler on and off.
- The slab target is determined by the storm/idling/melting setpoint and by the measured outdoor air temperature.
- Optional slab protection limits the temperature differential between the boiler supply and slab.

The system operation is dependent on sensor selection, as listed in the table below.

Sensor options					
Sensor	Sensor Model(s)	Slab Temperature Control	Manual Start/ Timed Stop	Auto Start/ Timed Stop	Auto Start/ Auto Stop
S1	Automatic Snow/Ice Sensor	•	•	–	•
S2+S3	Aerial Snow Sensor and Slab Sensor	•	•	•	–
S3	Slab Sensor	•	•	–	–
S2	Aerial Snow Sensor (not recommended)	–	•	•	–

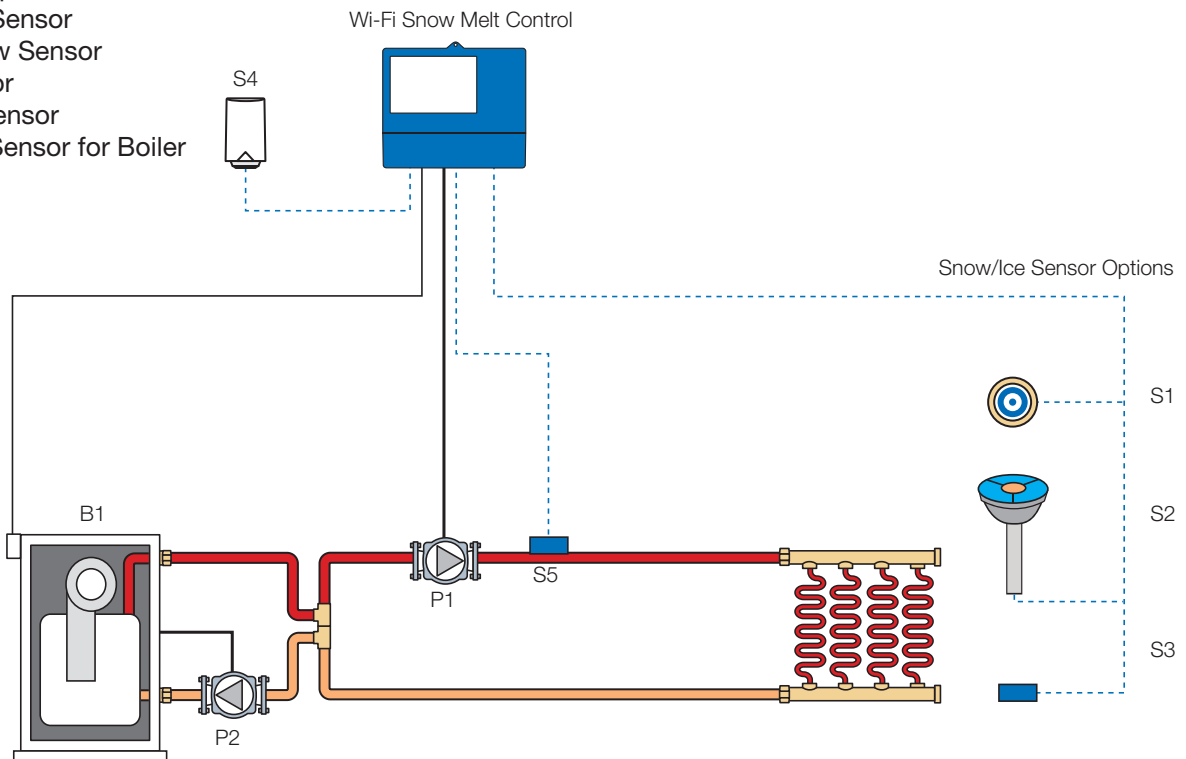
## Mechanical Configuration

### Legend

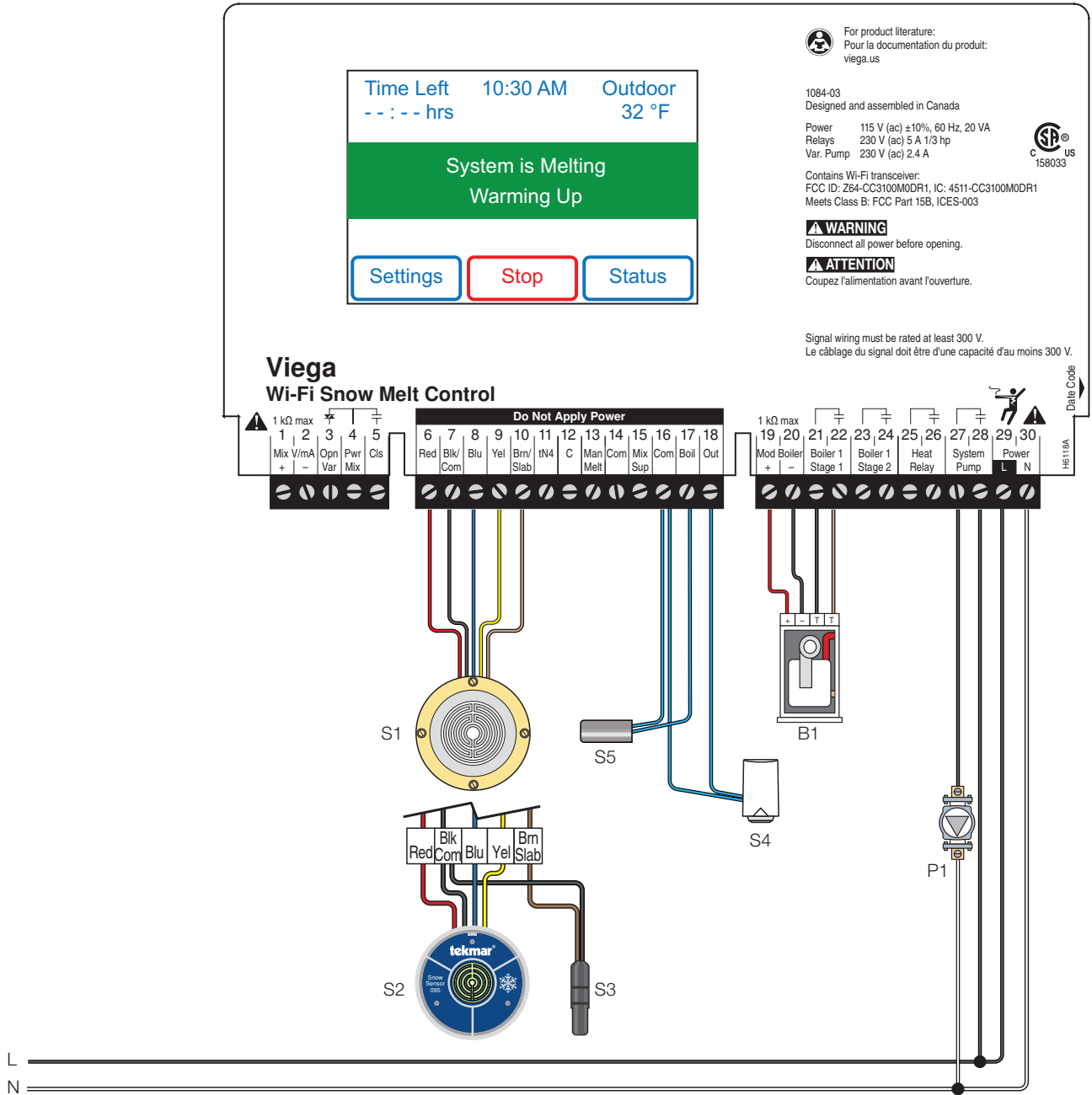
- B1 = Modulating Boiler
- P1 = System Pump
- P2 = Boiler Pump
- S1 = Snow/Ice Sensor
- S2 = Aerial Snow Sensor
- S3 = Slab Sensor
- S4 = Outdoor Sensor
- S5 = Universal Sensor for Boiler

### Application Settings

Setting Name	Value
Application Mode	Boiler



# Wiring Diagram



## Dedicated Boiler and Mixer

### Description

The Wi-Fi Snow Melt Control can operate a boiler that is dedicated to the snow melting system. The system is piped in primary-secondary to allow constant flow rates through the low-mass boiler and filled with glycol to prevent freezing.

- The system and boiler pumps operate continuously when heating the slab during melting/idling/storm operation.
- The mixing valve position is adjusted to 100% open unless providing boiler return protection.

- The slab temperature is controlled by modulating the boiler firing rate or cycling the boiler on and off.
- The slab target is determined by the melting/idling/storm setpoint and by the measured outdoor air temperature.
- Optional slab protection limits the temperature differential between the boiler supply and slab.

The system operation is dependent on sensor selection, as listed in the table below.

Sensor options					
Sensor	Sensor Model(s)	Slab Temperature Control	Manual Start/ Timed Stop	Auto Start/ Timed Stop	Auto Start/ Auto Stop
S1	Automatic Snow/Ice Sensor	•	•	–	•
S2+S3	Aerial Snow Sensor and Slab Sensor	•	•	•	–
S3	Slab Sensor	•	•	–	–
S2	Aerial Snow Sensor (not recommended)	–	•	•	–

