



# Technical Data Sheet

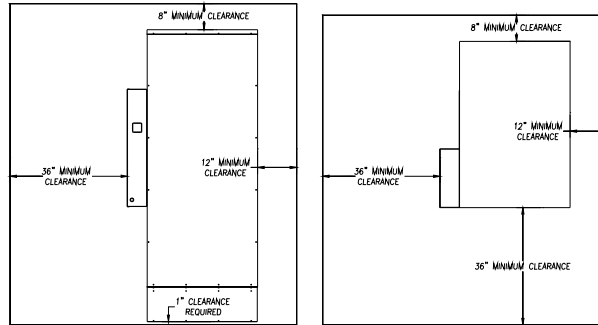
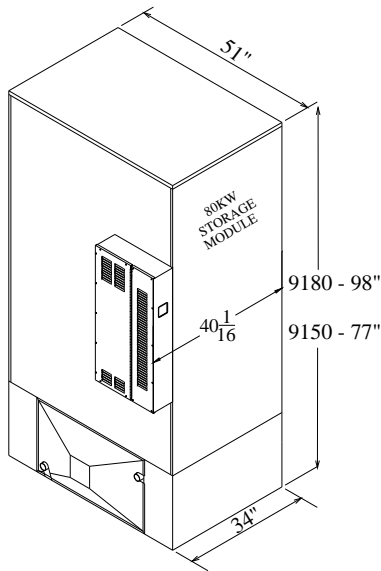
## THERM ELECT Hydronic

Electric Thermal Storage Heating System

Models 9150, 9180



### 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.



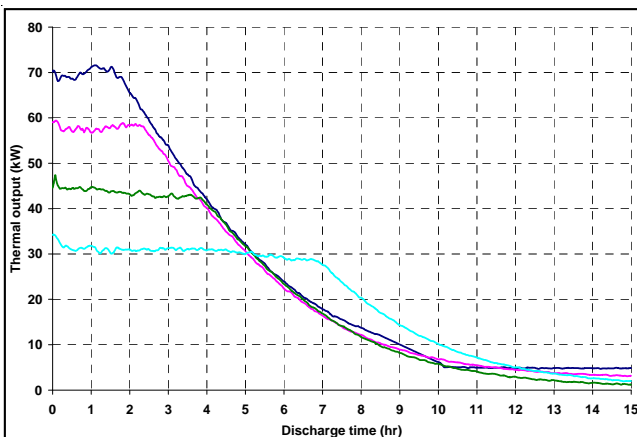
Some electrical codes may require a greater front clearance depending on operating voltages and other factors.

### Placement

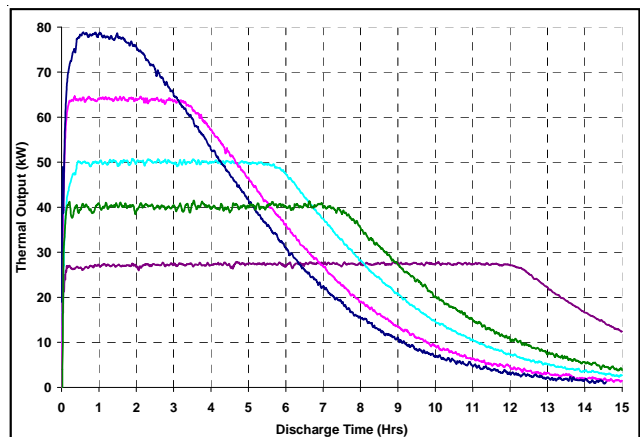
The minimum area required for the installation of the system is 100 square feet per unit. This area must remain free of debris and room air should be maintained at less than 85° Fahrenheit / 29° Celsius. It is the responsibility of the installer and system designer to provide appropriate ventilation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

### Load Profile Graphs

**MODEL 9150**  
**(53kW Storage Module)**



**MODEL 9180**  
**(80kW Storage Module)**



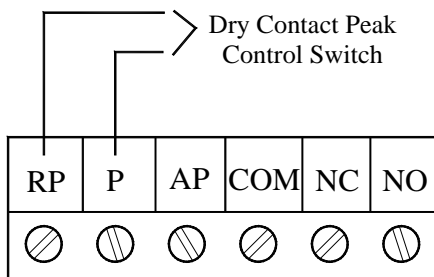
## Load Management

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. Auxillary contact is provided on the ThermElect for controlling external loads. If using the optional Steffes Power Line Carrier Transmitter (208/240V systems only) or 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. Optional load management control modules (Order Item #1908410) are available for control of up to 16 external loads.

