HEP000P Series

Installation, Operation, and Maintenance Manual

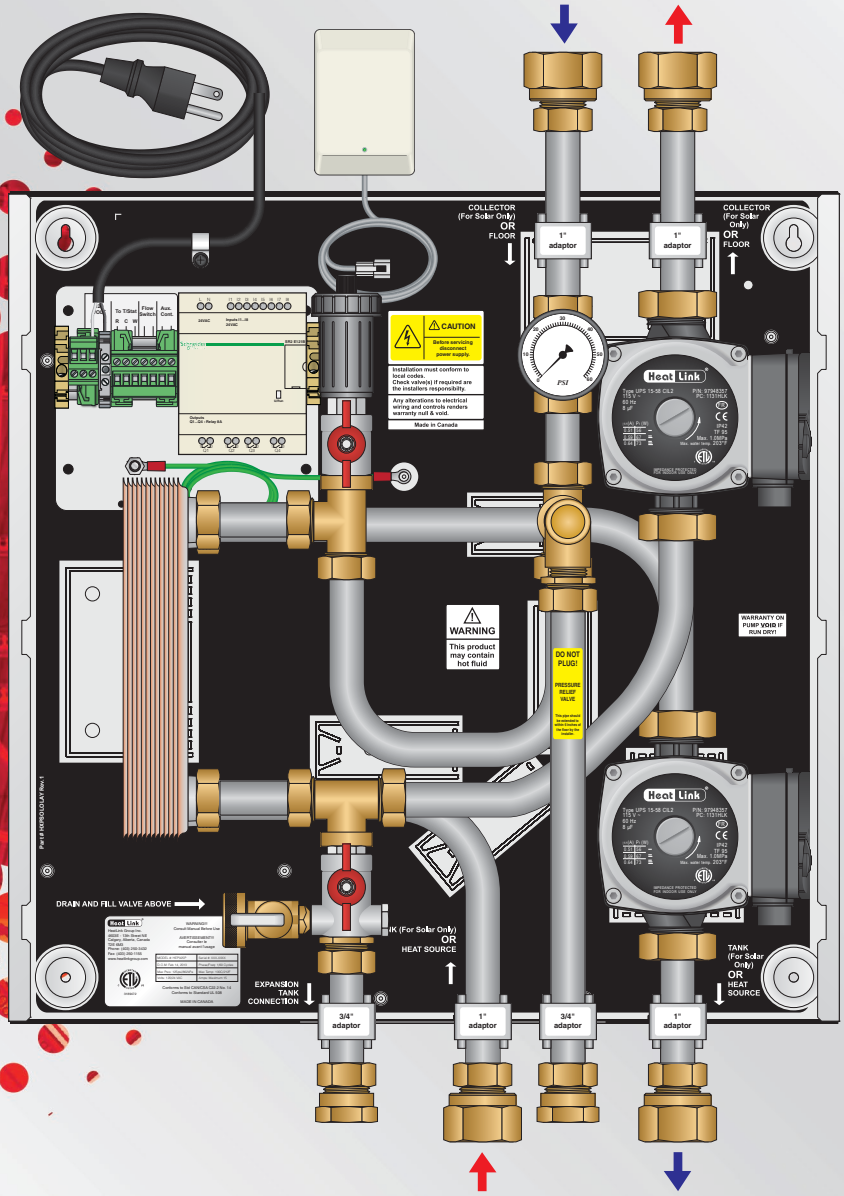


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Disclaimer

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Product Safety Information

Warnings

The zone control panel is for indoor use only and must be installed by a qualified installer/service technician. This product must be installed and operated in strict accordance with the terms set out in this manual and in accordance with the relevant requirements of the Local Authority Having Jurisdiction. Failure to comply will result in a void of warranty, and may also result in property damage, serious injury, or death.

Servicing

Prior to commencing installation of this panel it is necessary to read and understand all sections of this manual. The symbols below are used throughout this document to ensure proper operation of the panel, and your safety. Please pay attention to these symbols.



Warning
Possible Hazard



Warning
Live Power



Warning
Hot Pipes



Warning
Treated Water



In order to avoid injury or death, switch off the power to the panel prior to inspecting or making connections to the terminal strip.

Function

This zone control panel can provide mixing, distribution, and zoning for a wide variety of hydronic heating applications.
The effectiveness of the system is dependant on the system being designed and installed correctly. Proper consideration of factors such as BTU loads, outdoor design temperature, indoor design temperature, room set-point temperature(s), differential fluid temperatures, head loss, flow rates, and transfer capacities of the heat emitters is critical.
Once these factors have been considered and the system requirements determined, these can then be evaluated and compared to the panel capabilities.

Note: This panel does not regulate or monitor the operating safety limit temperatures of the fluid leaving the heat source. Dependant on local codes, the HEP panel models may be suitable for application in either open or closed systems supplied with potable water, where the system utilizes the domestic hot water as a heat source for the hydronic system. In such cases, all components of the panel (and system components) must be specified as non-ferrous material, suitably approved for potable use. Prior to installation consult your Local Authority Having Jurisdiction to determine the suitability of such an application.

Unpacking

Step 1 Examine carton for any damage that may have occurred during shipping. If damage is visible notify your courier and supplier immediately.

Step 2 Open the carton by removing the staples.

Step 3 Remove the cardboard spacers from the carton, then remove the panel from the carton. Lift the panel by the base, not the enclosure.

Step 4 There are 2 screws holding the enclosure in place during shipping. They are located at the top left & right of the panel base. Remove these 2 screws.

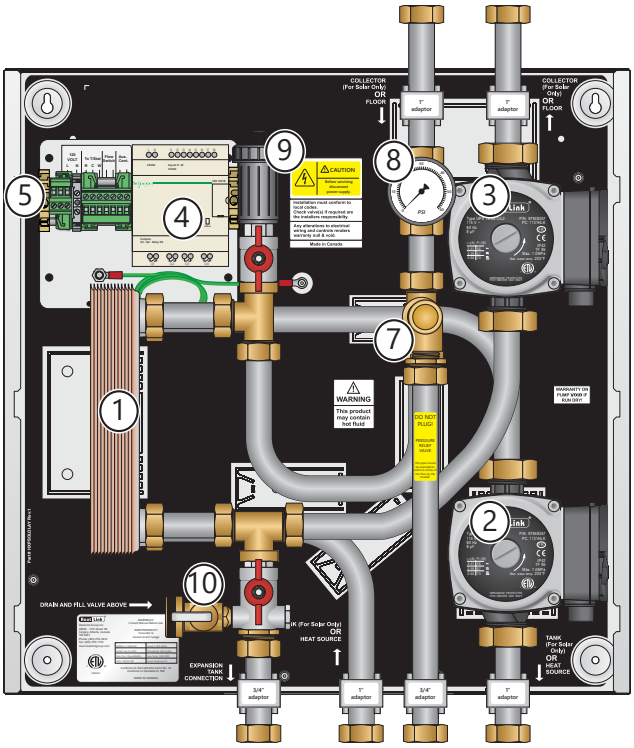
Step 5 Remove the enclosure from the panel by sliding it upwards until it stops, then gently pulling outwards off.

