

# tekmar® - Application

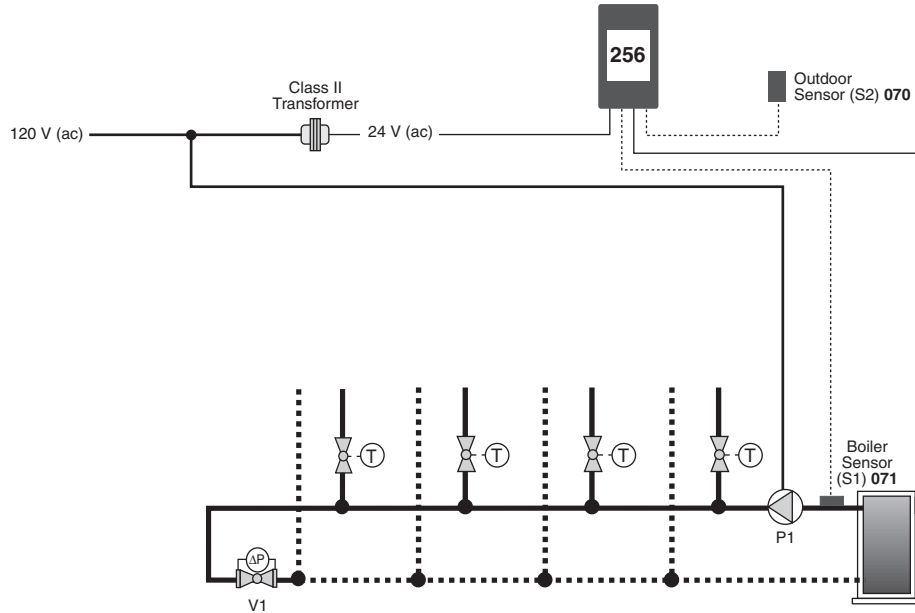
Boiler Control 256



A 256-1

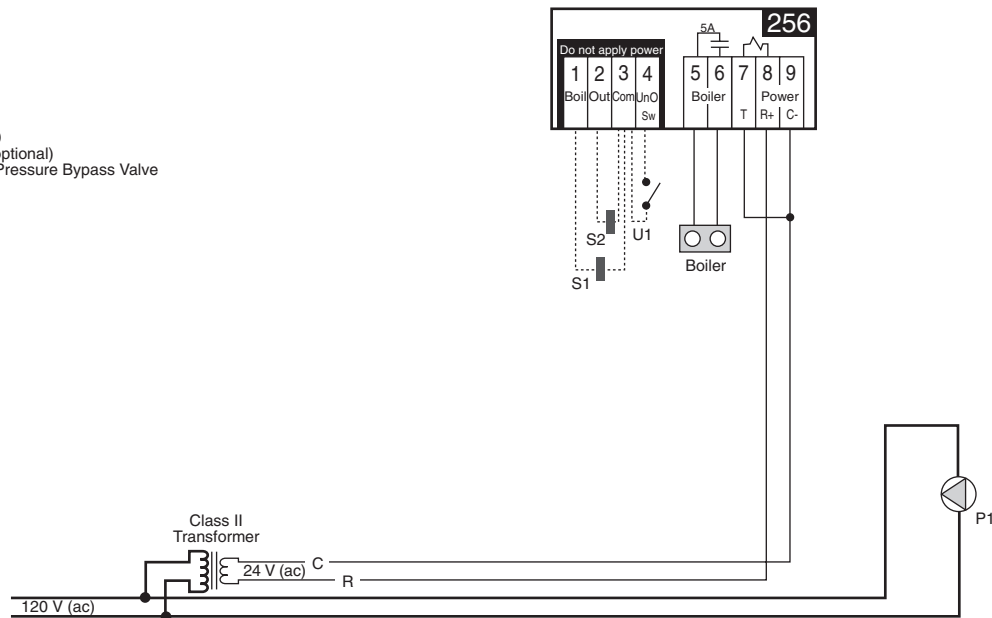
05/00

## Mechanical



## Electrical

P1 = Boiler Pump  
 S1 = Boiler Sensor 071  
 S2 = Outdoor Sensor 070  
 U1 = tekmar Timer 031 (optional)  
 V1 = Balancing Valve or Pressure Bypass Valve



**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.

## System Operation

The Boiler Control 256 provides partial or full outdoor reset to four (or more) thermostatic radiator valve zones. Constant circulation to the system is provided by the boiler pump (P1). The boiler operates at the required temperature in order to satisfy the load.

