

## Features of the Boiler Control 270

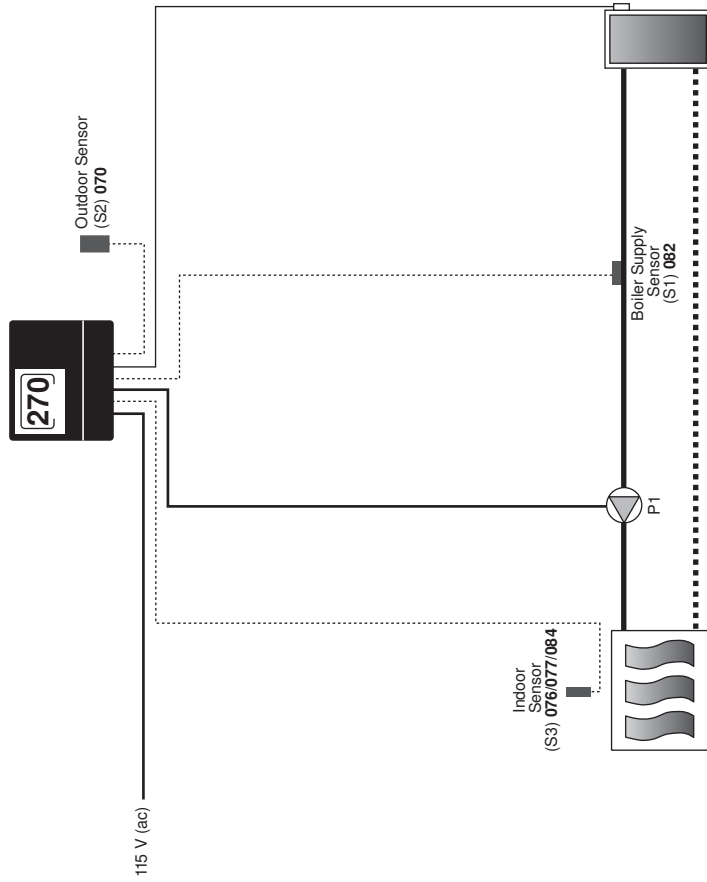
Please refer to Essay E 005: Control Functions and Benefits for a detailed description of these features.

- Outdoor Reset
- Characterized Heating Curve
- Water Temperature Setback
- Boost
- Warm Weather Shut Down
- Boiler Outdoor Reset
- Boiler Minimum Supply
- Boiler Post Purge
- DHW Boiler Reset Override
- DHW Condensing Boiler
- DHW External Demand
- DHW Post Purge
- DHW Priority
- Boiler Mass
- Internal Setback Timer
- Modulating Output
- Soft Stop

## Application

The tekmar Boiler Control 270 can control the supply water temperature from a single modulating boiler 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, 5-11 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

