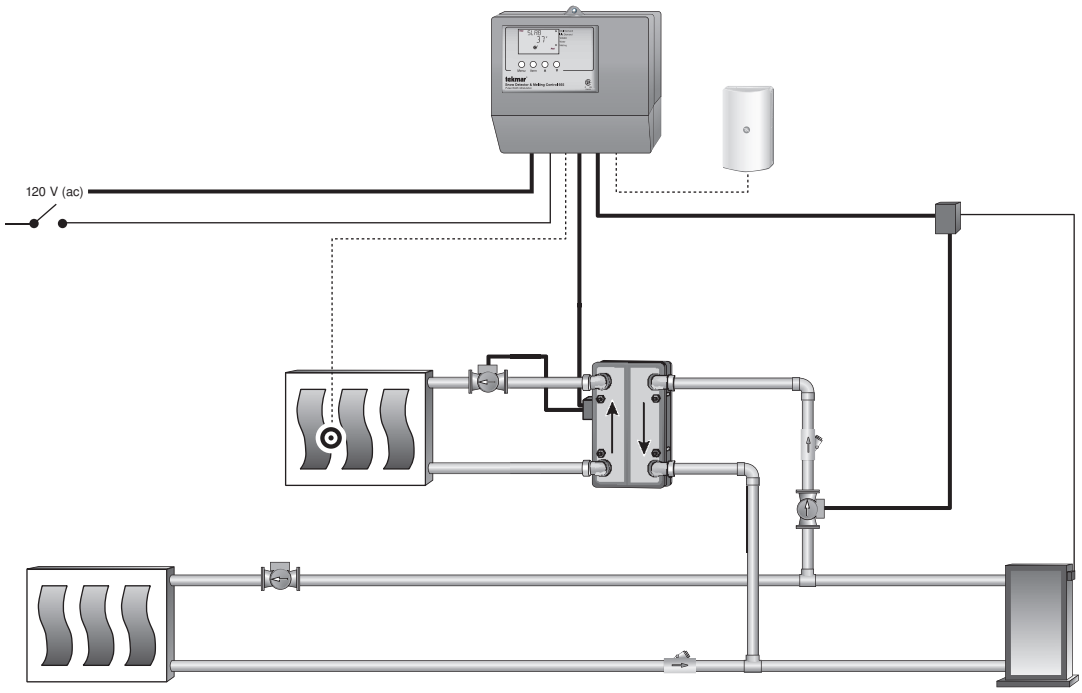
tekmar® Application Brochure

Snow Detector and Melting Control 665

Snow Melting

665_A
03/14
Replaces: 09/02

The Snow Detector & Melting Control 665 is a microprocessor-based control which operates a single zone 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. When the control is in the melting mode, the slab is maintained at a “Melting” temperature through an on/off output which operates a contactor for electrical cables, a boiler, an injection pump or an injection valve. When the control is not in the melting mode, the melt system can either be shut down or it can be maintained at an idle temperature for faster response and improved safety. The 665 control includes a large Liquid Crystal Display (LCD) in order to view system status and operating information.

