# Application Brochure

## WiFi Snow Melting Control 671

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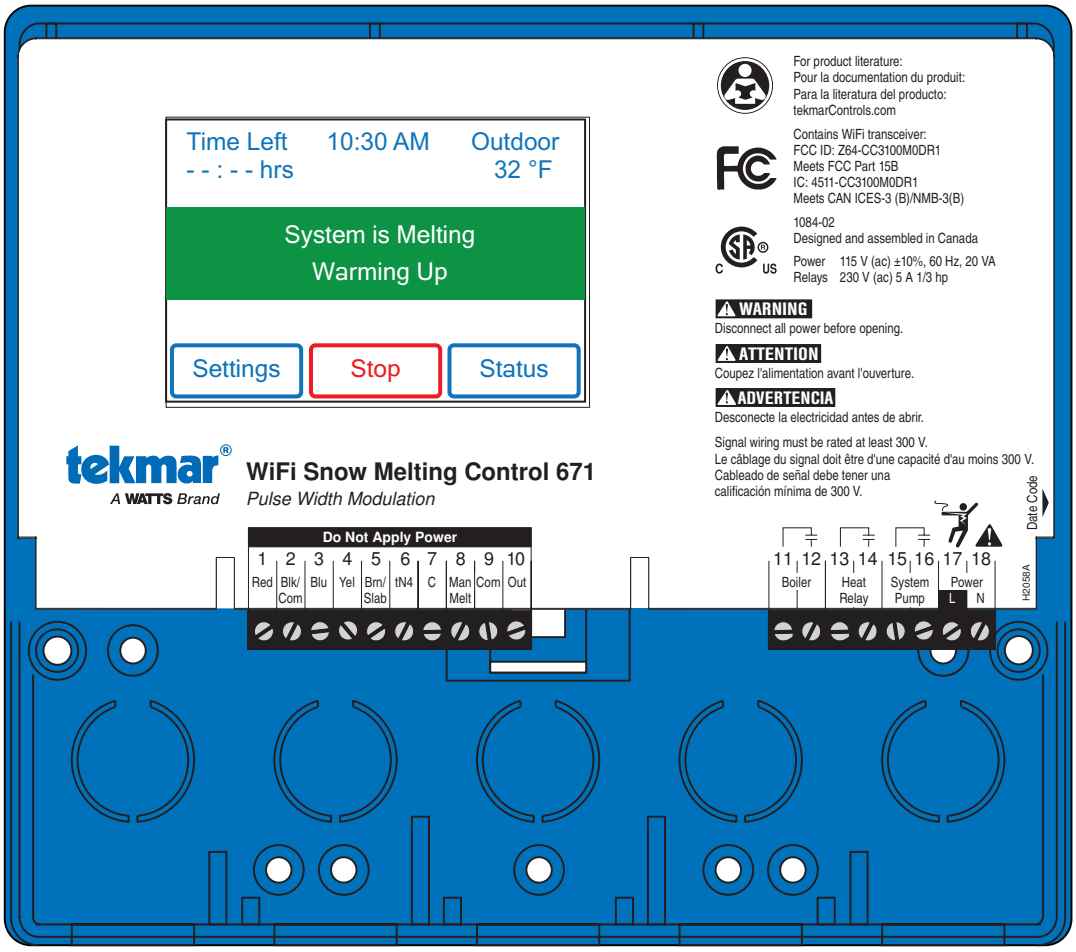
08/19

Snow Melting | Replaces: New

The WiFi Snow Melting Control 671 is designed to operate mechanical equipment to melt snow off an outdoor slab. It can be used in hydronic or electric snow melting applications. This product uses a tekmar snow/ice detection sensor in order to automatically melt snow using Pulse Width Modulation (PWM) and slab OutDoor Reset to maintain slab temperature. It is capable of controlling a single boiler, steam valve, or electric cable to supply heat to the slab.








tekmar
A WATTS Brand

## Description

The WiFi Snow Melting Control 671 operates a boiler that is dedicated for 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.

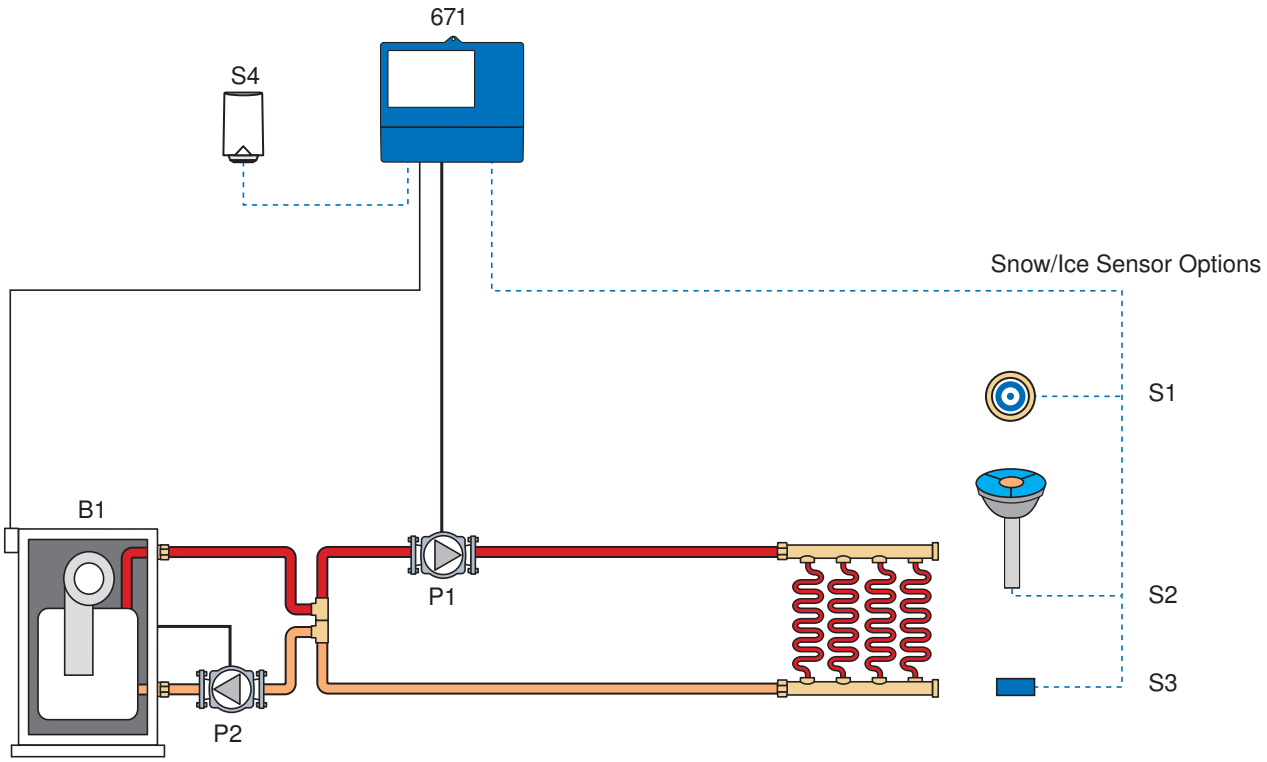
- The system pump operates continuously when heating the slab during melting/idling/storm operation.
- The boiler pump cycles on and off together with the boiler.
- The slab temperature is controlled by cycling the boiler on and off.
- The slab target is determined by the melting/idling/storm setpoint and by the measured outdoor air temperature.