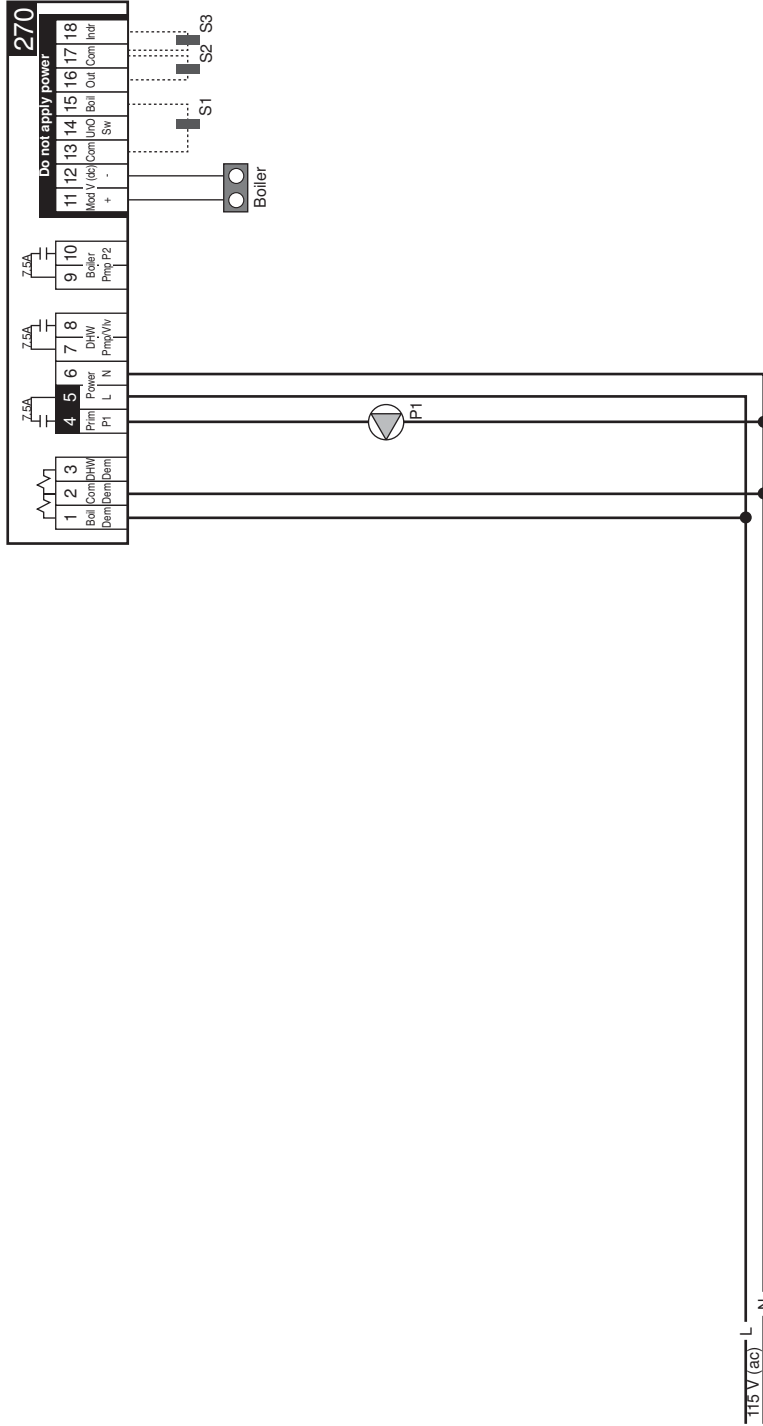
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### System Operation

The Boiler Control 270 provides outdoor reset to a heating system. An indoor sensor connects to the 270 to provide indoor temperature feedback.

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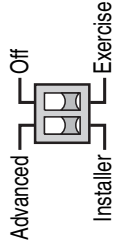
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**Essential Control Settings**

