



# Technical Data Sheet

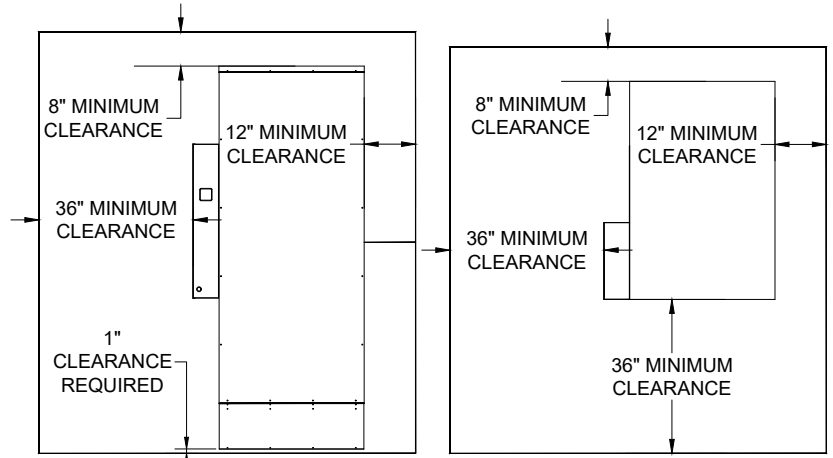
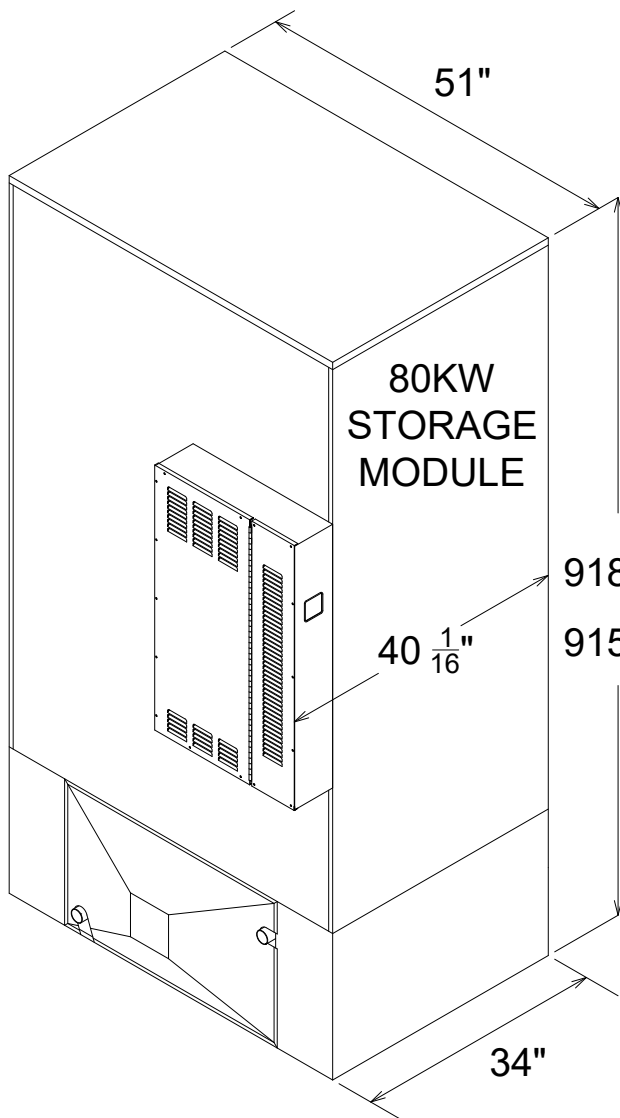
## 9100 ThermElect Hydronic

Models 9150 and 9180

2-Year Limited Manufacturer's Warranty



### Clearances and Dimensions



#### Storage Module (53kW and 80kW)

- Back = 8 inches
- Bottom = 1 inch (from combustible material)
- Right Side = 12 inches
- Top = 8 inches (from combustible material)
- Left Side & Front = 36 inches (for ease in servicing)

Adhere to clearances and provide appropriate ventilation to maintain no greater than 85°F air temperature in area where unit is installed.

**NOTE:** Some electrical codes may require a greater front clearance depending on operating voltages and other factors.

### Placement

The minimum area required for the installation of the system is 100 square feet per unit. This area must remain free of debris and room air should be maintained at less than 85° Fahrenheit / 29° Celsius. It is the responsibility of the installer and system designer to provide appropriate ventilation to control temperature in area where unit is placed.