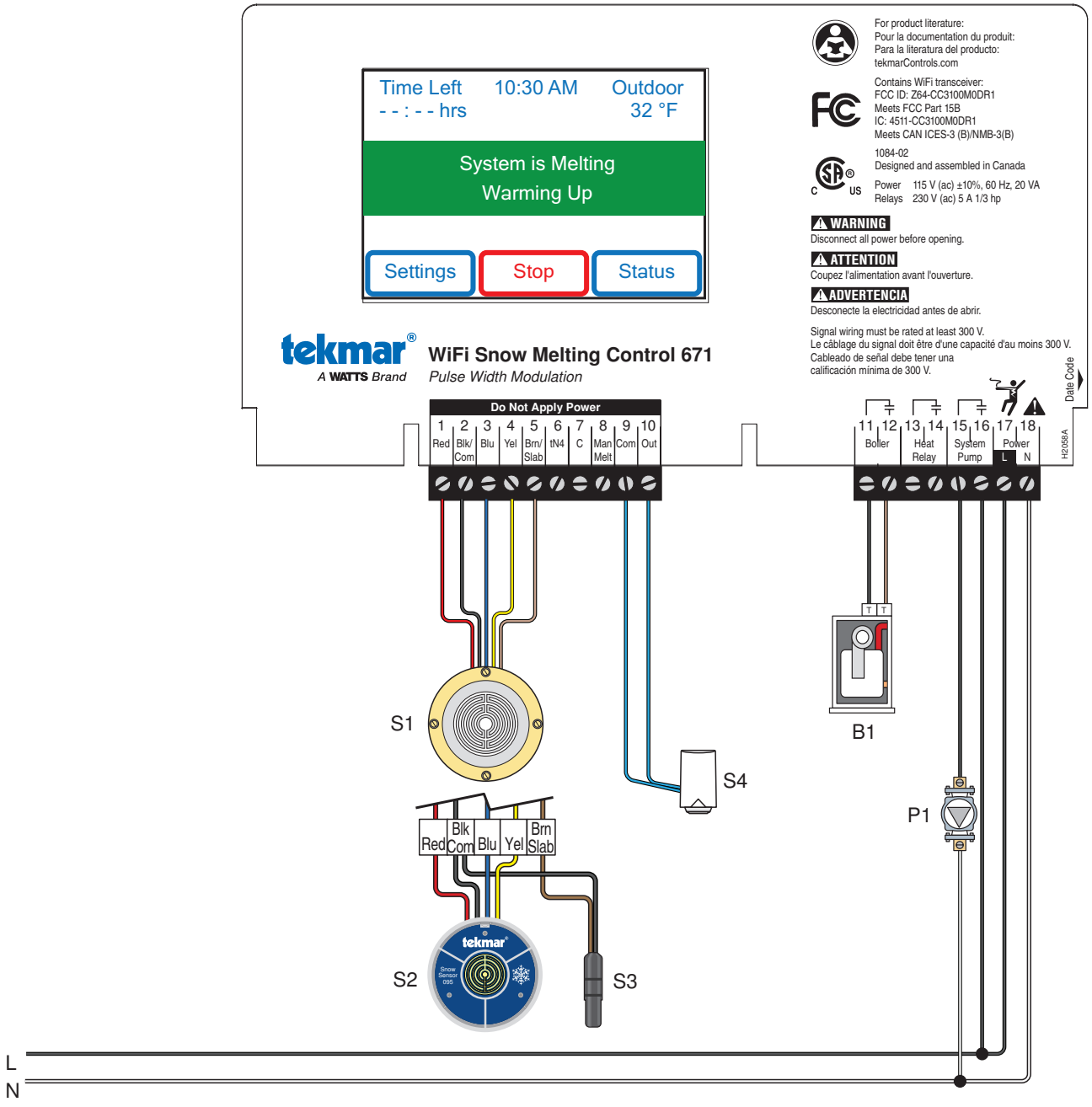
The system operation is dependent on sensor selection, as listed in the table below.

| Sensor options | | Operation methods | | | |
|---|---|---|---|---|---|
| Sensor | Sensor Model(s) | Auto Start/ Auto Stop | Auto Start/ Timed Stop | Manual Start/ Timed Stop | Slab Temperature Control |
| S1 | Automatic Snow/Ice Sensor 090 or 094 | • | – | • | • |
| S2 | Aerial Snow Sensor 095 | – | • | • | – |
| S3 | Slab Sensor 072 or 073 | – | – | • | • |
| S2+S3 | Aerial Snow Sensor 095 and Slab Sensor 072/073 | – | • | • | • |

## Legend

B1 = Boiler
P1 = System Pump
P2 = Boiler Pump
S1 = Snow/Ice Sensor 090 or 094
S2 = Snow Sensor 095
S3 = Slab Sensor 072 or 073
S4 = Outdoor Sensor 070





## Description

The WiFi Snow Melting Control 671 operates a snow melting zone warmed 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.

