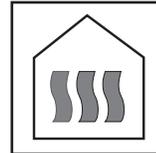


# tekmar® - Application

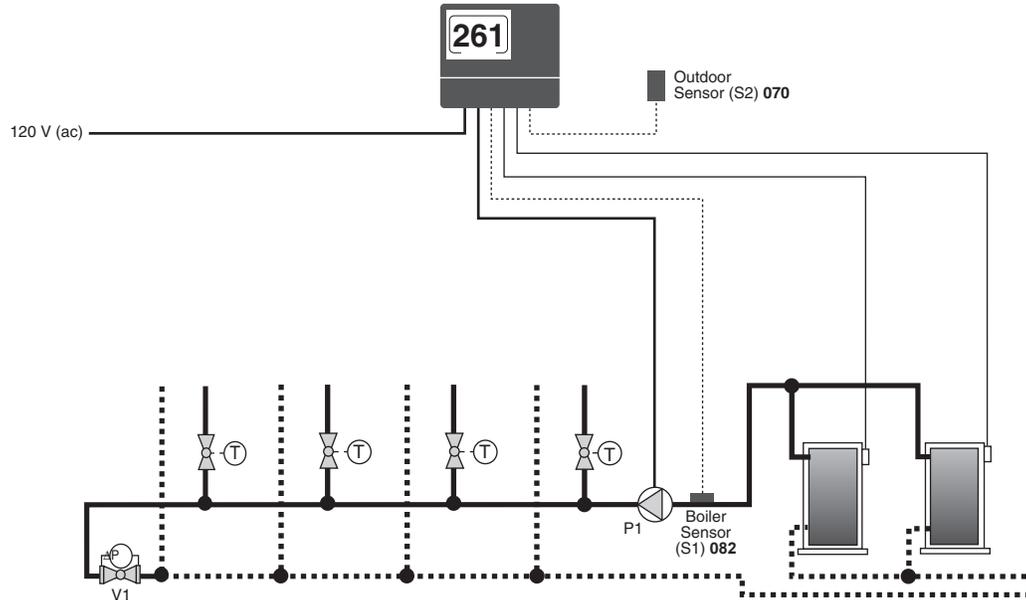
Boiler Control 261



A 261-1

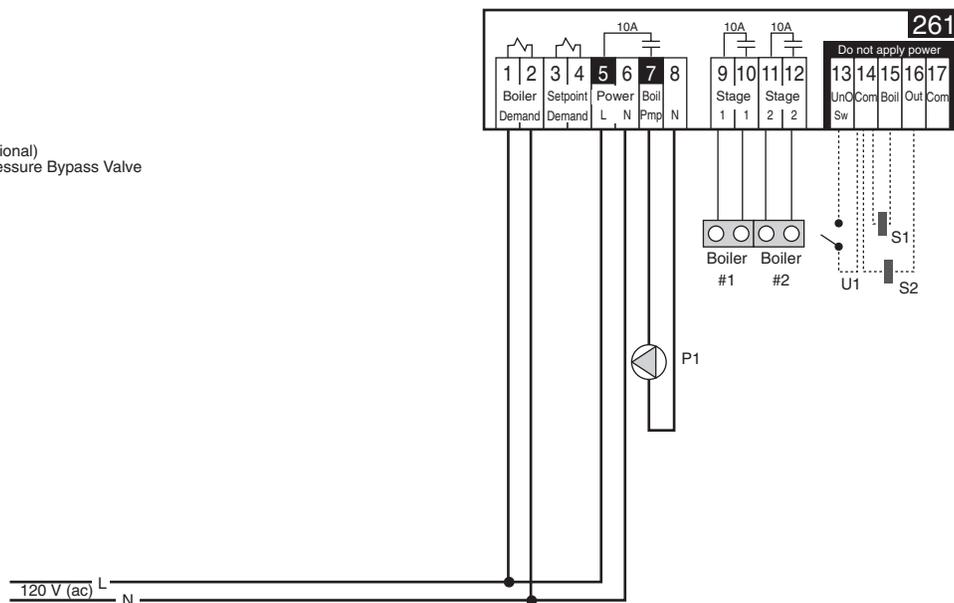
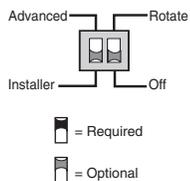
03/09

## Mechanical



## Electrical

P1 = Boiler Pump  
 S1 = Boiler Sensor 082  
 S2 = Outdoor Sensor 070  
 U1 = tekmar Timer 033 (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 261 provides partial or full outdoor reset to four (or more) thermostatic radiator valve zones. Constant circulation to the zones is provided by the boiler pump (P1). The boilers are staged as required to provide the supply water temperature that satisfies the load.