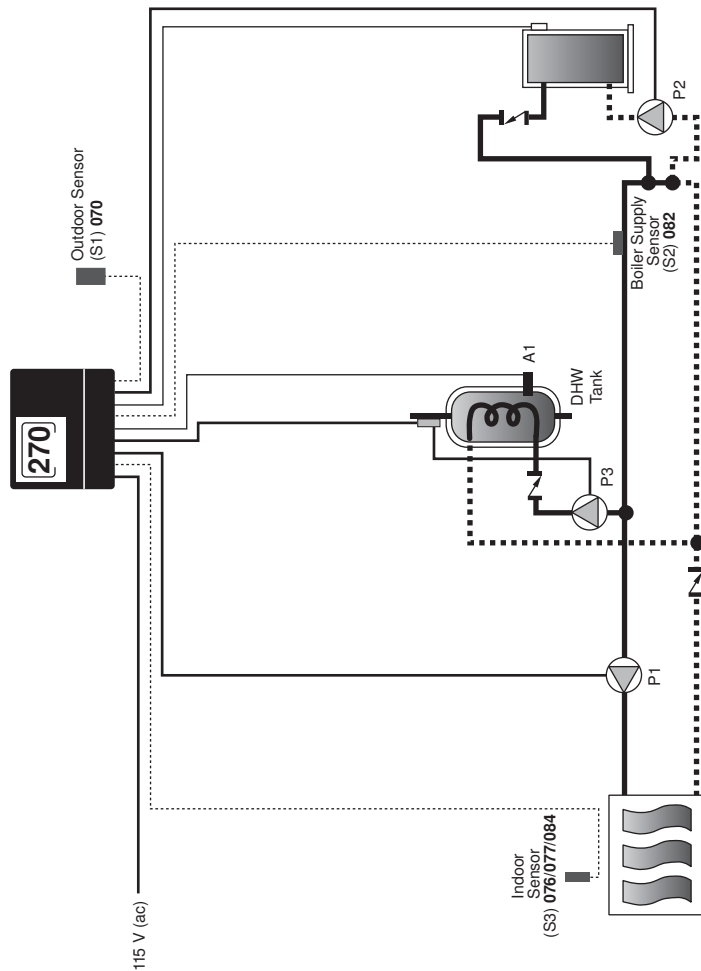
MODE = 1



required  
 optional

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- A1 = DHW Aquastat
- P2 = Boiler Pump
- P3 = DHW Pump
- S1 = Outdoor Sensor 070
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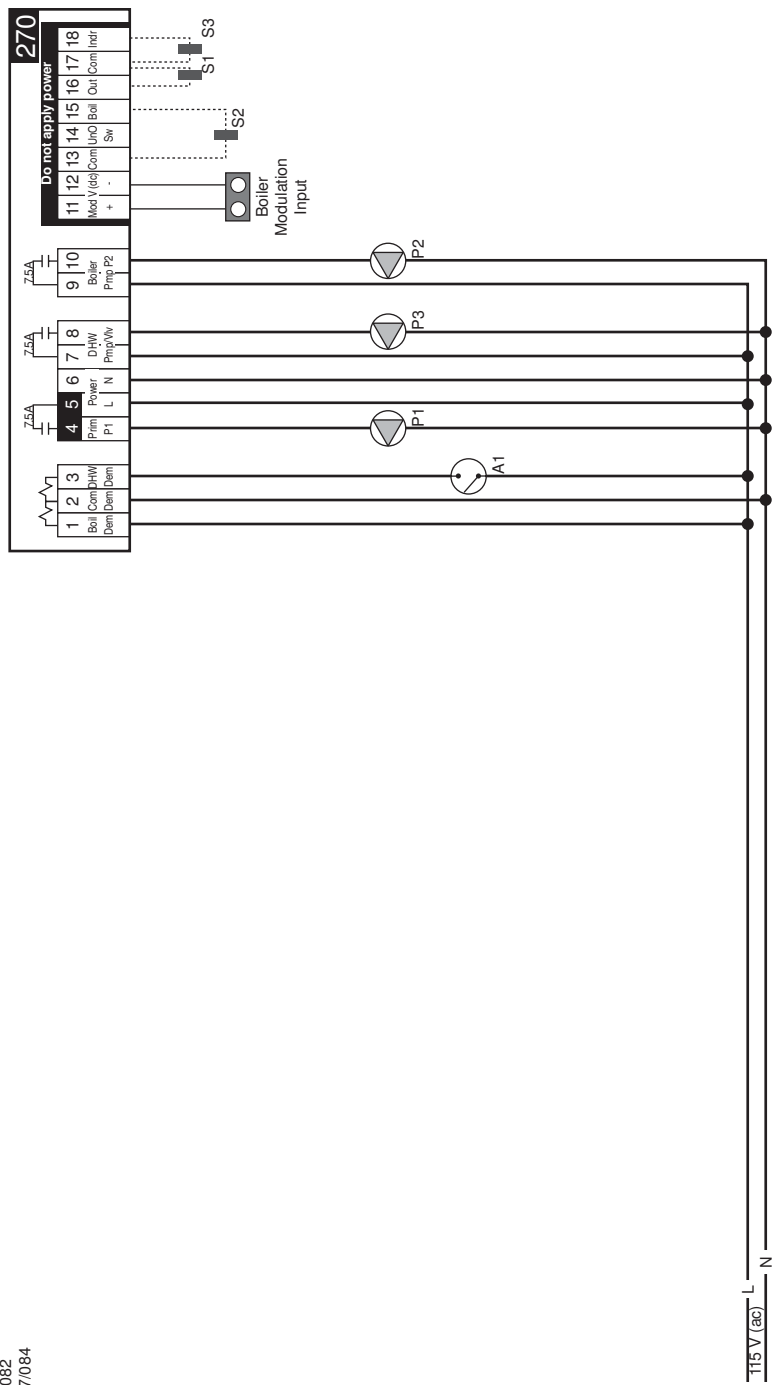
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### System Operation

