

Features of the Boiler Control 263

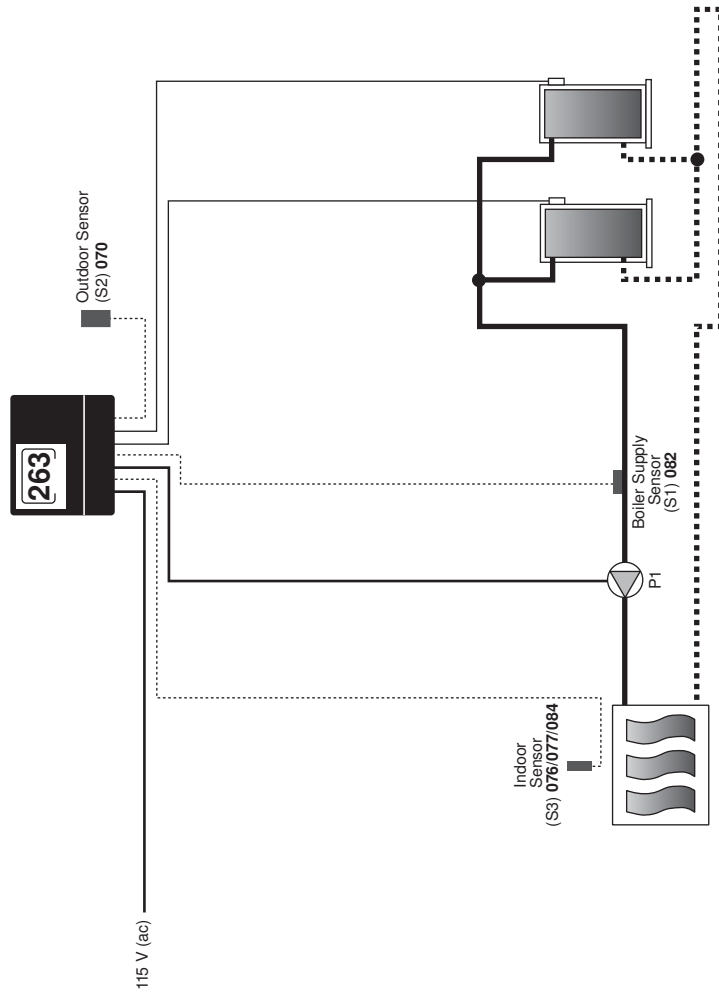
Please refer to Essay E 005: Control Functions and Benefits for a detailed description of these features.

- Outdoor Reset
- Characterized Heating Curve
- Water Temperature Setback
- Boost
- Warm Weather Shut Down
- Boiler Outdoor Reset
- Boiler Differential (Automatic)
- Boiler Minimum Supply
- Boiler Post Purge
- DHW Boiler Reset Override
- DHW Condensing Boiler
- DHW External Demand
- DHW Post Purge
- DHW Priority
- PID Staging
- Equal Run Time Rotation
- Lo / Hi Fire Boiler Staging
- Fire Delay
- Boiler Mass
- Setpoint Boiler Reset Override
- Setpoint Priority
- Internal Setback Timer
- Modulating Output
- Soft Stop

Application

The tekmar Boiler Control 263 can control the supply water temperature from a single modulating boiler or up to 2 on / off stages based on outdoor temperature, domestic hot water requirements, or setpoint requirements. The control has an internal setback timer, which can have 2 events per day on a 24 hour, 5-1-1 day or 7 day schedule.

P1 = Primary Pump
S1 = Boiler Supply Sensor 082
S2 = Outdoor Sensor 070
S3 = Indoor Sensor 076/077/084