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

**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. The boilers are piped in reverse return in order to ensure equal flow through the boilers.

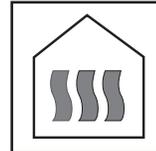
**Boiler Demand** When the outdoor air temperature is below the Warm Weather Shut Down (WWSD) setting, the 261 turns on the boiler pump (P1). The boiler supply water temperature is based on the *Characterized Heating Curve* settings. The boilers are staged to satisfy the required boiler supply water temperature. Whenever the boilers are fired, the 261 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 261.

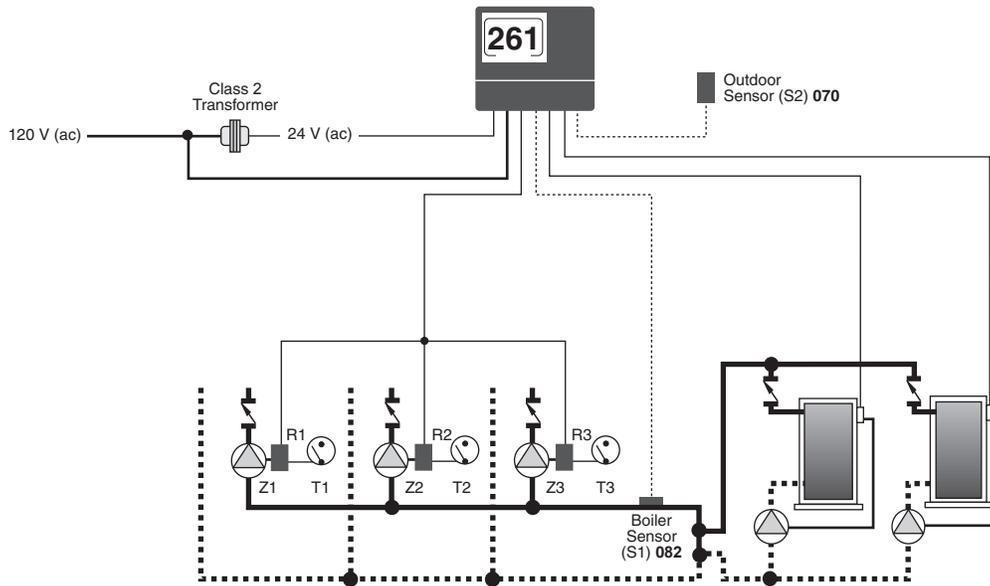


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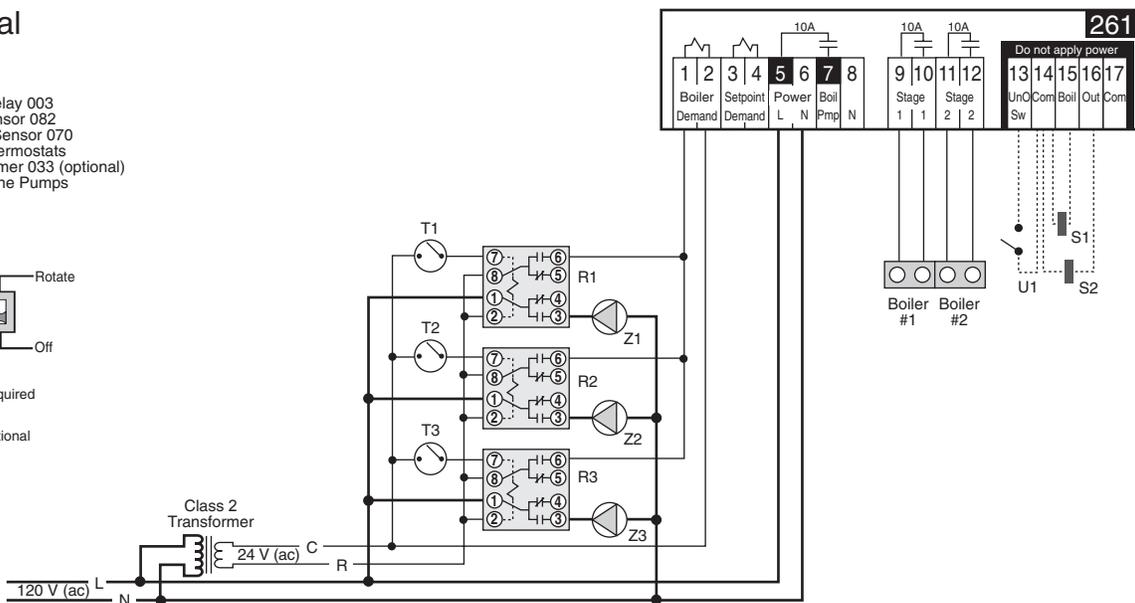
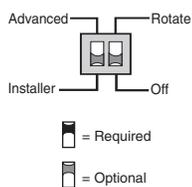