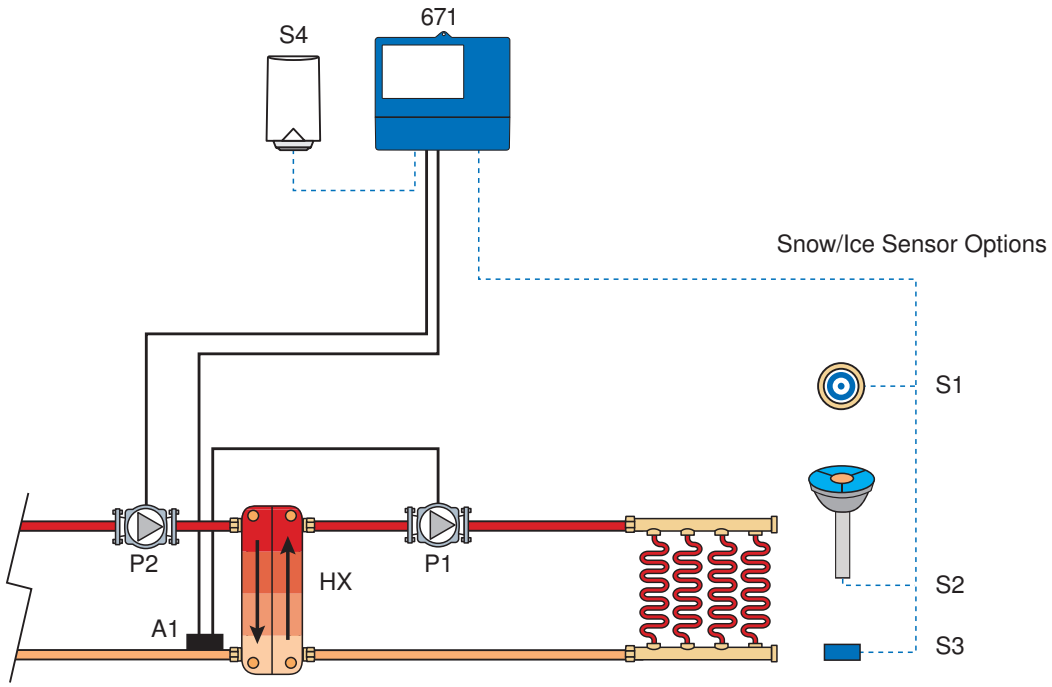
- The system pump operates continuously when heating the slab during melting/idling/storm operation.
- The slab temperature is controlled by cycling the boiler on and off.
- The slab target is determined by the melting/idling/storm setpoint and by the measured outdoor air temperature.
- A normally-closed aquastat protects the heat exchanger from freezing by shutting off power to the system pump.

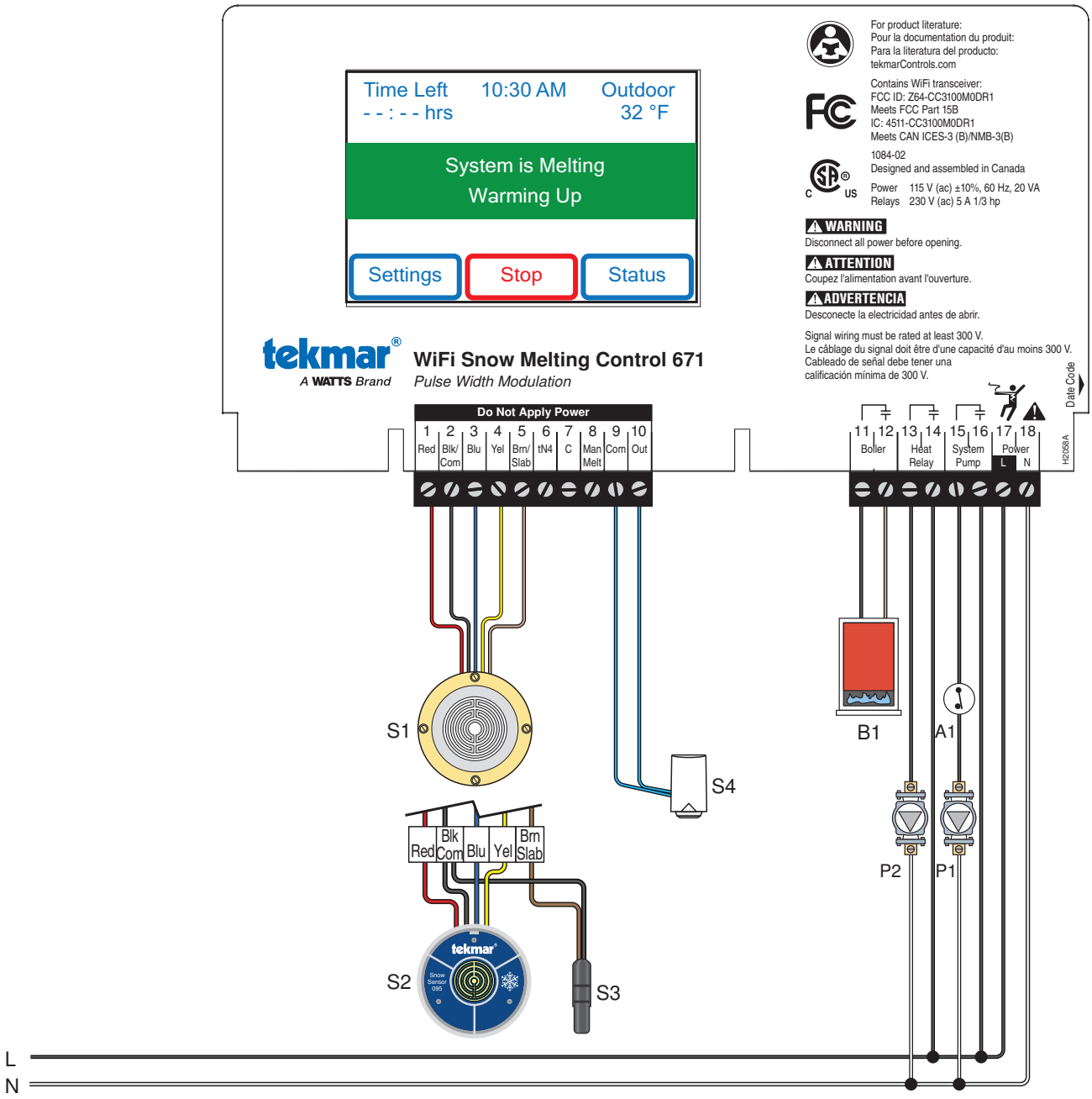
The system operation is dependent on sensor selection, as listed in the table below.

| Sensor options | | Operation methods | | | |
|---|---|---|---|---|---|
| Sensor | Sensor Model(s) | Auto Start/ Auto Stop | Auto Start/ Timed Stop | Manual Start/ Timed Stop | Slab Temperature Control |
| S1 | Automatic Snow/Ice Sensor 090 or 094 | • | – | • | • |
| S2 | Aerial Snow Sensor 095 | – | • | • | – |
| S3 | Slab Sensor 072 or 073 | – | – | • | • |
| S2+S3 | Aerial Snow Sensor 095 and Slab Sensor 072/073 | – | • | • | • |

## 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 090 or 094
S2 = Snow Sensor 095
S3 = Slab Sensor 072 or 073
S4 = Outdoor Sensor 070





## Description

The WiFi Snow Melting Control 671 operates a steam valve and a steam-to-water heat exchanger to heat a glycol-filled snow melting system.