Concept Drawing

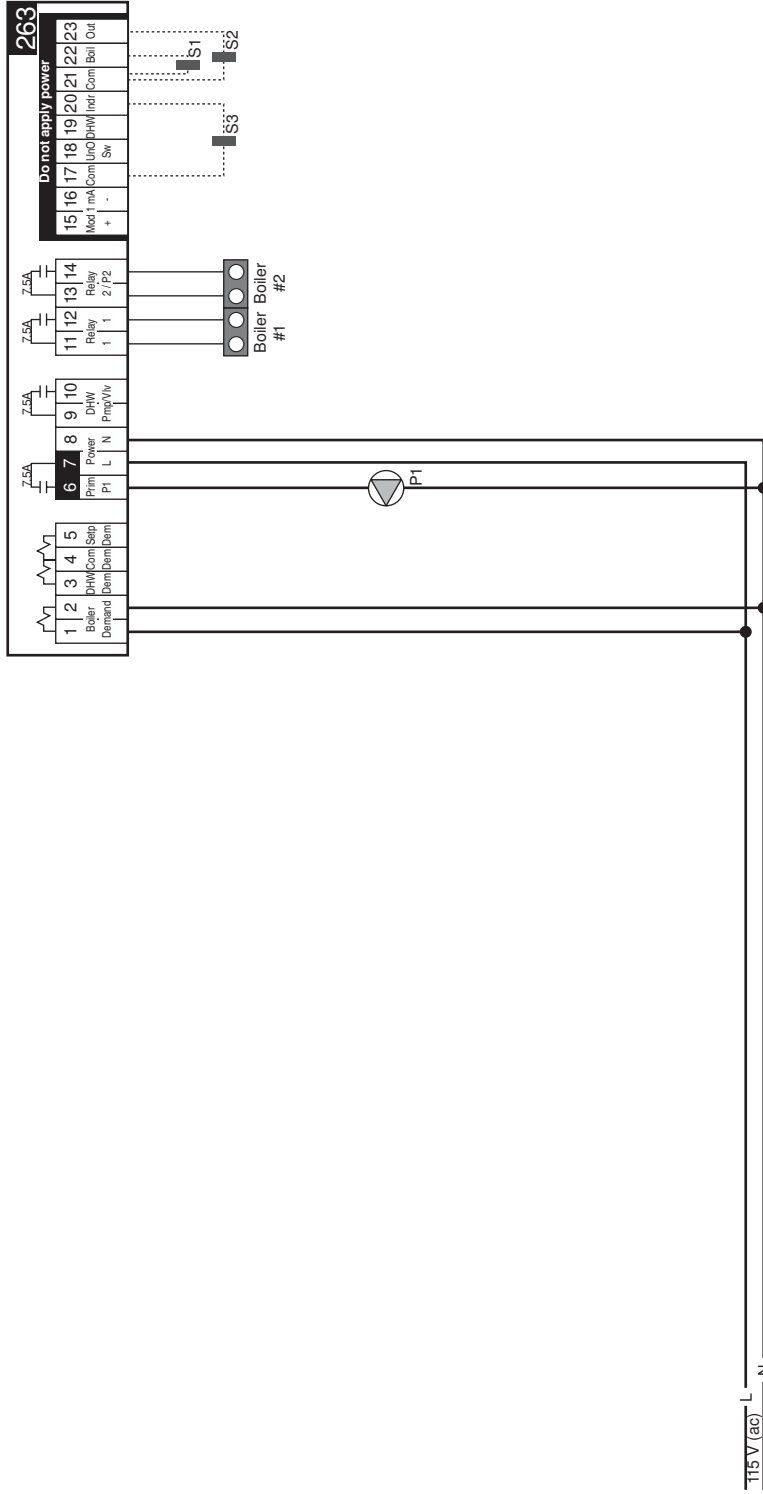
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System Operation

The Boiler Control 263 provides outdoor reset to a heating system. The 263 provides staging and rotation of the two boilers. The two boilers are piped in reverse return. An indoor sensor connects to the 263 to provide indoor temperature feedback.

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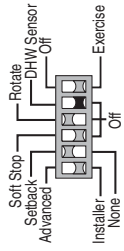


