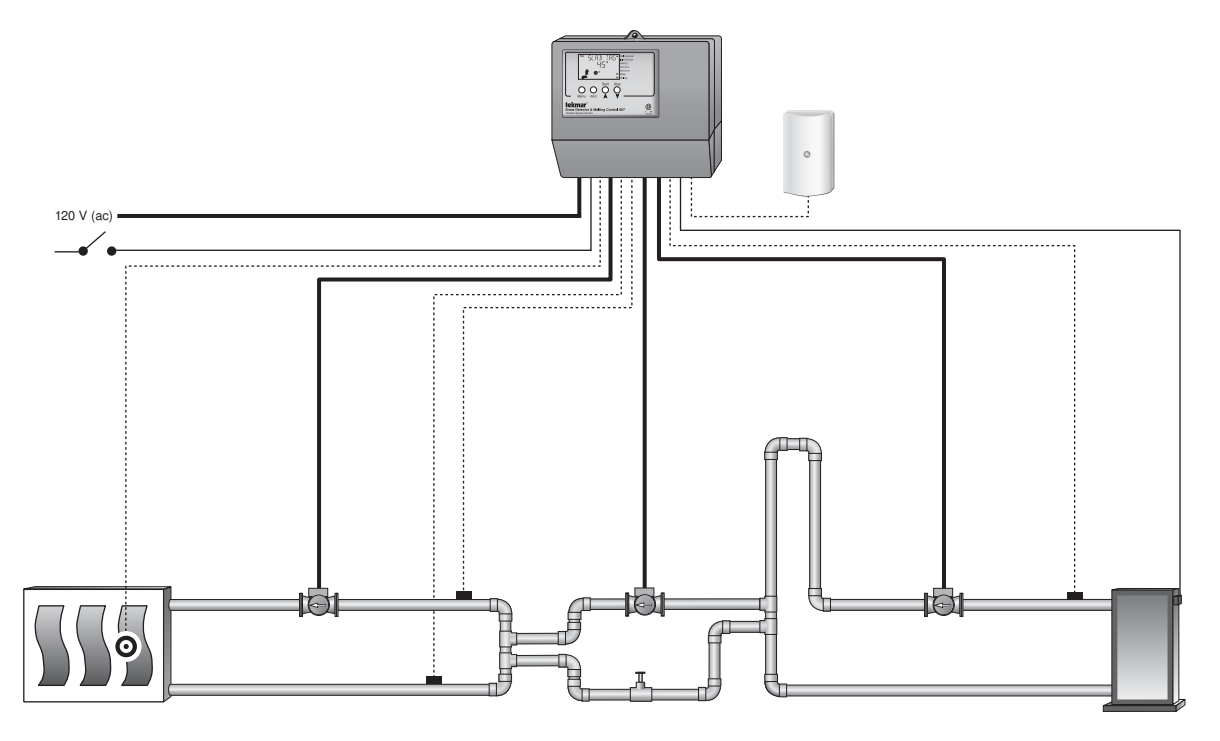
tekmar® - Application Brochure

Snow Detector and Melting Control 667

A 667

03/09



Features of the Snow Detector and Melting Control 667

Please refer to Essay E 005: Control Functions and Benefits for a detailed description of these features.

- 10 Boiler Differential (Automatic)
- 11 Boiler Minimum Supply
- 13 Boiler Post Purge
- 19 Fire Delay
- 20 Boiler Mass
- 21 Boiler Enable
- 35 Variable Speed Output
- 37 Boiler Protection
- 52 Snow/Ice Detection
- 53 Slab Protection
- 54 Viscosity Compensation
- 55 Slab Outdoor Reset
- 56 Snow Melting Setpoint
- 57 Snow Idling Setpoint
- 58 Warm Weather Cut Off
- 59 Cold Weather Cut Off
- 60 Pump/Integrated Exercising

Application

The Snow Detector & Melting Control 667 is a microprocessor-based control which operates a snow melting system. The control can operate automatically when a Snow/Ice Sensor 090 is installed or the user can manually enable and/or disable the system. The 667 controls a variable speed injection pump to provide both boiler and slab protection. When the control is not in the melting mode, the system can either be shut down or it can be maintained at an idle temperature for faster response and improved safety. The 667 control includes a large Liquid Crystal Display (LCD) in order to view system status and operating information.