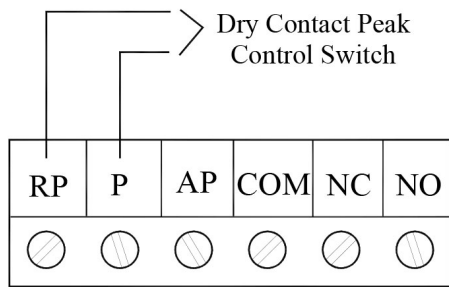
# Load Management

The ThermElect is a commercial Electric Thermal Storage (ETS) heating system. It uses Demand Free, Off-Peak electricity to provide a low cost heating solution for commercial, industrial, and large residential applications. ETS equipment is designed to store electricity, as heat, during hours when energy costs are lower and kW demand charges are not incurred. The ThermElect's thermal mass consists of a high-density ceramic brick capable of vast heat storage.

The ThermElect system is designed to operate under any one of three load control strategies.

- 1. On-Peak/Off-Peak Signal:** ThermElect responds to external load control device (contact closure) and charges during off-peak periods. Auxiliary contact is provided on the ThermElect for controlling external loads. If using the Steffes Time Clock Module for peak control, the direct wiring shown here is not necessary.
- 2. 4-20 Milli-Amp (1-5 Volt DC):** ThermElect responds to external load management device and monitors energy usage so as not to exceed the maximum allowable rate of consumption (kW).
- 3. Pulse Monitoring:** ThermElect monitors pulse inputs from the power company's electric meter and proportionally charges when demand free power is available.

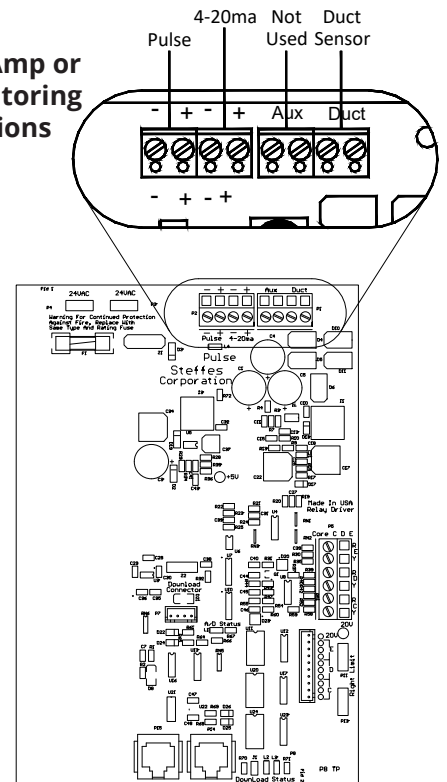
## Utility On-Peak/Off-Peak Connections



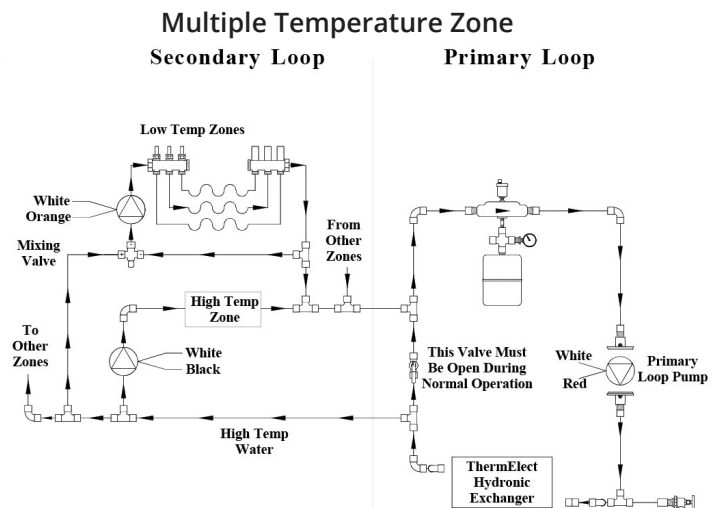
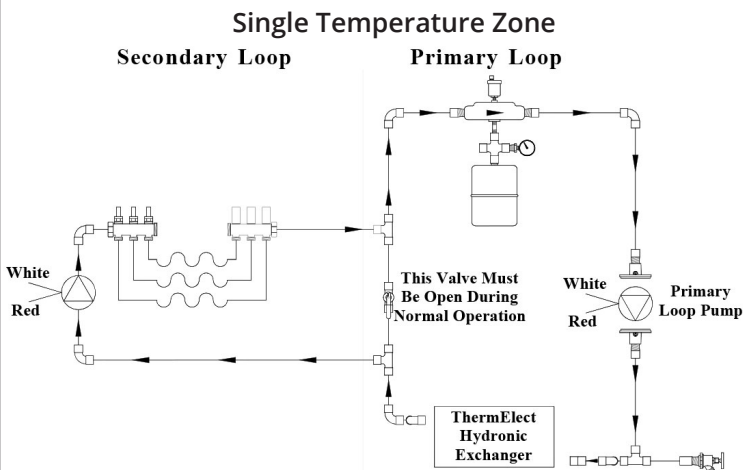
## Terminal Block Code Designations

