



CDP200

2-Temperature System Panel

Installation, Operation, and Maintenance Manual

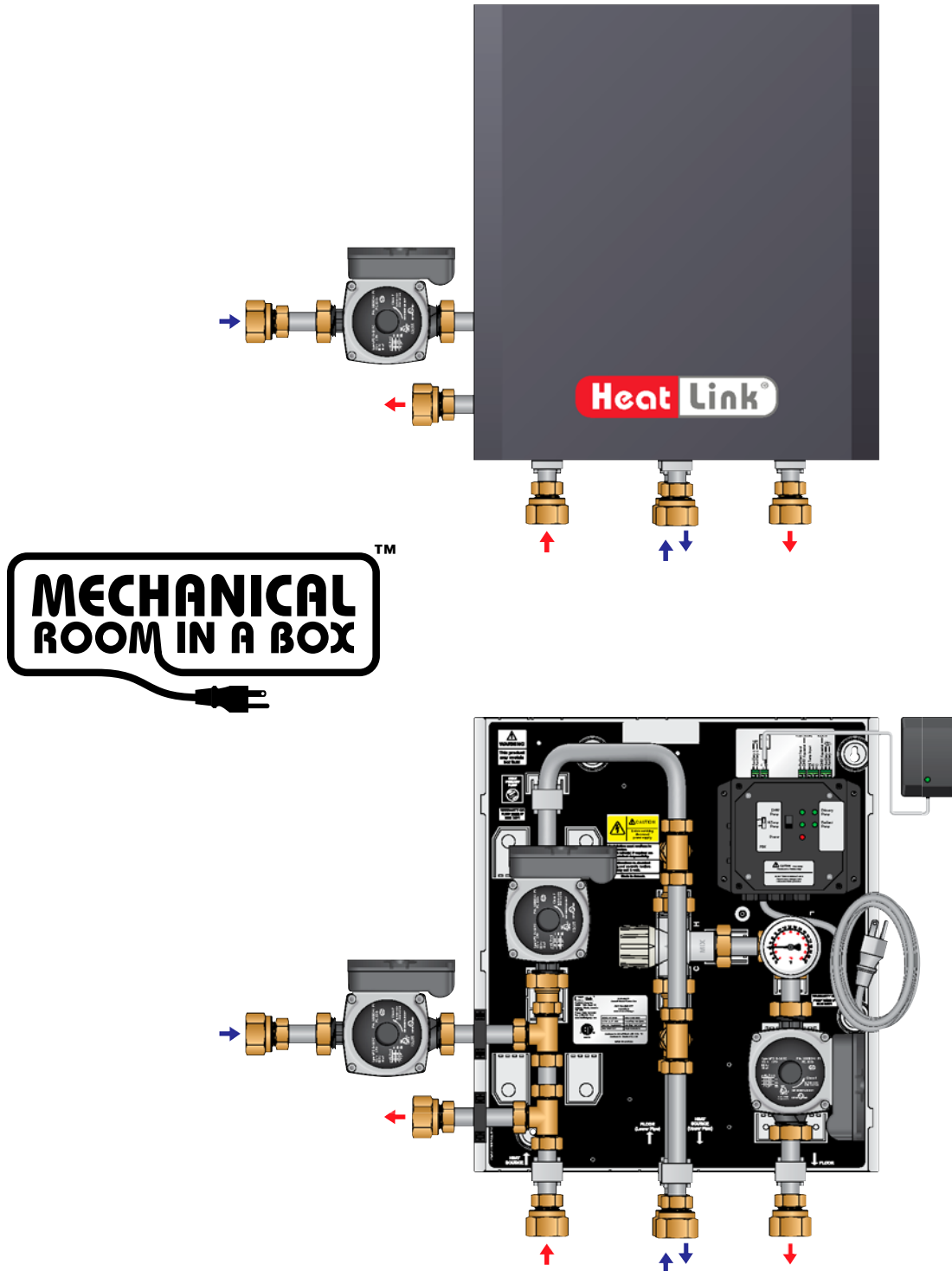


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Warnings

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.