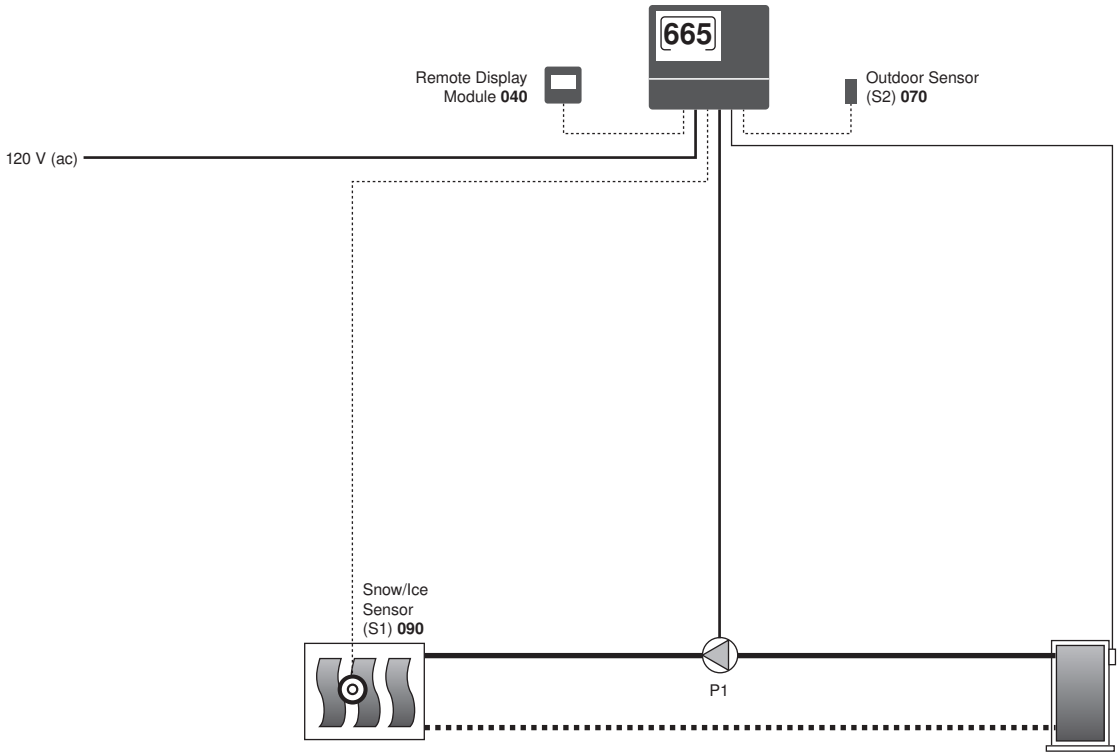


Features of the Snow Detector and Melting Control 665

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

- 34 Pulse Width Modulation
- 36 On/Off Injection Output
- 52 Snow/Ice Detection
- 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

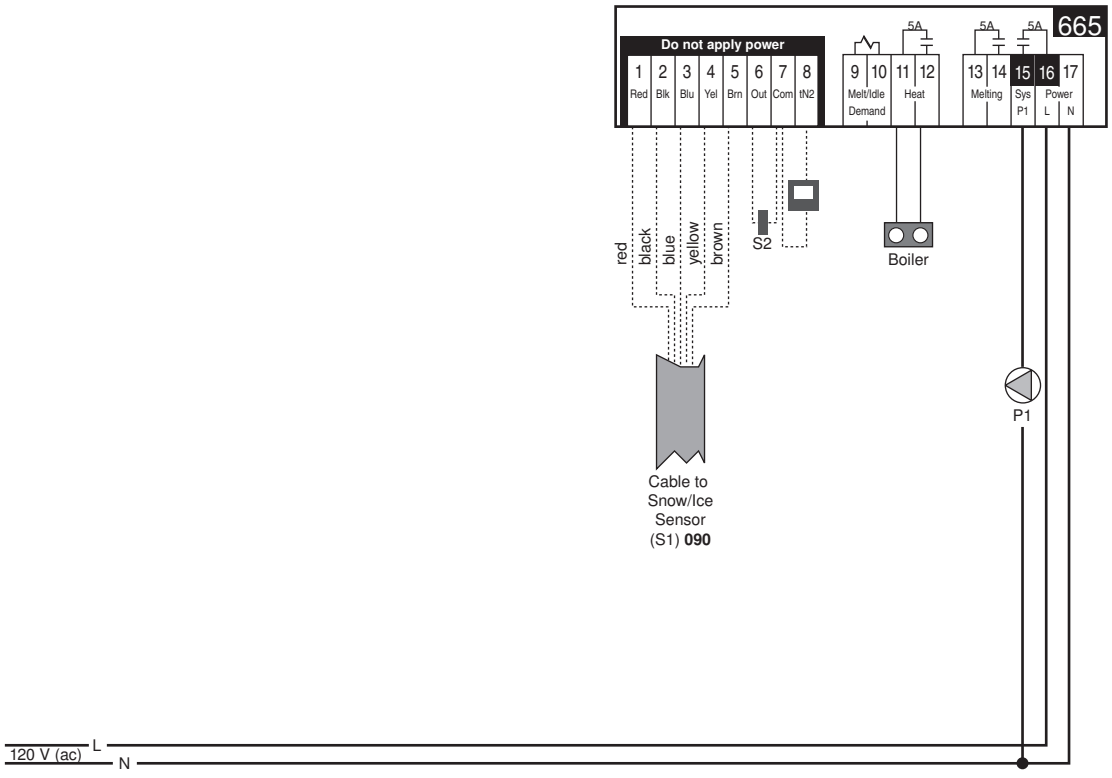
P1 = Snow Melting System Pump
S1 = Snow/Ice Sensor 090
S2 = Outdoor Sensor 070



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 665 provides snow melting for a single zone system. The 665 maintains constant circulation through the slab and cycles a single boiler in order to maintain the proper slab temperature. A Snow / Ice Sensor 090 is used to automatically detect snow or ice and enable the system.