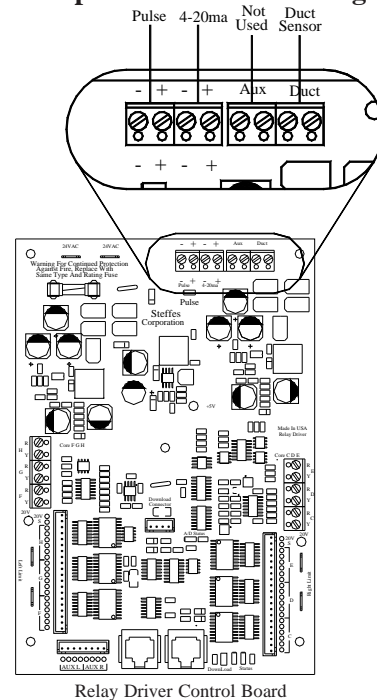
### Utility On-Peak/Off-Peak Connections



#### Terminal Block Code Designations

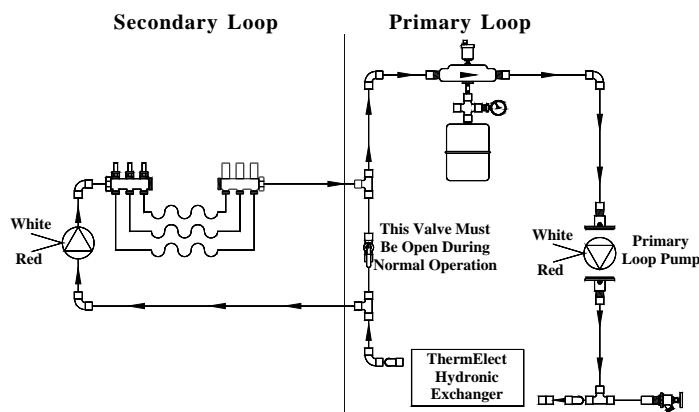
- RP = Peak Control Input Common
- P = Peak Control Input
- AP = Anticipated Peak (Pre-Peak) Control Input
- COM = Peak Control Output Common
- NC = Peak Control Output (Normally Closed)
- NO = Peak Control Output (Normally Open)

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

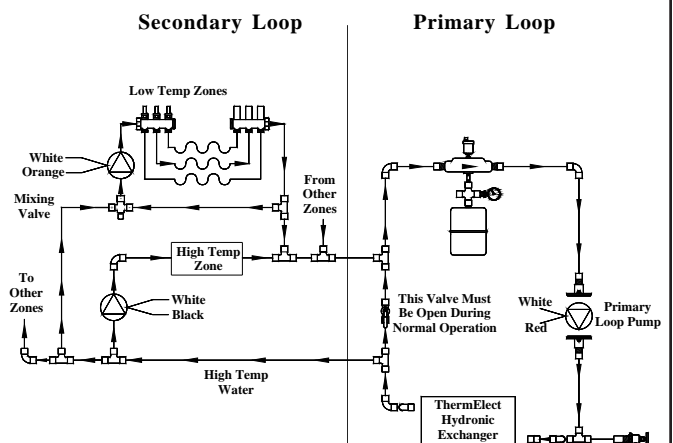


## Typical System Plumbing

### Single Temperature Zone



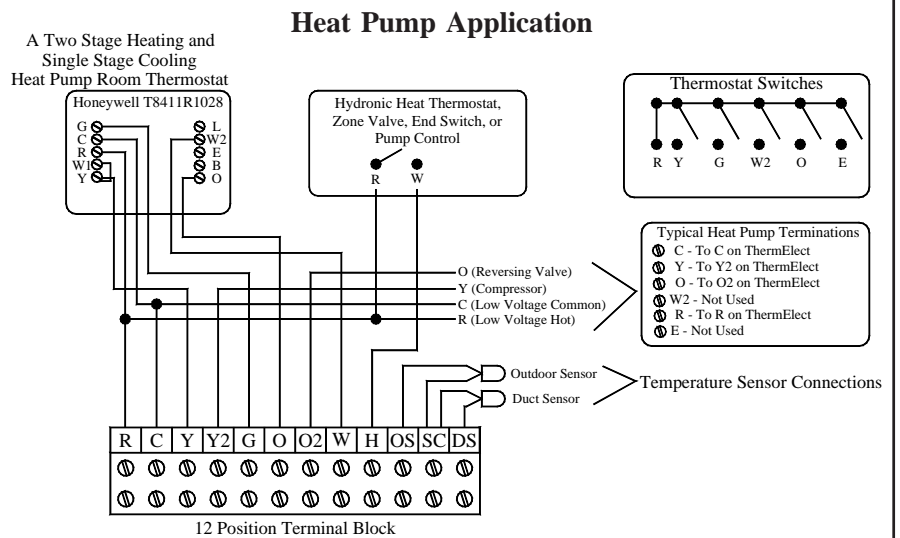
### Multiple Temperature Zones



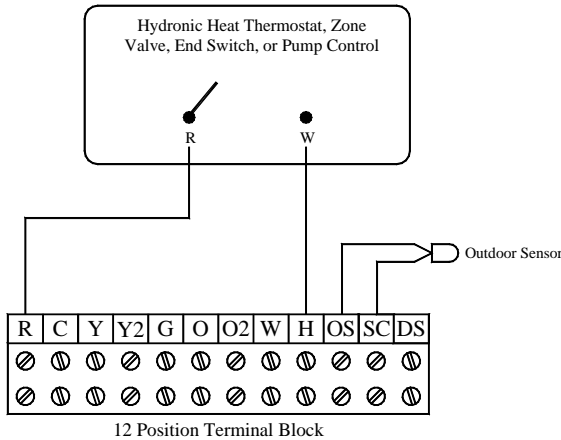
**NOTE:** There are many additional ways to connect plumbing and regulate temperature from the primary loop onward.

