

## 10 LOW VOLTAGE PEAK CONTROL CONNECTIONS

RP	P	AP	COM	NC	NO

1. Route low voltage circuit to the six position terminal block.
2. Connect field wiring to positions "RP" and "P" on terminal block.

**Comfort Plus 6-Position 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)

### IMPORTANT

If utilizing a Steffes Time Clock Module or Power Line Carrier control, refer to the installation instructions provided with the device.

## 11 LOW VOLTAGE OUTDOOR SENSOR CONNECTIONS

The outdoor temperature sensor can be installed by wiring it directly to the system or to the Steffes power line carrier (PLC) system, if utilized.

Direct Wired:

1. Mount outdoor sensor in a location where it can accurately sense outdoor temperature.
2. Route low voltage wire from outdoor sensor to electrical compartment:
  - Seal external wall openings.
  - Outdoor sensor lead can be extended to 250 ft.
  - Unshielded Class II (thermostat) wire can be used provided it is segregated from any line voltage wiring.
3. Connect outdoor sensor wires to "OS" and "SC" positions of the 12 position low voltage terminal block.

### IMPORTANT

- If connecting to the Steffes power line carrier system, follow the installation instructions in the PLC system's Owner's and Installer's Guide.
- Outdoor sensor wire **MUST NOT** be combined with other control wiring in a multi-conductor cable.

R	C	W		G	Y	Y2		OS	SC	RS	
R	C	Y	Y2	G	O	O2	W	E	OS	SC	RS

Comfort Plus 12 Position Terminal Block

## 12 LOW VOLTAGE ROOM THERMOSTAT WIRING

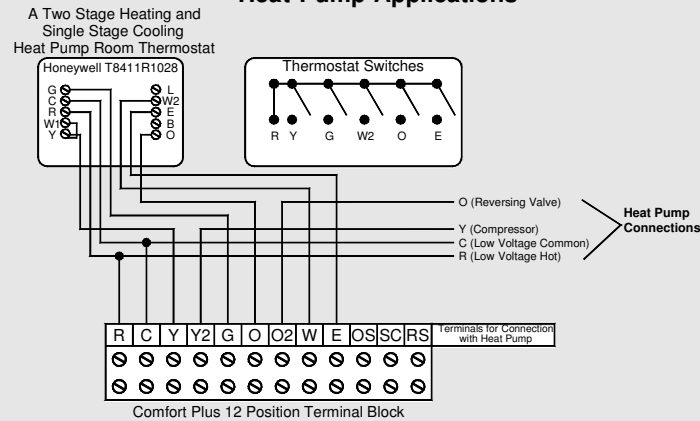
A 24 VAC thermostat must be used (digital recommended).

1. Disconnect power to Comfort Plus heating system. Route thermostat low voltage wire to the system.
2. Insulate thermostat wire wall opening if necessary.
3. Attach thermostat. When using a mechanical thermostat or thermostat with anticipator, resistor kit #1190015 must be installed to ensure proper operation.
4. Route low voltage wire into electrical compartment to 12 position low voltage terminal block.

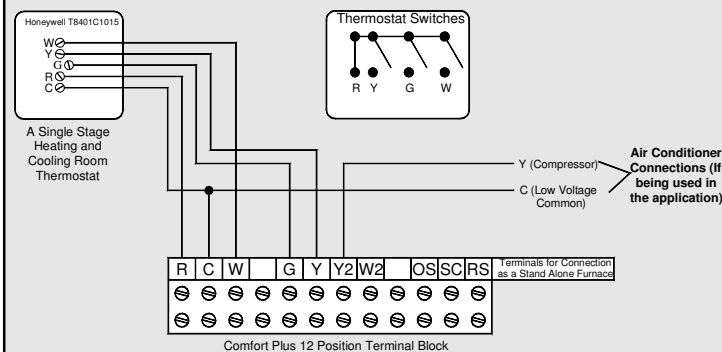
### Comfort Plus 12-Position Low Voltage Terminal Block Coding

R = Low Voltage Hot	O = Reversing Valve Input
C = Low Voltage Common	O2 = Reversing Valve Output
Y = Compressor/Stage 1 Heat Call	E = Emergency Heat
W = Stage 2 Heat Call	OS = Outdoor Temperature Sensor
Y2 = Compressor Output	SC = Outdoor Temperature Sensor Common
G = Fan Call	RS = Freeze Protection Room Temperature Sensor

### Heat Pump Applications



### Stand Alone Furnace Applications (Shown with Uncontrolled Air Conditioning System)



## 13 SOFTWARE CONFIGURATION

To ensure proper operation, the system software must be configured for the application. Refer to the Configuration Menu in the Owner's and Installer's Manual or to the Configuration Guide provided by your local power company.