**Heat Source Details** The heat source can be either a high mass or low mass non-condensing or low temperature boiler.

**Piping Details** Thermostatic radiator valve (TRV) zones are piped into the boiler loop. A pressure differential valve (V1) provides a bypass for the boiler pump (P1) in the event that most of the TRV's are closed.

**Boiler Demand** The boiler supply water temperature is based on the *Characterized Heating Curve* settings. The boiler is fired to satisfy the required boiler supply water temperature. Whenever the boiler is fired, the 256 aims to increase the boiler supply water temperature to at least the BOIL MIN setting. In this application the control requires a permanent heat demand. A permanent heat demand is generated by wiring the C-(9) side of the transformer to T (7).

All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 256.

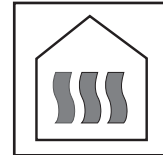


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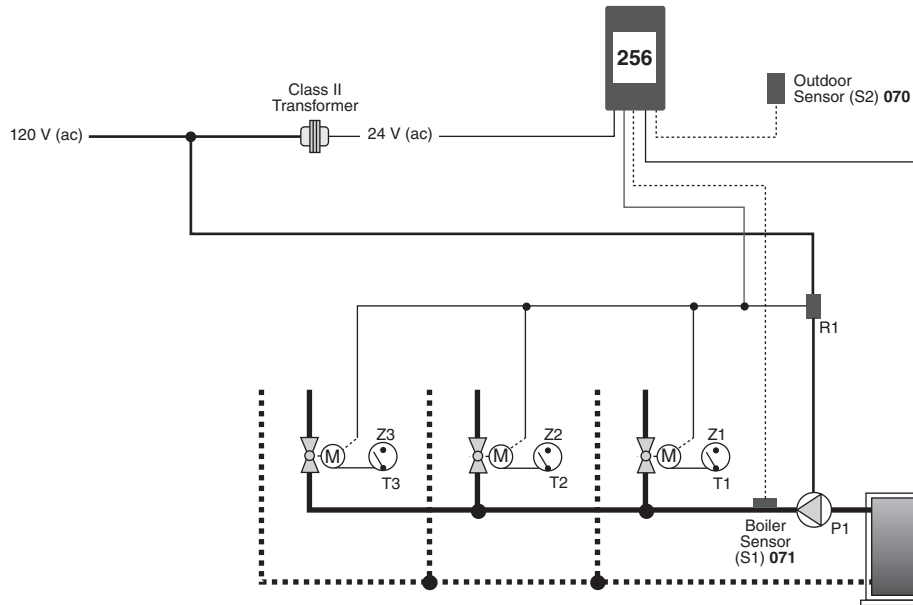
Boiler Control 256



A 256-2

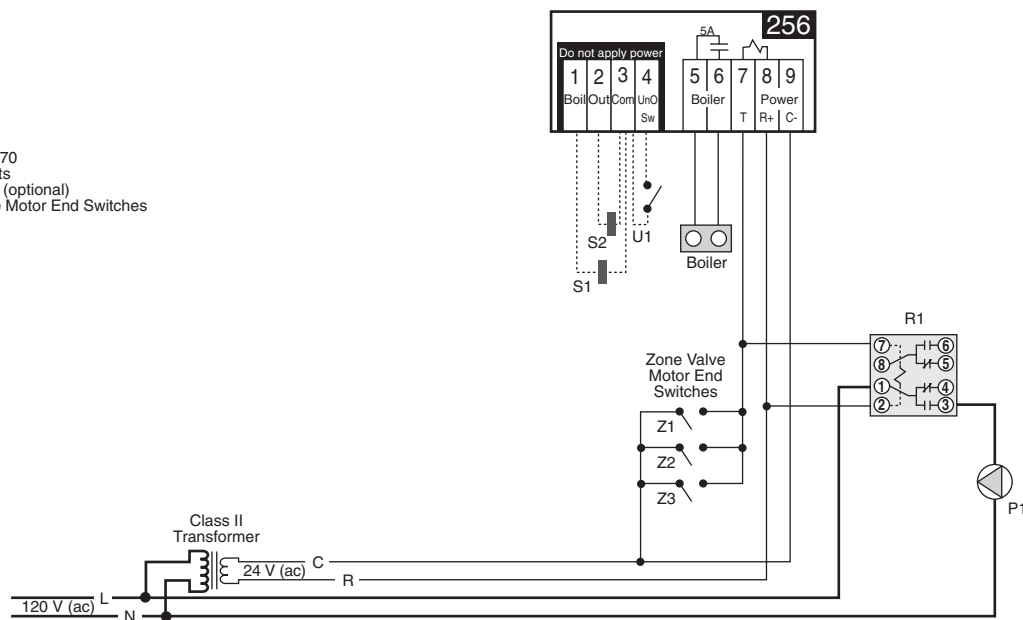
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## Mechanical