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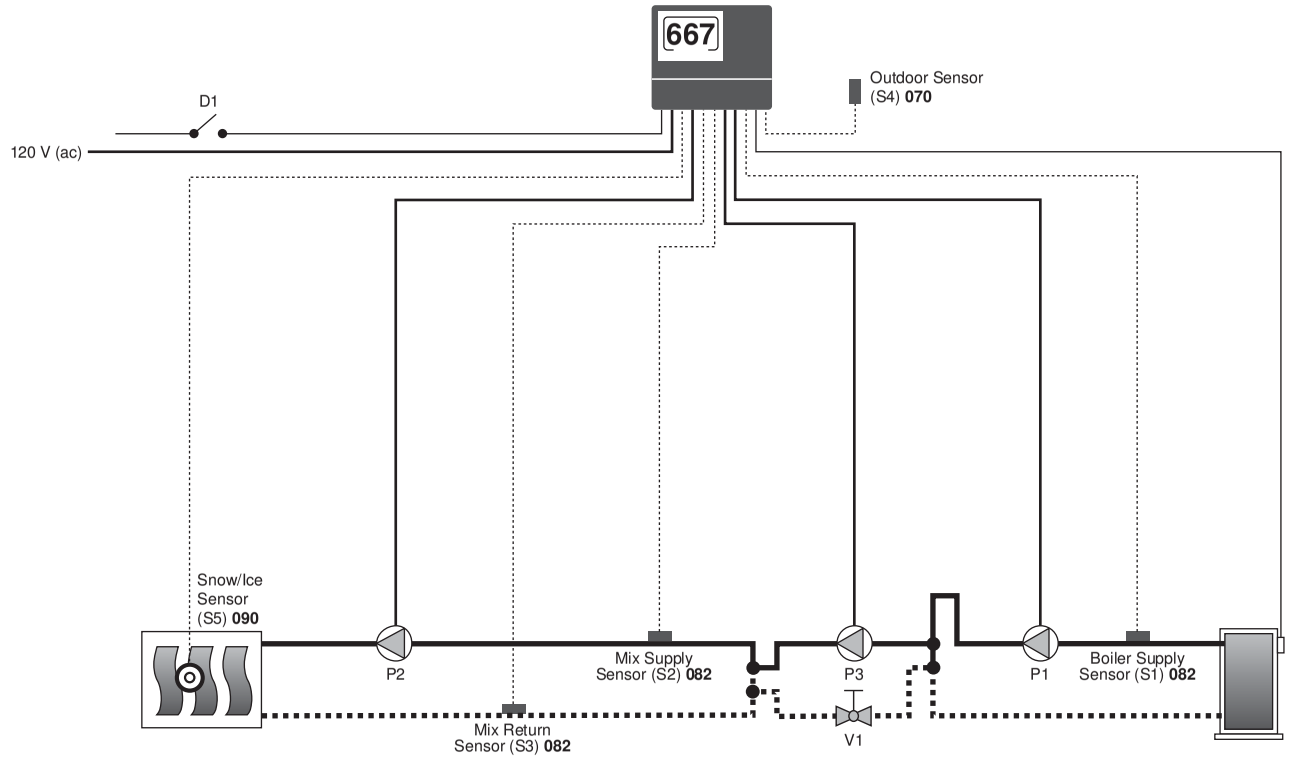
D1 = Melt/Idle Demand
P1 = Boiler Pump
P2 = Snow Melt System Pump
P3 = Variable Speed Injection Pump
S1 = Boiler Supply Sensor 082
S2 = Mix Supply Sensor 082
S3 = Mix Return Sensor 082
S4 = Outdoor Sensor 070
S5 = Snow/Ice Sensor 090
V1 = Balancing or Globe Valve



Concept Drawing
This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

System Operation
The Snow Detector & Melting Control 667 provides snow melting for a single zone system. The 667 operates the boiler based on the current load on the system in order to provide the required mixed supply fluid temperature that satisfies the load while protecting the slab from thermal stress. The output of the variable speed injection pump is controlled in order to protect the boiler from flue gas condensation.