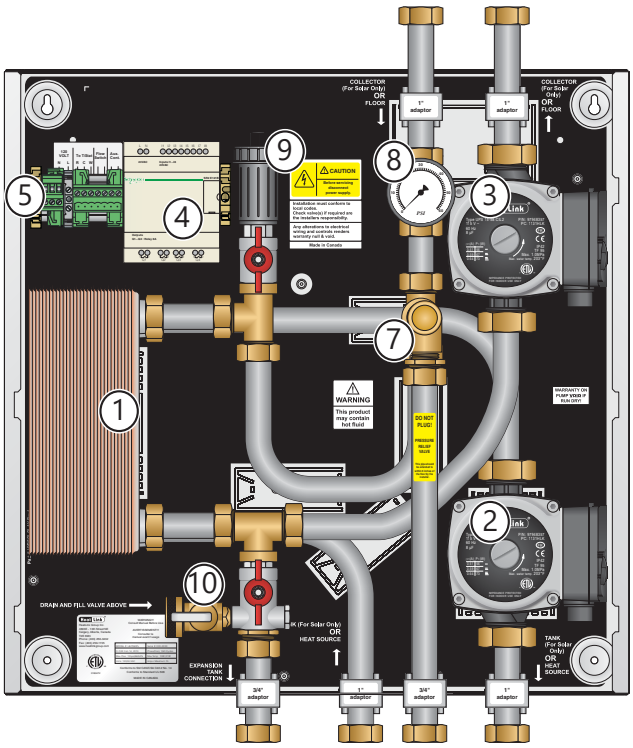


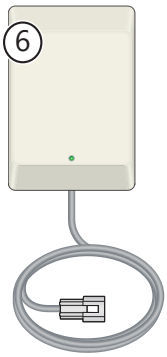
Installation Tools Needed

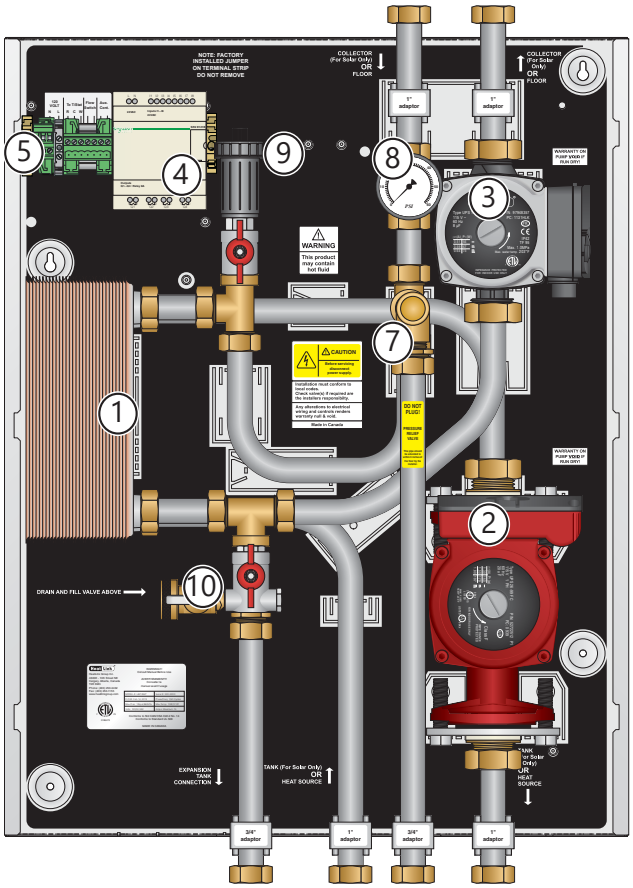
- Level
- Screwdriver or power drill
- Flat head bit
- Phillips head bit # 2
- 2 adjustable wrenches (or 2 × 30mm wrenches)

Panel Components (Diagram)

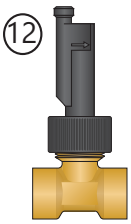


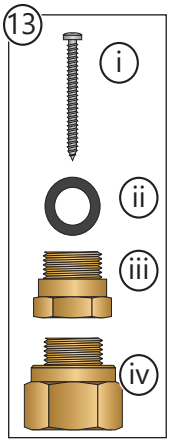












Panel Components (Descriptions)

#	Components		Component Description	HeatLink Part Number (Qty.) HEP025P	HEP080P	HEP095R
1	Single wall, brazed-plate heat exchanger		The heat exchanger provides separation of the primary and secondary loops.	HTEX3812 (3×8-12)	HTEX3830 (3×8-30)	
2	Primary pump		The circulator moves the heated fluid through the hydronic system when there is a call for heat from the thermostat. Factory set to 3rd speed. See pump curves below. See pump curves on pg 8.	PUMP1558		PUMP2699
3	Secondary pump			PUMP1558		
4	PLC control		This module provides the control and switching for the panel.	----- PLC7R2P2 -----		
5	Terminal block		Provides easy access wiring for thermostats, flow switch (opt.), and aux. contacts.	----- n/a -----		
6	24V(ac) 20Va plug-in transformer		Provides power to the panel electronics.	----- PLINTR20VA ------		
7	½" Safety relief valve			----- n/a -----		
8	Pressure gauge		The rear connection pressure gauge reads the secondary loop pressure. May not be exactly as shown. Range: 0-60psi	----- PG14NPT260 -----		
9	Automatic air vent		Automatic air vent purges air trapped in the secondary loop. May not be exactly as shown.	----- 79932 -----		
10	Drain and fill valve		Access point for filling and draining the panel.	----- n/a -----		
11	Powder coated cover		Helps to protect the panel from the elements, and give the mechanical room a clean look.	----- n/a -----		
12	Optional flow switch		The electronic flow indicator provides DHW priority when the DHW flow rate reaches a factor pre-set level (approx. 0.5 US gpm). Must be piped in downstream of panel.	----- FLWSWTCH -----		
13	Accessory pack		Panel installation accessories.*	ACCHEP025P	ACCHEP080P	ACCHEP095P
	i	Mounting screw	Panel mounting screws.	(×4)	(×4)	(×4)
	ii	¾" Nitrile washer	Washers for installation of adapters, plus (4) spares.	NTRWSH34 (×10)	NTRWSH34 (×10)	NTRWSH34 (×10)
	iii	¾" MBSP × ¾" FNPT adapters	Adapters for expansion tank, and pressure relief piping.	(×2)	(×2)	(×2)
	iv	¾" MBSP × 1" FNPT adapters	Adapters for system piping.	(×4)	(×4)	(×4)

**Contact your HeatLink representative if the accessory pack is missing in whole or in part.*

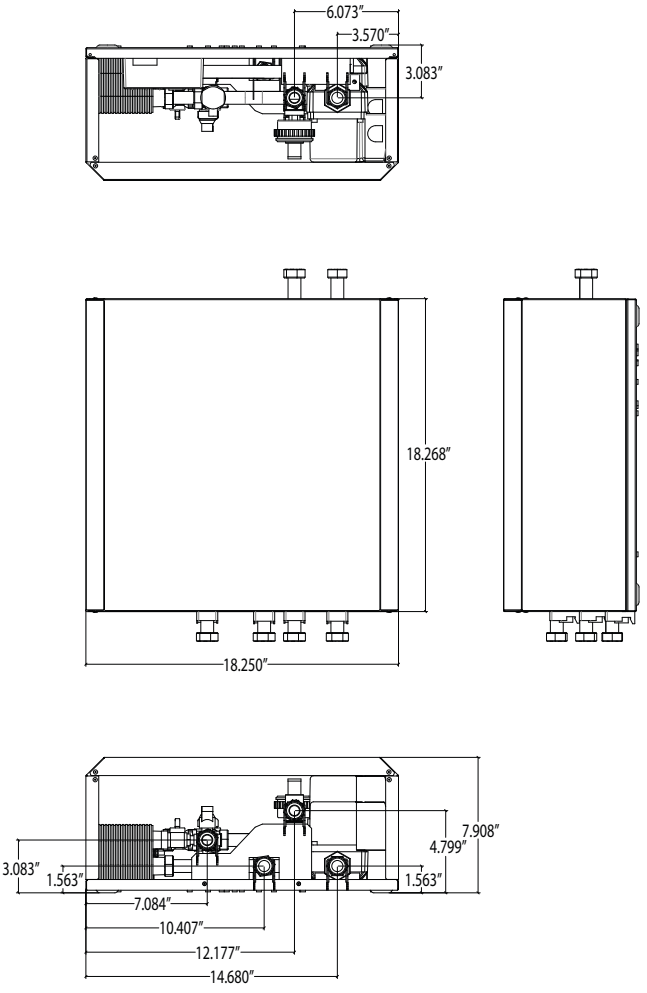
HEP Panel Performance at Different Supply Water Temperatures