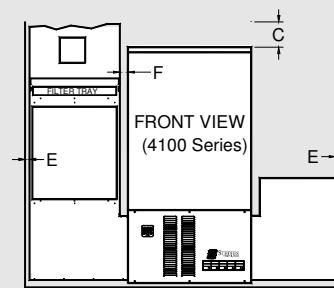
"Manufactured in North America"

## COMFORT PLUS Models 4120, 4130, 4140



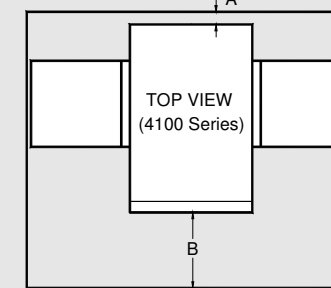
## Quick Reference Installation Sheet

### 1 PLACEMENT AND CLEARANCES



### WARNING

If area available to install Comfort Plus system is less than 100 square feet, consult factory. If installing in area with less than 400 square feet, ventilation **MUST** be provided. Temperature in area should be maintained at or below 85°F.



A Back and Sides = 3 inches from combustibles  
B Front = 36 inches  
C Top = 6 inches from combustibles  
D Bottom = zero clearance  
E Outer Sides of Return and Supply Ducts = zero clearance  
F Between Duct and Left Side = 2 inches

### 2 SET-UP

1. Remove heating elements from base.
2. Place system in desired location.
3. Adjust leveling legs.
4. Remove painted front panel of brick storage cabinet.
5. Position element wiring harnesses to avoid damage during brick loading.
6. Disconnect brick core temperature sensor(s) from shipping position. Position sensor(s) to avoid damage during brick loading.
7. Remove galvanized front panel.
8. Starting at bottom, lift and drape insulation blankets over top of system.
9. Remove front air channel by pulling out at top.

### CAUTION

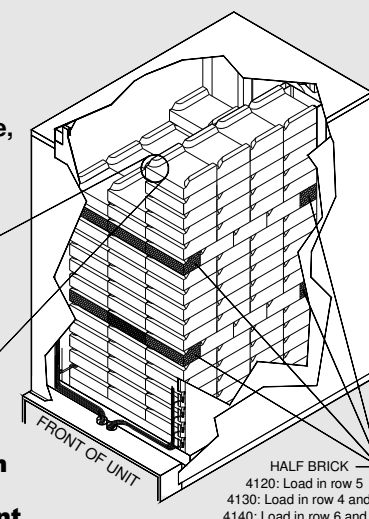
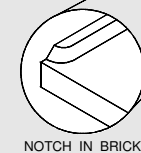
- **DO NOT** extend leveling legs more than one inch.
- **DO** use and follow generally accepted safety practices when handling insulation material.
- Equipment **MUST** be installed by a qualified technician in accordance with all applicable local, state and national codes and regulations.
- Reference Owner's and Installer's Manual for complete safety, installation, and operation instructions.

### 3 BRICK LOADING

Starting at the back of the brick core cavity, load bricks one row at a time using left side, right side, center pattern. Place bricks with grooved side facing up, notch facing forward, and ridge on left and right.

### IMPORTANT

- Remove loose brick debris from brick.
- Brick rows **MUST** line up front to back and side to side.
- Use half bricks in proper rows and in correct positions. Back half of brick **MUST** be installed in back rows. Front half (notched brick piece) **MUST** be installed in front rows.