P1 = Snow Melting System Pump
S1 = Snow/Ice Sensor 090
S2 = Outdoor Sensor 070



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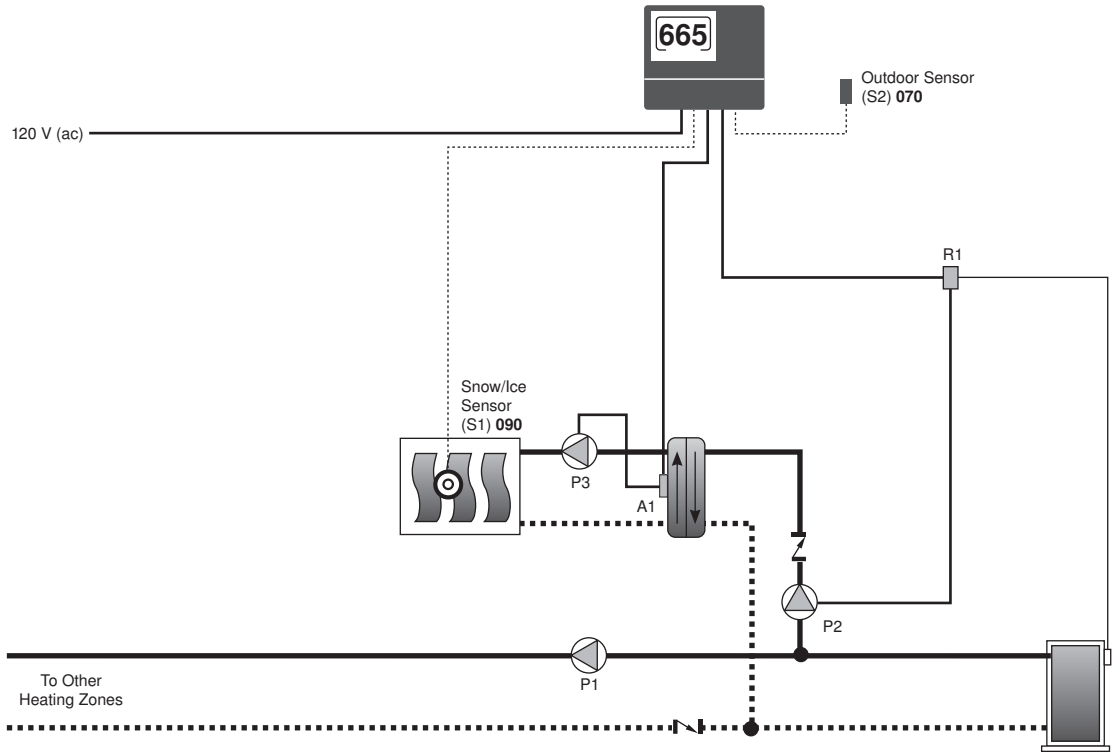
Essential Control Settings

A1 = Freeze Protection Aquastat
P1 = Heating System Pump
P2 = On/Off Injection Pump
P3 = Snow Melting System Pump
R1 = DPDT Relay 004
S1 = Snow/Ice Sensor 090
S2 = Outdoor Sensor 070



