

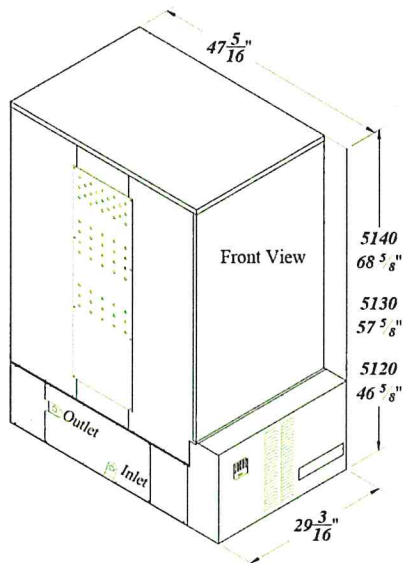
# Technical Data Sheet

## 5100 Comfort Plus Hydronic

5-Year Limited Manufacturer's Warranty

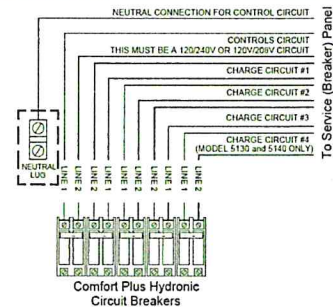
### Unit Dimensions

- System will fit through a 30" doorway without disassembling. For smaller openings or for ease in moving, it can be disassembled.



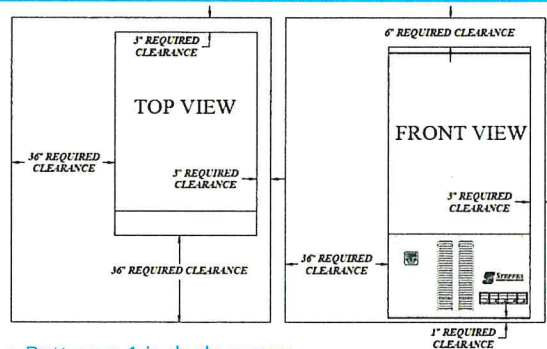
### Line Voltage Field Connections and Circuit Phasing

- The breakers on the Comfort Plus are intended for service disconnect only. The 15 amp breaker powers the pump, blowers and system controls circuit. The 60 amp breakers power the element circuits.
- Factory configured with multiple circuit, single phase connections. If single feed is desired a single feed kit is available from the factory. Phase balancing is recommended when making connections in 3-phase applications.
- Controls circuit **MUST** include a neutral wire.



### Placement and Clearances

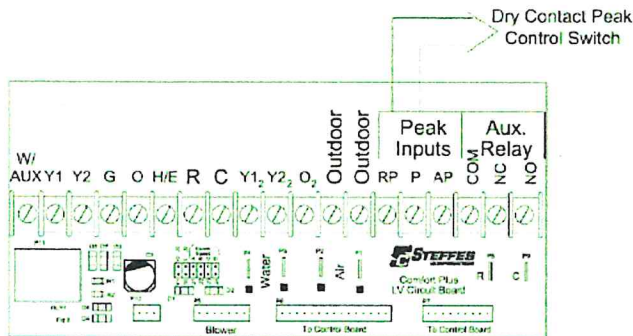
- The area in which the system is installed must remain free of debris and adequate ventilation is required to maintain room temperature of less than 85° F. A static heat recovery unit or air handler are options available to move the radiant heat from the outer panels to a more desirable area.
- Adhere to all national and local electrical and building code placement requirements for electric heating appliances.
- An 18" high stand is available from the factory to elevate the system if necessary.



- Bottom = 1 inch clearance
- Top = 6 inches (from combustible material)
- Front = 36 inches (for ease in servicing)
- Left Side = 36 inches (for ease in servicing)
- Back and Right Side = 3 inches (from combustible material)

## Low Voltage Peak Control Connections

If using the optional Steffes Power Line Carrier Transceiver or Steffes Time Clock Module for peak control, the direct wiring shown here is not necessary.

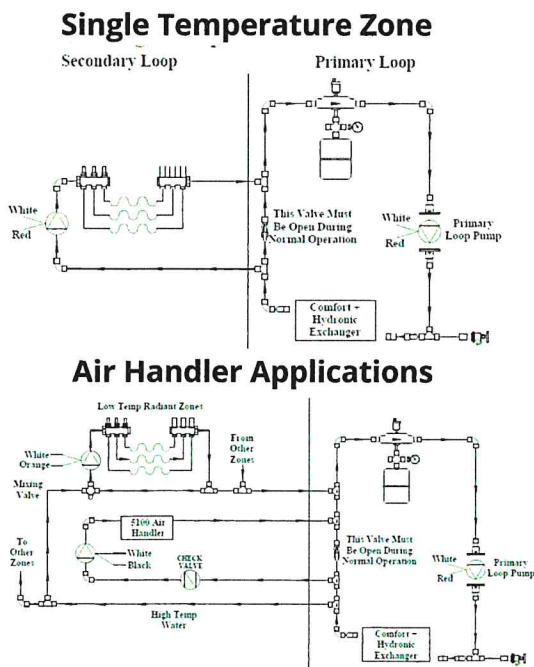


## Low Voltage Terminal Block Coding

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)

## Typical System Plumbing

There are many ways to connect plumbing and regulate temperature of water supplied from the primary loop. These are typical plumbing schematics.



## Pressure Drop Through Heat Exchanger

STATIC PRESSURE (Feet Water Column)	.1 ft @ 2 GMP
	.2 ft @ 4 GMP
	.4 ft @ 6 GMP
	.7 ft @ 8 GMP
	1.1 ft @ 10 GMP

Based on 80 degree entry water temperature with a 50% glycol mix.