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Essential Control Settings

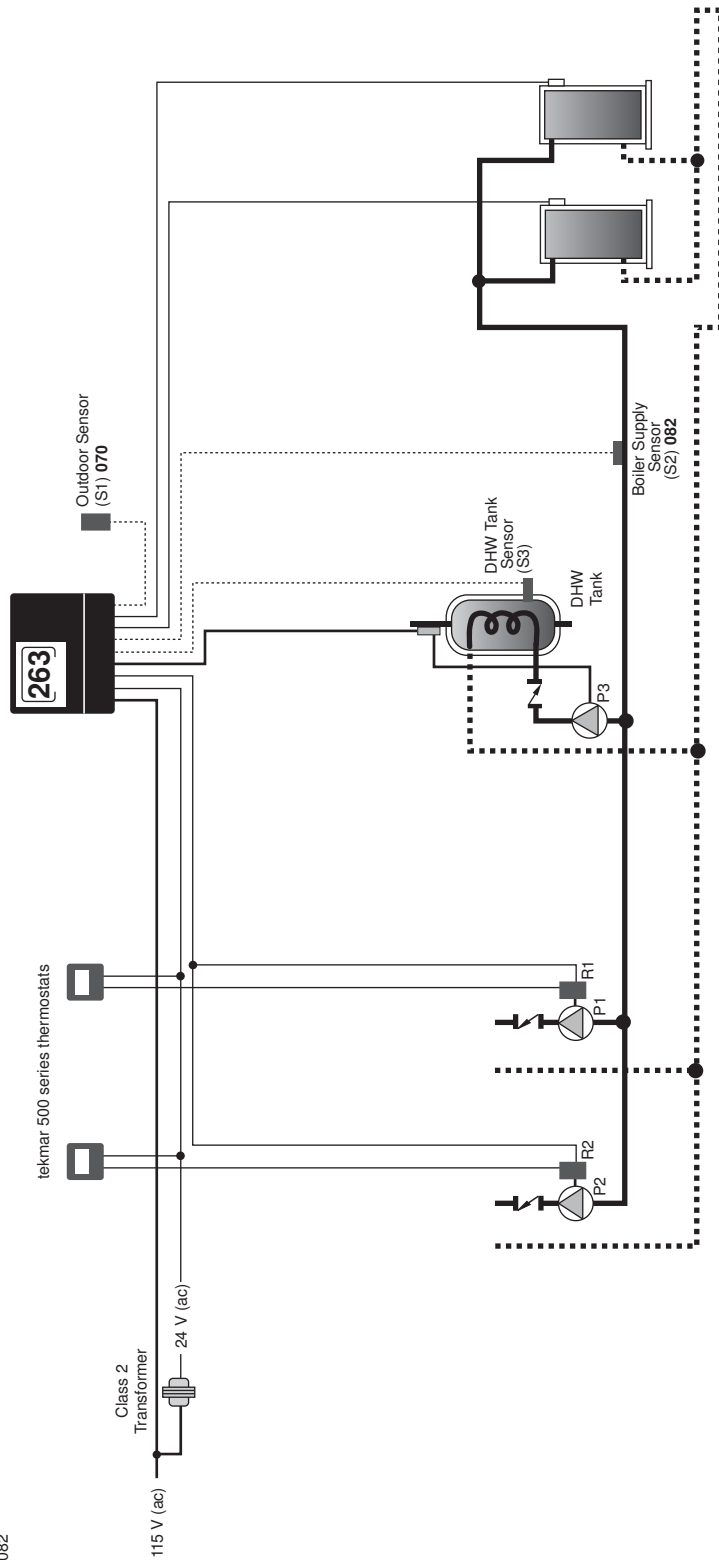
MODE = 1



required
 optional

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- P1, P2 = Zone Pump
- P3 = DHW Pump
- R1, R2 = Relay 003
- S1 = Outdoor Sensor 070
- S2 = Boiler Supply Sensor 082
- S3 = DHW Sensor



Concept Drawing

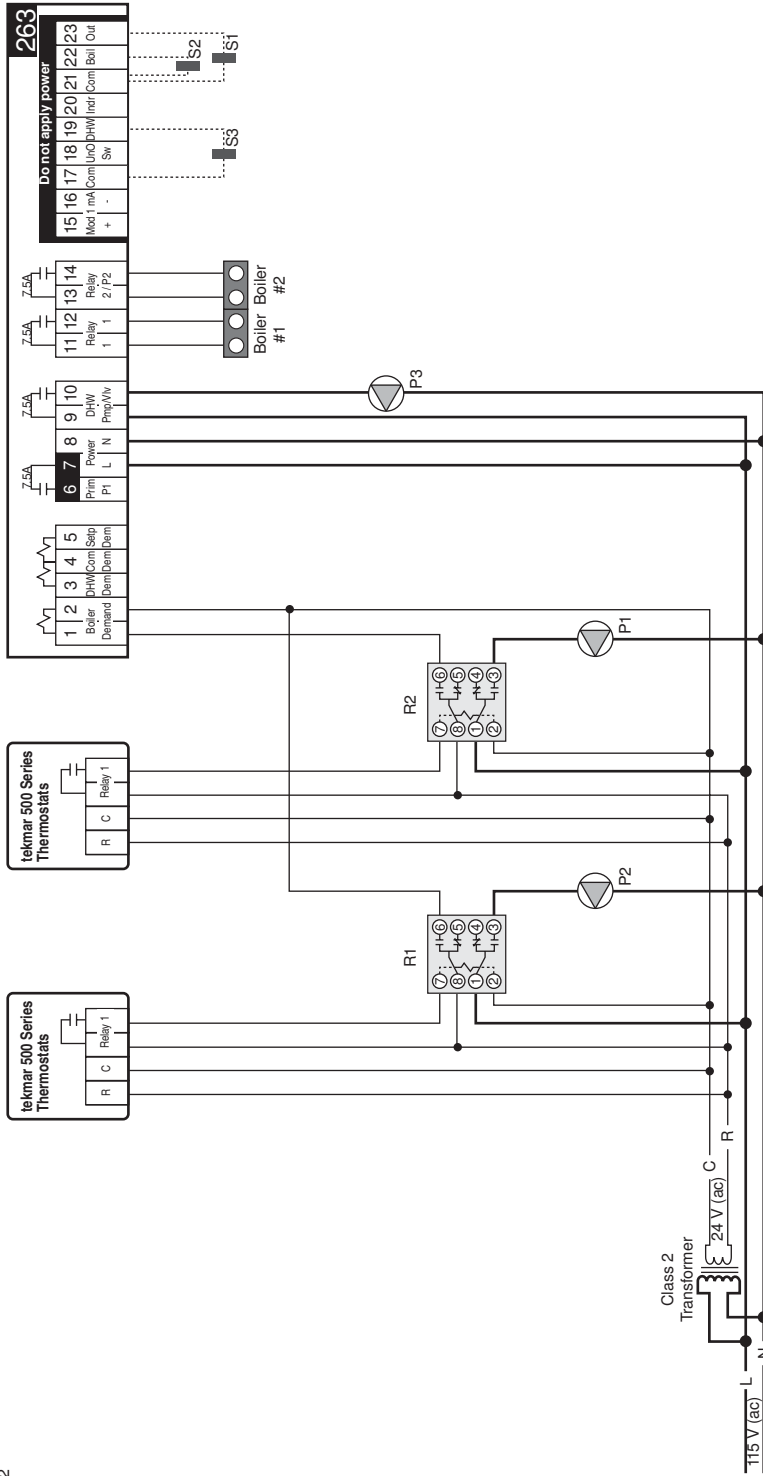
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System Operation

The Boiler Control 263 provides outdoor reset to a space heating system and satisfies domestic hot water loads. The two on / off boilers are piped in reverse return. The control provides staging and rotation for the two boilers. The domestic hot water tank is monitored by a sensor placed in a tank well. The 263 operates the boilers and the domestic hot water pump in order to maintain a tank temperature.