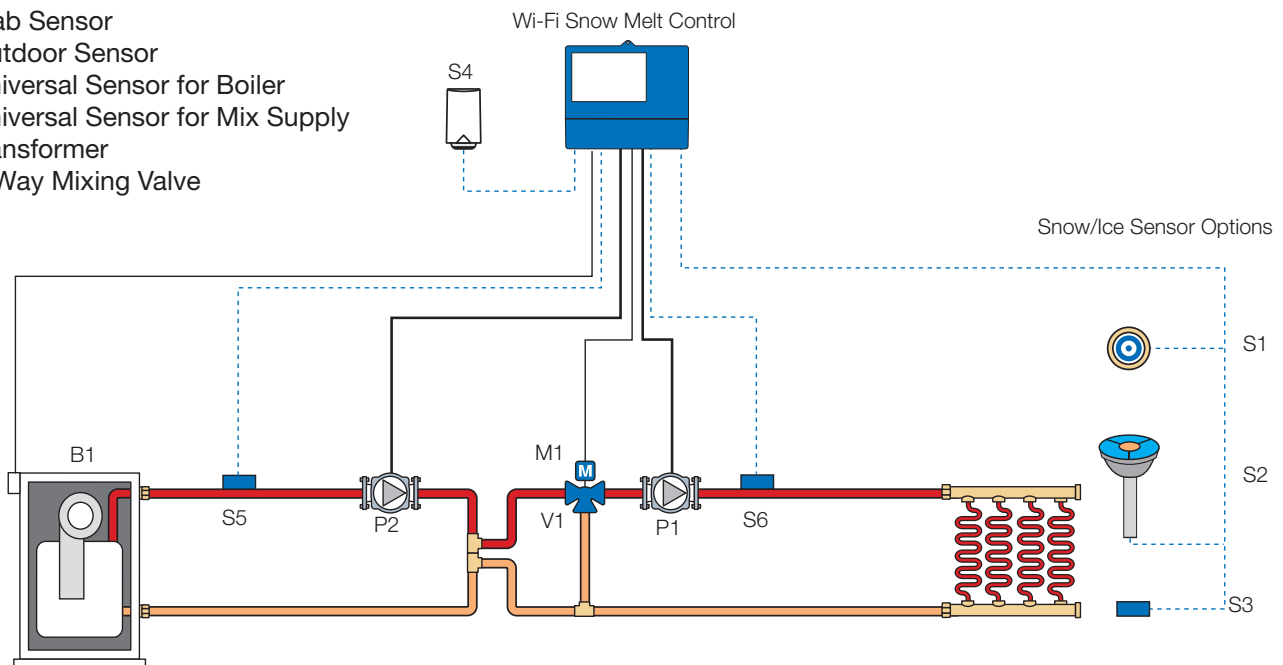
## Mechanical Configuration

### Legend

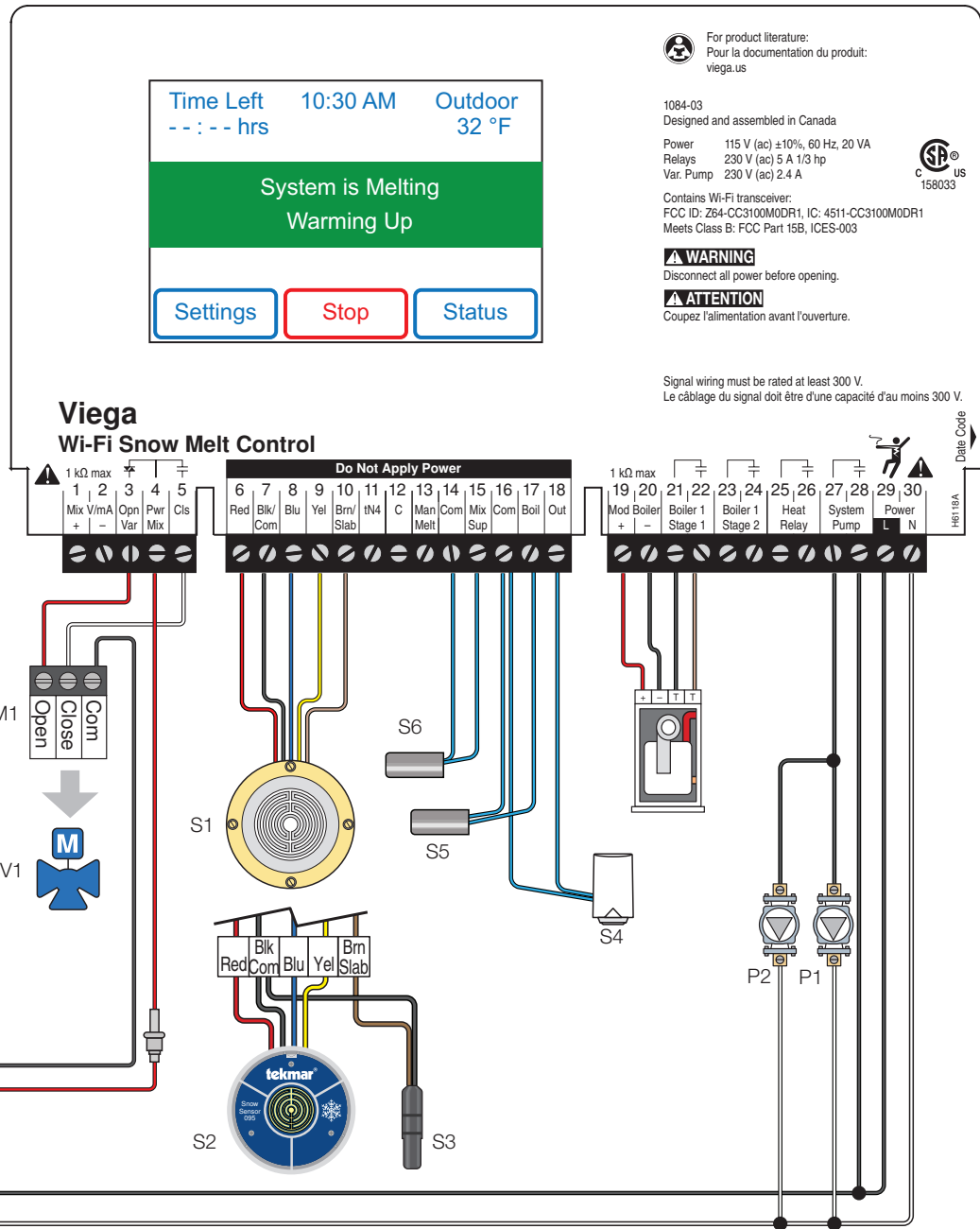
- B1 = Modulating Boiler
- M1 = Actuating Motor
- P1 = System Pump
- P2 = Boiler Pump
- S1 = Snow/Ice Sensor
- S2 = Aerial Snow Sensor
- S3 = Slab Sensor
- S4 = Outdoor Sensor
- S5 = Universal Sensor for Boiler
- S6 = Universal Sensor for Mix Supply
- X1 = Transformer
- V1 = 3-Way Mixing Valve