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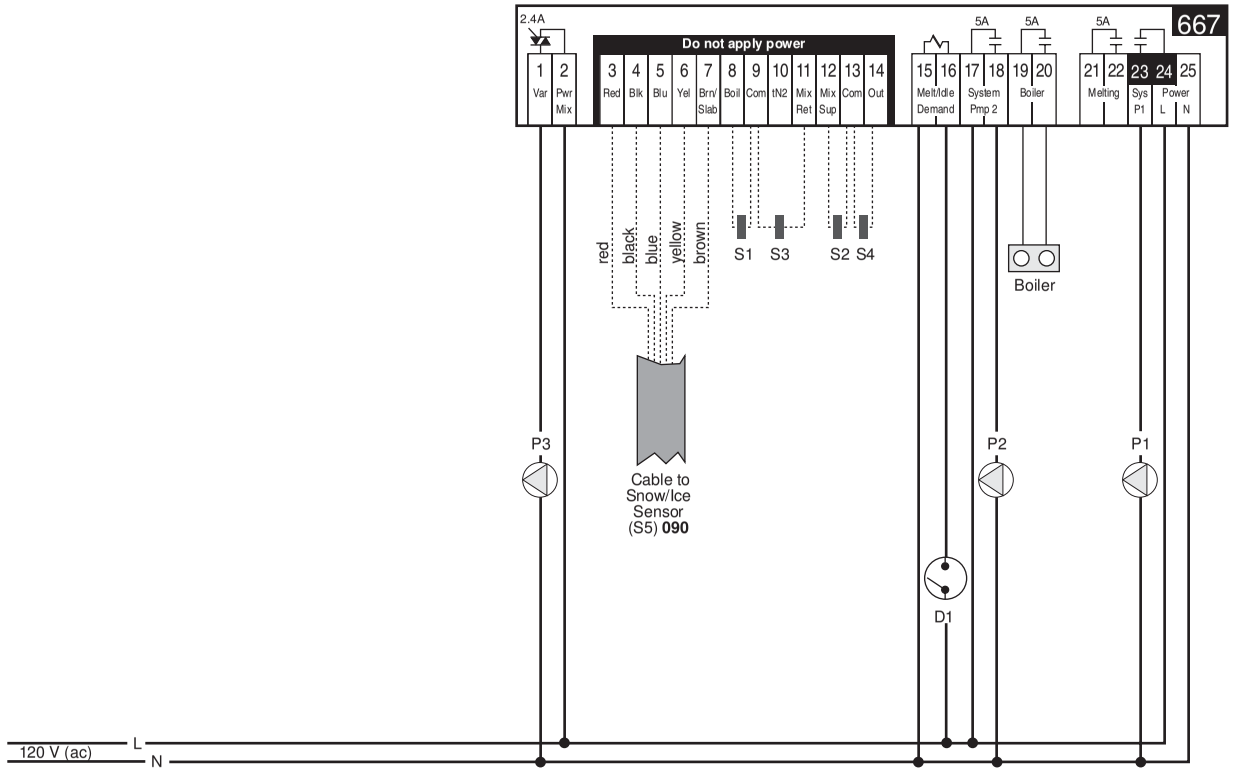

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Essential Control Settings
Boil Sens = Sup