Supply Temperature	HEP025P 140	150	160	170	180	HEP080P 140	150	160	170	180	HEP095P 140	150	160	170	180
BTUH	39,000	55,000	66,000	77,000	88,000	80,000	102,000	125,000	149,000	172,000	96,000	115,000	140,000	165,000	190,000
GPM Primary	4	4.5	4.5	4.5	4.5	8	8	8	8	8	13	13	13	13	13
GPM Secondary	4	5	5	5	5	8	8	8	8	8	8	8	8	8	8
Htg. Sys. Available ft.hd.	10	9	9	9	9	8	8	8	8	8	8	8	8	8	8
Htg System Temp Differential °F	18	22	26	31	35	20	25	31	37	43	24	29	35	41	48

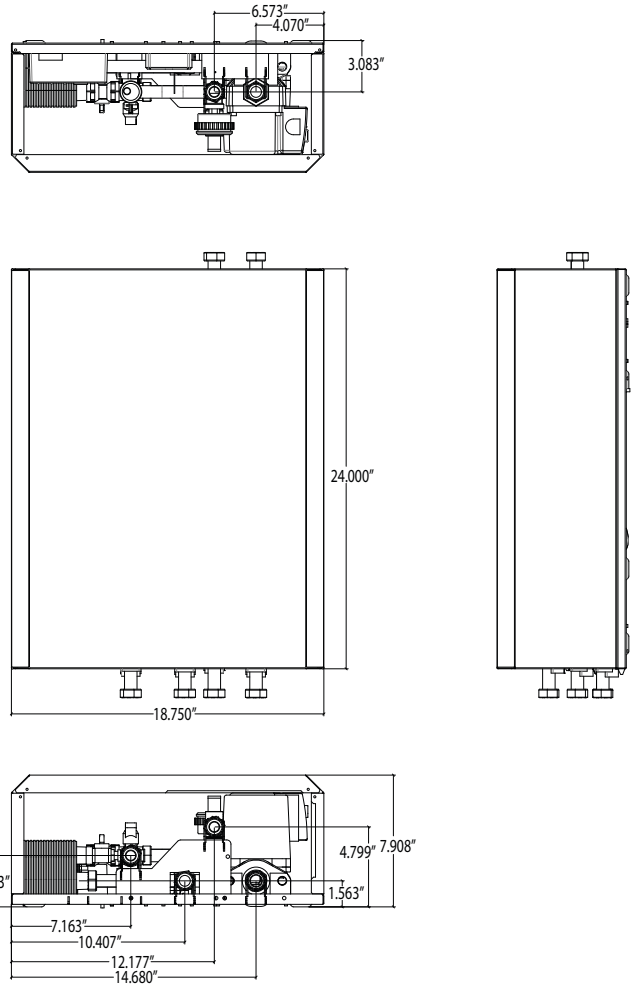
Note: Performance data is based on water as the primary and secondary heating fluid.