### Application Settings

Setting Name	Value
Application Mode	Boiler + Mix



# Wiring Diagram



## Shared Boiler and Heat Exchanger

### Description

The Wi-Fi Snow Melt Control can operate a snow melting zone from a heat source that is shared with other loads in a building. A heat exchanger isolates the glycol-filled snow melting system loop from the water-filled main heating system.

- The system pump operates continuously when heating the slab during storm/idling/melting operation.
- The slab temperature is controlled by cycling the heat exchanger pump and the boiler enable on and off.

- The slab target is determined by the storm/idling/melting setpoint and by the measured outdoor air temperature.
- A normally-closed aquastat protects the heat exchanger from freezing by shutting off power to the system pump.

The system operation is dependent on sensor selection, as listed in the table below.

Sensor options					
Sensor	Sensor Model(s)	Slab Temperature Control	Manual Start/ Timed Stop	Auto Start/ Timed Stop	Auto Start/ Auto Stop
S1	Automatic Snow/Ice Sensor	•	•	–	•
S2+S3	Aerial Snow Sensor and Slab Sensor	•	•	•	–
S3	Slab Sensor	•	•	–	–
S2	Aerial Snow Sensor (not recommended)	–	•	•	–

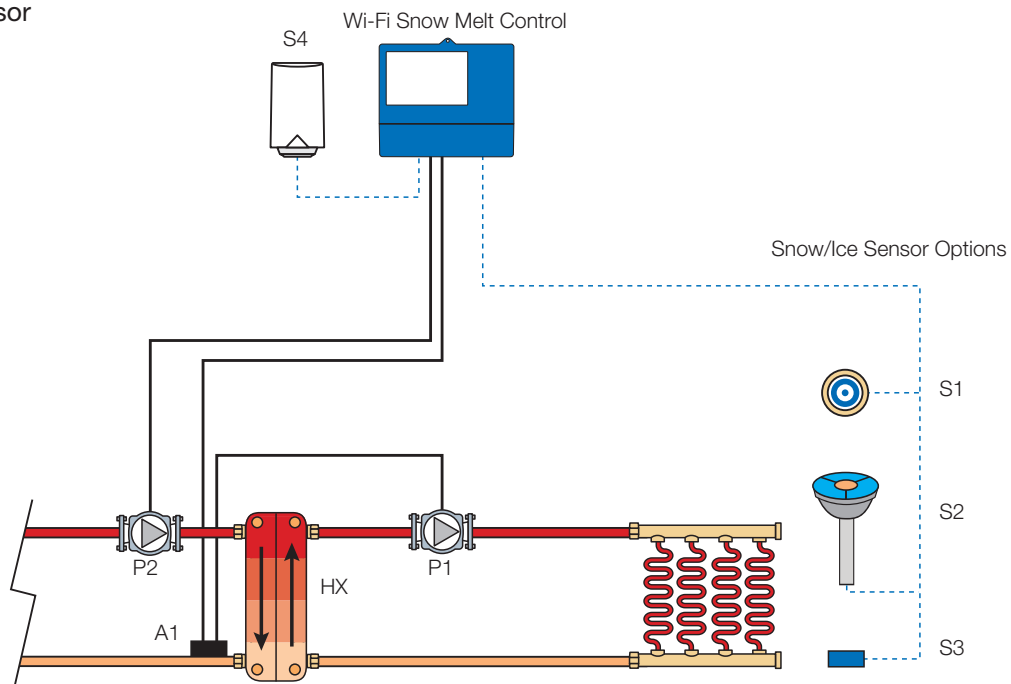
## Mechanical Configuration

### Legend

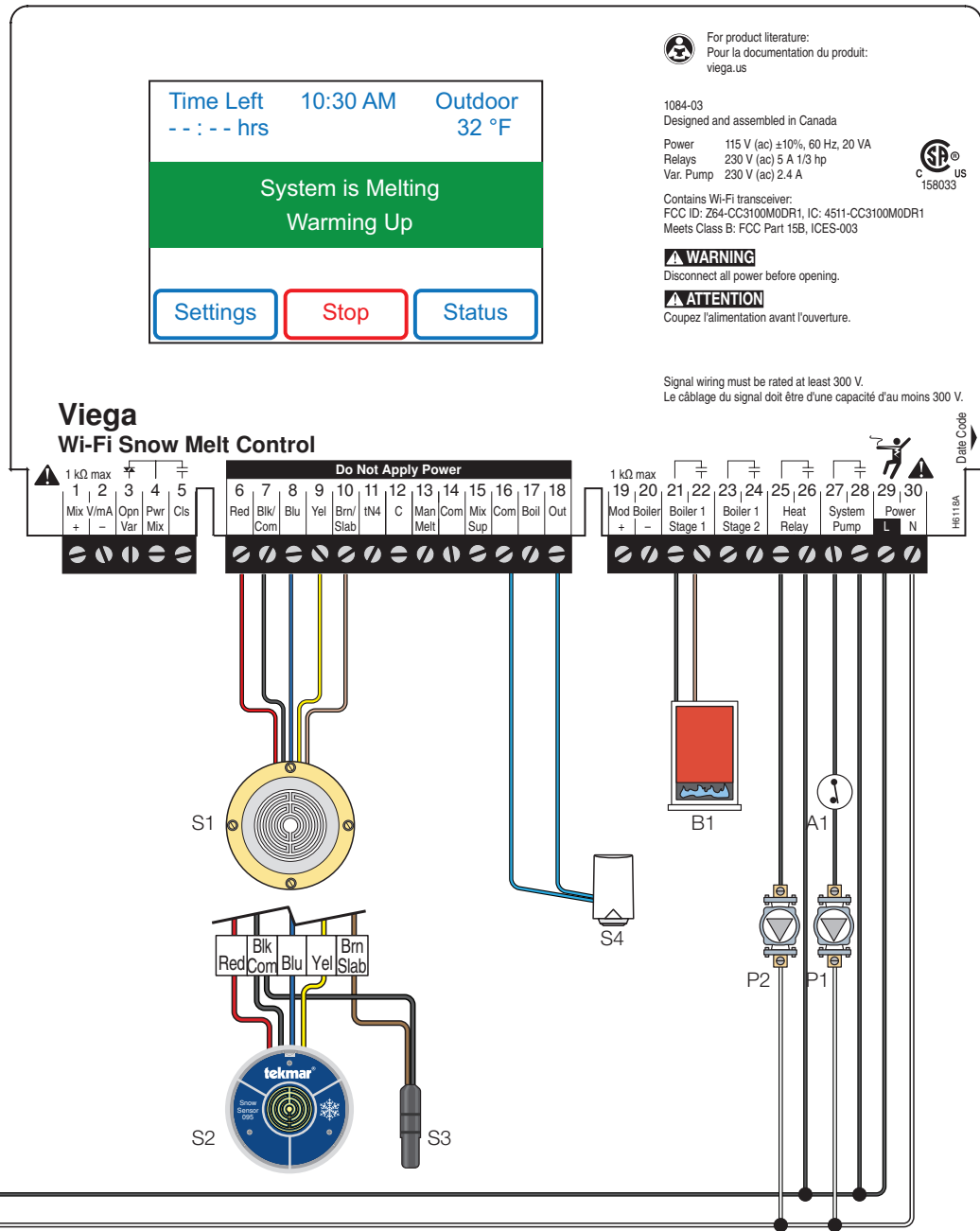
- A1 = Normally Closed Freeze Protection Aquastat
- B1 = Boiler Enable
- HX = Heat Exchanger
- P1 = System Pump
- P2 = On/Off Heat Exchanger Pump
- S1 = Snow/Ice Sensor