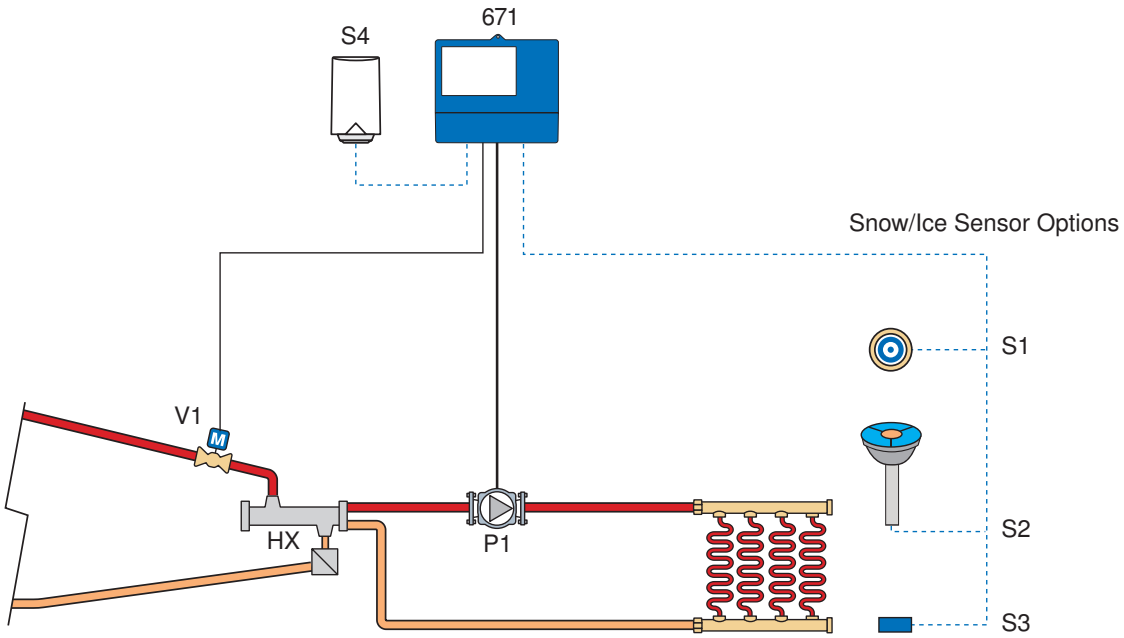
- The system pump operates continuously when heating the slab during melting/idling/storm operation.
- The slab temperature is controlled by turning on and off the steam valve.
- The boiler relay is closed while the steam valve is open. This provides a signal to fire the steam boiler.
- The slab target is determined by the melting/idling/storm setpoint and by the measured outdoor air temperature.

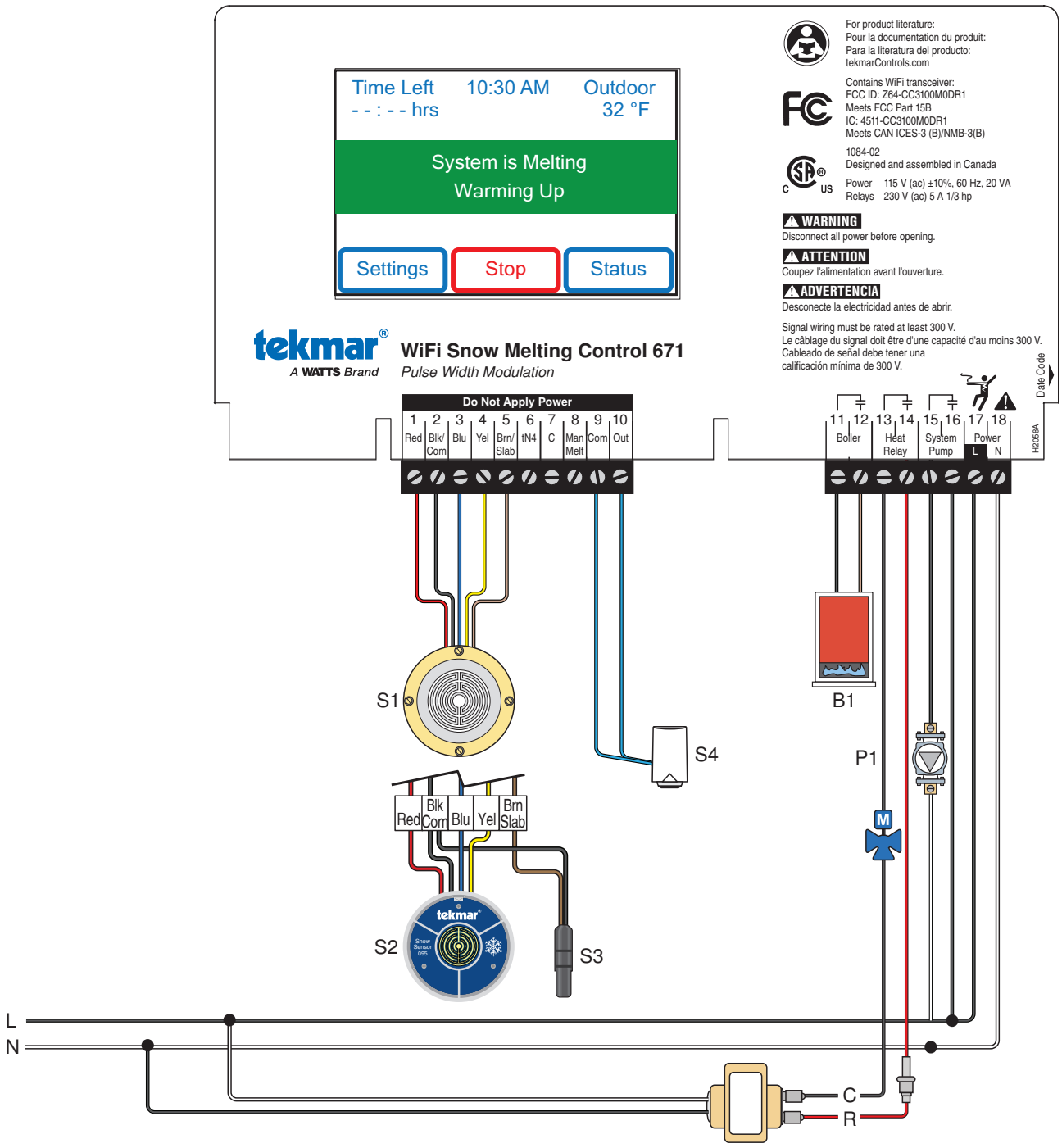
The system operation is dependent on sensor selection, as listed in the table below.

| Sensor options | | Operation methods | | | |
|---|---|---|---|---|---|
| Sensor | Sensor Model(s) | Auto Start/ Auto Stop | Auto Start/ Timed Stop | Manual Start/ Timed Stop | Slab Temperature Control |
| S1 | Automatic Snow/Ice Sensor 090 or 094 | • | – | • | • |
| S2 | Aerial Snow Sensor 095 | – | • | • | – |
| S3 | Slab Sensor 072 or 073 | – | – | • | • |
| S2+S3 | Aerial Snow Sensor 095 and Slab Sensor 072/073 | – | • | • | • |

## Legend

B1 = Boiler Enable
HX = Steam-to-Glycol Heat Exchanger
M1 = On/Off Steam Valve
P1 = System Pump
S1 = Snow/Ice Sensor 090 or 094
S2 = Snow Sensor 095
S3 = Slab Sensor 072 or 073
S4 = Outdoor Sensor 070





## Description

The WiFi Snow Melting Control 671 operates an electric cable snow melting system.