Dimensions

HEP025P & HEP080P



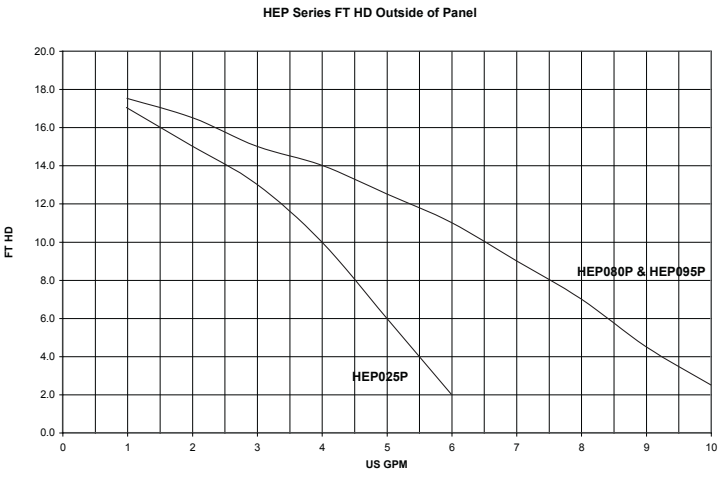
HEP095P



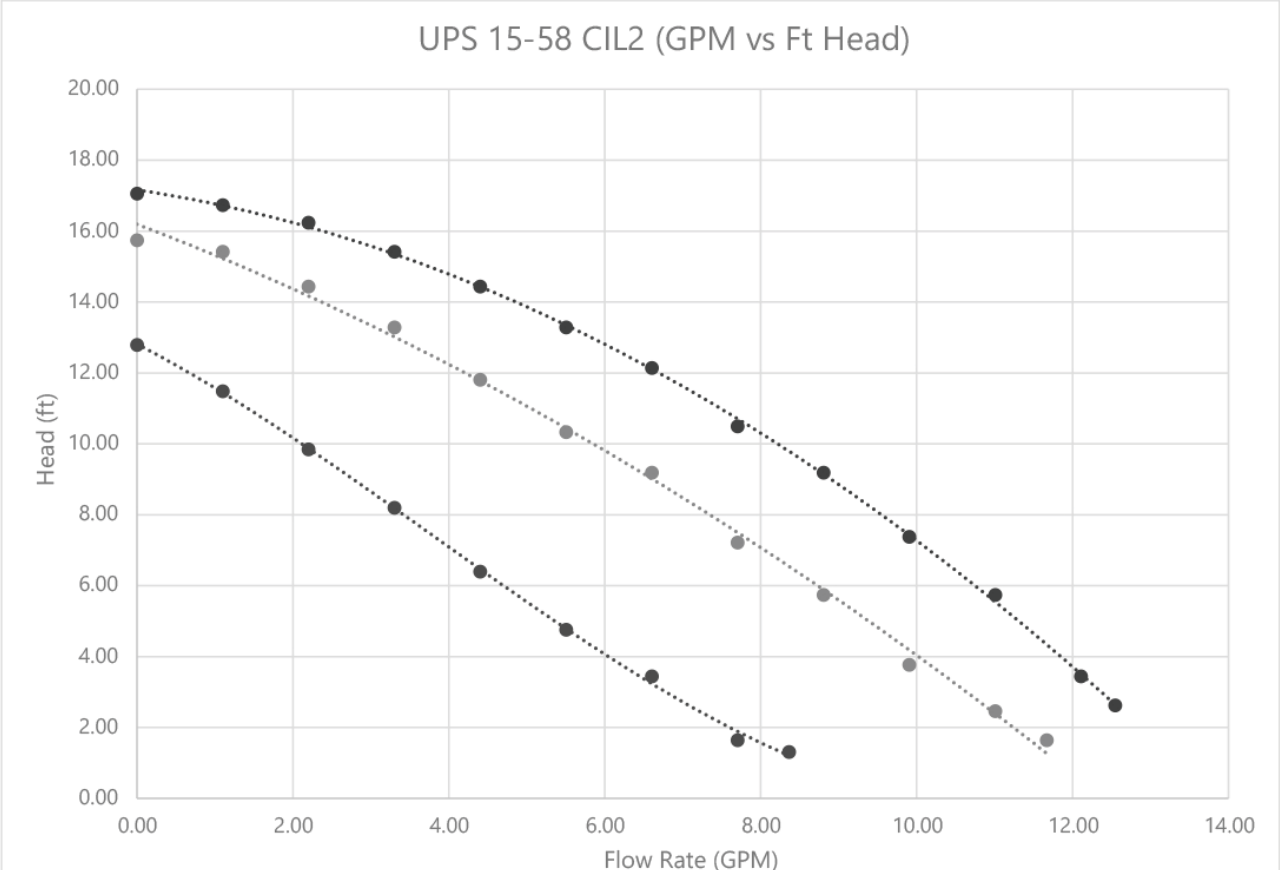
Specifications & Listings

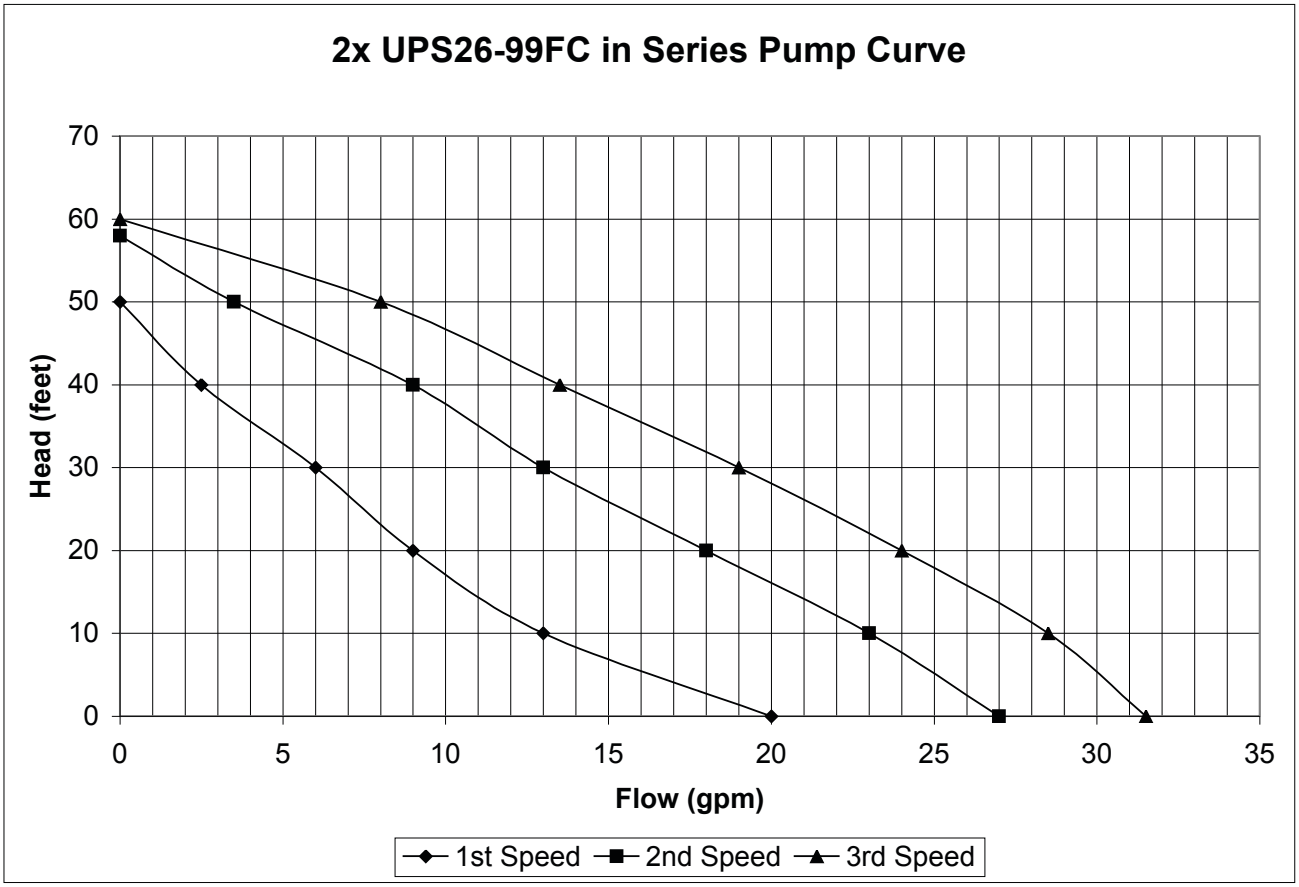
	HEP025P	HEP080P	HEP095P
Listing	cETLus		
Conforms to	CAN/CSA-C22 No.14, UL508		
Dimensions	18-1/4"H × 18-1/4"W × 7-3/4"D		24"H × 18-3/4"W × 7-3/4"D
Weight	30 lbs	32.5 lbs	46.5 lbs
Nominal panel output *see conditions below	25,000 Btu/hr	80,000 Btu/hr	95,000 Btu/hr
Max ambient temperature	120°F		
Max water temperature	200°F		
Settable fluid temp range	dependant on heat source temperature		
Power supply: pre-wired on system controller	110 V(ac); max. current 2A		
Primary circulator	Non-ferrous, Grundfos UPS15-58CIL2		Non-ferrous, Grundfos UPS26-99BFC
Secondary circulator	Non-ferrous, Grundfos UPS15-58CIL2		
Heat exchanger; single-wall brazed plate	3×8-12	Single-wall brazed plate; 3×8-30	
Auxiliary terminal	Yes, dry contacts, max. load 10A		
DHW priority	Optional @ ~0.5 US gpm DHW flow		
Temperature control method	None		
Piping	3/4" 304 Stainless steel tubing		
Piping connections	1" FNPT, 3/4" FNPT		
DHW priority switch connection	1/2" FNPT (FLWSWTCH optional)		
Backplate	Galvanized steel		
Enclosure	Powder coated steel		

Panel Output Conditions	Primary Side	Secondary Side
HEP025P		
Fluid type	Water	Water
Entering fluid temp (°F)	140°F	100°F
Exiting fluid temp (°F)	120°F	120°F
Flow rate (US gpm)	3 US gpm	3 US gpm
Pressure drop (ft head)	3 ft	2 ft
Allowable pressure drop outside of Panel (ft head)	13 ft	14 ft
HEP080P		
Fluid type	Water	Water
Entering fluid temp (°F)	140°F	100°F
Exiting fluid temp (°F)	120°F	120°F
Flow rate (US gpm)	8.1 US gpm	8.1 US gpm
Pressure drop (ft head)	3.9 ft	3.7 ft
Allowable pressure drop outside of Panel (ft head)	6 ft	6 ft
HEP095P		
Fluid type	Water	Water
Entering fluid temp (°F)	140°F	100°F
Exiting fluid temp (°F)	125°F	127°F
Flow rate (US gpm)	13 US gpm	7 US gpm
Pressure drop (ft head)	10 ft	3 ft
Allowable pressure drop outside of Panel (ft head)	10 ft	9 ft



Pump Curves


UPS 15-58 CIL2 (GPM vs Ft Head)
Head (ft)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
Flow Rate (GPM)