- S2 = Aerial Snow Sensor
- S3 = Slab Sensor
- S4 = Outdoor Sensor

### Application Settings

Setting Name	Value
Application Mode	PWM Zone
Boiler Type	Enable



# Wiring Diagram



## Shared Boiler and Mixing Injection Pump

### Description

The Wi-Fi Snow Melt Control can operate a snow melting zone from a heat source that is shared with other loads in a building. The system uses a variable speed injection pump to regulate the water temperature and a heat exchanger isolates the glycol-filled snow melting system loop from the water-filled main heating system.

- The system pump operates continuously when heating the slab during storm/idling/melting operation.
- The slab temperature is controlled by adjusting the speed of the variable speed injection pump.

- When the variable speed injection pump is on, the heat exchanger pump and the boiler enable are on.
- The slab target is determined by the storm/idling/melting setpoint and by the measured outdoor air temperature.
- A normally-closed aquastat protects the heat exchanger from freezing by shutting off power to the system pump.

The system operation is dependent on sensor selection, as listed in the table below.

Sensor options					
Sensor	Sensor Model(s)	Slab Temperature Control	Manual Start/ Timed Stop	Auto Start/ Timed Stop	Auto Start/ Auto Stop
S1	Automatic Snow/Ice Sensor	•	•	–	•
S2+S3	Aerial Snow Sensor and Slab Sensor	•	•	•	–
S3	Slab Sensor	•	•	–	–
S2	Aerial Snow Sensor (not recommended)	–	•	•	–