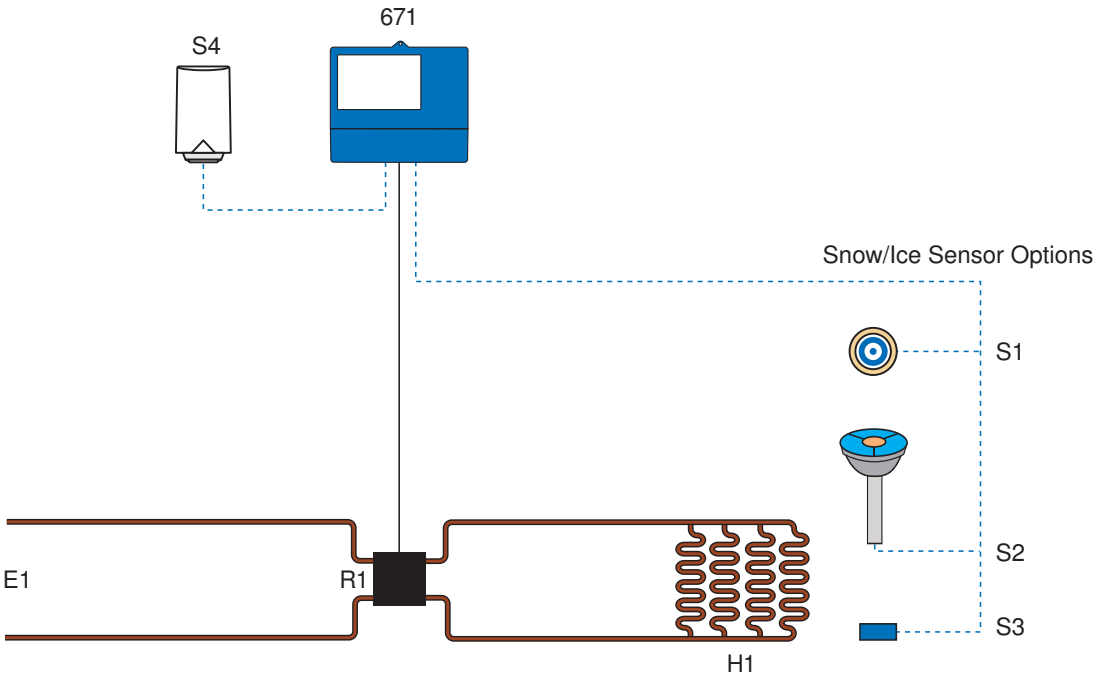
- The electric contactor is cycled on and off based on the slab load.

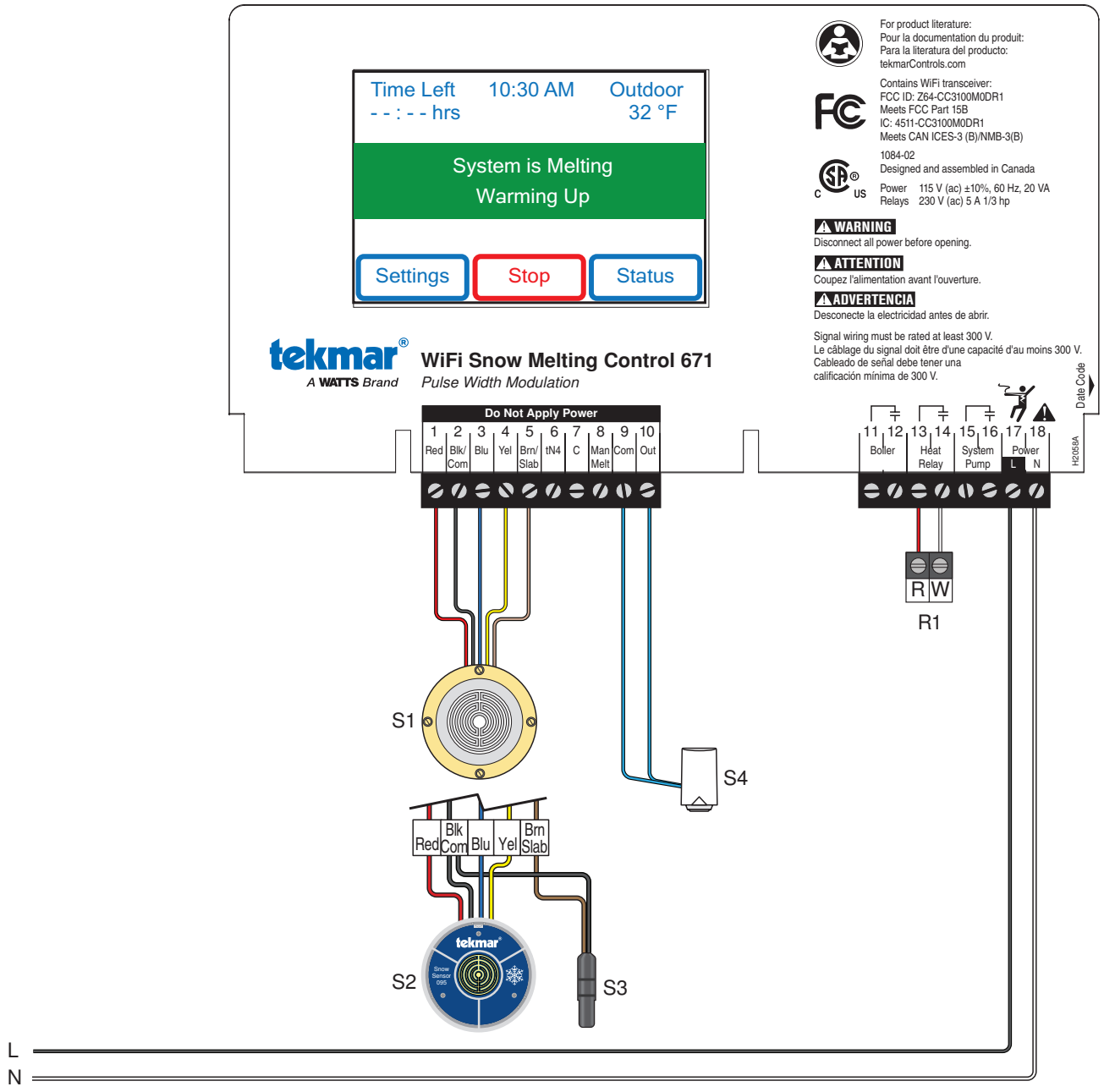
The system operation is dependent on sensor selection, as listed in the table below.