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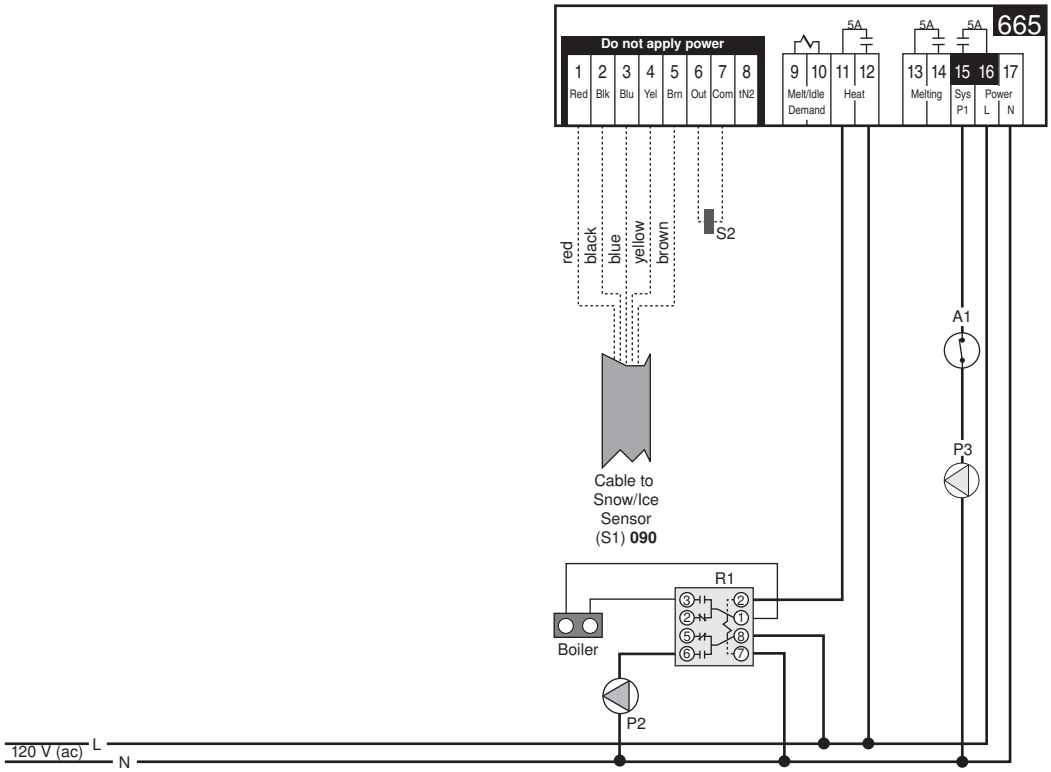
System Operation
The Snow Detector & Melting Control 665 provides snow melting for a single zone system. The 665 maintains constant circulation through the slab and cycles a pump to a heat exchanger in order to maintain the proper slab temperature. A freeze protecting aquastat is used to prevent the heat exchanger from freezing. A Snow / Ice Sensor 090 is used to automatically detect snow or ice and enable the system.

A1 = Freeze Protection Aquastat
P1 = Heating System Pump
P2 = On/Off Injection Pump
P3 = Snow Melting System Pump
R1 = DPDT Relay 004
S1 = Snow/Ice Sensor 090
S2 = Outdoor Sensor 070



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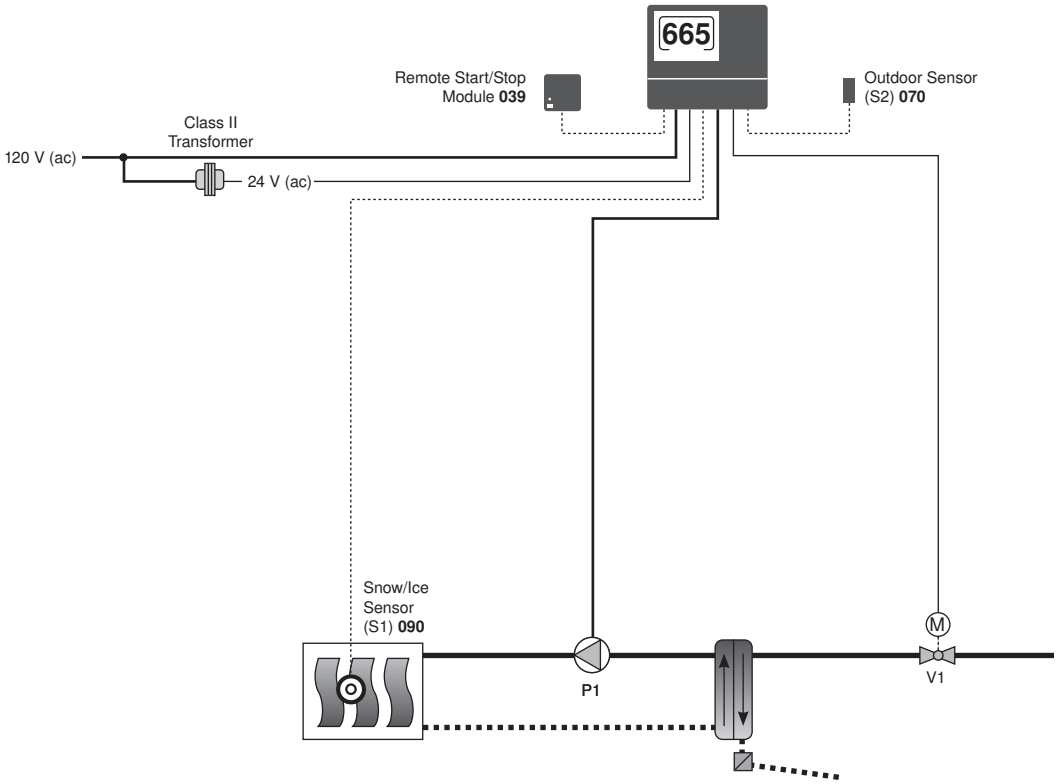
Essential Control Settings