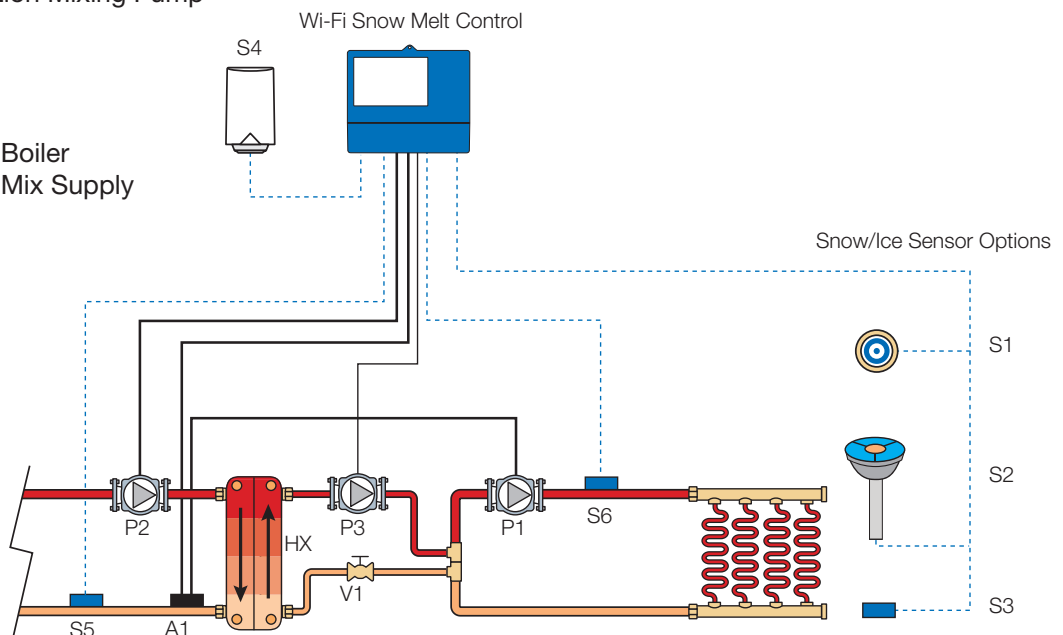
## Mechanical Configuration

### Legend

- A1 = Normally Closed Freeze Protection Aquastat
- B1 = Boiler Enable
- HX = Heat Exchanger
- P1 = System Pump
- P2 = Heat Exchanger Pump
- P3 = Variable Speed Injection Mixing Pump
- S1 = Snow/Ice Sensor
- S2 = Aerial Snow Sensor
- S3 = Slab Sensor
- S4 = Outdoor Sensor
- S5 = Universal Sensor for Boiler
- S6 = Universal Sensor for Mix Supply
- V1 = Globe Valve

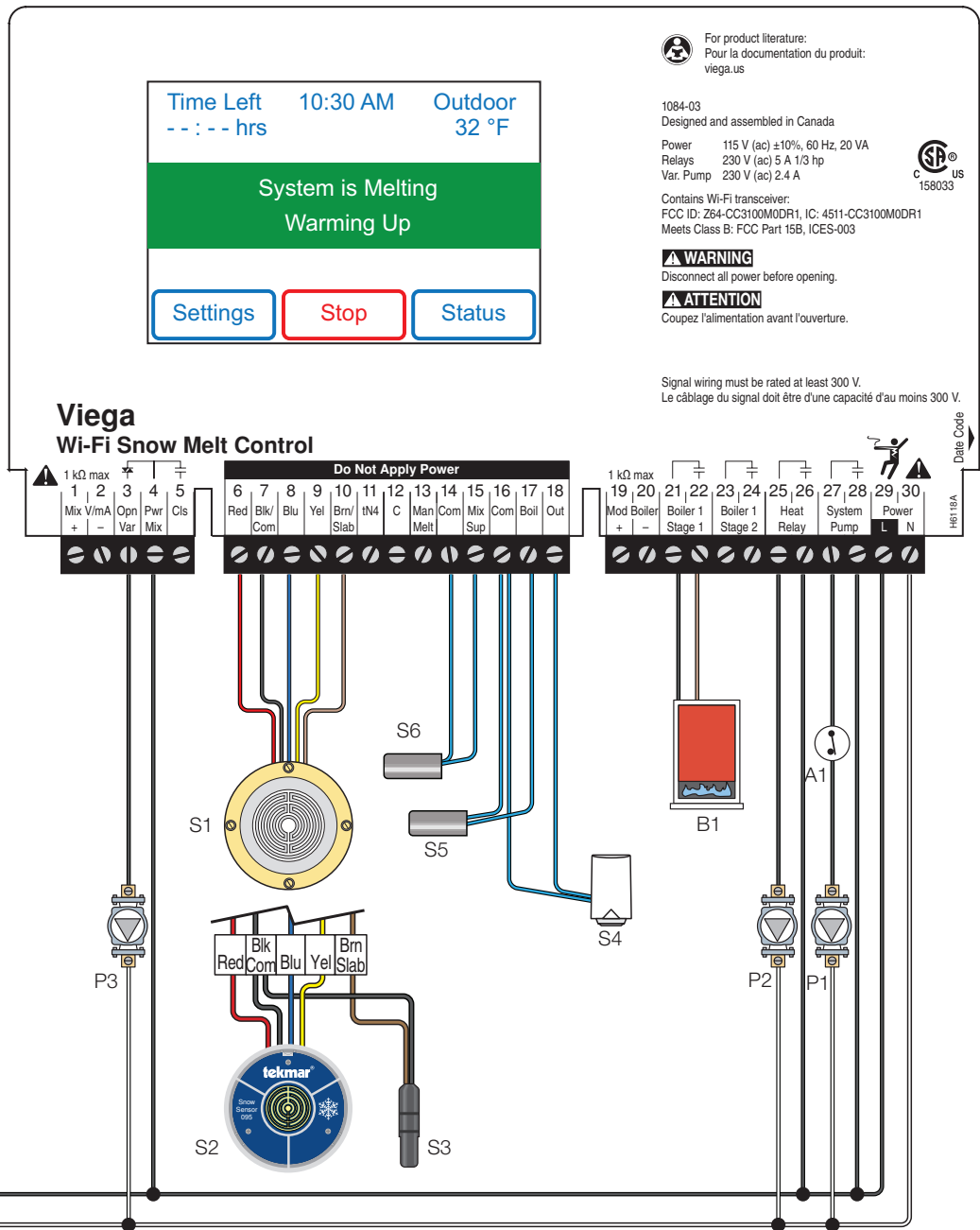
### Application Settings

Setting Name	Value
Application Mode	Mixing
Mixing Type	Injection
Boiler Type	Enable





# Wiring Diagram



## Modulating Steam Valve

### Description

The Wi-Fi Snow Melt Control can operate a modulating steam valve and a steam-to-water heat exchanger to heat a glycol-filled snow melting system.