| Sensor options | | Operation methods | | | |
|---|---|---|---|---|---|
| Sensor | Sensor Model(s) | Auto Start/ Auto Stop | Auto Start/ Timed Stop | Manual Start/ Timed Stop | Slab Temperature Control |
| S1 | Automatic Snow/Ice Sensor 090 or 094 | • | – | • | • |
| S2 | Aerial Snow Sensor 095 | – | • | • | – |
| S3 | Slab Sensor 072 or 073 | – | – | • | • |
| S2+S3 | Aerial Snow Sensor 095 and Slab Sensor 072/073 | – | • | • | • |

## Legend

E1 = 115 or 230 V (ac) Electric Power Supply
H1 = Electric Heating Cable
R1 = Electric Relay Contactor
S1 = Snow/Ice Sensor 090 or 094
S2 = Snow Sensor 095
S3 = Slab Sensor 072 or 073
S4 = Outdoor Sensor 070





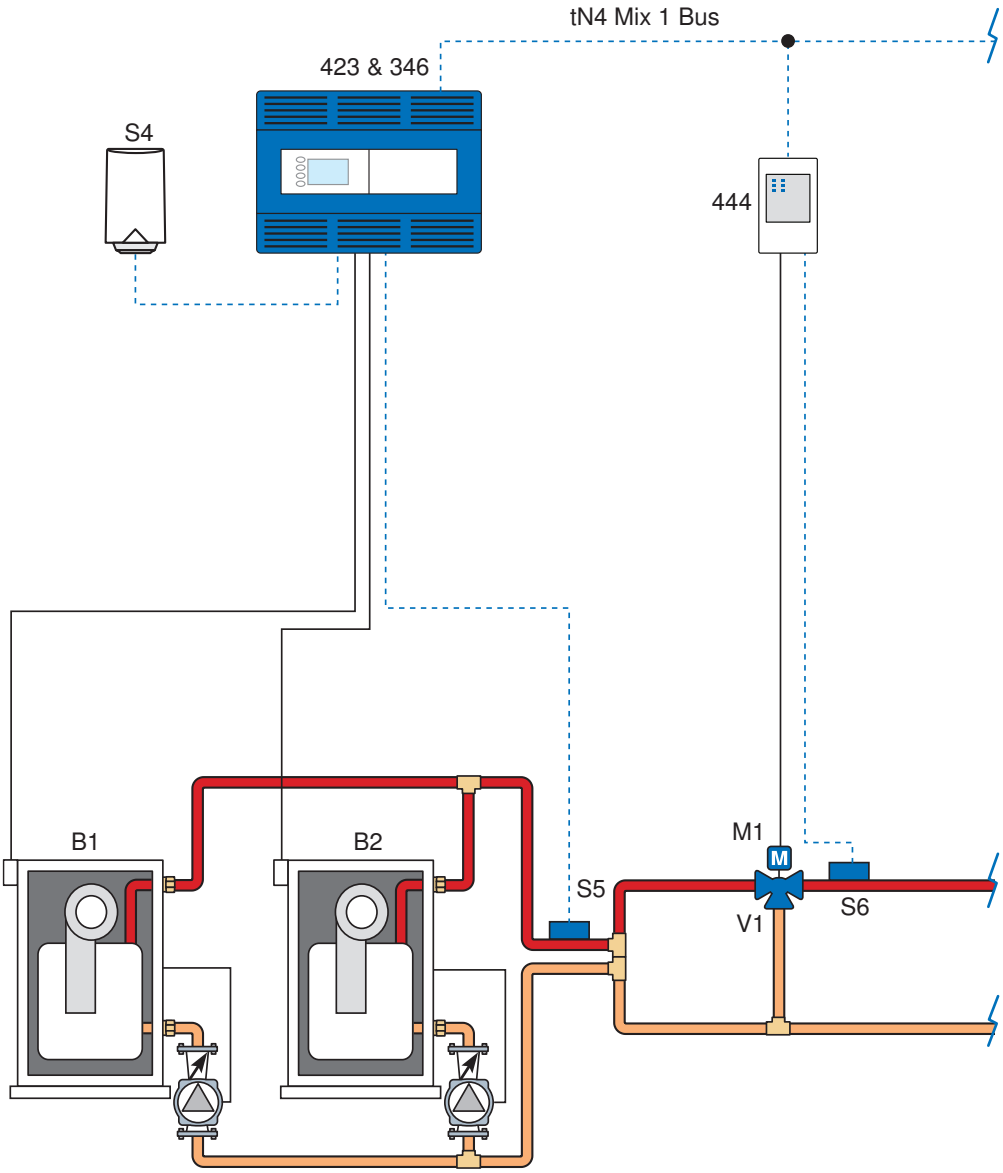
## Description

The system has two snow melting zones heated by two boilers. The water temperature is regulated by a shared mixing valve for the two snow melting zones. The boilers and mixing valve are operated by a Universal Reset Module 423, Power Manager 346 and Mixing Expansion Module 444. Each snow melting zone is operated by a WiFi Snow Melting Control 671.

- The slab target is determined by the melting/idling/storm setpoint and by the measured outdoor air temperature.
- The zone pump cycles on/off when heating the slab during melting/idling/storm operation.
- When the zone is heated, the 671 communicates to the 423 and 444 to operate the mixing valve and fire the boilers.
- The 423 and 444 close the mixing valve to provide boiler return protection when the boiler supply temperature falls below the 423 boiler minimum setting.

