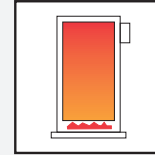


# tekmar® - Application

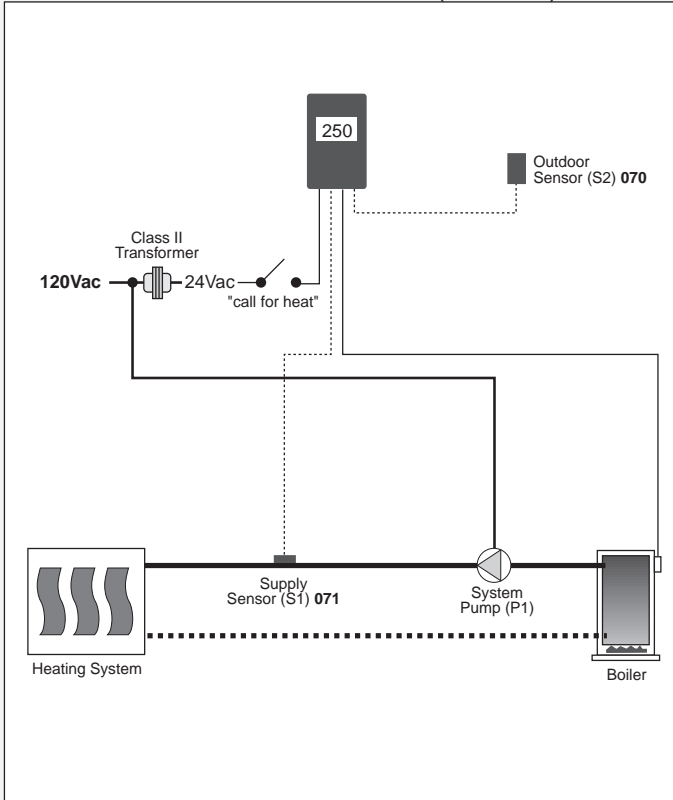
One Stage Boiler Control 250



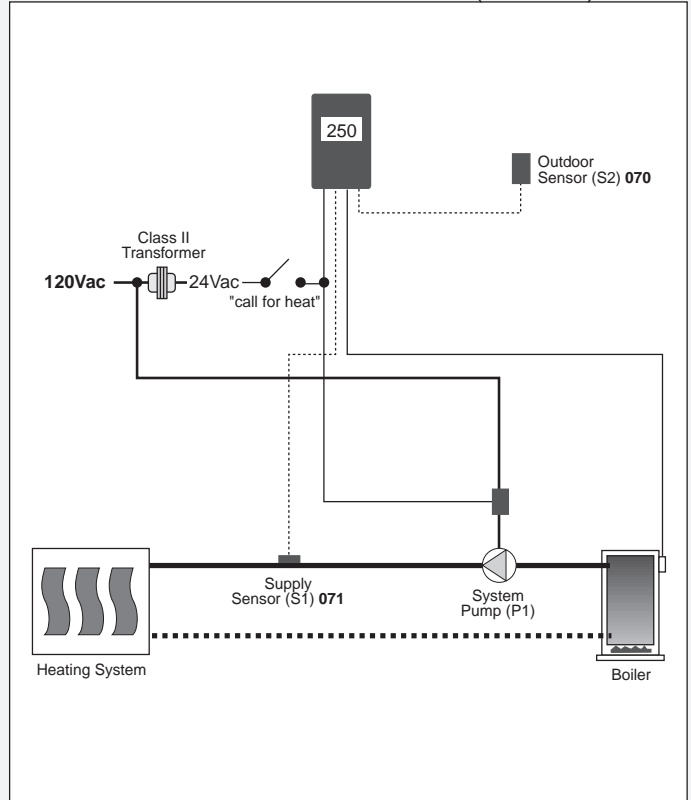
A 250-1

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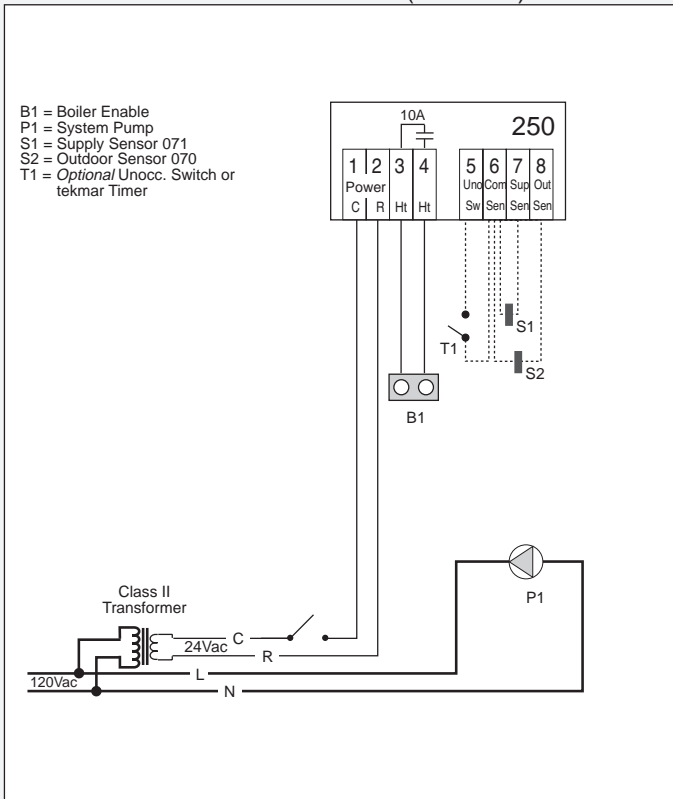
Mechanical – Constant Circulation (A 250-1a)



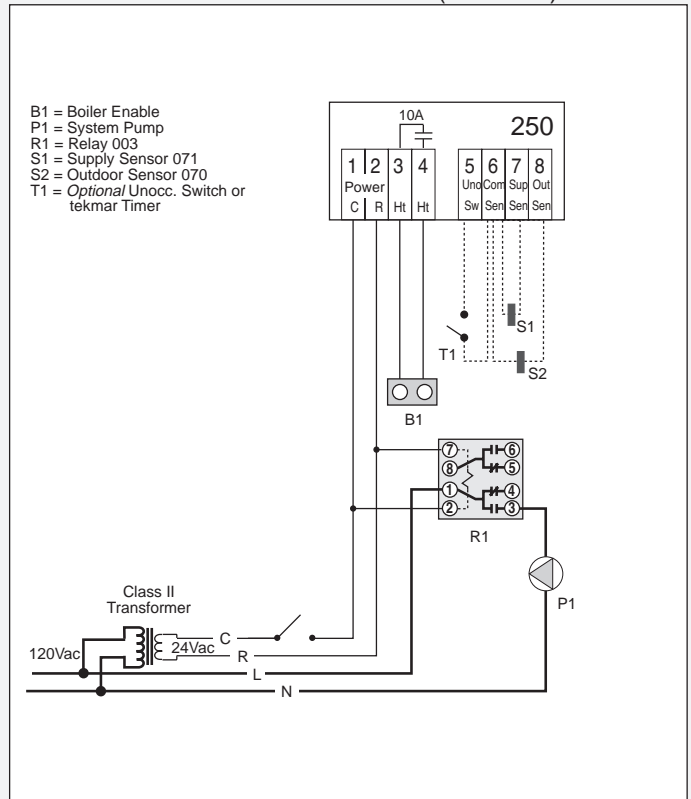
Mechanical – Intermittent Circulation (A 250-1b)



Electrical – Constant Circulation (A 250-1a)



Electrical – Intermittent Circulation (A 250-1b)



**Note:** This is only a concept drawing. The designer must determine whether this application will work in his system and must ensure compliance with code requirements. Necessary auxiliary equipment, isolation relays (for loads greater than the specified tekmar internal relay ratings), and other safety and limit devices must be added.

## Specifications

The following are minimum recommended specifications for the control in this application.