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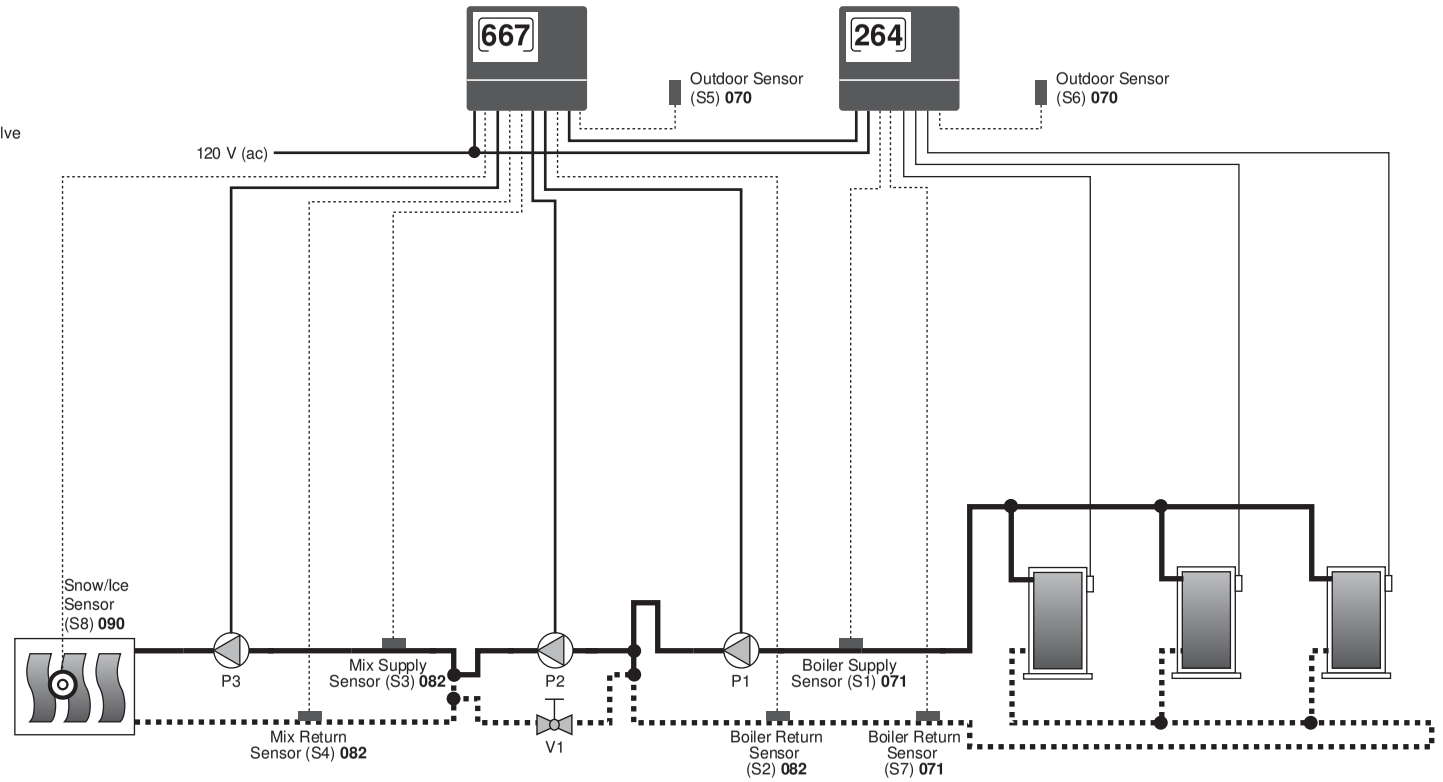
P1 = Boiler Pump
P2 = Variable Speed Injection Pump
P3 = Snow Melt System Pump
S1 = Boiler Supply Sensor 071
S2 = Boiler Return Sensor 082
S3 = Mix Supply Sensor 082
S4 = Mix Return Sensor 082
S5 = Outdoor Sensor 070
S6 = Outdoor Sensor 070
S7 = Boiler Return Sensor 071
S8 = Snow/Ice Sensor 090
V1 = Balancing Valve or Globe Valve



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System Operation
The Snow Detector & Melting Control 667 combines with the Boiler Control 264 to provide snow melting for a single zone system. The 667 operates the variable speed injection pump based on the current load on the system in order to provide the required mixed supply fluid temperature, protect the slab from thermal stress and protect the boilers from flue gas condensation. The Boiler Control 264 stages the boilers based on the load on the system and provides Equal Run Time Rotation.