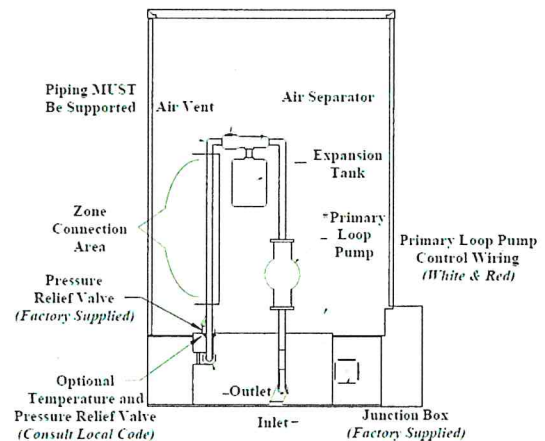
## Typical Floor Zone Design

Pipe Size	Maximum Pipe Length
3/8"	200'
1/2"	300'
5/8"	500'

Pipe length will vary by manufacturer.

## Primary Water Loop Plumbing

- The system must be plumbed with a primary water loop consisting of a minimum of 10' of 1" pipe and its own circulator pump (Grundfos UP15-42F single speed 115 VAC or equal recommended). The primary loop serves to regulate heat transfer from the system's heat exchanger. A kit containing components generally installed with hydronic heat systems is available from Steffes. The primary loop must be powered by the Comfort Plus control system.
- The Comfort Plus Hydronic system is factory configured for left side plumbing attachment only.

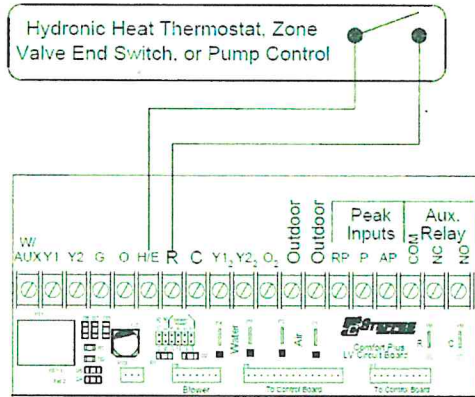




## Low Voltage Wall Thermostat, Sensor, and Compressor Connections

- 24 VAC wall thermostat must be used. Honeywell brands shown in schematics and recommended.
- A digital wall thermostat is recommended for use with Comfort Plus 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 amp) on the heat call input circuit.
- An outdoor sensor is included with the system to provide outdoor temperatures for automatic charge control (regulation of stored heat).

### Single Hydronic Heating Zone Application



### Terminal Block Code Designations

- W/AUX = Stage 2 Heat Call
- Y1 = Stage 1 Heat Call
- Y2 = Stage 2 Heat Call
- G = Fan Call
- O = Reversing Valve Input
- H/E = Hydronic Heat
- R = Low Voltage Hot
- C = Low Voltage Common
- Y1<sub>2</sub> = Compressor Output Stage 1
- Y2<sub>2</sub> = Compressor Output Stage 2
- O<sub>2</sub> = Reversing Valve Output
- Outdoor = Outdoor Temperature Sensor

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

Model	5120		5130		5140		
Charging Input (See Note 1)	14.0 kW	19.2 kW	24.8 kW	28.8 kW	37.2 kW	38.4 kW	45.6 kW
Single feed: Minimum Circuit Ampacity (240V Systems) Includes 25% Derate for Continuous Load)	84	110	140	160	204	210	248
Element Current Draw	59 AMPS	80 AMPS	104 AMPS	120 AMPS	155 AMPS	160 AMPS	190 AMPS
Element Circuits Required (See Note 2)	3-30 AMP	3-40 AMP	3-50 AMP	4-40 AMP	4-50 AMP	4-50 AMP	4-60 AMP
Pump and Blowers/Controls Circuit Required	1-15 amp (10 AMPS maximum load)						
Pump Voltage	120V (Neutral Conductor Required)						
Blower/Controls Voltage	240V or 208V						
Storage Capacity (See Note 3)	120 kWh (409,440 BTU)		180 kWh (614,160 BTU)		240 kWh (818,880 BTU)		
Approximate Installed Weight	2,218 lbs		3,046 lb		3,894 lbs		
Pipe Size- Water Inlet/Water Outlet	1"						
Output Water Temperature Selection Range	50°F to 185°						
Maximum Working Pressure	20 PSIG requires 30 PSI Pressure Relief Valve (Standard) 60 PSIG requires 75 PSI Pressure Relief Valve 125 PSIG requires 150 PSI Pressure Relief Valve						
Minimum Flow Rate (primary loop)	1 GPM per 10,000 BTU of required output at 20°F temperature rise (10 GPM maximum)						
Maximum Maintainable Heat Loss (See Note 3)							
8 Consecutive Charge Hours (BTU/hr)	20,414	27,996	34,175	41,994	49,212	55,992	65,615
12 Consecutive Charge Hours (BTU/hr)	30,621	41,994	45,566	62,991	65,615	83,988	87,487
6/4/6/8 Charge Strategy (BTU/hr)	30,621	41,994	54,242	62,991	81,363	83,988	99,738

**Note 1:** Standard configuration (240V) systems can be connected to 208V; however, the charging input of the system will derate by 25%. If 208V specific charging voltage is required, it is available as a special factory order. For 277V systems, refer to the 7100 series.

**Note 2:** The system is factory configured to be field connected to multiple line voltage circuits. If single feed to the elements and pump/blower/system controls circuits is desired, an optional single feed kit is available to order.

**Note 3:** The size and heating ability of the system required for an installation is dependent on the heat loss of the area and the power company's off-peak hours. In addition, if the unit is not installed within the heated area, heat lost statically must be taken into account when sizing a system. Contact Steffes for assistance in selecting an appropriately sized system.