### Mechanical



### Electrical

R1, ..., R3 = Relay 003  
 S1 = Boiler Sensor 082  
 S2 = Outdoor Sensor 070  
 T1, ..., T3 = Thermostats  
 U1 = tekmar Timer 033 (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 261 provides partial or full outdoor reset to three (or more) boiler zones. The boilers are staged as required to provide the supply water temperature that satisfies the load.

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

**Piping Details** Thermostat controlled zone pumps are piped off the boiler loop as a secondary loop. The boilers are piped using parallel primary / secondary in order to provide equal and isolated flow through each boiler.

**Boiler Demand** When heat is required in the heating zones, the zone pump relays send a *Boiler Demand* to the 261. The boiler supply water temperature is based on the *Characterized Heating Curve* settings. The boilers are staged to satisfy the required boiler supply water temperature. Whenever the boilers are fired, the 261 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 261.

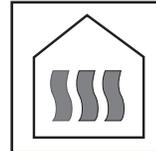


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# tekmar® - Application

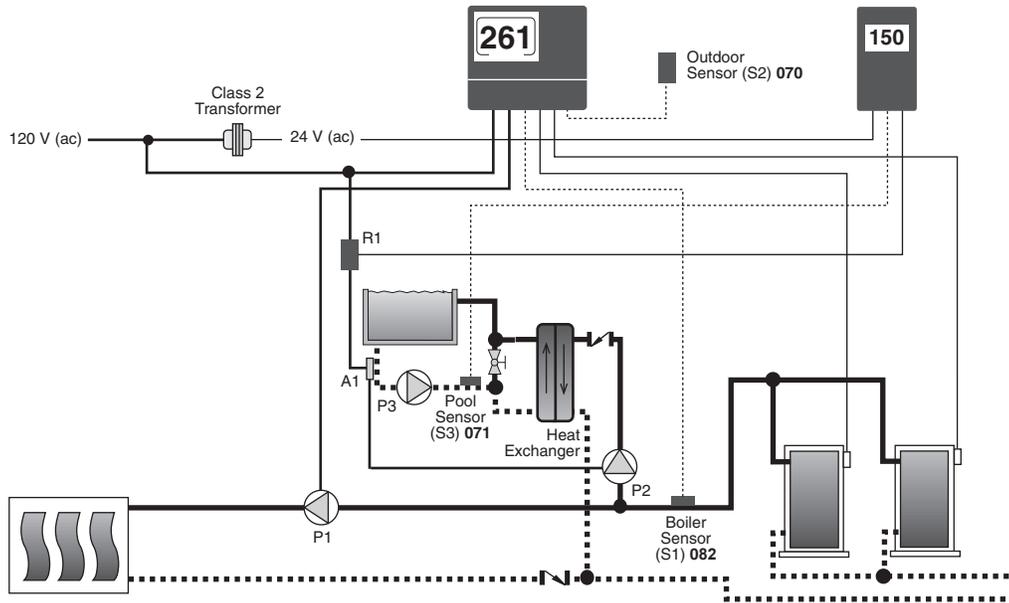
Boiler Control 261 & Setpoint Control 150