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

| Sensor options | | Operation methods | | | |
|---|---|---|---|---|---|
| Sensor | Sensor Model(s) | Auto Start/ Auto Stop | Auto Start/ Timed Stop | Manual Start/ Timed Stop | Slab Temperature Control |
| S1 | Automatic Snow/Ice Sensor 090 or 094 | • | – | • | • |
| S2 | Aerial Snow Sensor 095 | – | • | • | – |
| S3 | Slab Sensor 072 or 073 | – | – | • | • |
| S2+S3 | Aerial Snow Sensor 095 and Slab Sensor 072/073 | – | • | • | • |

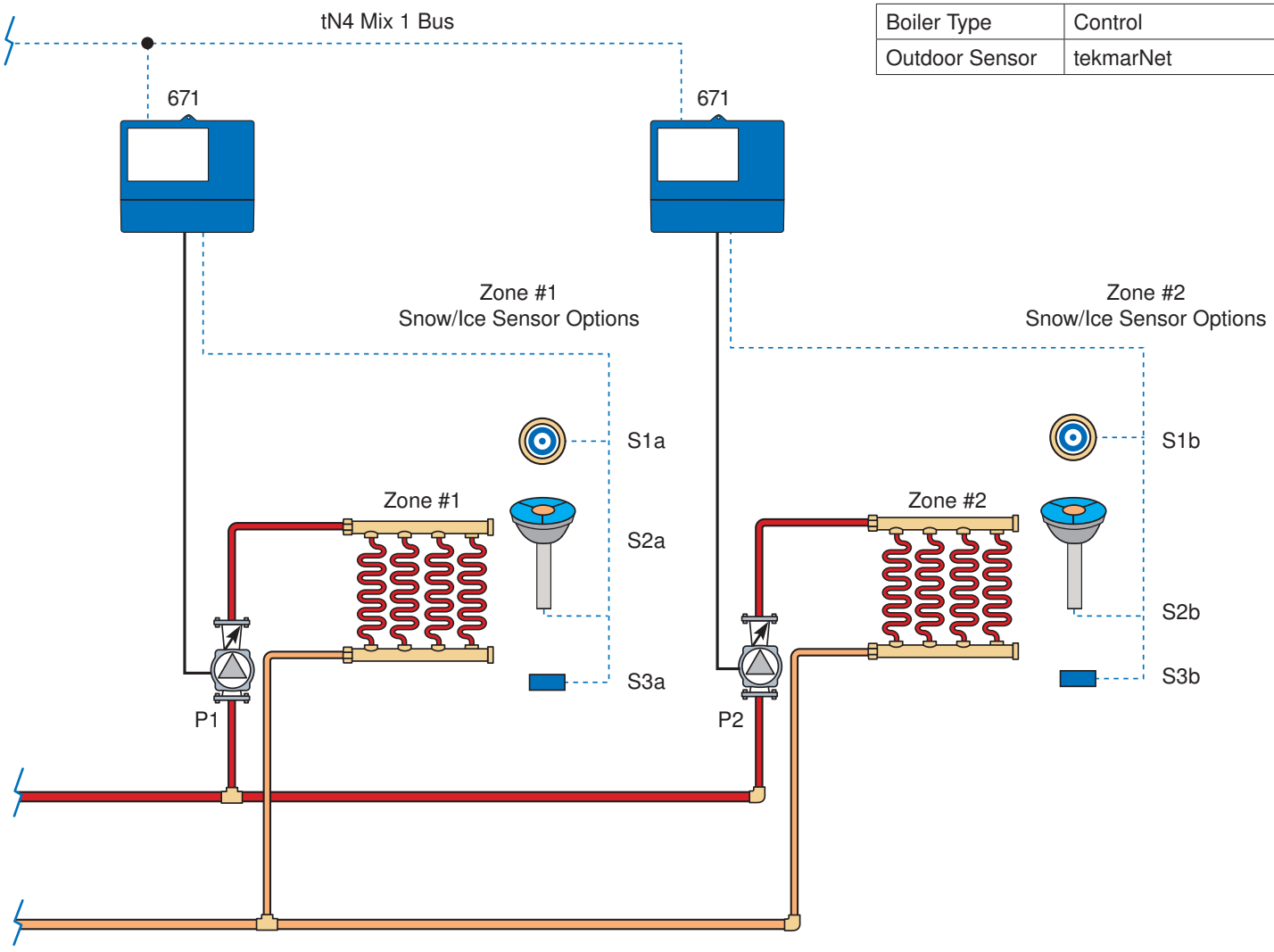


## Legend

B1, B2 = Modulating Boilers
M1 = Actuator Motor 741
P1 = Zone 1 Pump
P2 = Zone 2 Pump
S1a = Zone 1 Snow/Ice Sensor 090 or 094
S1b = Zone 2 Snow/Ice Sensor 090 or 094
S2a = Zone 1 Snow Sensor 095
S2b = Zone 2 Snow Sensor 095
S3a = Zone 1 Slab Sensor 072 or 073
S3b = Zone 2 Slab Sensor 072 or 073
S4 = Outdoor Sensor 070
S5 = 423 Boiler Supply Sensor 082
S6 = 444 Mix Supply Sensor 082
V1 = 3-Way Mixing Valve 710 through 714
X1 = Transformer 009

## 671 Application Settings

| Setting Name | Value |
|---|---|
| Boiler Type | Control |
| Outdoor Sensor | tekmarNet |