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 R1, R2 = Relay 003
 S1 = Outdoor Sensor 070
 S2 = Boiler Supply Sensor 082
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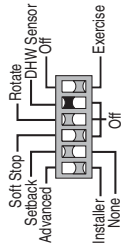


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Essential Control Settings

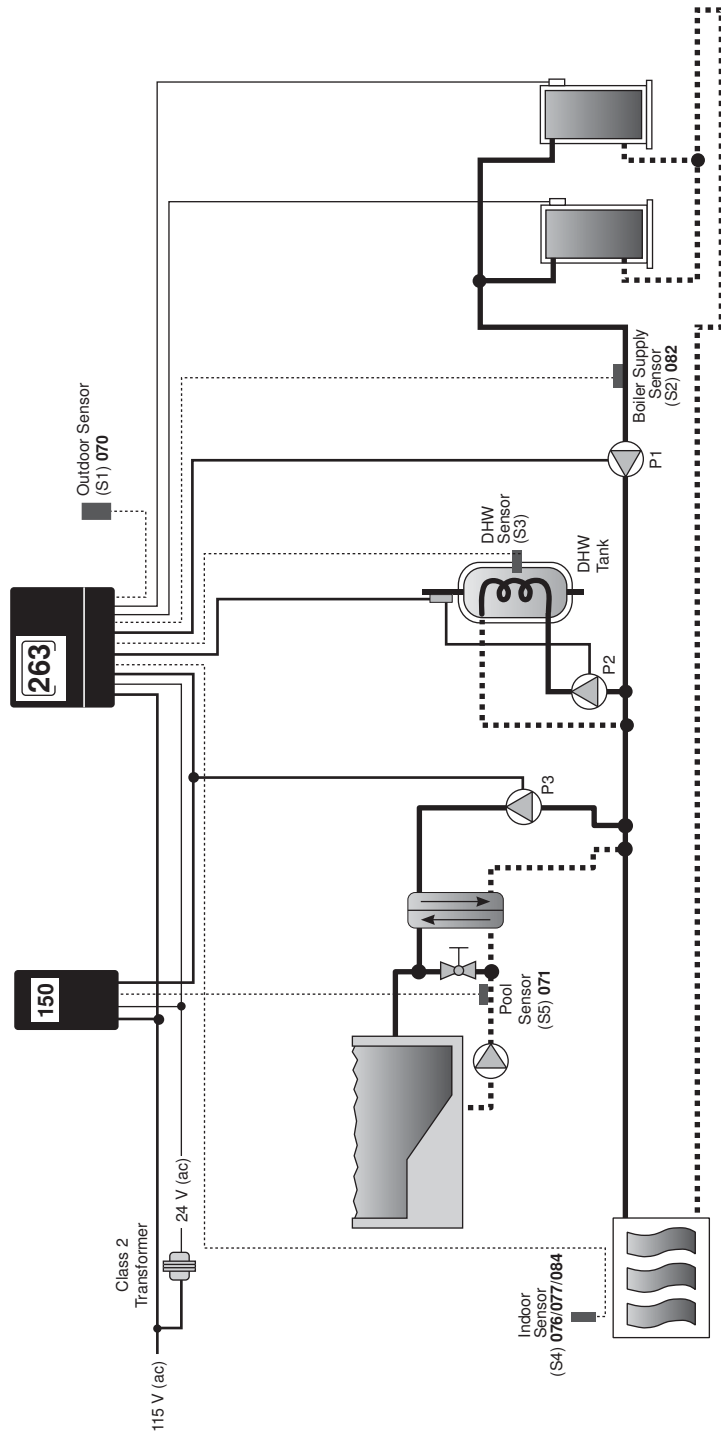
MODE = 1
 DHW MODE = 1 (no priority)
 2 (priority)



required
 optional

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- P1 = Primary Pump
- P2 = DHW Pump
- P3 = Pool Pump
- S1 = Outdoor Sensor 070
- S2 = Boiler Supply Sensor 082
- S3 = DHW Sensor
- S4 = Indoor Sensor 076/077/084
- S5 = Pool Sensor 071