P1 = Snow Melting System Pump
S1 = Snow/Ice Sensor 090
S2 = Outdoor Sensor 070
V1 = On/Off Steam Valve



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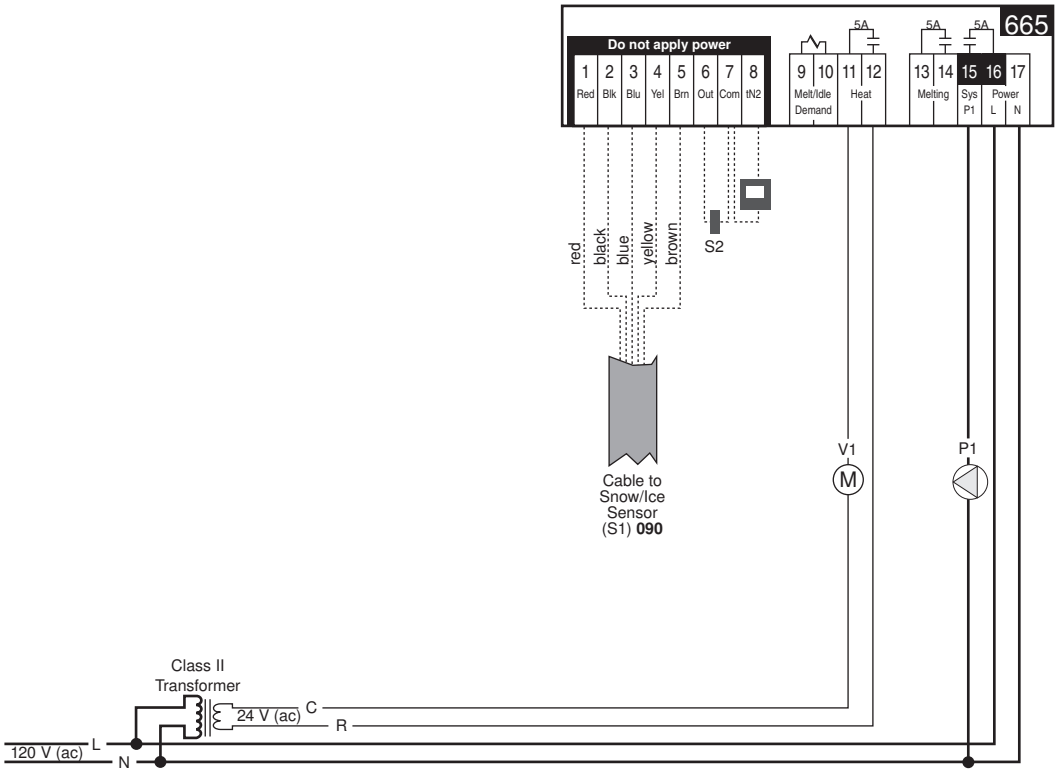
System Operation
The Snow Detector & Melting Control 665 provides snow melting for a single zone system. The 665 maintains constant circulation through the slab and cycles a steam valve to a steam to water heat exchanger in order to maintain the proper slab temperature. A Snow / Ice Sensor 090 is used to automatically detect snow or ice and enable the system.

P1 = Snow Melting System Pump
S1 = Snow/Ice Sensor 090
S2 = Outdoor Sensor 070
V1 = On/Off Steam Valve