- The boiler shall not be fired unless there is a "call for heat" from the heating system and the outdoor air temperature is colder than the control's Warm Weather Shut Down (WWSD) setting.
- The control shall have an adjustable minimum boiler operating temperature limit to help prevent condensation of flue gases and subsequent corrosion and blockage of the boiler heat exchanger and chimney.
- The heating system supply water temperature shall be calculated based on the control's heating curve (reset ratio) setting, the outdoor air temperature, and the control's minimum boiler operating temperature setting.
- The control shall have an adjustable boiler operating temperature differential and a selectable time delay between boiler cycles to prevent short operating cycles of the boiler.
- In application A250-1a the system pump shall run continuously.
- In application A250-1b the system pump shall run continuously as long as the control receives a "call for heat".
- The control shall have an input for an optional remote setback timer.
- The control shall have a test button which turns on the boiler and resets the time delay.
- The control shall be an electronic control with 10 Amp relay contacts and indicator lights for control functions and status.
- The control enclosure must be able to be mounted on standard North American electrical boxes.
- The location of the control must be within its specified temperature and humidity ranges with the installer ensuring that the control and its wiring are isolated and/or shielded from strong sources of electromagnetic noise.
- The control component required from tekmar is a One Stage Boiler Control 250.

## Settings

One Stage Boiler Control 250	Adjustment Range	Recommended Initial Settings
Minimum	50 to 170°F (10 to 77°C)	
Differential	2 to 42°F (1 to 23°C)	
Heating curve	0.4 to 3.6	
WWSD	55 to 85°F (13 to 29°C)	

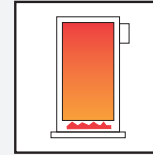
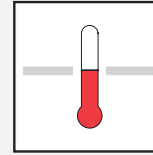
## Additional Information

- For control installation and testing instructions see Brochures: D 001 and D 250.
- For other control applications see Application Register A 000.
- For detailed control operation and function description see Essays: E 001 and E 002.