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A667-2
03/09

P1 = Boiler Pump
P2 = Variable Speed Injection Pump
P3 = Snow Melt System Pump
S1 = Boiler Supply Sensor 071
S2 = Boiler Return Sensor 082
S3 = Mix Supply Sensor 082
S4 = Mix Return Sensor 082
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S6 = Outdoor Sensor 070
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S8 = Snow/Ice Sensor 090
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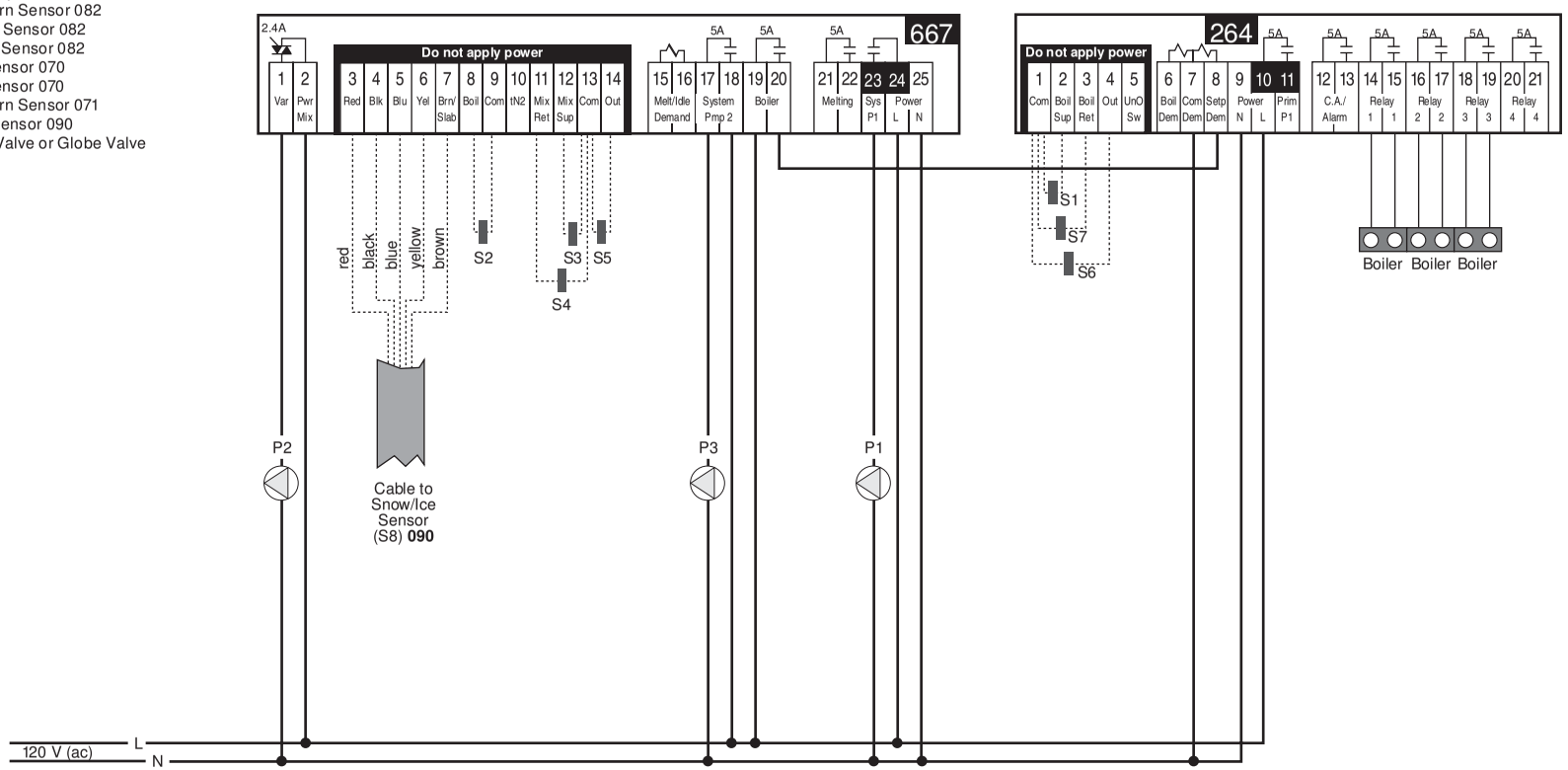

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Essential Control Settings

Snow Detector & Melting Control 667	Boiler Control 264
Boil Sens = RET	Mode = 1

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tekmar® - Application Mechanical