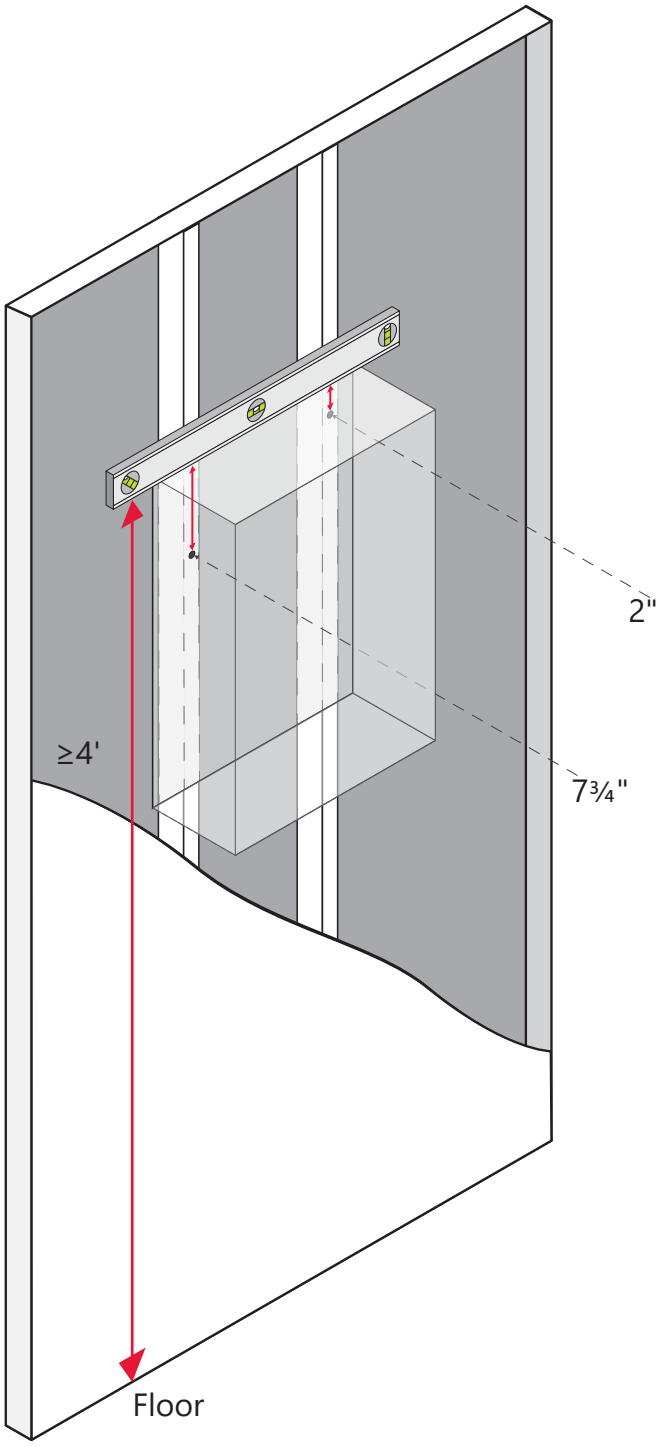

2x UPS26-99FC in Series Pump Curve
Head (feet)
70
60
50
40
30
20
10
0
0
5
10
15
20
25
30
35
Flow (gpm)
1st Speed
2nd Speed
3rd Speed

Panel Mounting

Prior to mounting the panel, ensure the wall is capable of supporting the weight of the panel. Ensure that a 115V receptacle is within reach of the 6-foot cord and plug and 24V plug-in transformer.
The top of the panel should be a minimum of 4 feet from the floor.

Step 1 Find and mark the wall stud locations. If the panel cannot be secured directly to the studs, or suitable backing boards, plywood may need to be installed behind the panel to properly secure it in place.

Step 2 Using a level, draw a line between the studs at a minimum of 4′ from the floor.



Step 3 Screw two of the supplied mounting screws into the wall studs (or backing plywood) at 2" and 7¾" below the desired height, leaving ¼" of the screw out of the wall.

Step 4 Lift panel onto mounting screws.

Step 5 Screw remaining mounting screws into the holes at the bottom of the panel. Tighten the top two screws.

Step 6 Refer to piping hookup and fill and purge.

Step 7 See page 16 for optional flow switch installation instructions.

Piping Hookup

Before making any connections, identify the required connections to and from the panel (see page xx for adapter sizes). The supplied rubber washers must be used.

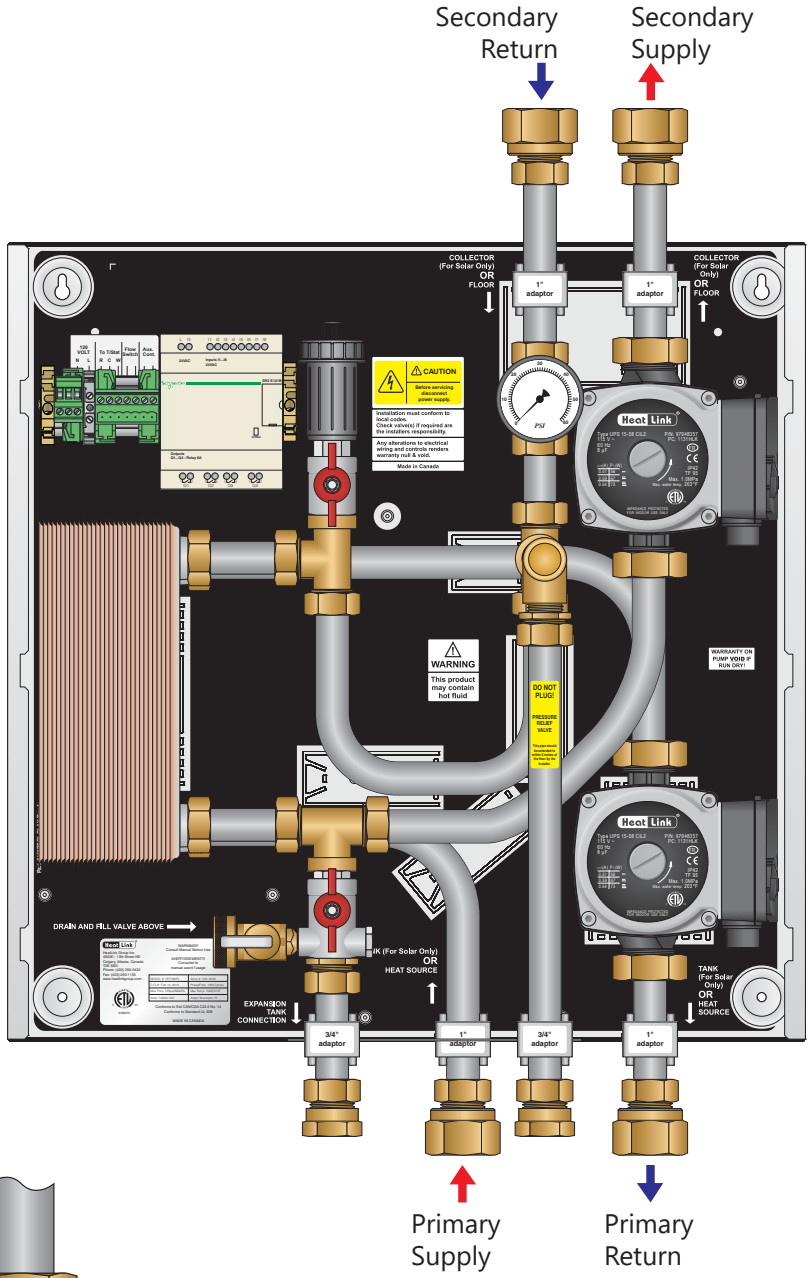
Step 1 Connect MNPT adapter (not included) D to copper pipe, or tubing E.