System Operation

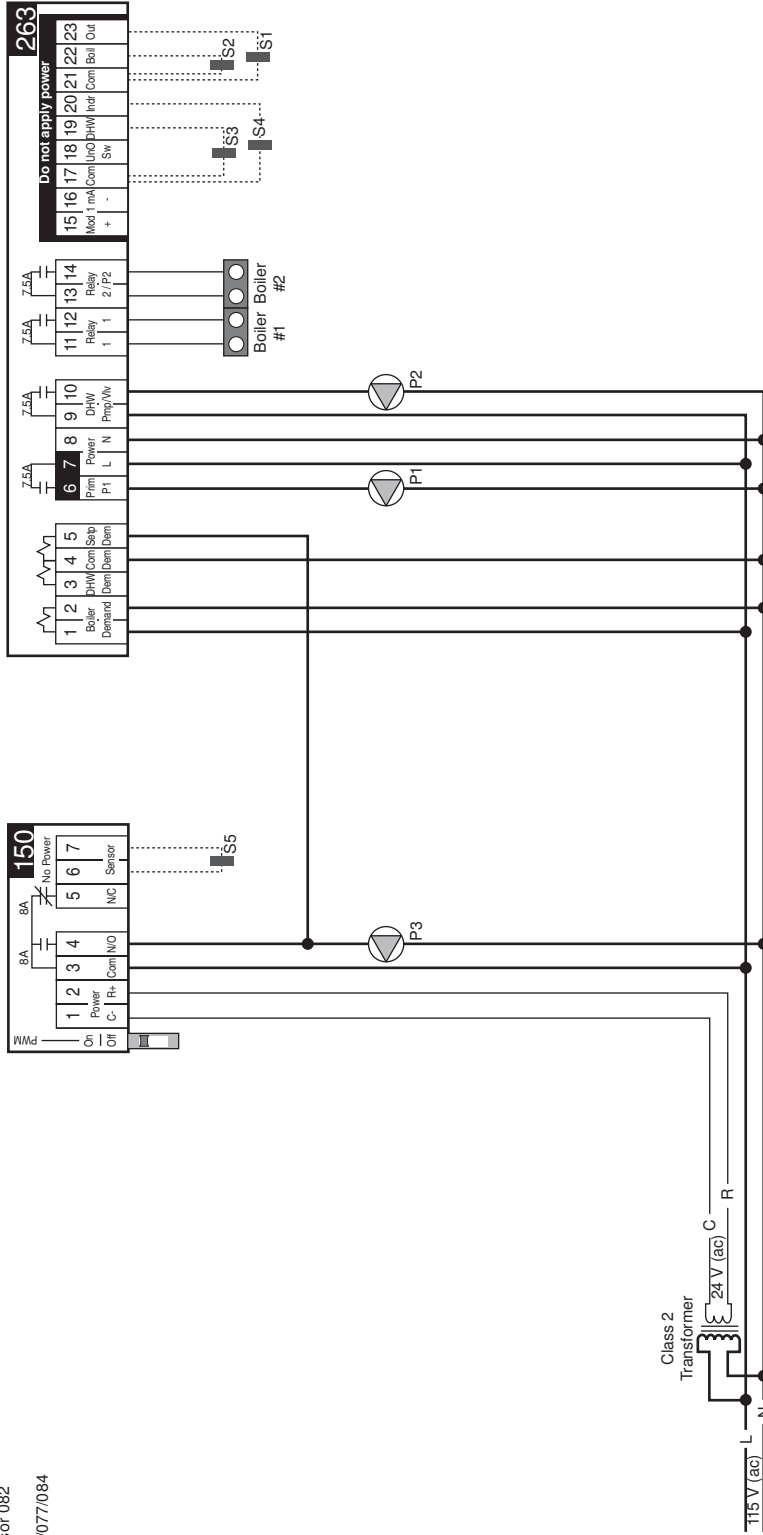
The Boiler Control 263 provides outdoor reset to a space heating system, satisfies domestic hot water loads, and provides heat for a pool. An indoor sensor connects to the 263 to provide indoor temperature feedback. The two on / off boilers are piped in reverse return. The 263 provides staging and rotation to the two boilers. The domestic hot water tank is piped in primary-secondary to the space heating system. A domestic hot water sensor monitors the tank temperature and the 263 operates the boilers and a domestic hot water pump to maintain temperature in the tank. A Setpoint Control 150 maintains a temperature in a pool.

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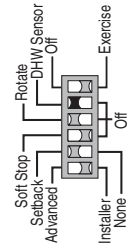
- P1 = Primary Pump
- P2 = DHW Pump
- P3 = Pool Pump
- S1 = Outdoor Sensor 070
- S2 = Boiler Supply Sensor 082
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- S4 = Indoor Sensor 076/077/084
- S5 = Pool Sensor 071



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Essential Control Settings

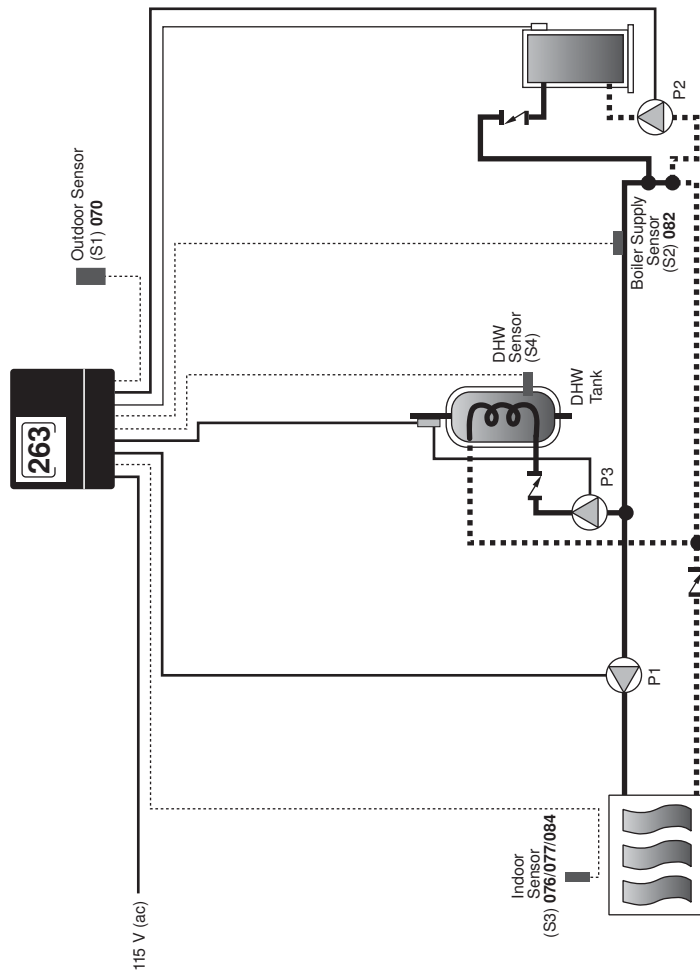
- MODE = 1
- DHW MODE = 3
- Setpoint MODE = 3