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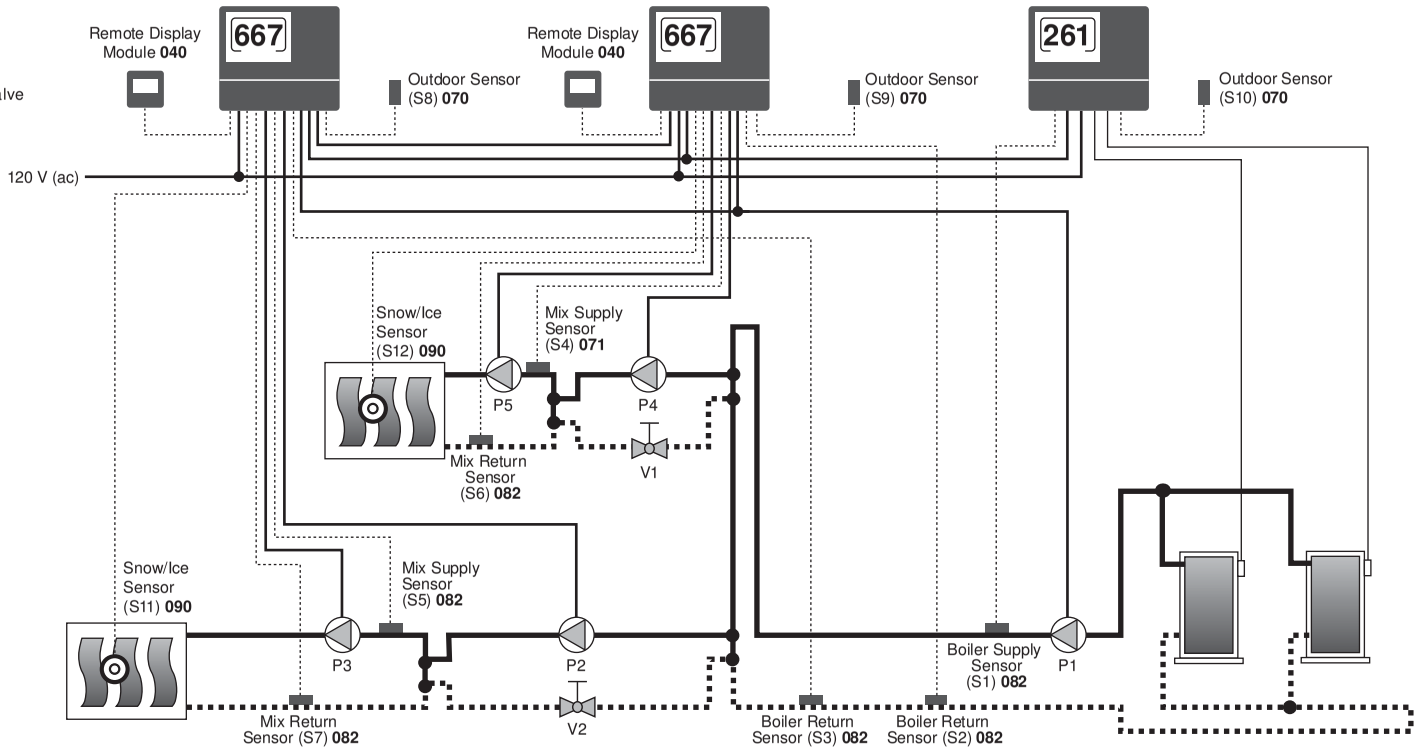
P1 = Boiler Pump
P2, P4 = Variable Speed Injection Pump
P3, P5 = Snow Melt System Pump
S1 = Boiler Supply Sensor 082
S2, S3 = Boiler Return Sensor 082
S4, S5 = Mix Supply Sensor 082
S6, S7 = Mix Return Sensor 082
S8, ..., S10 = Outdoor Sensor 070
S11, S12 = Snow/Ice Sensor 090
V1, V2 = Balancing Valve or Globe Valve



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System Operation
Two Snow Detector & Melting Control 667s combine with the Boiler Control 261 to provide snow melting for a two zone system. The 667s operate their variable speed injection pumps based on the current load on the system in order to provide the required mixed supply fluid temperature, protect the slab from thermal stress and protect the boilers from flue gas condensation. The Boiler Control 261 stages the boilers based on the load on the system and provides Equal Run Time Rotation.