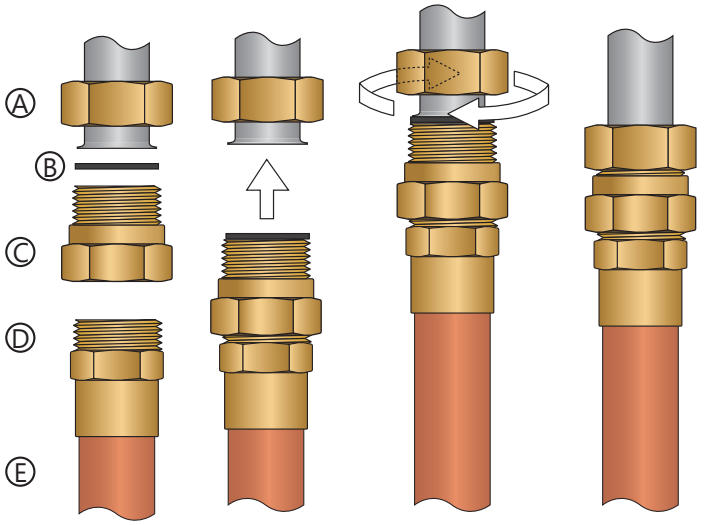
Step 2 Screw supplied M×FNPT adapter C onto D using appropriate thread sealant.

Step 3 Place included rubber washer B on flat surface of C, and place against flanged edge of stainless steel pipe.

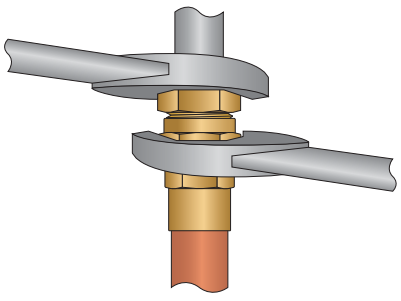
Step 4 Slide nut A over adapter C and finger tighten, then using two 30mm wrenches tighten the nut - ***do not overtighten the nut as this will damage the rubber washer.***

Step 5 See page 16 for optional flow switch connection instructions.





Note: Use precautions when soldering or applying heat within 16" of the panel.



Do not overtighten brass nuts!

Fill & Purge

The following steps are recommended in order to fill the panel with water and purge entrained air once piping is completed, and before activation of the panel.

Note: Additional steps may be required for the rest of the hydronic system, and the heat source.

Note: Because the panel contains a heat exchanger, each side of the panel must be filled and purge separately.

Note: Isolation and drain valves are not included with the panel, but are necessary to properly fill and purge the panel, and to isolate the panel for service.

Step 1 Ensure the panel is not plugged in.

Step 2 Close all isolation and drain valves.

Step 3 Attach fill and purge hoses (not included) as per diagram.

Step 4 For heating-side fill and purge, open valves **E**, **A**, and **B**.

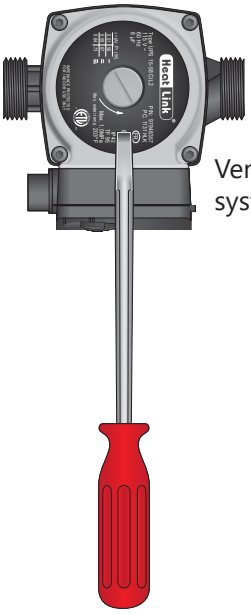
Step 5 When purged water is free of bubbles close valve **E**.

Step 6 For system-side fill and purge, open valves **F**, **C** and **D**.

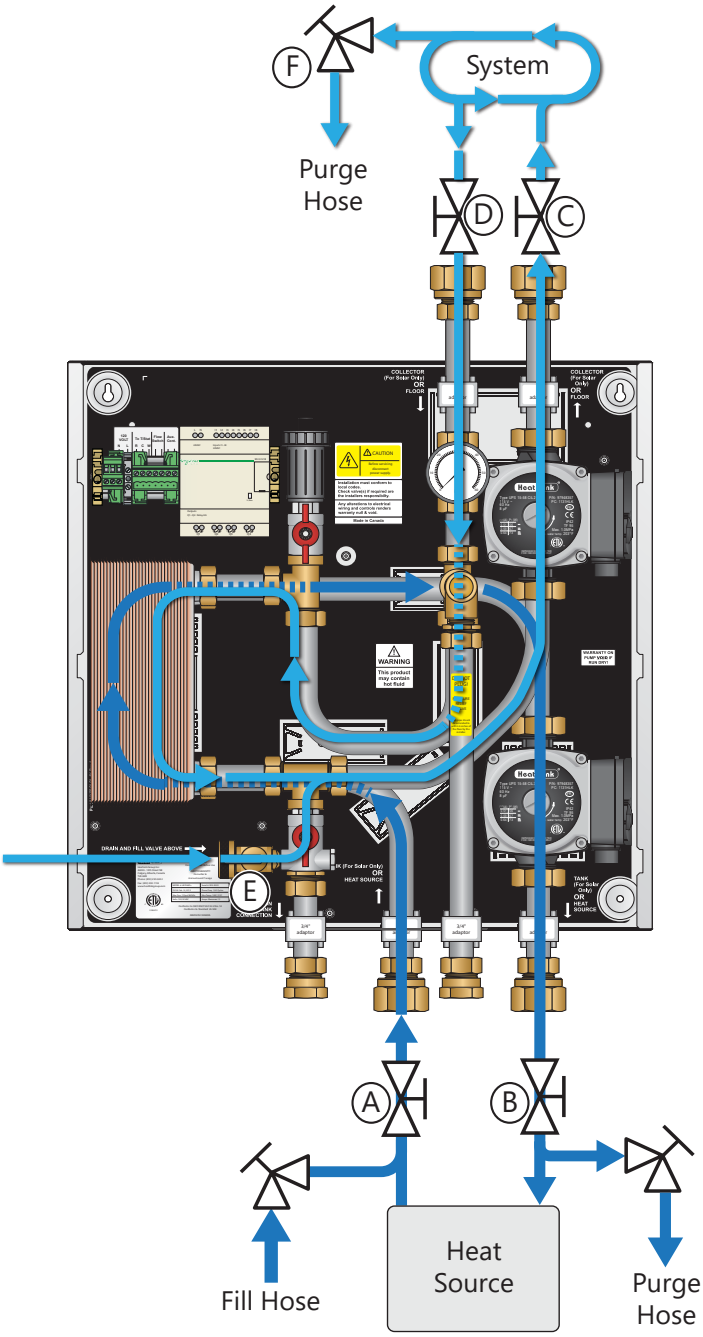
Step 7 When purged water is free from bubbles close valve **F**.

Step 8 Remove fill and purge hoses.

Step 9 Vent both pumps using a large flat head screwdriver before starting system.



Vent pumps before system startup

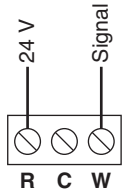


Panel Wiring

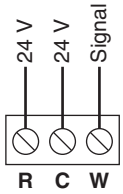
Thermostat Wiring

24V low voltage power may be supplied to the thermostat. Wiring of thermostat should be done by qualified electrician and should meet local codes and jurisdictions. Wiring to the terminal strip requires 18 gauge wire.