- RP = Peak Control Input Common
- P = Peak Control Input
- AP = Anticipated Peak (Pre-Peak) Control Input
- COM = Peak Control Output Common
- NC = Peak Control Output (Normally Closed)
- NO = Peak Control Output (Normally Open)

## 4-20 Milli-Amp or Pulse Monitoring Connections



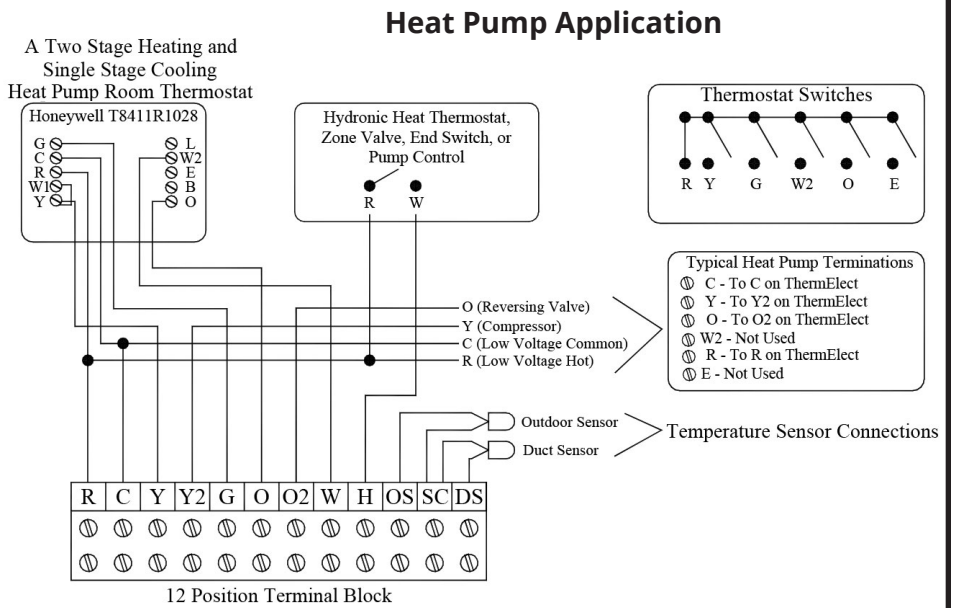
# Typical System Plumbing



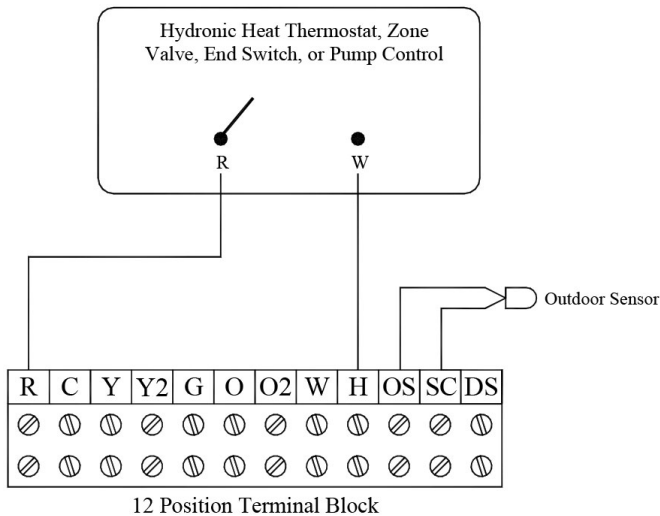
**NOTE:** There are many additional ways to connect plumbing and regulate temperature from the primary loop onward.

## Low Voltage Wall Thermostat, Sensor, and Compressor Connections

- A low voltage (24VAC) room thermostat can be used for room temperature control with the ThermElect Hydronic system. If so, Steffes recommends using a digital thermostat. To initiate a heat call, the system needs a switch closure from R to H. This energizes the primary loop pump outputs.
- In heat pump applications, the Honeywell brand thermostat is recommended and shown in the wiring schematic.
- An outdoor temperature sensor is included with the system to provide outdoor temperatures for automatic charge control (regulation of stored heat).