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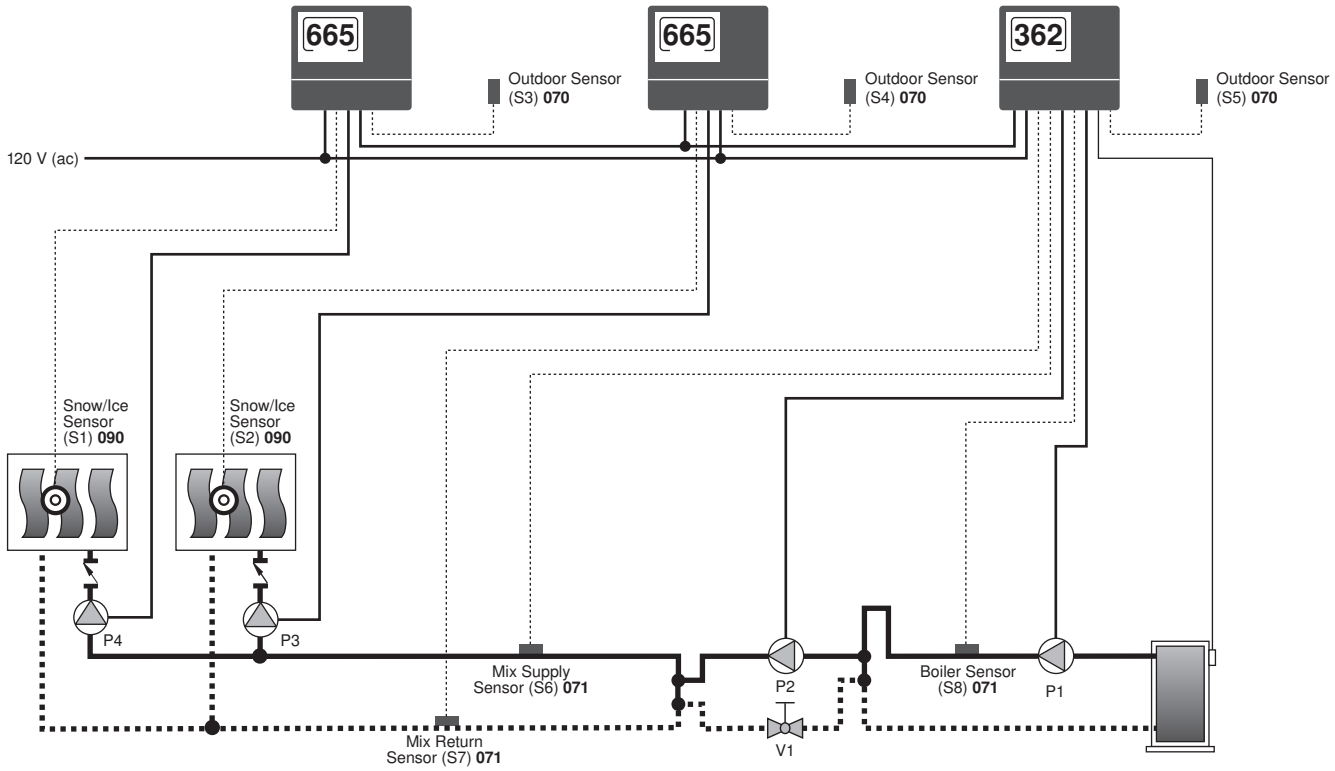
Essential Control Settings

P1 = Boiler Pump
P2 = Variable Speed Injection Pump
P3, P4 = Snow Melting System Pump
S1, S2 = Snow/Ice Sensor 090
S3, S4 ,S5 = Outdoor Sensor 070
S6 = Mix Supply Sensor 071
S7 = Mix Return Sensor 071
S8 = Boiler Sensor 071
V1 = Balancing or Globe Valve