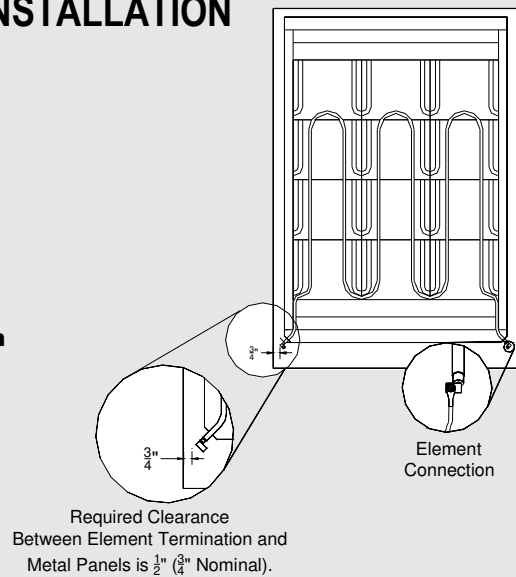
HALF BRICK  
4120: Load in row 5  
4130: Load in row 4 and 8  
4140: Load in row 6 and 12

## 4 HEATING ELEMENT INSTALLATION

### ⚠ WARNING

**HAZARDOUS VOLTAGE:** Risk of electric shock, injury or death.

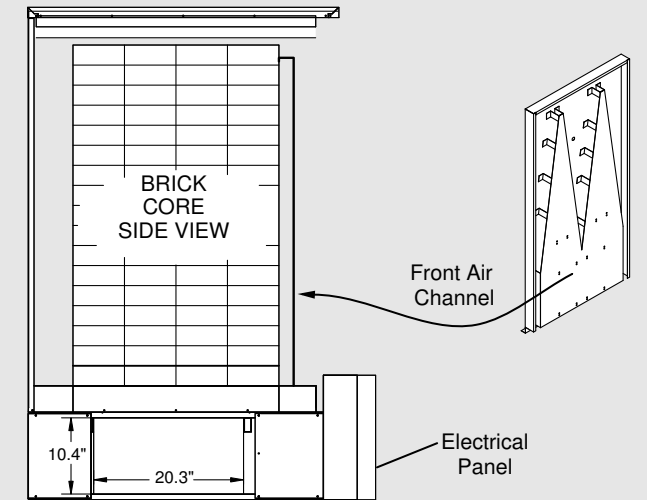
- **DO NOT** remove electrical panel cover while system is energized.
- Elements **MUST** be positioned properly to avoid short circuiting them against any surfaces within system.
- Use care when making connections to avoid element damage.



1. Insert heating elements between brick layers until element ends embed into side cutouts of brick cavity. Elements **MUST** be installed with threaded screw tabs on wire connection terminals pointing forward and down.
2. Remove painted panel from electrical compartment and locate the installation hardware package.
3. Connect wiring harnesses to heating elements using screws in hardware package. Install screws with heads up and thread pointing down. Tighten screws to 14 in-lbs.

## 5 AIR CHANNEL INSTALLATION

1. Install air channel with air deflectors (arrow shaped pieces) facing inward and narrow ends of deflectors pointing up. Place bottom of air channel in first.
2. Lower insulation blankets back into position, one at a time. Tuck sides into edges, corners and around exposed portions of heating elements.
3. Install galvanized panel. Slide bottom edge inside lower lip of brick cavity. Top rests on outside of cavity.
4. Check non-insulated element connections to make sure they do not come within 1/2" of any surface.



## 6 BRICK CORE TEMPERATURE SENSOR(S) INSTALLATION

### ⚠ CAUTION

**Risk of improper operation. Proper installation of the brick core temperature sensor(s) is critical to the operation of the Comfort Plus heating system. Read and follow installation instructions carefully.**

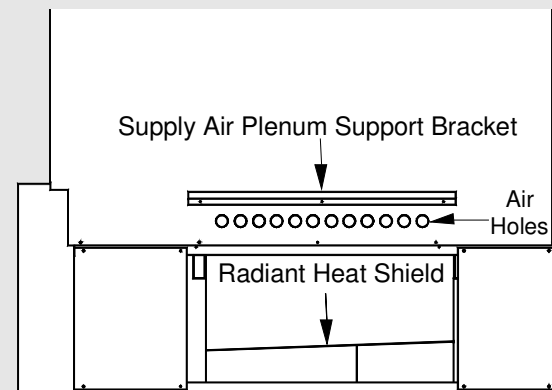
1. Remove screw(s) by temperature sensor hole(s) in galvanized front panel.
2. Insert temperature sensor(s) through hole(s). Sensor(s) must pass through blanket insulation and into brick core.
3. Install screw(s) into galvanized front panel to hold sensor(s) and provide electrical ground connection.
4. Inspect sensor wiring for possible short circuiting hazards.
5. Install painted front panel.