Disclaimer

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Tools For Installation

- Level
- Screwdriver or power drill
- Flat head bit
- Phillips head bit # 2
- 2 adjustable wrenches (or 2× 30mm wrenches and 2× 40mm wrenches)

Function

This 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 zone control panel capabilities (refer to pages 5-8).

Note: This panel does not regulate or monitor the operating safety limit temperatures of the fluid leaving the heat source.

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.

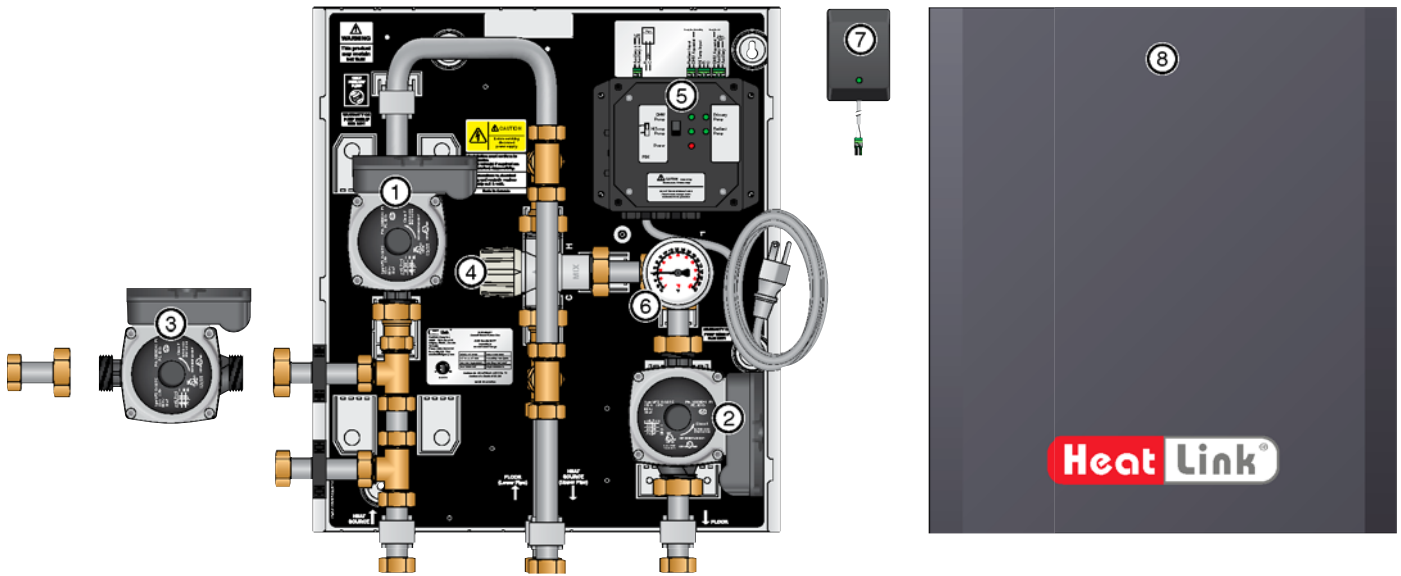
Step 5 Remove the enclosure from the panel by sliding it upwards until it stops, then gently pulling outwards off.