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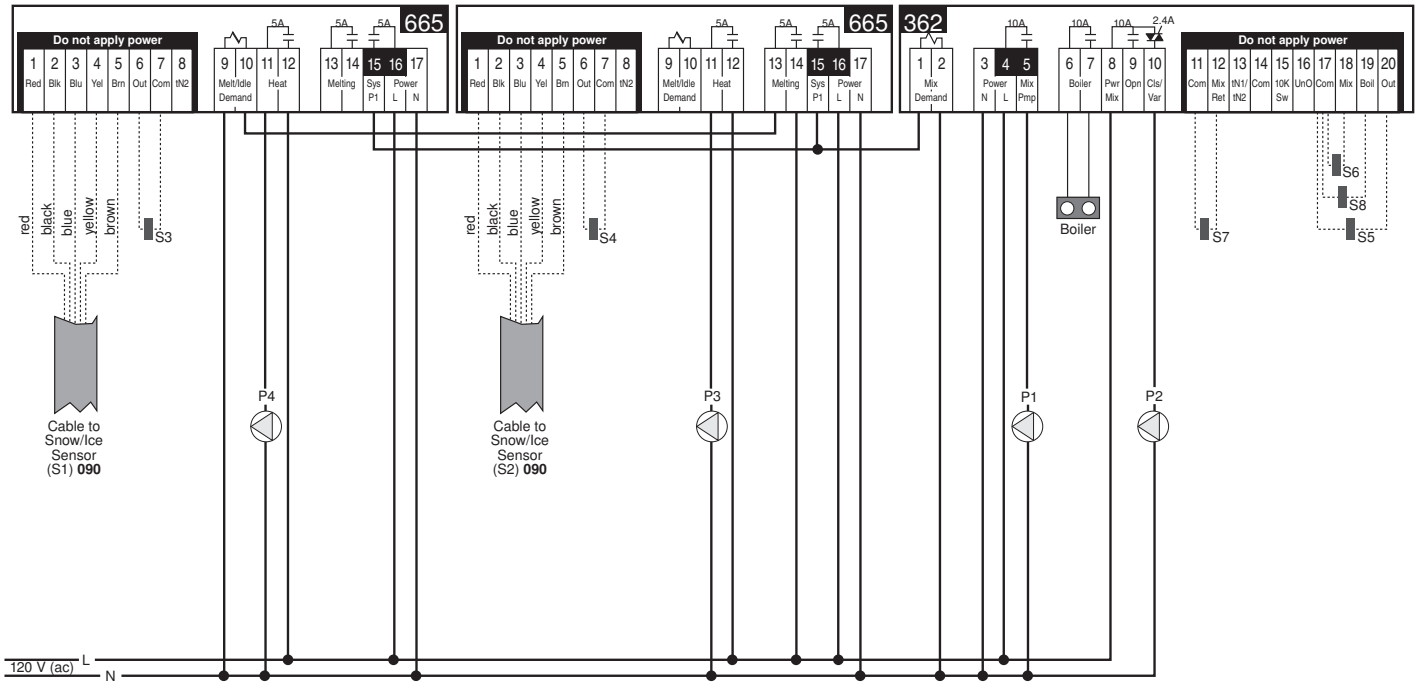
System Operation
Two Snow Detector & Melting Control 665s combine with a Mixing Control 362 to provide snow melting for a two zone system. The Mixing Control 362 provides boiler protection from cold fluid return temperatures as well as providing slab protection by limiting the delta T of the snow melting system. The two zones can be prioritized by using the Melting contact and Melt Demand input. A Snow / Ice Sensor 090 is used in each zone to automatically detect snow or ice and enable the system.

P1 = Boiler Pump
P2 = Variable Speed Injection Pump
P3, P4 = Snow Melting System Pump
S1, S2 = Snow/Ice Sensor 090
S3, S4 ,S5 = Outdoor Sensor 070
S6 = Mix Supply Sensor 071
S7 = Mix Return Sensor 071
S8 = Boiler Sensor 071
V1 = Balancing or Globe Valve



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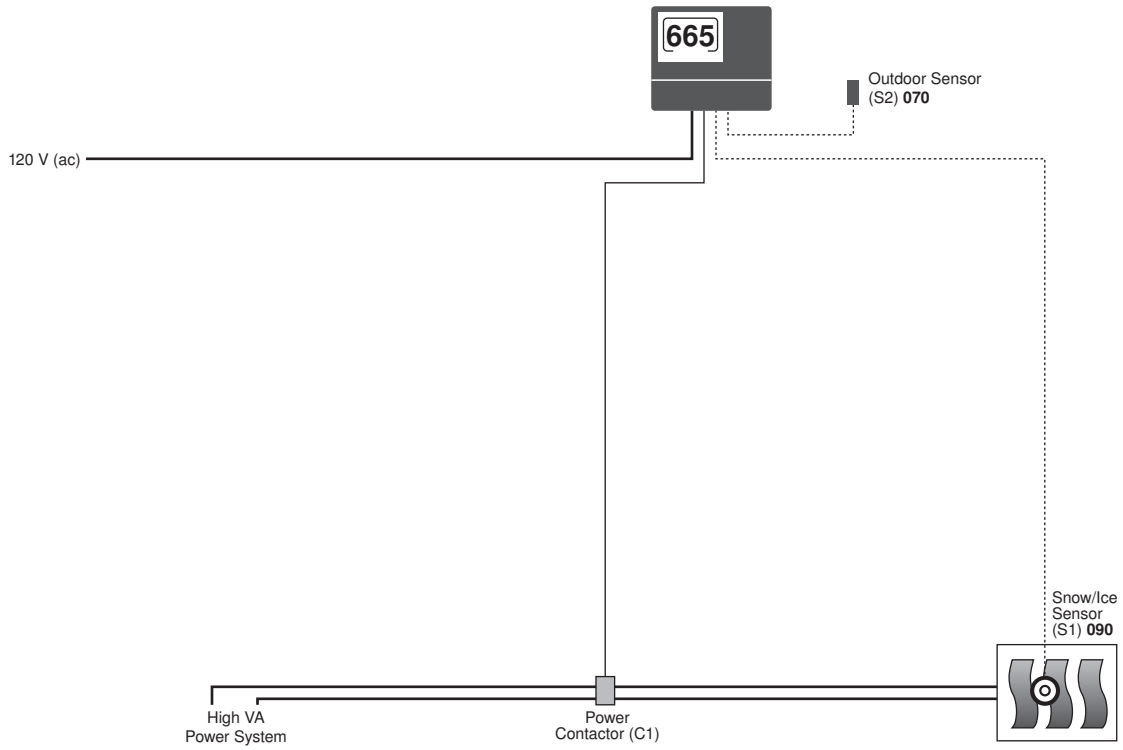
Essential Control Settings
Mixing Control 362
Mode = 2
Mixing = Var
10K = None
Boil Sens = Sup