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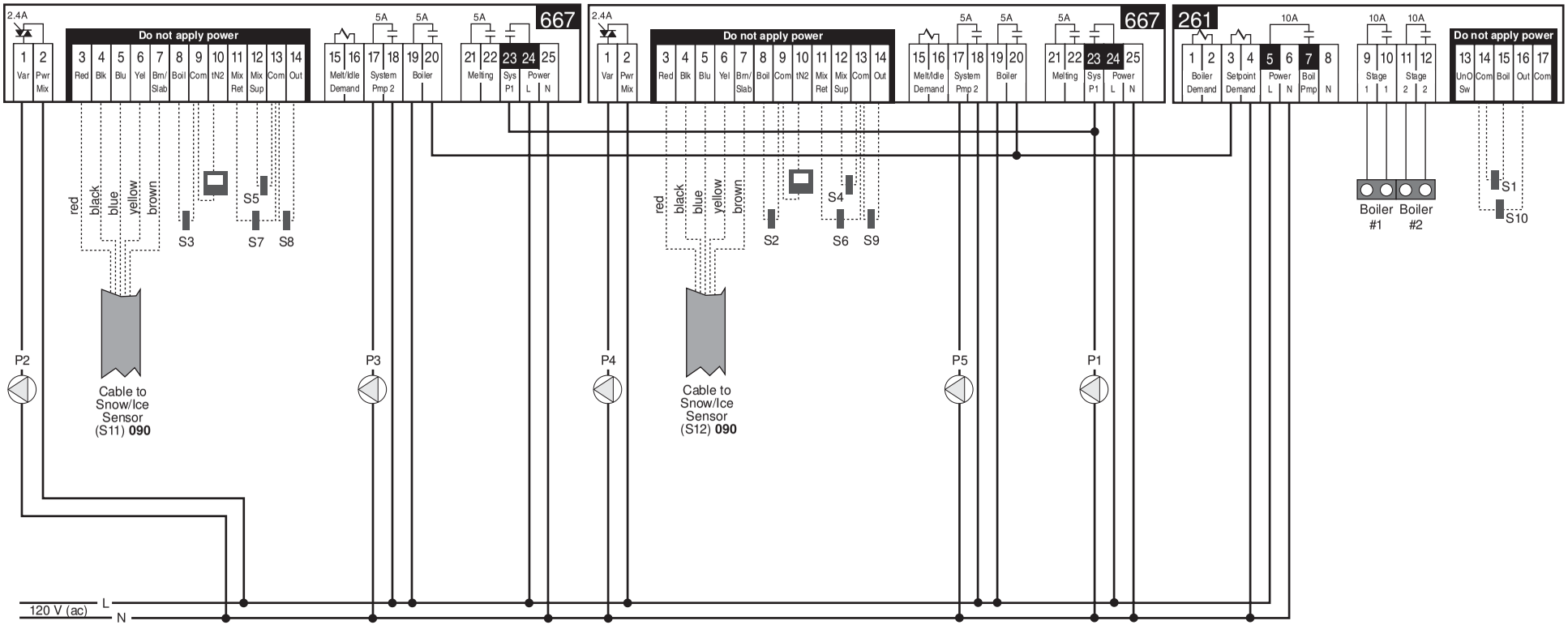
P1 = Boiler Pump
P2, P4 = Variable Speed Injection Pump
P3, P5 = Snow Melt System Pump
S1 = Boiler Supply Sensor 082
S2, S3 = Boiler Return Sensor 082
S4, S5 = Mix Supply Sensor 082
S6, S7 = Mix Return Sensor 082
S8, ..., S10 = Outdoor Sensor 070
S11, S12 = Snow/Ice Sensor 090
V1, V2 = Balancing Valve or Globe Valve



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Essential Control Settings
Snow Detector & Melting Control 667
Boil Sens = RET

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Specifications

The following are the recommended specifications for the Snow Detector and Melting Control 667

- The system water temperature shall be based on the outdoor temperature and feedback from sensors located in the snow melting slab.
- The control shall have an adjustable Minimum Supply 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 be able to directly operate a variable speed injection pump.
- The control shall have the ability to limit the amount of cool water being returned to the boiler through the variable speed injection pump 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 single on / off 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 a single on / off boiler in order to prevent short cycling.
- The control shall compensate for sudden changes in outdoor temperature in order to minimize the chance of the snow melting slab surface freezing.
- The control shall have four separate lockable access levels to limit the number of adjustments available to various users.
- The control shall have a test button that activates a pre-programmed test sequence testing all of the control's outputs.
- The control shall show a number of current sensor temperatures depending on the access level that has been selected.
- 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 various device 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.
- 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 have the option of connecting a Remote Display Module to allow for remote monitoring and adjustment of the control.
- The control shall have the option of connecting a Remote Start / Stop Module to allow for starting and stopping of the system.
- The control shall not operate the system to provide heat to the snow melting zone when it enters into either a Warm Weather Shut Down (WWSD) or a Cold Weather Cut Off (CWCO) mode.

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All specifications are subject to change without notice.
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