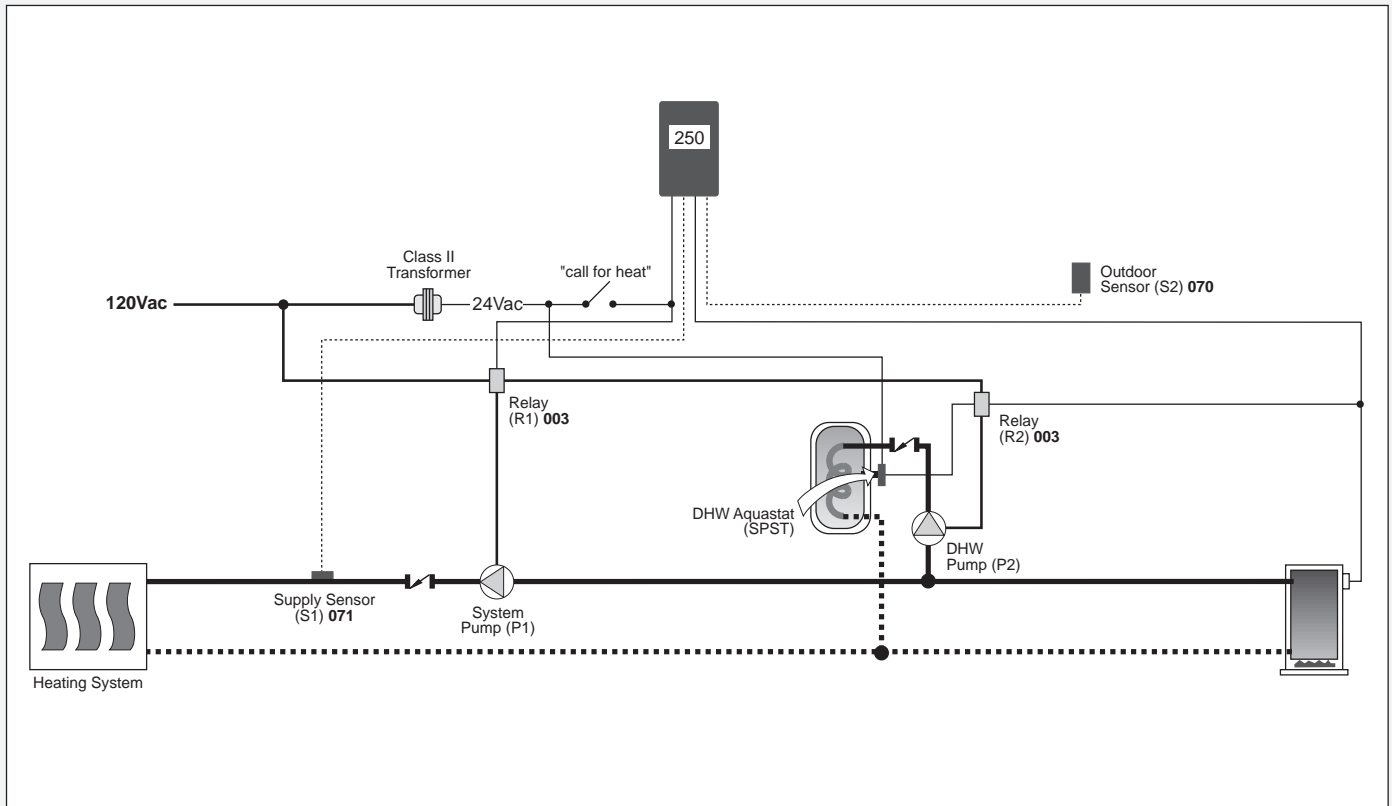
# tekmar® - Application

One Stage Boiler Control 250

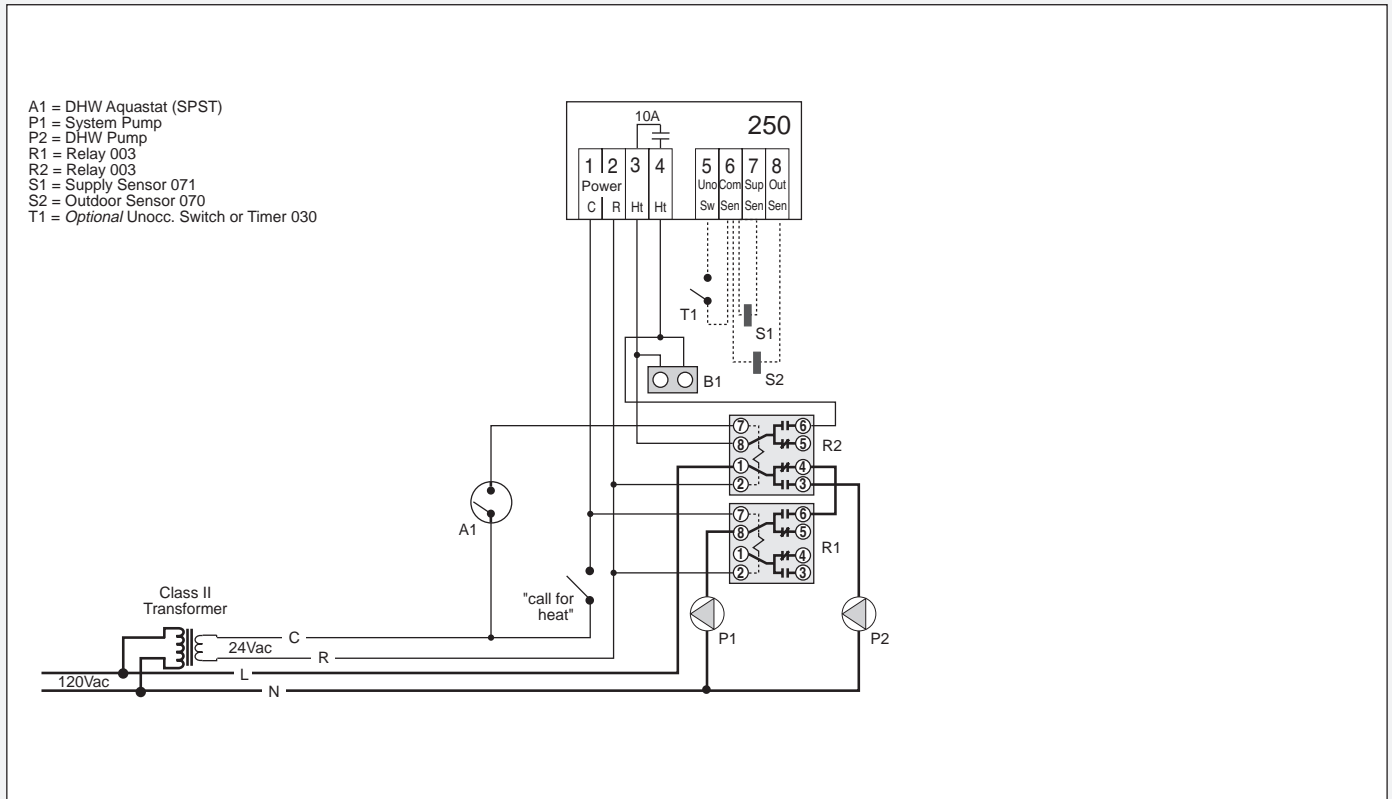


A 250-2  
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## Mechanical



## Electrical



**Note:** This is only a concept drawing. Designers must determine whether this system will work in each application and must ensure compliance with code requirements. Necessary auxiliary equipment and safety devices must be added.

## Operation

The One Stage Boiler Control 250 regulates the heating system supply water temperature based on the outdoor air temperature by cycling the boiler within its required operating limits. If the Domestic Hot Water (DHW) temperature is below the DHW aquastat setpoint, the system pump is turned off, the DHW pump is turned on, the control is by-passed and the boiler is cycled on its operating limit control.

## Specifications

The following are minimum recommended specifications for the control in this application.

- The boiler shall not be fired unless there is a "call for heat" from the heating system and the outdoor air temperature is colder than the control's Warm Weather Shut Down (WWSD) setting, or domestic hot water (DHW) needs to be generated.
  - The control shall have an adjustable minimum boiler operating temperature limit to help prevent condensation of flue gases and subsequent corrosion and blockage of the boiler heat exchanger and chimney.
  - The heating system supply water temperature shall be calculated based on the control's heating curve (reset ratio) setting, the outdoor air temperature, and the control's minimum boiler operating temperature setting.
  - The control shall have an adjustable boiler operating temperature differential and a selectable time delay between boiler cycles to prevent short operating cycles of the boiler.
  - The generation of DHW shall have priority over heating.