A 261-3

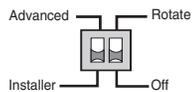
03/09

## Mechanical

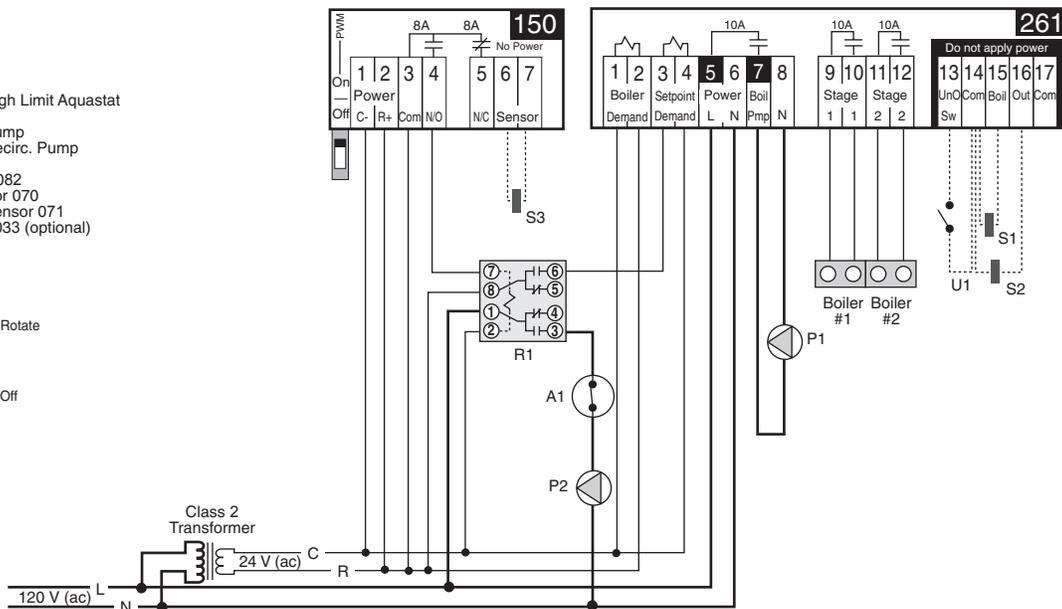


## Electrical

- A1 = Pool or Spa High Limit Aquastat
- P1 = Boiler Pump
- P2 = Pool or Spa Pump
- P3 = Pool or Spa Recirc. Pump
- R1 = Relay 003
- S1 = Boiler Sensor 082
- S2 = Outdoor Sensor 070
- S3 = Pool or Spa Sensor 071
- U1 = tekmar Timer 033 (optional)



- = Required
- = Optional



**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 261 provides partial outdoor reset to a single boiler zone. The Setpoint Control 150 controls the temperature of the pool or spa. The boilers are staged as required to provide the supply water temperature that satisfies the loads.

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

**Piping Details** A single boiler zone is permanently wired. The pool or spa heat exchanger is piped into the boiler loop and the flow is controlled through a pump (P2). The boilers are piped in reverse return in order to provide equal flow through both boilers.

**Setpoint Demand** The Setpoint Control 150 cycles relay R1 in order to control the heat exchanger pump (P2) and maintain the pool or spa temperature. When the 150 requires heat, it provides a *Setpoint Demand* to the 261 through relay R1. The 261 increases the boiler temperature to at least the *Setpoint* setting.

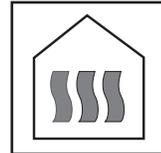
**Boiler Demand** When the outdoor air temperature is below the Warm Weather Shut Down (WWSD) setting, the 261 turns on the boiler pump (P1). The boiler supply water temperature is based on the *Characterized Heating Curve* settings. The boilers are staged to satisfy the required boiler supply water temperature. Whenever the boilers are fired, the 261 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 261.