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S2b = Zone 2 Snow Sensor 095
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S3b = Zone 2 Slab Sensor 072 or 073
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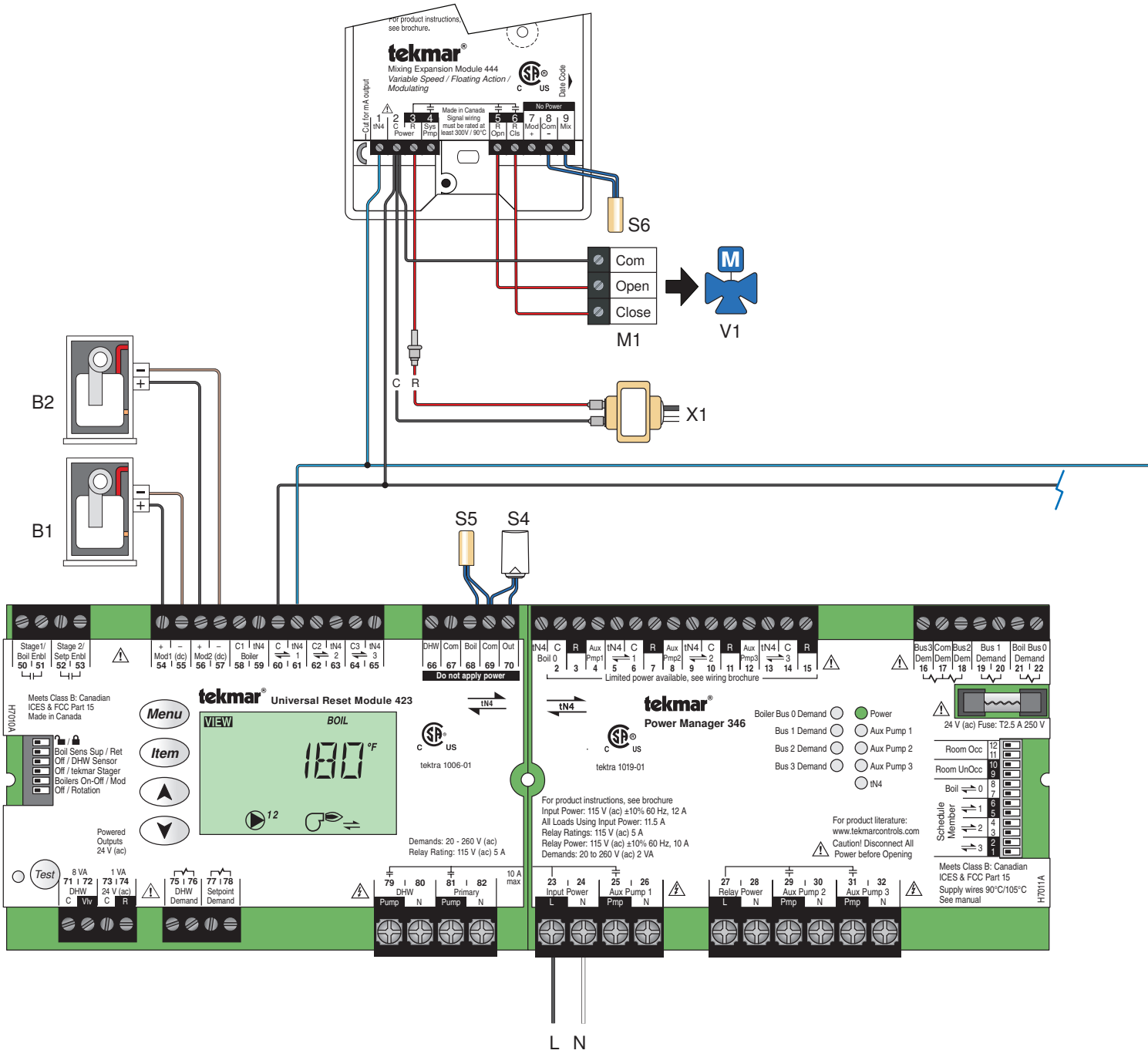
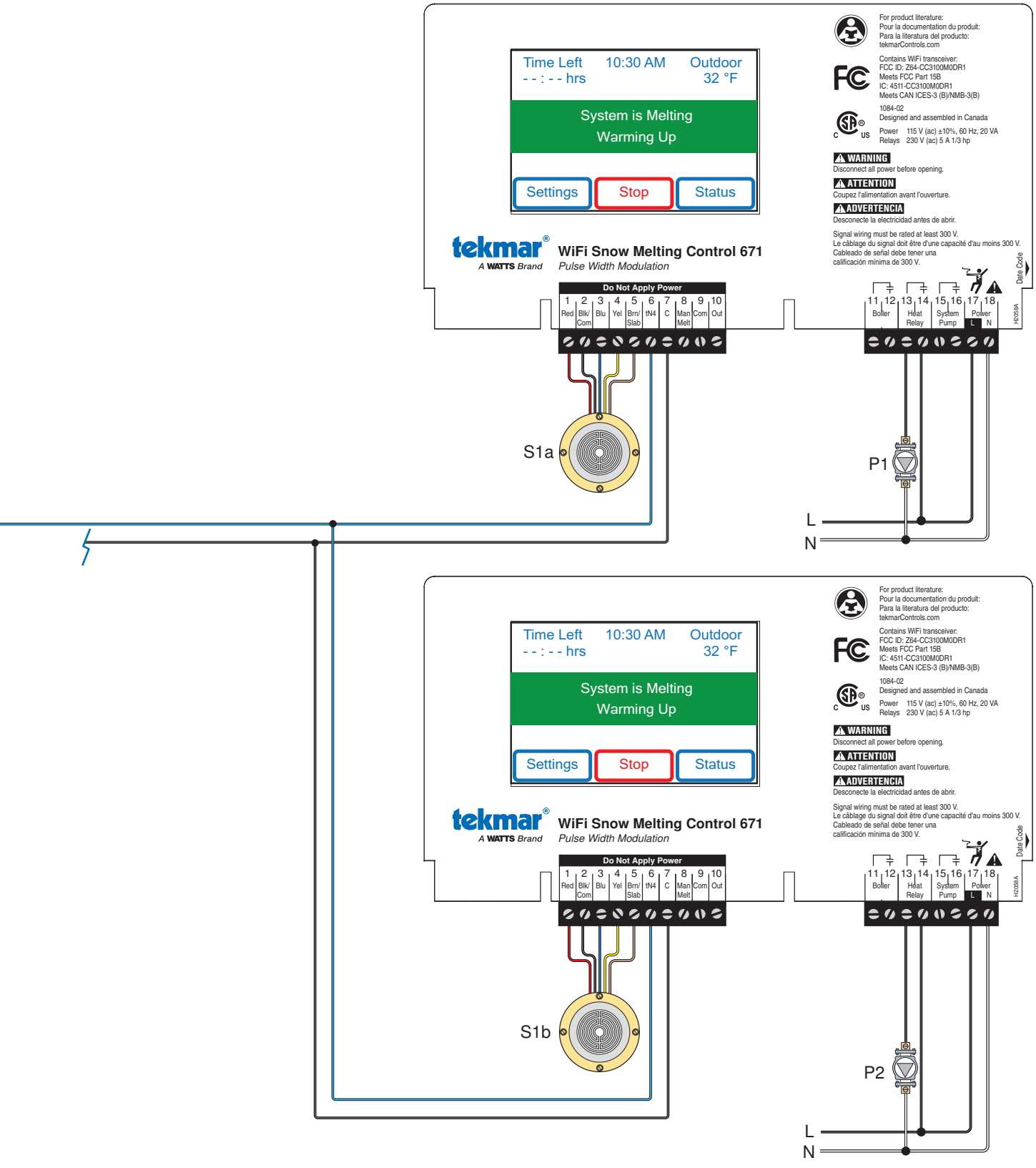


## 671 Application Settings

| Setting Name | Value |
|---|---|
| Boiler Type | Control |
| Outdoor Sensor | tekmarNet |



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## Specifications

**The following are the recommended specifications for the WiFi Snow Melting Control 671.**

- 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 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 two separate 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 that are operated by the control shall be periodically exercised to prevent seizure during long idle periods.

**⚠ CAUTION**

This Application Brochure is not intended to provide full installation instructions and safety information. In order to avoid property damage or injury, please refer to the complete installation manual and product safety information provided with the product.