# Low Voltage Wall Thermostat, Sensor, and Compressor Connections

- 24 VAC wall thermostat must be used.
- A digital wall thermostat is recommended for use with ThermElect Systems. If utilizing a mechanical wall thermostat, it may be necessary to add a load resistor (250 ohm, 5 watt) due to the low current draw (.01 amps) on the heat call input circuit.
- 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



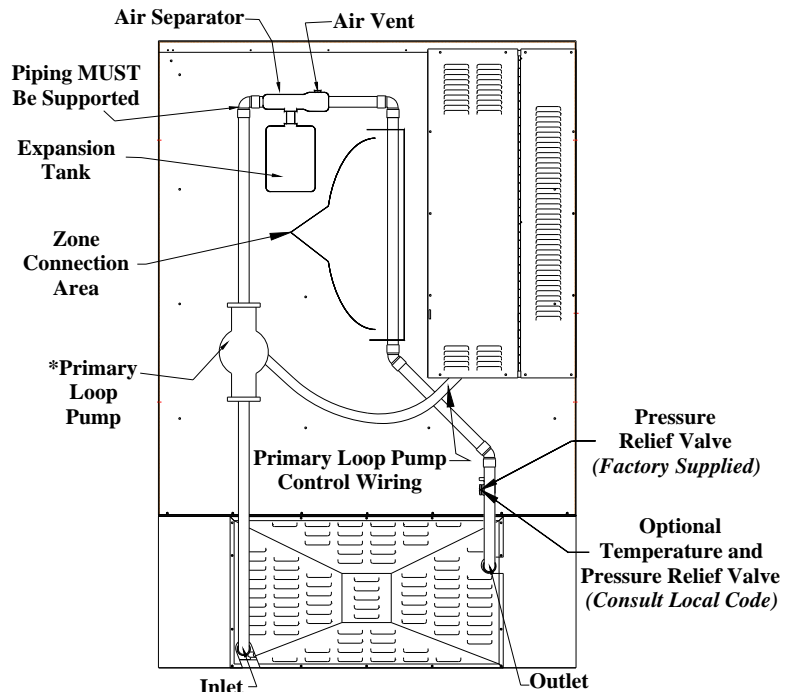
## Terminal Block Code Designations

- 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 Sensor

## 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 circulator 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)

Input Voltage	240	120/208	120/240	277/480	347/600
Phase	1	3	3	3	3
Number of Wires	2	3	3	4	4
Charging Input (kW)	53.3	48.0	53.3	50.4	53.3
Elements - Quantity	12	12	12	12	12
Elements - Watts Each	4,444	4,000	4,444	4,200	4,444
Amps – Core Charging	222.20	133.39	128.44	60.65	51.23
Max. Pump & Blower Load (AMPS) <i>Tentative</i>	4.6	4.6	4.6	2.3	1.9
Minimum Circuit Ampacity	283.50	172.49	166.30	78.69	66.41
Blowers/System Control Voltage*	240V/208V				
Storage Capacity – kWh ***	290				
Storage Capacity - BTU	989,480				
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				
Approximate Insulation Block / Elements / Other Weight (lbs)	330				
Approximate Brick Weight (lbs)	3,440				
Number of Brick	192				
Approximate Installed Weight (lbs) **	4,670				

### MODEL 9180 (80kW Storage Module)

Input Voltage	240	120/208	120/240	277/480	347/600
Phase	1	3	3	3	3
Number of Wires	2	3	3	4	4
Charging Input (kW)	80.0	72.0	80.0	75.6	80.0
Elements - Quantity	18	18	18	18	18
Elements - Watts Each	4,444	4,000	4,444	4,200	4,444
Amps – Core Charging	333.30	200.09	192.66	90.97	76.84
Max. Pump & Blower Load (AMPS) <i>Tentative</i>	4.6	4.6	4.6	2.3	1.9
Minimum Circuit Ampacity	422.38	255.86	246.57	116.59	98.43
Blowers/System Control Voltage*	240V/208V				
Storage Capacity – kWh***	440				
Storage Capacity - BTU	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)	970				
Approximate Insulation Block / Elements / Other Weight (lbs)	400				
Approximate Brick Weight (lbs)	5,160				
Number of Brick	288				
Approximate Installed Weight (lbs) **	6,530				

\* Supply via stepdown transformer - field installed.

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

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