

**Typical Specification for Heat Transfer
Pioneer Heating Appliance®
Models: PHR-100/130/160/199 Btu /Hr**

The Pioneer Heating Appliance®, manufactured by Heat Transfer Products, Inc., includes (4) models with inputs ranging from 100,000 to 199,000 Btu. Model PHR- _____ having a modulation input range of _____ Btu/Hr shall operate on either natural or LP gas. The combustion chamber will be designed to drain condensation to the condensate trap at the bottom of the unit. The fire tube type heat exchanger shall be designed with a primary section constructed of 90/10 copper nickel and a secondary section constructed of 800 H stainless steel and copper nickel alloys. The heat exchanger design shall be bent tube for the primary section and helical for the secondary. The complete heat exchanger assembly shall carry a 12 year limited warranty.

The heater water vessel shall be constructed of 304L stainless steel with a water volume of 55 gallons to provide hydronic stabilization for the space heating circuits. The heater shall not require primary/secondary piping configuration. Heater system return connection shall be constructed with a tube which directs system return water from the top to the bottom of the unit through an outlet screen to remove air and separate dirt from the space heating loop. An automatic air vent system shall be located on the top of the heater. The appliance shall be suitable for use with propylene glycol, up to 50% concentration.

The heater outer jacket shall be constructed of plastic and shall contain 2 inch thick water blown foam insulation. The heater combustion system enclosure shall be constructed of plastic. This enclosure shall be designed with a removable cover to give access to the internal components.

The heater shall have an integrated digital control system utilizing an algorithm to fully adjust the firing rate while maintaining the desired output temperature. The control regulates the combustion system through a PWM signal to the combustion fan which adjusts the volume of air supplied to the burner. Control shall have flame stabilization monitoring to automatically adjust the firing rate and stabilize the flame signal.

The heater control shall provide password security for design parameters which control the heater outdoor reset curve, indirect set point, pump purge, alarm output function and PC port connection. The heater shall have capability to accept a 0-10 volt input connection from a BMS system to control either the set point temperature or modulation rate of the heater. The heater shall have a built-in sequencer to optimize efficiency and rotate the firing sequence when multiple cascaded heaters are connected to provide space heating. Control is capable of controlling up to 8 heaters with CAT 3/5 cable connections.

The control shall be equipped to monitor system safety circuits, such as low water cut off, high limit, flue limit, and top and bottom temperature monitoring sensors. The field connection board shall provide 3 amp 120 volt line voltage outputs for the central heating pump, DHW pump, and a system pump or alarm circuit. The low voltage terminal strip shall be removable to ease wiring of the low voltage inputs for TT, DHW sensor, outdoor sensor, and 0-10 volt inputs into the control.

The heater combustion system can be designed for either two pipe (intake and exhaust) closed combustion, or a single pipe system taking mechanical room air and piping exhaust outside. Schedule 40 or 80 PVC or stainless steel piping materials are approved for venting applications. **(NOTE: Foam core pipe is not an approved exhaust venting material.)** The vent connections (intake and exhaust) shall be located on the bottom of the heater.

Appliance venting can be installed using several different methods, including:

Direct Venting – Where the intake and exhaust vents terminate in a two pipe configuration or through a factory approved sidewall or roof termination kit.

Indoor Combustion Venting from a Confined or Unconfined Space – Where the exhaust runs vertically and combustion air is drawn either from the mechanical room or from outdoors.

The total combined length of exhaust and intake vents cannot exceed 200 combined feet for the vent connection size supplied with each unit. Adequate combustion air must be supplied when drawing air from the mechanical room. Avoid the room contaminates listed in the installation manual.

The appliance shall have an independent laboratory rating of oxides of nitrogen (NO_x) of 20 ppm or less corrected to 3% O₂. The manufacturer shall verify proper operation of the burner, all controls and heat exchanger prior to shipping.

The appliance shall operate at altitudes up to 4500 feet above sea level without additional parts or adjustment.

Maximum unit dimensions shall be length _____ inches, width _____ inches and height _____ inches. Maximum unit weight shall be _____ pounds.

NOTE: Due to variations in CSD-1 requirements from state to state, please consult with the factory for all controls required in your jurisdiction.

LP-349
Rev 8.11.10