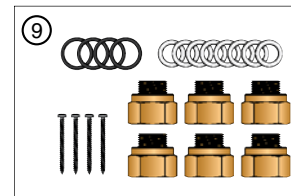
Step 6 Verify the following items:

- (4) Mounting screws
- (6) ¾" MBSP x 1" FPT adapters
- (8) ¾" rubber washers (2 spares)
- (4) 1" rubber washers (2 spares)

Panel Components



#	Component	Part Number
		CDP200
①	Primary Pump (Grundfos UPS15-58 RU)	PUMP1558
②	Mixed Temp Pump (Grundfos UPS15-58 RU)	PUMP1558
③	High Temp Pump (Grundfos UPS15-58 RU)	PUMP1558
④	Thermostatic Mixing Valve	BRAVLV13WMXTH
⑤	Power Box with 6' Power Cord	PWRB6R1
⑥	Thermometer	76940
⑦	24Vac Plug-in Transformer	PLINTR20VA
⑧	Enclosure	n/a
⑨	Accessory Pack	ACCCDP2
	3/4" Washer	WHTWSH34
	1" Washer	NTRWSH1

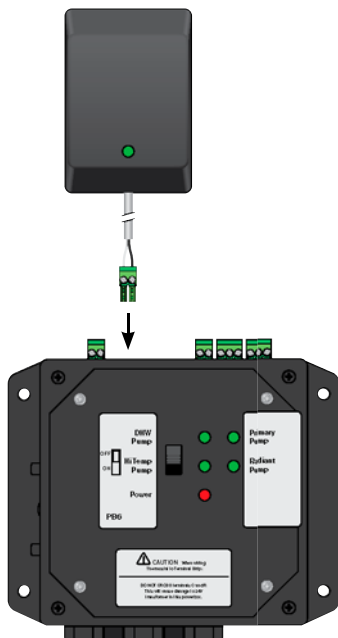


Specifications

	CDP200
Listing	cETLus
Conforms to	CAN/CSA-C22 No.14, UL508
Dimensions	18-1/4"H x 16-1/4"W x 7-3/4"D
Weight	41.5 lbs.
Nominal panel output* - <i>see conditions below</i>	200,000 Btu/hr*
Max ambient temperature	120°F
Max water temperature	200°F
Settable fluid temp range	100-145°F
Min required flow for correct temp control	1 US gpm
Power supply: pre-wired on system controller	110 V(ac); max. current 3A
Primary circulator	Non-ferrous, Grundfos UPS15-58RU
Low temp circulator	Non-ferrous, Grundfos UPS15-58RU
High temp/DHW circulator	Non-ferrous, Grundfos UPS15-58RU
Auxiliary terminal	Yes
Other control supplied prewired	n/a
Temperature control method	1" 3-Way thermostatic
Mix Valve Cv	3.9
Piping	3/4" 304 Stainless steel tubing
Piping connections	1" FPT
Backplate	Galvanized steel
Enclosure	Powder coated steel

Panel Output Conditions	Primary	Mixed Temp	High Temp/ DHW
Nominal output (Btu/h)	200,000	70,000	130,000
Fluid type	Water	Water	Water
ΔT (°F)	40°F	20°F	26°F
Flow rate (US gpm)	10 US gpm	7 US gpm	10 US gpm
Pressure drop (ft head)	8 ft	4 ft	8 ft

Panel Component Specifications



24Vac Plug-in Transformer

This plugs into and provides 24Vac power to the power box.

Specifications:

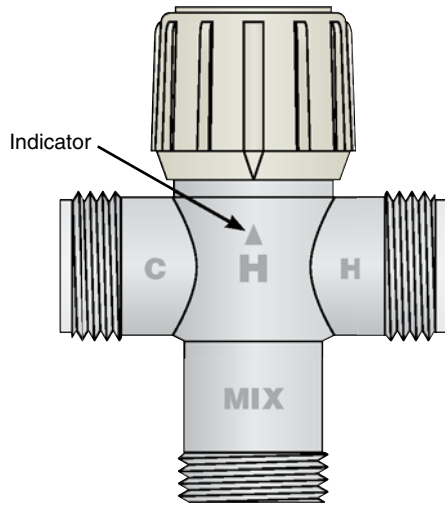
- Requires 115V power source.

Power Box

This module provides the required power for all electronic components on the panel, via the ON/OFF switch. Power box may not be exactly as shown.