**NOTE:** Models 4130 and 4140 have an upper and a lower temperature sensor. Each sensor is marked for proper installation.

## 8 DUCTING

### ⚠ WARNING

**HAZARDOUS VOLTAGE:** Risk of electric shock, injury or death. **DO NOT** operate the Comfort Plus heating system without ducting installed to both the air inlet and outlet.



4100 Series systems are factory configured for a left-to-right or right-to-left airflow.

For a down flow configuration, order Down Flow Kit #1301578.

**NOTE:** If placing system into area with less than 400 square feet, a minimum 24" x 24" opening must be installed in the area where system is located. In addition, a 6" x 6" non-closing register must be cut into the return air duct. Refer to Placement and Clearance Requirements section of Owner's and Installer's Manual for more information.

### SYSTEM AIR DELIVERY MATRIX

Standard 1/2HP Motor

SUPPLY AIR BLOWER	STATIC PRESSURE (INCHES WATER COLUMN) (External static pressure should not exceed .75 inches water column)			
	0.10	0.25	0.50	0.75
HIGH	Not Recommended	1850 CFM	1560 CFM	1350 CFM
MEDIUM HIGH	1800 CFM	1780 CFM	1470 CFM	1240 CFM
MEDIUM LOW	1610 CFM	1580 CFM	1420 CFM	Not Applicable
*LOW	1230 CFM	1205 CFM	Not Applicable	Not Applicable

\* Low Speed Maximum Pressure is .25 inches water column.

**Ducting:**

1. Unbox supply air blower plenum assembly.
2. Remove and discard metal plate securing supply air blower to plenum assembly.
3. Adjust blower speed.  
**NOTE:** Blower speed selection is made at the supply air blower. To change blower speed, detach quick disconnect terminals at supply air blower. Select desired blower speed and connect corresponding wires.
4. Attach plenum support bracket to supply air side using blunt tip screws.
5. Attach supply blower wiring harness to blower. Place excess wiring in base below radiant heat shield.
6. Verify blower is installed with motor facing away from system.
7. Attach supply air blower plenum. Drill two 1/8" holes per edge. Use self-tapping screws.
8. Connect return air and supply air ducting. The air holes directly above the air outlet on the right side **MUST** be contained in the duct system.

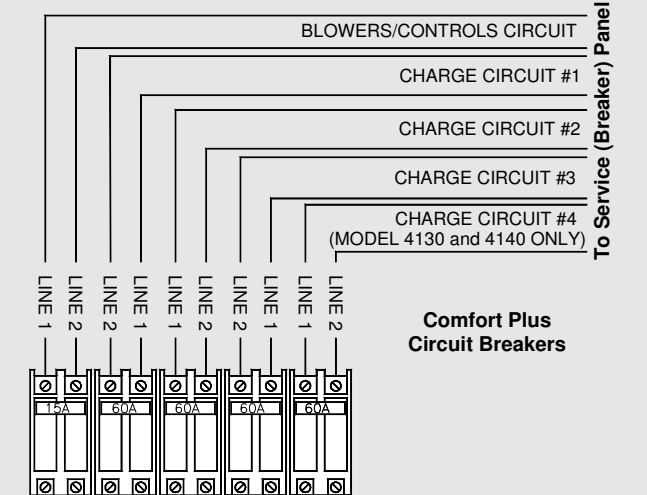
### IMPORTANT

When interfacing with a heat pump:

1. The blower speed connected to the high speed relay (black/blue wire) is used for both heating and cooling.
2. The A-Coil **MUST** be placed on the return air side.

## 9 LINE VOLTAGE ELECTRICAL CONNECTIONS

### CIRCUIT PHASING CONNECTIONS



### ⚠ WARNING

**HAZARDOUS VOLTAGE:** Risk of electric shock, injury or death. **Do not energize the Comfort Plus heating system until installation is complete.**

1. Remove electrical panel cover.
2. Route all line voltage wires through knockout(s) and into electrical panel.
3. Make proper field wiring connections.

### IMPORTANT

- To ensure proper operation and safety, all line voltage circuits must be segregated from low voltage wiring.
- To reduce electromagnetic fields associated with electrical circuits and to avoid induced voltage on sensors and electronic devices, the circuit phases **MUST** be alternated as shown above.
- **DO NOT** install any wiring in the line voltage compartment of the Comfort Plus heating system unless it is rated for line voltage.