- required
- optional

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- P1 = Primary Pump
- P2 = Boiler Pump
- P3 = DHW Pump
- S1 = Outdoor Sensor 070
- S2 = Boiler Supply Sensor 082
- S3 = Indoor Sensor 076/077/084
- S4 = DHW Sensor



Concept Drawing

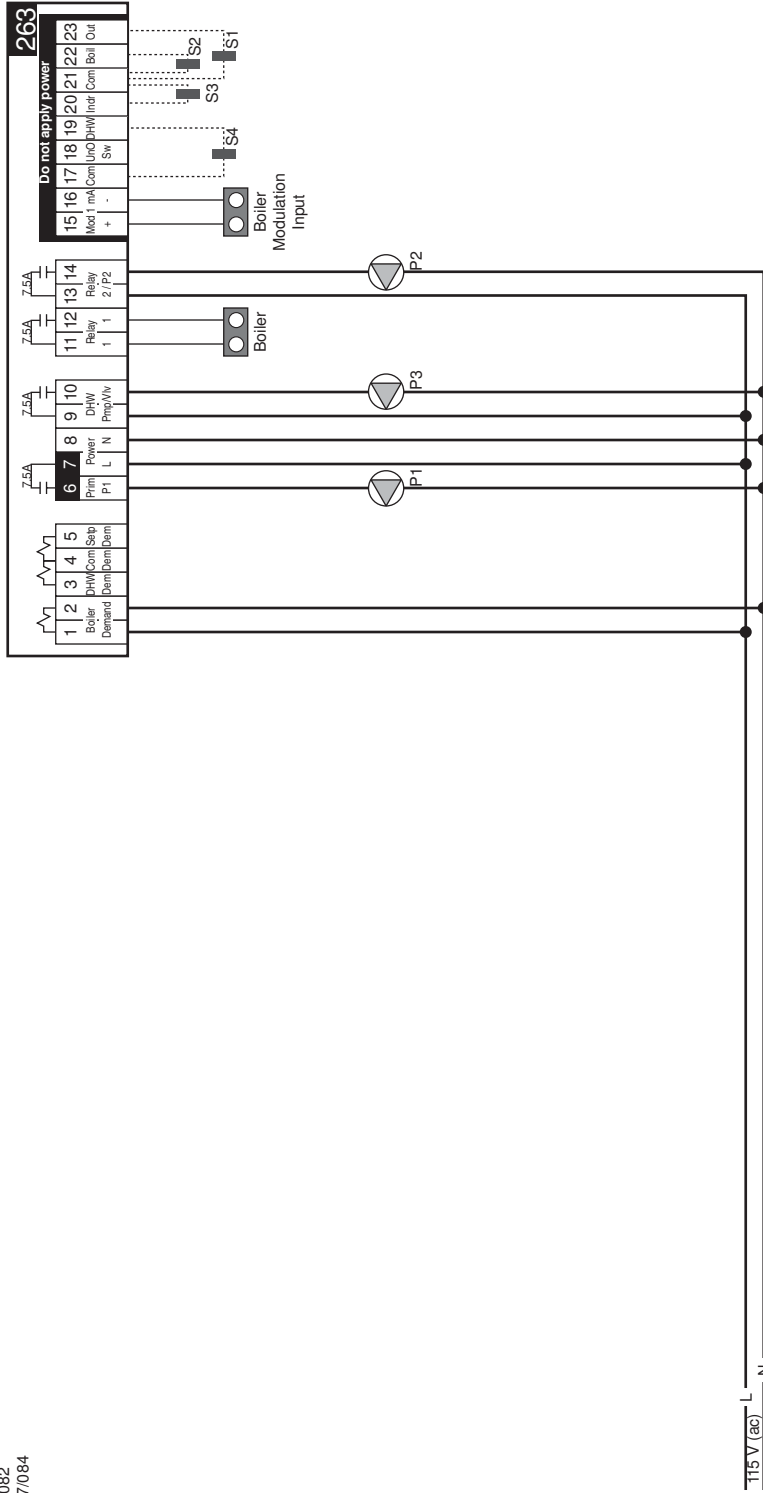
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System Operation

The Boiler Control 263 provides outdoor reset to a space heating system and satisfies domestic hot water loads. An indoor sensor provides indoor temperature feedback from the space heating system. The 263 modulates the firing rate of the modulating boiler and operates a boiler pump. The boiler is piped in primary-secondary to the heating loads. The domestic hot water tank temperature is monitored by a sensor and the 263 operates the boiler and domestic hot water pump to maintain temperature.