  - The DHW temperature shall be set by the DHW aquastat.
  - If DHW needs to be generated, the system pump shall be turned off, the DHW pump shall be turned on, the One Stage Boiler Control shall be by-passed, and the boiler shall be cycled on its operating limit control.
  - The system pump shall run continuously as long as the control receives a "call for heat" and no DHW is generated.
  - The DHW pump shall only run when DHW is generated.
  - The control shall have an input for an optional remote setback timer or (tekmar Timer 030).
  - The control shall have a test button which turns on the boiler and resets the time delay.
  - The control shall be an electronic control, having one SPST internal relay with a 10 Amp (resistive) isolated contact for control output and have indicator lights for control functions and status.
  - The control shall be compatible with standard North American wiring hardware.
  - The control shall have CSA (Canadian Standards Association) and UL (Underwriters Laboratory) approval.
  - The installation location must be maintained within the ambient temperature and humidity ranges specified in the D 250 brochure for this control, with the installer ensuring that the control and its wiring are isolated and/or shielded from strong sources of electromagnetic noise.
- **Order the following components for this application:** one One Stage Boiler Control 250, and two Relays 003.

## Settings

One Stage Boiler Control 250	Adjustment Range	Recommended Initial Settings
Minimum	50 to 170°F (10 to 77°C)	
Differential	2 to 42°F (1 to 23°C)	
Heating curve	0.4 to 3.6	
WWSD	55 to 85°F (13 to 29°C)	

## Additional Information

- For control installation, testing and operating instructions see Brochures D 001 and D 250.
- For other control applications see Application Register A 000.
- For control theory and system integration details see Essays E 001 and E 002.

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