Specifications:

- Requires 115V power source.
- Requires a maximum 15A circuit breaker.



3-Way Thermostatic Mixing Valve (TMV)

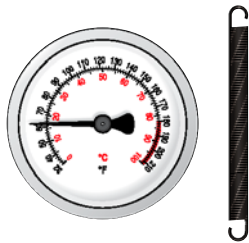
The TMV controls the temperature of the hydronic system via a self regulating thermostat.

Setting the TMV

The indicator for the valve is located at the base of the knob. The mixed (desired) temperature is a function of the supply temperature and the TMV setting.

See the below chart to determine the proper setting for you system. After allowing the system to run for a short period, verify the setting and adjust if necessary.

Supply Fluid Temp		Mixed Fluid Temperature									
		0		1		2		3		4	
120°F	49°C	96°F	36°C	104°F	40°C	116°F	47°C	117°F	47°C	117°F	47°C
140°F	60°C	98°F	37°C	106°F	41°C	118°F	48°C	130°F	54°C	137°F	58°C
160°F	71°C	100°F	38°C	108°F	42°C	120°F	49°C	132°F	56°C	145°F	63°C
180°F	82°C	102°F	39°C	110°F	43°C	122°F	50°C	134°F	57°C	147°F	64°C



Thermometer (76940)

The pipe mounted thermometer reads the supply fluid temperature.

Specifications:

- Temperature range of 32-210°F (0-100°C).

Mounting

Prior to mounting the panel, ensure the wall is capable of supporting the weight of the panel.
Ensure that two 115V receptacles are within reach of the 6-foot cord and plug and 24V plug-in transformer.

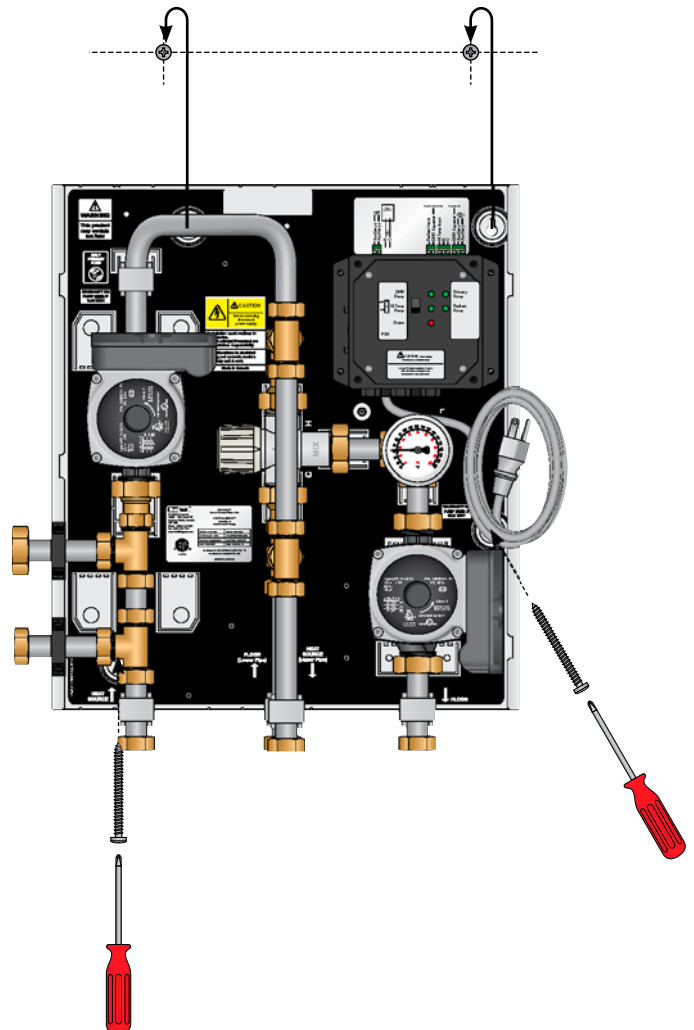
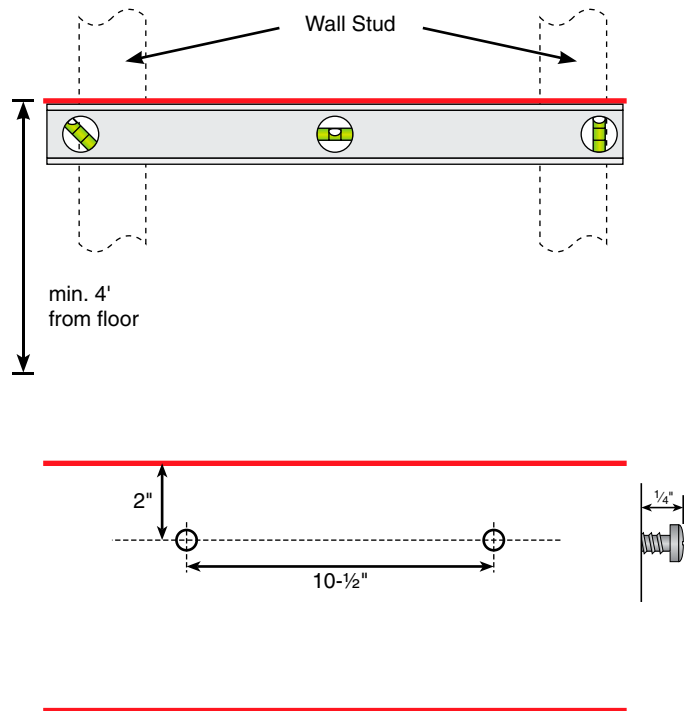
Step 1 Determine the locations and distance between the wall studs. With a level at a minimum height of 4' from the floor draw a straight line on the wall and mark the stud locations.
If the panel cannot be secured directly to the studs, or suitable backing boards, plywood may need to be installed behind the panel to properly secure it in place.