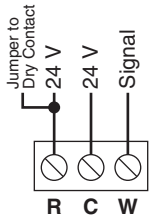
- Do not exceed 2VA per thermostat.
- Do not cross terminals C and R



2-Wire Thermostat
(battery only or non-electric)



3-Wire Thermostat
(HeatLink thermostats)



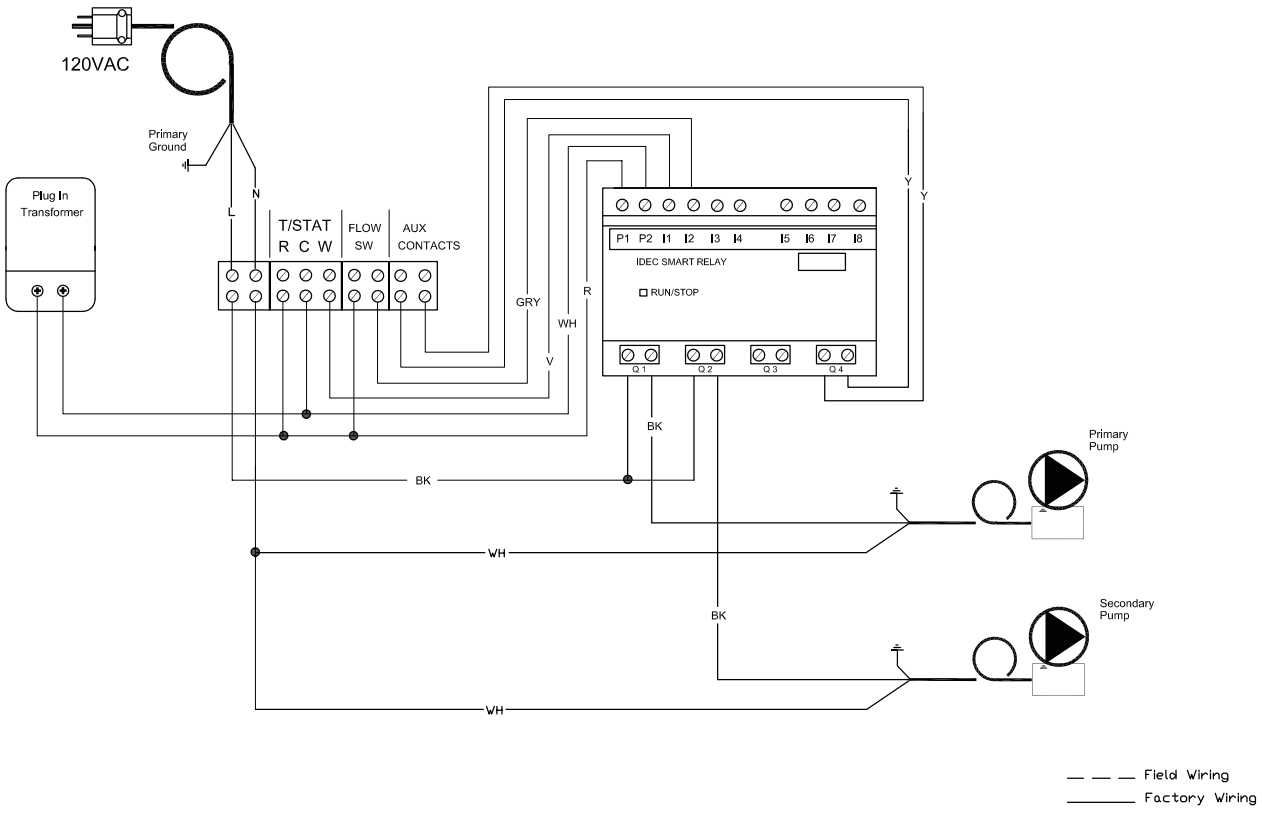
4-Wire Thermostat
(with dry contact signal)

Other Contacts

Aux(iliary) Contacts: The auxiliary contact set is dry, meaning no supply of power is present at the terminal. The maximum allowable load is 10A. The auxiliary dry contact is for switching another device (ie. the heat source) when there is a call for heat.

Flow Sw(itch) Contacts: The wiring harness of the optional Flow Switch for DHW Priority (FLWSWITCH) uses these contacts (see page xx).

Wiring Diagram



Panel Control Sequence

Step 1 When the power cord from the PLC ① is plugged in, and the 24Vac Plug-in Transformer ② is plugged in, the Green LED is flashing on the PLC, indicating that the panel is powered.

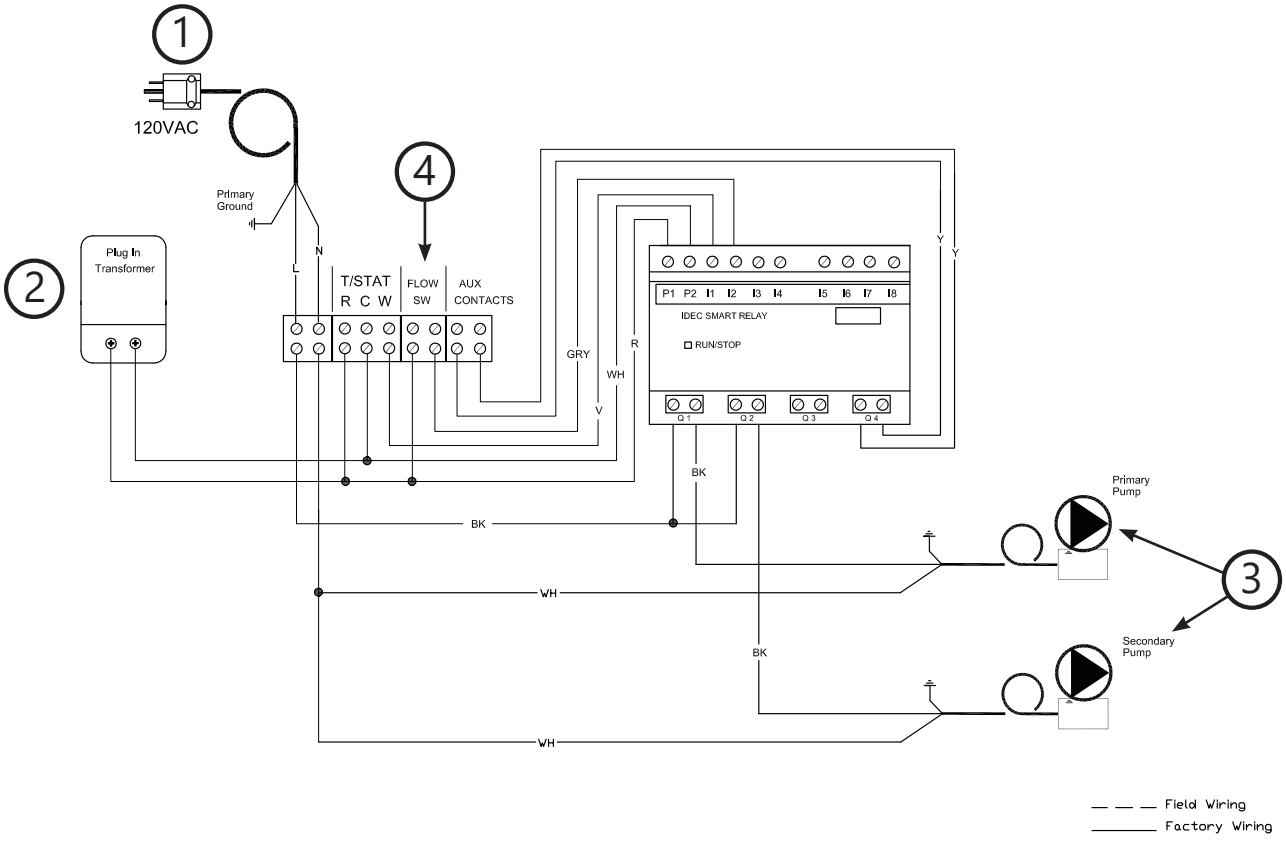
Step 2 When a thermostat calls for heat, its internal 24V contacts close, the auxiliary terminals close, and both circulators ③ turn on.