- The system pump operates continuously when heating the slab during storm/idling/melting operation.
- The slab temperature is controlled by adjusting the modulating steam valve position.
- The boiler relay is closed while the modulating steam valve is open. This provides a signal to fire the steam boiler.

- The slab target is determined by the storm/idling/melting setpoint and by the measured outdoor air temperature.

The system operation is dependent on sensor selection, as listed in the table below.

Sensor options					
Sensor	Sensor Model(s)	Slab Temperature Control	Manual Start/ Timed Stop	Auto Start/ Timed Stop	Auto Start/ Auto Stop
S1	Automatic Snow/Ice Sensor	•	•	–	•
S2+S3	Aerial Snow Sensor and Slab Sensor	•	•	•	–
S3	Slab Sensor	•	•	–	–
S2	Aerial Snow Sensor (not recommended)	–	•	•	–

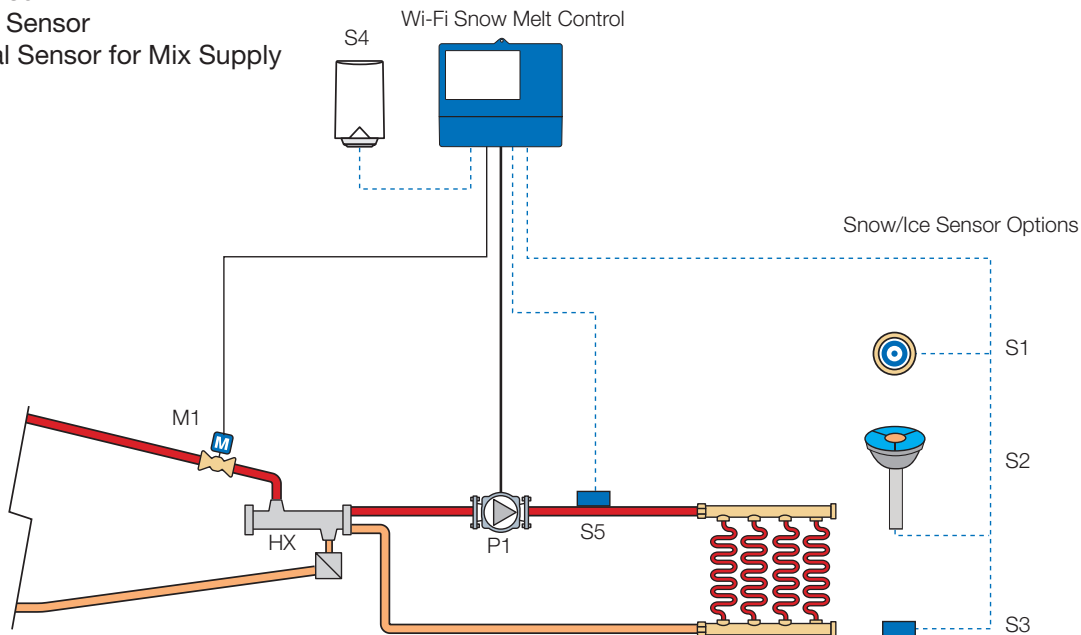
## Mechanical Configuration

### Legend

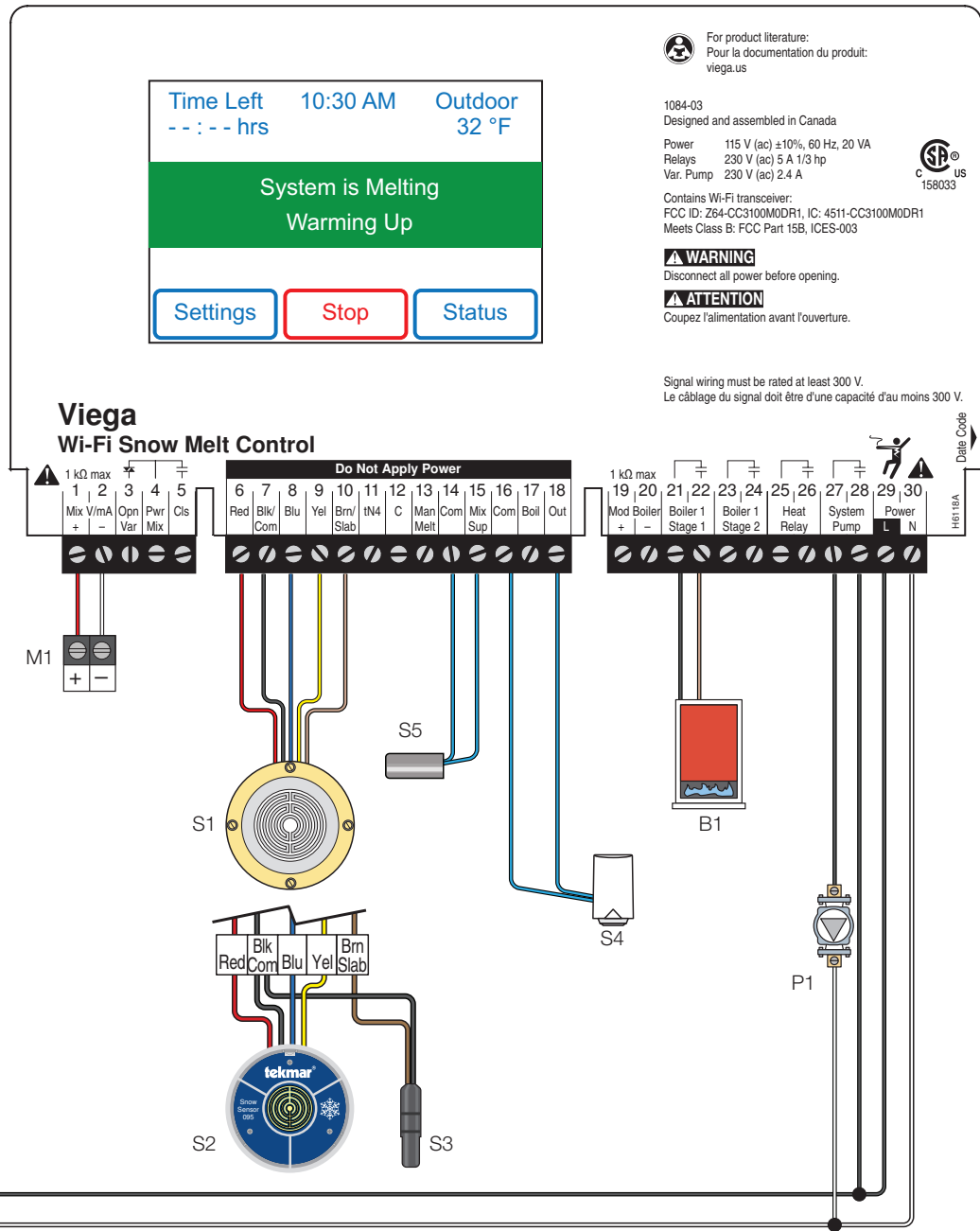
- B1 = Boiler Enable
- HX = Steam-to-Glycol Heat Exchanger
- M1 = Modulating Steam Valve
- P1 = System Pump
- S1 = Snow/Ice Sensor
- S2 = Aerial Snow Sensor
- S3 = Slab Sensor
- S4 = Outdoor Sensor
- S5 = Universal Sensor for Mix Supply

### Application Settings

Setting Name	Value
Application Mode	Mixing
Mixing Type	0-10 V or 4-20 mA
Boiler Type	Enable



# Wiring Diagram



**The following are the recommended specifications for the Wi-Fi Snow Melt Control.**

- The control shall communicate with the Internet to provide remote starting, stopping and monitoring through an Android, Apple iOS mobile app, or through a web browser.
- The control shall have the ability to use a snow/ice sensor in order to automatically detect snow or ice and begin operation of the system. The system shall continue to run until the sensor is dry or the control is manually stopped.
- The control shall communicate with an Internet weather service to determine the local snow fall forecast and automatically pre-heat the slab for an adjustable timed duration.
- The control shall have the ability to be manually started with an adjustable running time that counts down and automatically stops the system.