## Hydronic Heating Single Zone System



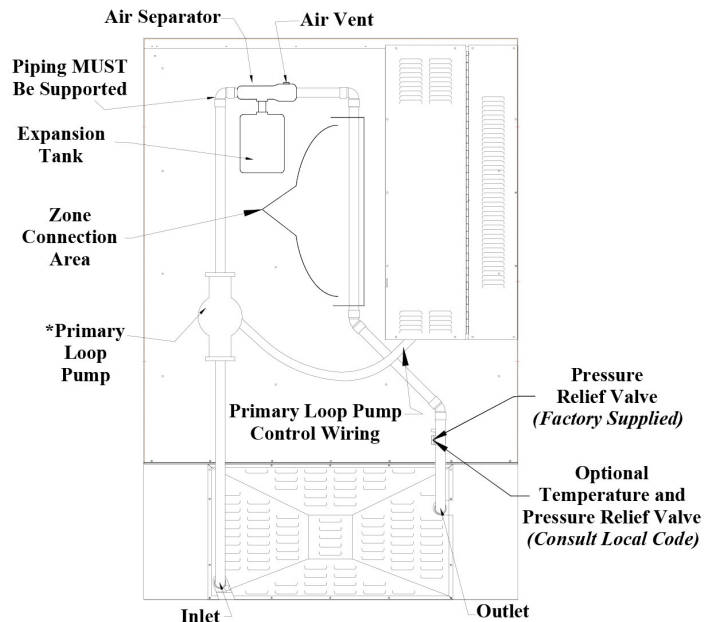
## Terminal Block Code Designations

- R = Low Voltage Hot
- C = Low Voltage Common
- Y = Compressor/Stage 1 Heat Call
- Y2 = Compressor Output
- G = Fan Call
- O = Reversing Valve Input
- O2 = Reversing Valve Output
- W = Stage 2 Heat Call
- H = Hydronic Heat
- OS = Outdoor Temperature Sensor
- SC = Outdoor Temperature Sensor Common
- DS = Duct Temperature

## Primary Water Loop Plumbing

The ThermElect Hydronic System must be plumbed with a primary water loop consisting of a minimum of 12' of 1.25" pipe and its own circulatory pump. The primary loop serves to regulate heat transfer from the unit's heat exchanger.

Primary loop must be powered by ThermElect control system as shown in figure on the right.



## Specifications

	Model 9150 53kW Storage Module		Model 9180 80kW Storage Module	
Input Voltage	277/480	347/600	277/480	347/600
Phase	3	3	3	3
Number of Wires	4	4	4	4
Charging Input (kW)	50.4	53.3	75.6	80.0
Elements - Quantity	12	12	18	18
Elements - Watts Each	4,200	4,444	4,200	4,444
Amps - Core Charging	60.65	51.23	90.97	76.84
Max. Pump & Blower Load (AMPS) Tentative	2.3	1.9	2.3	1.9
Minimum Circuit Ampacity	78.69	66.41	116.59	98.43
Blowers/System Control Voltage*	240V/208V			
Storage Capacity - kWh***	290		440	
Storage Capacity - BTU	989,480		1,501,280	
Pipe Size (Inlet/Outlet)	1 ½"			
Required Primary Loop	Minimum of 12' of 1 ½" pipe required in primary loop plumbing			
Output Water Temperature (selection range)	50°F to 185°F			
Maximum Working Pressure	20 PSIG requires 30 PSI Pressure Relief Valve 60 PSIG requires 75 PSI Pressure Relief Valve (Standard) 125 PSIG requires 150 PSI Pressure Relief Valve			
Flow Rate (Primary Loop)	1 GPM per 10,000 BTU of required output at 20°F Temperature Rise (Not to exceed 30 GPM)			
Internal Pressure Drop (assuming 50% glycol mix)	.7 ft @ 15 GPM 1.2 ft @ 20 GPM		1.8 ft @ 25 GPM 2.5 ft @ 30 GPM	
Approximate Heater Module Weight (lbs)	900		970	
Approximate Insulation Block/Elements/Other Weight (lbs)	330		400	
Approximate Brick Weight (lbs)	3,440		5,160	
Number of Brick	192		288	
Approximate Installed Weight (lbs)**	4,670		6,530	

\* Supply via step-down transformer - field installation.

\*\* Add approximately 500 lbs to arrive at shipping weight.

\*\*\* Storage capacity is based on a maximum core temperature of 1,400 degrees Fahrenheit.