## Electrical

- P1 = Boiler Pump
- R1 = Relay 003
- S1 = Boiler Sensor 071
- S2 = Outdoor Sensor 070
- T1, ..., T3 = Thermostats
- U1 = tekmar Timer 031 (optional)
- Z1, ..., Z3 = Zone Valve Motor End Switches



**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.

## System Operation

The Boiler Control 256 provides partial or full reset to three (or more) boiler zones. The boiler is operated at the temperature required in order to satisfy the load.

**Heat Source Details** The heat source can be either a high mass or low mass non-condensing or low temperature boiler.

**Piping Details** Thermostat controlled zone valves are piped into the boiler loop. The boiler pump (P1) provides circulation through these zones when heat is required.

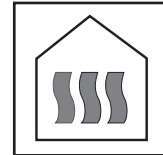
**Boiler Demand** When heat is required in the boiler zones, the zone valve end switches send a *Boiler Demand* to the 256 and turns on the boiler pump (P1) through relay R1. The boiler supply water temperature is based on the *Characterized Heating Curve* settings. The boiler is fired to satisfy the required boiler supply water temperature. Whenever the boiler is fired, the 256 aims to increase the boiler supply water temperature to at least the BOIL MIN setting.

All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 256.

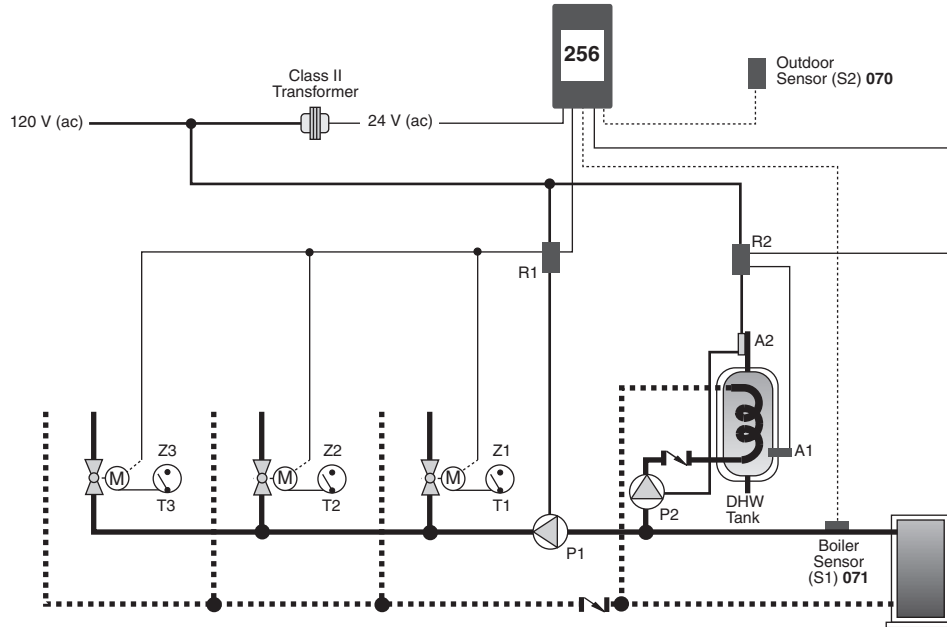


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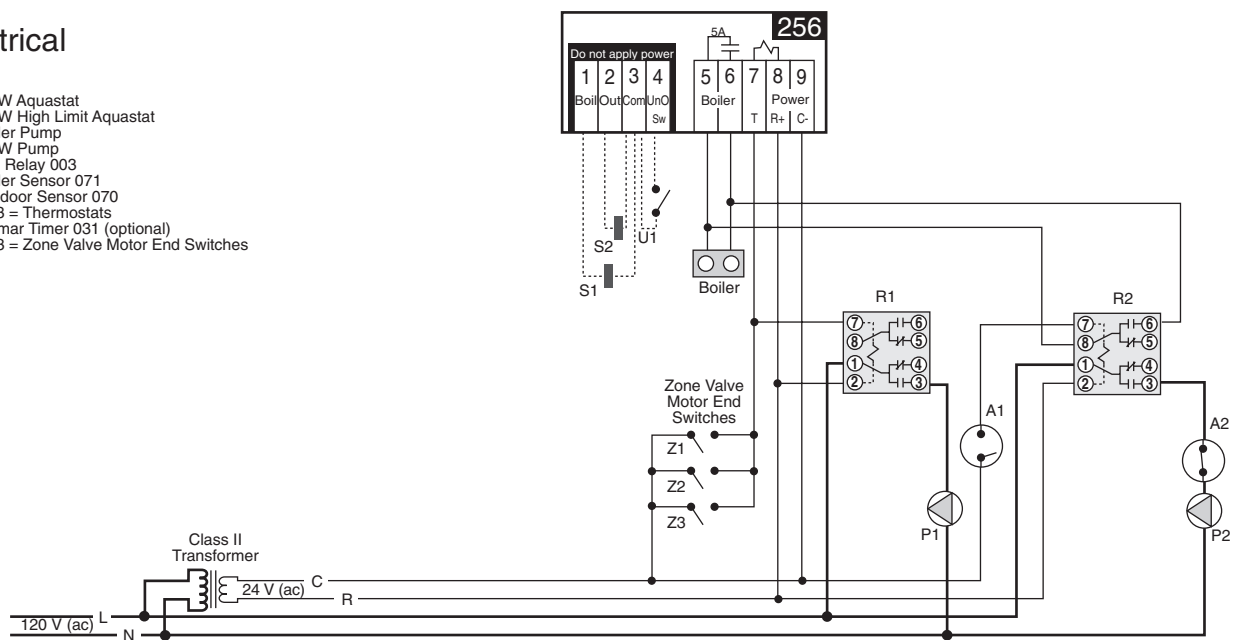


### Mechanical



### Electrical

- A1 = DHW Aquastat
- A2 = DHW High Limit Aquastat
- P1 = Boiler Pump
- P2 = DHW Pump
- R1, R2 = Relay 003
- S1 = Boiler Sensor 071
- S2 = Outdoor Sensor 070