- The control shall not operate the system to provide heat to the snow melting zones when it enters into either a Warm Weather Shut Down (WWSD) or a Cold Weather Cut Off (CWCO) mode.
- The system water temperature shall be based on the outdoor temperature and feedback from sensors located in the snow melting slabs.
- The control shall have the option to mix the supply water temperature using a mixing valve with a floating action, 0-10 V (dc) or a 4-20 mA actuator motor, or using a variable-speed injection mixing pump.
- The control shall have an adjustable minimum return water temperature setting to help prevent condensation of flue gases and subsequent corrosion and blockage of the boiler's heat exchanger and chimney.
- The control shall have the ability to limit the amount of cool water being returned to the boiler through the mixing device in order to prevent low boiler operating temperatures and flue gas condensation.
- The control shall have the ability to directly control the supply temperature of a modulating boiler, a one or two-stage boiler, or to send a boiler enable signal to another boiler operating control to allow for a staging control to be connected.
- The control shall have the option of an automatic differential calculation for the operation of one or two boiler stages in order to prevent short cycling.
- The control shall use proportional, integral and derivative (PID) logic when modulating or staging boiler stages.
- The control shall have the option to limit the heat up rate of the slab to help prevent cracking the concrete.
- The control shall have two separate lockable access levels to limit the number of adjustments available to various users.
- The control shall have a manual override that allows each output to be manually turned on or off.
- The control shall continuously monitor its temperature sensors and provide an error message upon a control or sensor failure.
- The control shall record and display boiler and pump running hours and minimum and maximum temperatures depending on the access level that has been selected.
- During extended periods of inactivity, the pumps and valves that are operated by the control shall be periodically exercised to prevent seizure during long idle periods.