Step 3 As the circulators move fluid through the panel the thermostatic mixing valve adjusts the fluid temperature based on the user settings (page 8).

Step 4 When the requirements of the thermostat are met, the internal contacts of the thermostat open, the auxiliary contacts open, and the circulators stop.

Step 5 Both the primary and secondary circulators are activated once every 24 hours, for 15 minutes, to ensure that potable water in the piping is not stagnant.

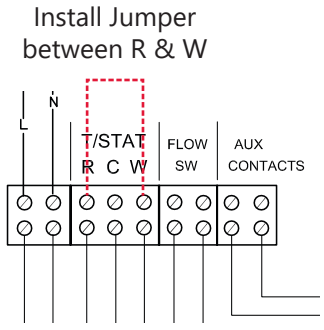
Note: If the FLWSWTCH optional DHW priority flow switch ④ is installed and the DHW flow is above the factory setting for this device, the primary circulator stops and the auxiliary contacts open. When the DHW flow drops below the factory setting the panel resumes normal operation.



Troubleshooting

Problem	Check / Verify	Possible Cause
Low Temperature Within Room	Misplacement of thermostat location within room.	Make sure thermostat is not being influenced by an additional heat source, such as lighting or air duct.
	Low temperature setting of the thermostat.	Adjust the temperature setting on thermostat.
	The system fails to turn on if the thermostat is set to high setting	Thermostat may be out of calibration or defective. Replace thermostat.
	The electronic actuator fails to open during a call for heat	The electronic actuator may be improperly seated or may be defective. Replace if necessary.
	Wiring from heat source to panel.	Check that the wiring is done properly. Consult qualified electrician prior to alteration of wiring between heat source and panel.
	Output of heat source is unable to meet demand of heating system.	Compare output of heat source to the requirements of the heating system.
	Circulator is not on during a call for heat. (Use a stethoscope or similar device to verify)	The PLC or circulator may be defective.
	When zone valves are installed outside the panel a qualified electrician should verify 24V power is supplied to the thermostats and actuator.	The 24V transformer may have failed. Any zone valves must be opened manually to avoid dead-heading of the circulator.
High Temperature Within Room	Check current setting of the thermostat.	Adjust the temperature setting on thermostat to a lower setting.
	Installed electronic actuators remain open after the thermostat is satisfied.	An obstruction inside the zone valve is not allowing the actuator to fully close or the thermostat is still calling for heat.

To test system functions you can temporarily create a “permanent” heat demand by installing a jumper between **R & W**. With a jumper between W & R, the pumps should run and the auxiliary contacts should close.



Maintenance

Yearly maintenance should be done on the panel prior to each heating season to ensure the efficient and accurate operation of the panel.
Complete the following check list:

- Raise all thermostats to cause a call for heat within the system. Verify that the circulator starts, via a stethoscope or similar device.
- Confirm that the Auxiliary Contacts close.
- If applicable, verify that each zone valve opens during the call for heat – the actuator should be warm to the touch, the LED will light up (on 5620x models) and the white indicator should rise from the top of the actuator.
- Return all thermostats to a desirable setting.

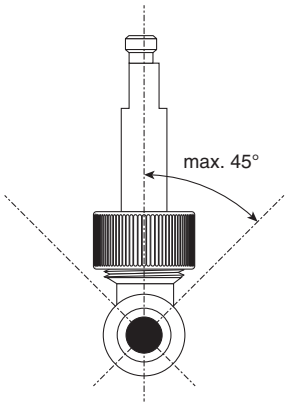
You are now ready for another heating season with HeatLink.

Flow Switch Installation

Sold separately, the optional flow switch for DHW priority can be easily installed by following the instructions below.

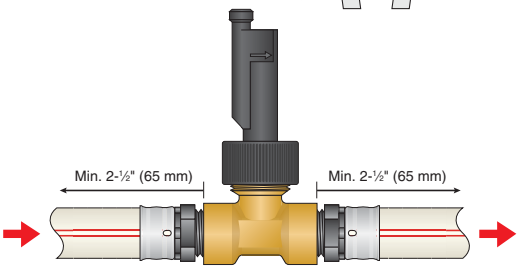
Notes:

- Make sure the cable to the flow switch isn't under tension.
- Clean the pipe system in which the flow switch is to be installed and remove any magnetic particles, e.g. welding residue.
- The straight in- and outlet pipe (in front of and behind the flow switch) has to be at least 2-½" (65 mm).
- The flow switch should be installed in an "upright standing position" in horizontal pipework.
- The switch should only be installed in a vertical position, deviation max. 45°.
- Make sure that ther are no external magnetic fields or large ferromagnetic bodies in the immediate vicinity of the flow switch, since these can impair device functioning.
- Screw on the union plastic nut with a maximum torque of 8 Nm.
- To prevent overheating when soldering near the flow switch, the flow switch (body with paddle system) and the o-ring must be removed from the pipe section.





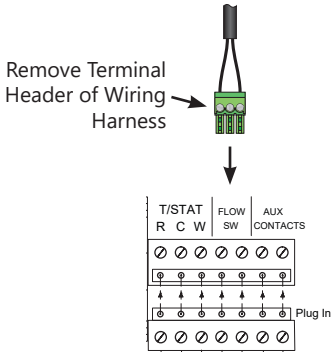
Step 1 DHW connectors are ½" FNPT. Using appropriate thread sealant and fittings, connect the water heater output to the input on the flow switch; and house hot water system to output on flow switch.
The straight in- and outlet pipe (in front of and behind the flow switch) has to be at least 2-½" (65 mm).

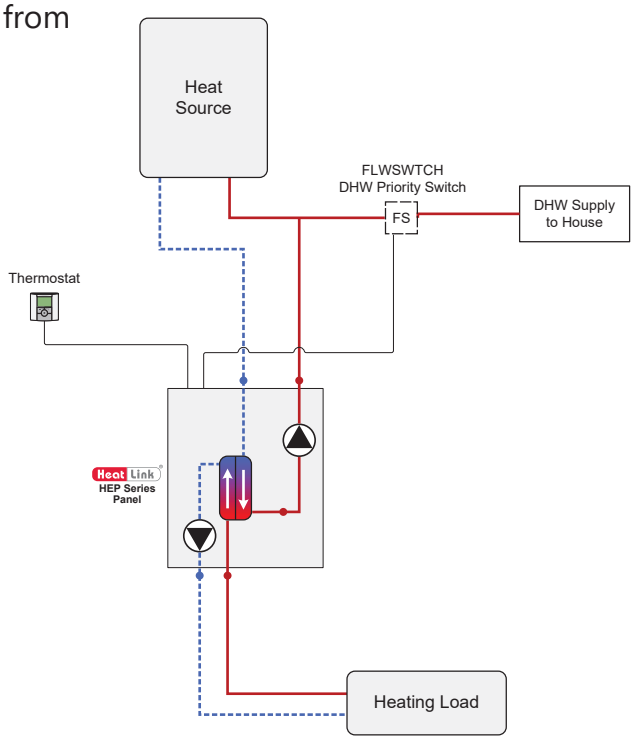


Step 2 Observe flow direction when making connections.

Step 3 Be sure to connect the DHW priority *downstream* from the panel (see schematic at right).

Step 4 Disconnect power from the panel. Remove the terminal header of the wiring harness from the flow switch. Connect the flow switch wires to the flow switch terminals.







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