- T1, ..., T3 = Thermostats
- U1 = tekmar Timer 031 (optional)
- Z1, ..., Z3 = Zone Valve Motor End Switches



**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.

## System Operation

The Boiler Control 256 provides partial reset to three (or more) boiler zones. The supply of heat to an indirect Domestic Hot Water (DHW) tank is controlled through an external relay. The boiler operates at the required temperature in order to satisfy the loads.

**Heat Source Details** The heat source can be either a high mass or low mass non-condensing boiler.

**Piping Details** Thermostat controlled zone valves are piped into the boiler loop. The boiler pump (P1) provides circulation through these zones when heat is required. Heat is supplied to the DHW tank through a DHW pump (P2).

**DHW Operation** When the DHW tank requires heat, the DHW aquastat (A1) energizes relay R2. Relay R2 provides power to the DHW pump (P2) in order to provide circulation through the DHW tank. Once energized, relay R2 also enables the boiler. The boiler is then allowed to operate up to the operating aquastat's setting.

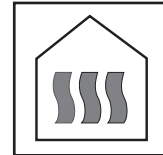
**Boiler Demand** When heat is required in the boiler zones, the zone valve end switches send a *Boiler Demand* to the 256 and turns on the boiler pump (P1) through relay R1. The boiler supply water temperature is based on the *Characterized Heating Curve* settings. The boiler is fired to satisfy the required boiler supply water temperature. Whenever the boiler is fired, the 256 aims to increase the boiler supply water temperature to at least the BOIL MIN setting.

All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 256.