The Boiler Control 270 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 270 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 an aquastat and the 270 operates the boiler and domestic hot water pump to maintain temperature.

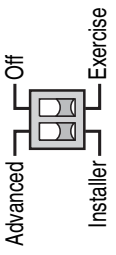
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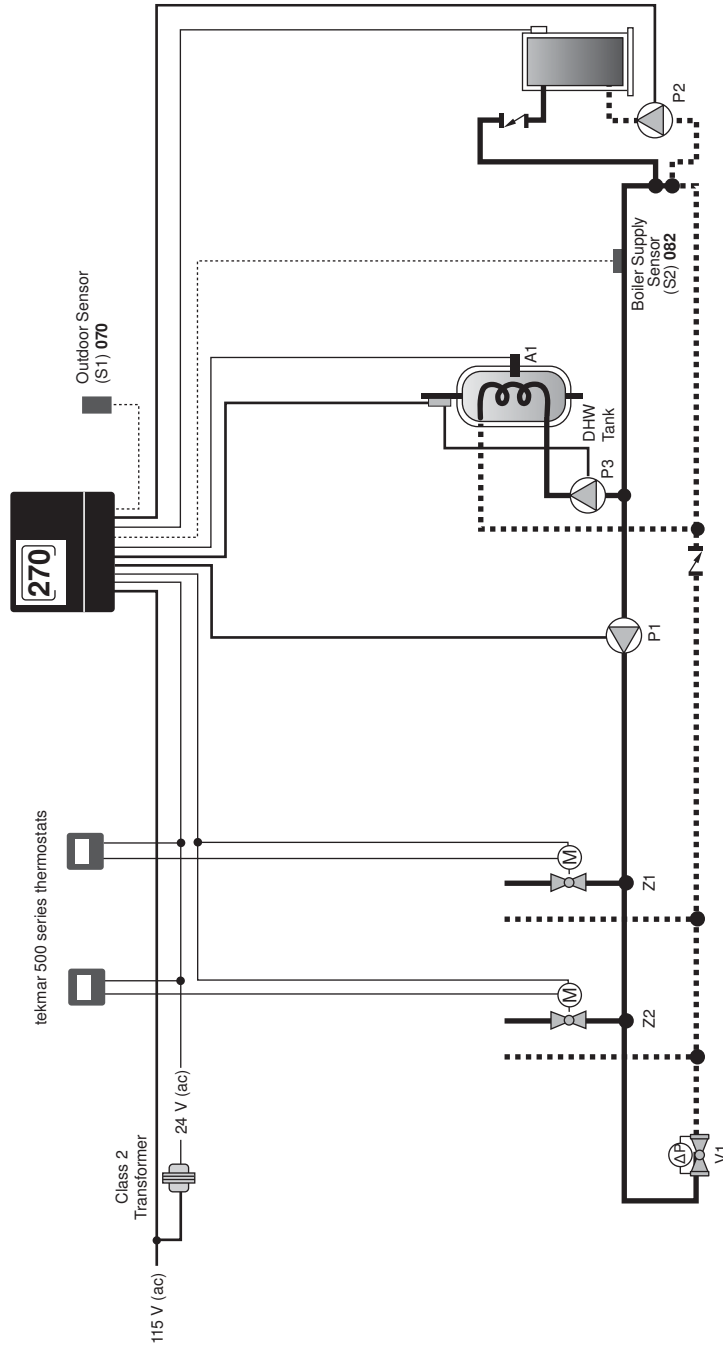
**Essential Control Settings**  
 MODE = 2  
 DHW MODE = 1 (no priority)  
 2 (priority)