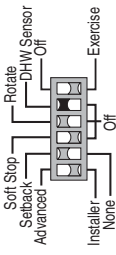
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- P1 = Primary Pump
- P2 = Boiler Pump
- P3 = DHW Pump
- S1 = Outdoor Sensor 070
- S2 = Boiler Supply Sensor 082
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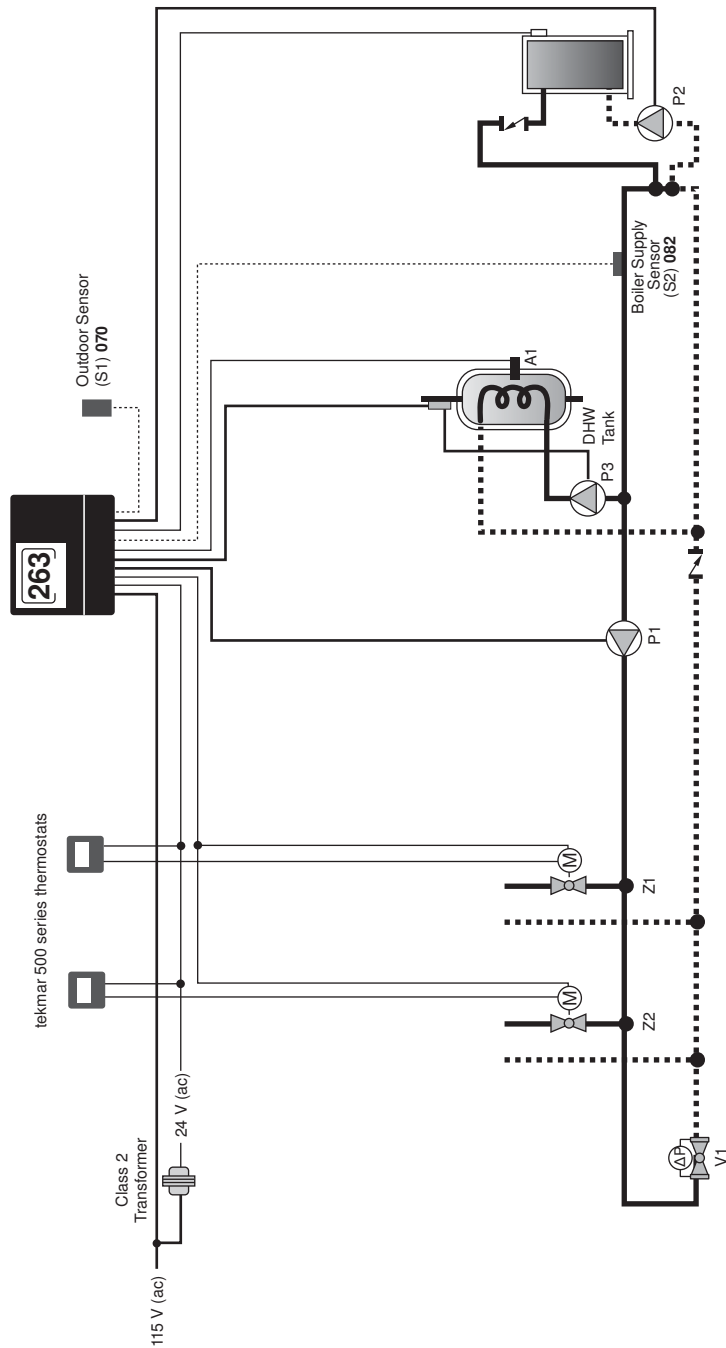
Essential Control Settings
 MODE = 2
 DHW MODE = 1 (no priority)
 2 (priority)



required
 optional

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- A1 = DHW Aquastat
- P1 = Primary Pump
- P2 = Boiler Pump
- P3 = DHW Pump
- S1 = Outdoor Sensor 070
- S2 = Boiler Supply Sensor 082
- V1 = Pressure Differential Bypass Valve
- Z1, Z2 = Zone Valves