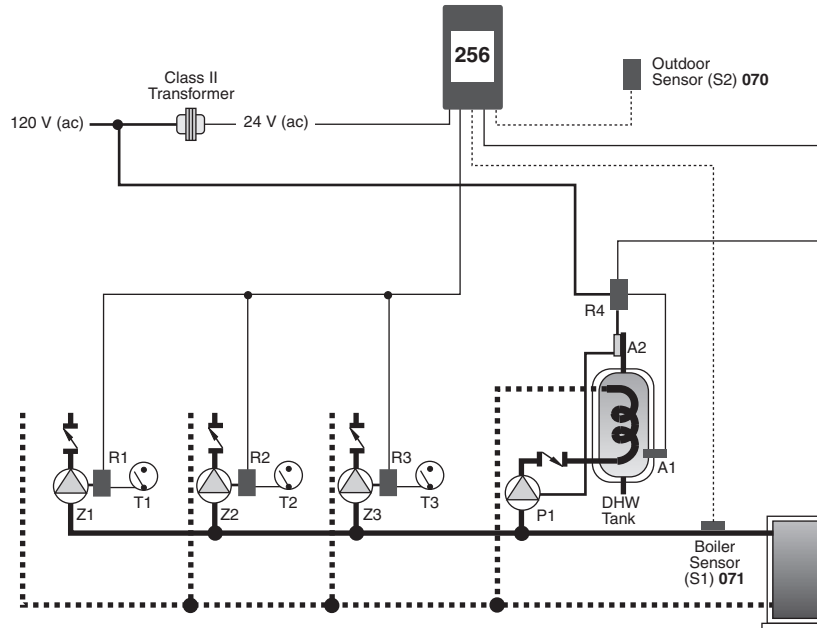


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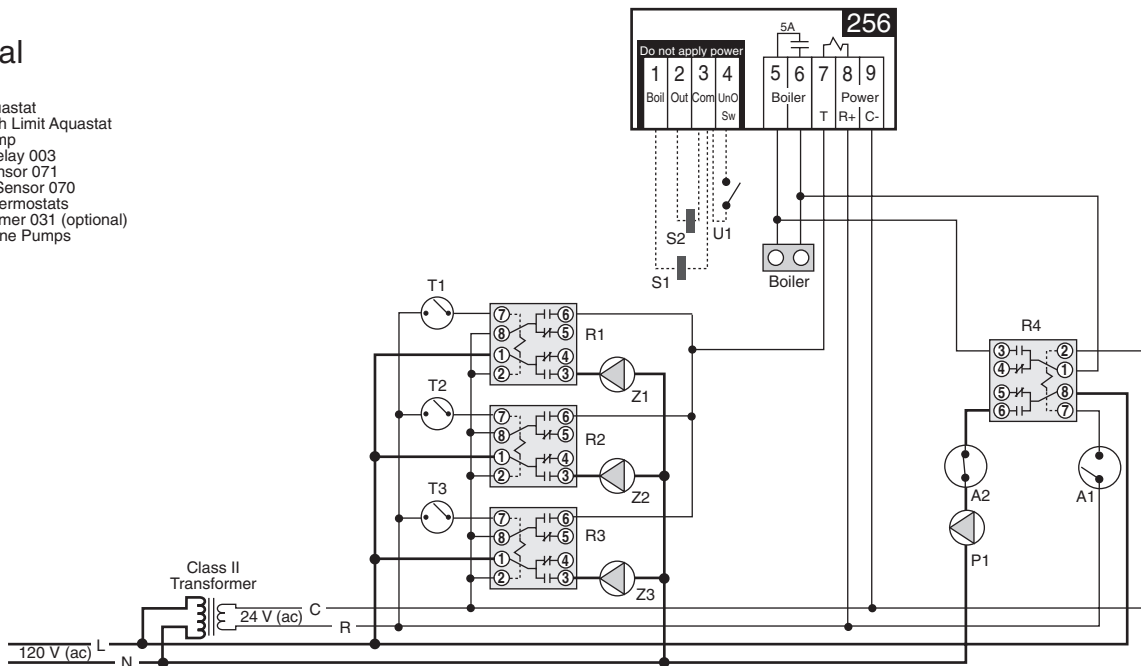


### Mechanical



### Electrical

- A1 = DHW Aquastat
- A2 = DHW High Limit Aquastat
- P1 = DHW Pump
- R1, ..., R4 = Relay 003
- S1 = Boiler Sensor 071
- S2 = Outdoor Sensor 070
- T1, ..., T3 = Thermostats
- U1 = tekmar Timer 031 (optional)
- Z1, ..., Z3 = Zone Pumps



**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.

## System Operation

The Boiler Control 256 provides partial reset to three (or more) zones. The supply of heat to an indirect Domestic Hot Water (DHW) tank is controlled through an external relay. The boiler operates at the required temperature in order to satisfy the loads.

**Heat Source Details** The heat source can be either a high mass or low mass non-condensing boiler.

**Piping Details** Thermostat controlled zone pumps are piped into the boiler loop. Heat is supplied to the DHW tank through a DHW pump (P1).

**DHW Operation** When the DHW tank requires heat, the DHW aquastat (A1) energizes relay R4. Relay R4 provides power to the DHW pump (P1) in order to provide circulation through the DHW tank. Once energized, relay R4 also enables the boiler. The boiler is then allowed to operate up to the operating aquastat's setting.

**Boiler Demand** When heat is required in the boiler zones, the zone pump relays send a *Boiler Demand* to the 256. The boiler supply water temperature is based on the *Characterized Heating Curve* settings. The boiler is fired to satisfy the required boiler supply water temperature. Whenever the boiler is fired, the 256 aims to increase the boiler supply water temperature to at least the BOIL MIN setting.

All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 256.



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