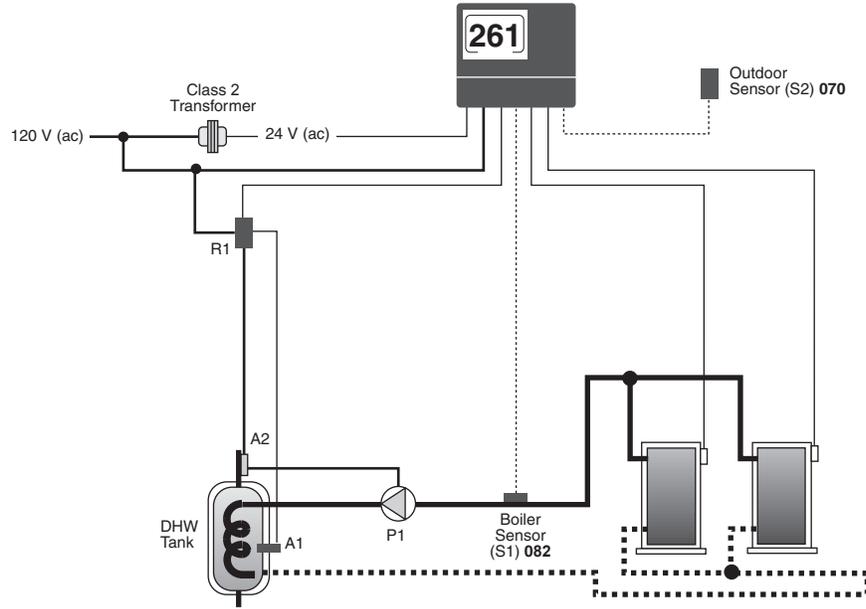


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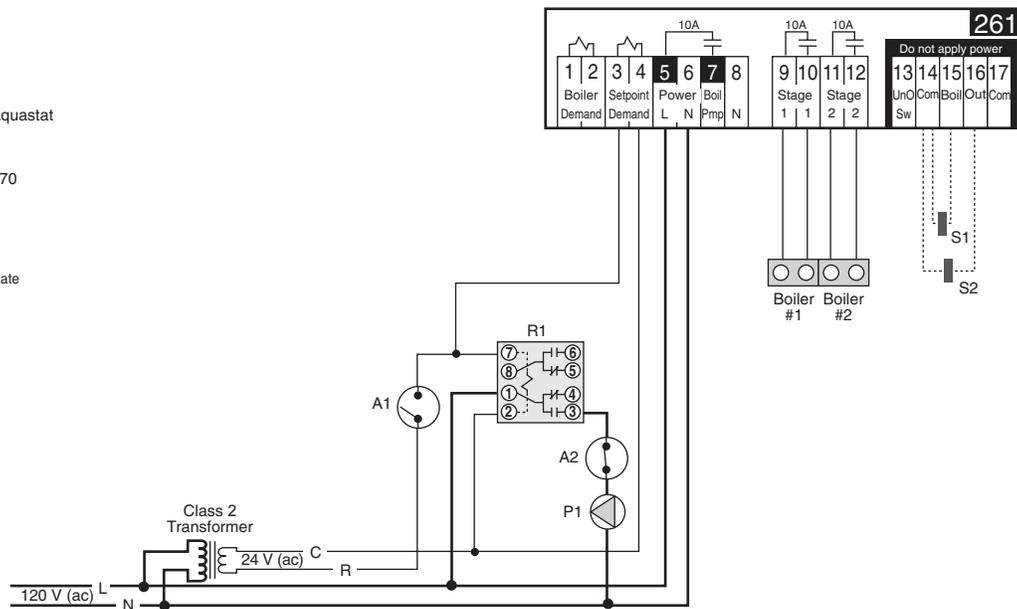
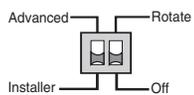


### Mechanical



### Electrical

- A1 = DHW Aquastat
- A2 = DHW High Limit Aquastat
- P1 = DHW Pump
- R1 = Relay 003
- S1 = Boiler Sensor 082
- S2 = Outdoor Sensor 070



**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 261 provides control of two boilers for a dedicated Domestic Hot Water (DHW) storage system.

**Heat Source Details** The heat source can be high mass or low mass non-condensing or low temperature boilers, or any boilers designed for this type of application.

**Piping Details** The boilers are piped in reverse return in order to provide equal flow through each boiler.

**Setpoint Demand** When the DHW tank requires heat, the DHW aquastat (A1) provides a *Setpoint Demand* to the 261 through relay R1. Relay R1 provides power to the DHW pump (P1) in order to provide circulation through the DHW tank. The 261 increases the boiler temperature to the *Setpoint* setting.

All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 261.



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