C1 = Power Contactor
S1 = Snow/Ice Sensor 090
S2 = Outdoor Sensor 070



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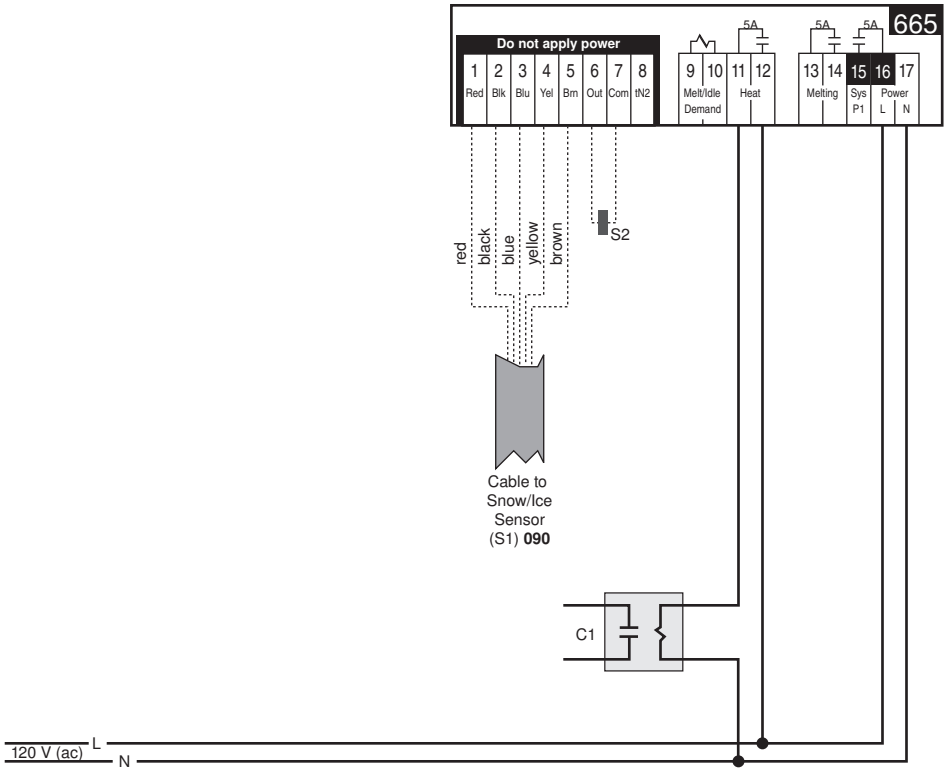
System Operation
The Snow Detector & Melting Control 665 provides snow melting for a single zone system. The 665 maintains the required slab temperature by cycling electric cables in the slab. A Snow / Ice Sensor 090 is used to automatically detect snow or ice and enable the system.

C1 = Power Contactor
S1 = Snow/Ice Sensor 090
S2 = Outdoor Sensor 070



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Essential Control Settings

Specifications

The following are the recommended specifications for the Snow Detector and Melting Control 665

- The control shall control the temperature of the snow melting slab by cycling an on / off device to inject heat into the system.
- 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.

tekmar® Control Systems

tekmar Control Systems Ltd., *A Watts Water Technologies Company.* Head Office: 5100 Silver Star Road, Vernon, B.C. Canada V1B 3K4, 250-545-7749, Fax. 250-545-0650 Web Site: www.tekmarControls.com

All specifications are subject to change without notice.
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