Concept Drawing

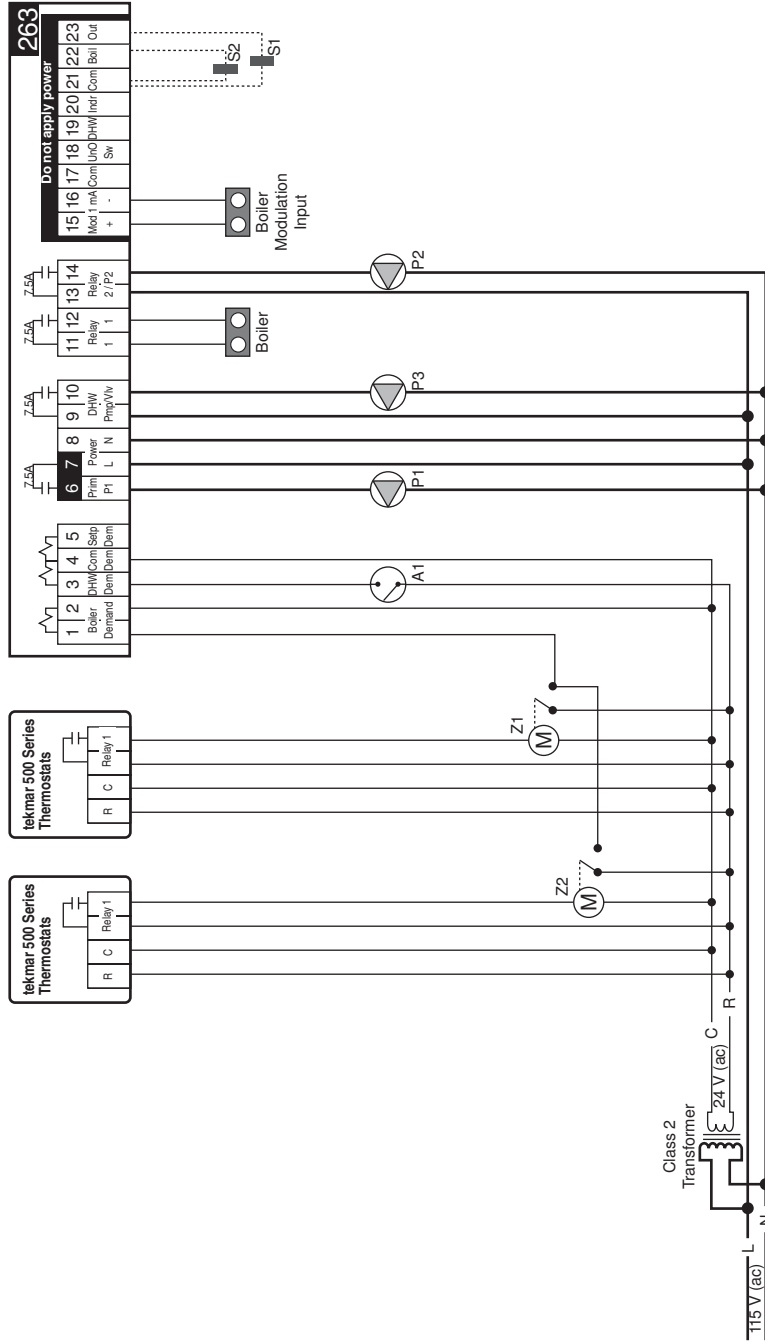
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System Operation

The Boiler Control 263 provides outdoor reset to a space heating system and satisfies domestic hot water loads. The heat source is a modulating boiler with a boiler pump piped in primary-secondary to the heating system. An aquastat provides a DHW demand to the 263 to maintain domestic hot water temperature. This system, when used with condensing modulating boilers, can heat a radiant floor heating system and provide domestic hot water priority by shutting off the primary pump.

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- A1 = DHW Aquastat
- P1 = Primary Pump
- P2 = Boiler Pump
- P3 = DHW Pump
- S1 = Outdoor Sensor 070
- S2 = Boiler Supply Sensor 082
- Z1, Z2 = Zone Valves

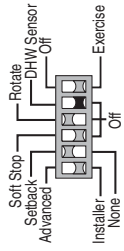


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Essential Control Settings

MODE = 2
DHW MODE = 2



- required
- optional

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Specifications

The following are the recommended specifications for the Boiler Control 263

- The control shall be able to operate boilers that have one or two independent on / off stages.
- The control shall be able to operate a single modulating boiler and the boiler's pump.
- The control shall have the ability to calculate the boilers' target temperature based on outdoor reset.
- The control shall have the ability to have the boilers' target temperature set using an adjustable setpoint.
- The control shall have an adjustable warm weather shut down. The warm weather shut down only applies to outdoor reset operation.
- The control shall have a primary pump contact that operates during a call for space heating.
- The control shall have the ability to operate a domestic hot water contact that operates during a domestic hot water call.
- The control shall have the ability to limit the number of boilers operated during domestic hot water calls for heat.
- The control shall have an option to rotate the firing sequence of the boilers and the option for rotating the boiler firing sequence shall be based on the boilers' accumulated running hours.
- The control shall use proportional, integral and derivative (PID) logic when staging boiler stages.
- 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 boilers' heat exchanger and chimney.
- The control shall have the option of an automatic differential calculation in order to prevent short cycling of the stages.
- The boiler pump shall have an adjustable post purge setting that allows the pump to run for a set period of time after the boiler has been shut off.
- The control shall have an adjustable minimum inter-stage delay that can be set manually or calculated automatically by the control.
- The control shall have two 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 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 continually monitor its temperature sensors and provide an error message upon a control or sensor failure.
- The control shall record and display the running hours of each boiler.
- During extended periods of inactivity, the pumps or valves that are operated by the control shall be periodically exercised to prevent seizure during long idle periods.
- The control shall have the option to gradually modulate the boiler down to low fire before the boiler is shut off.
- The control shall have one 4 - 20 mA or 0 - 20 mA modulating external output.
- The control shall have the field upgrade option of converting the modulating output to 0 - 10 V (dc), 2 - 10 V (dc) and 0 - 135 Ω .



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