Step 2 Screw two of the supplied mounting screws into the wall studs (or backing plywood) 2" from the top of desired height, and 10-1/2" apart, leaving 1/4" of screw out from the wall.

Step 3 Lift and place the panel onto the mounting screws.

Step 4 Screw the two remaining mounting screws into the holes at the bottom of the panel and tighten the top two screws.

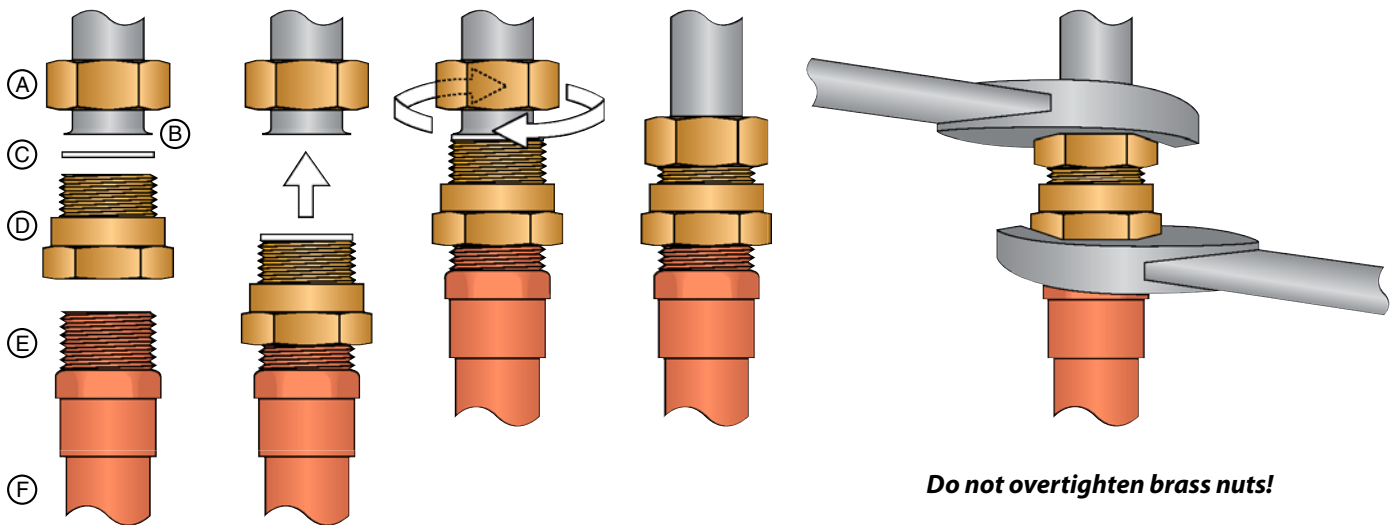
Step 5 Before replacing the enclosure, refer to pages 10-16 for fill and purge, and proper wiring instructions.