- required
- optional

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- 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

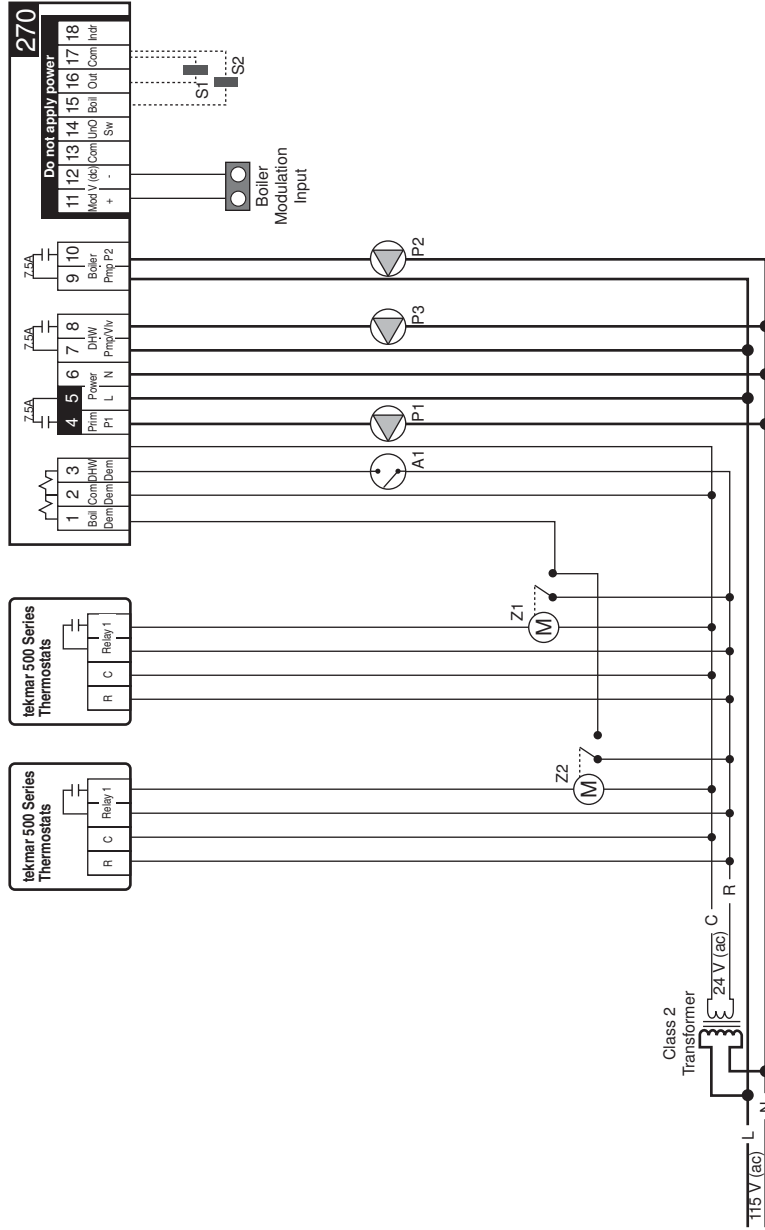
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### System Operation

The Boiler Control 270 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 270 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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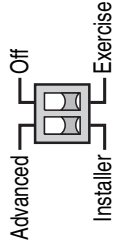
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#### Essential Control Settings

DHW MODE = 2



- required
- optional

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## Specifications

### The following are the recommended specifications for the Boiler Control 270

- 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 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 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 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 the 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  $\Omega$ .



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