Piping Hookup continued

Step 3 Connect all adapters.

1. Connect MPT adapter (E) to copper pipe or tubing (F).
2. Screw supplied M x FPT adapter (D) onto (E) using appropriate thread sealant.
3. Take assembly (D)(E)(F) and place rubber washer (C) on flat surface of (D).
4. Without disturbing rubber washer (C), place assembly against flanged stainless steel pipe (B).
5. Slide nut (A) over adapter (D) and finger tighten nut. Then, using two 30mm wrenches, tighten the nut **taking care not to overtighten the nut**, as this will damage the rubber washer.



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

Fill And 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.

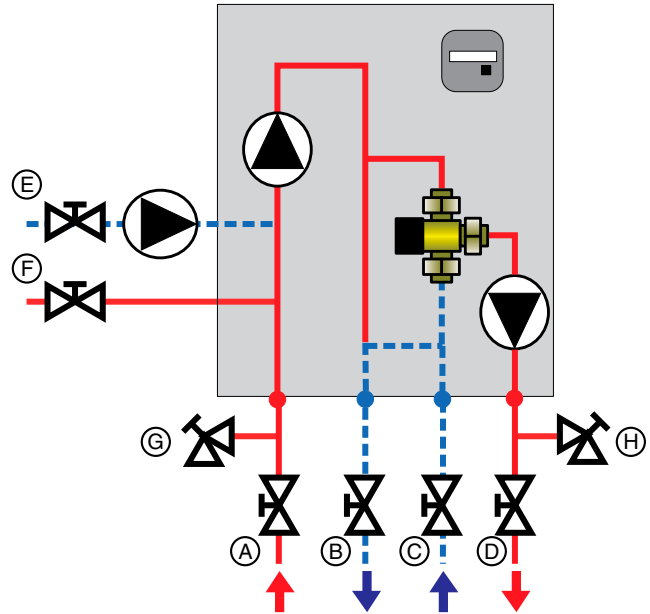


The discharged system fluid from the fill and purge process is not for consumption or washing.

Note: *Additional purging steps may be required for the rest of the hydronic system.*

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** Adjust the thermostatic mixing valve to a position of four (see page 8).
- Step 3** Fully close valves (A), (B), (C), (D), (E), (F), and (H). Fully open valve (G).
- Step 4** Attach a purge hose (not included) to (G) and a fill hose (not included) to (H). Open valve (H).
- Step 5** When exiting water from (G) is free of bubbles, close valve (G), then valve (H).
- Step 6** Remove hoses from drain valves and full open valves (A), (B), (C), (D), (E), and (F).
- Step 7** Check for leaks at connections. If any leaks are found, use a back-up wrench and carefully tighten until leak stops. **Do not overtighten.**
- Step 8** Readjust the setting of the thermostatic mixing valve to provide a proper mixed fluid temperature to the hydronic system (see page 8).



Panel Wiring

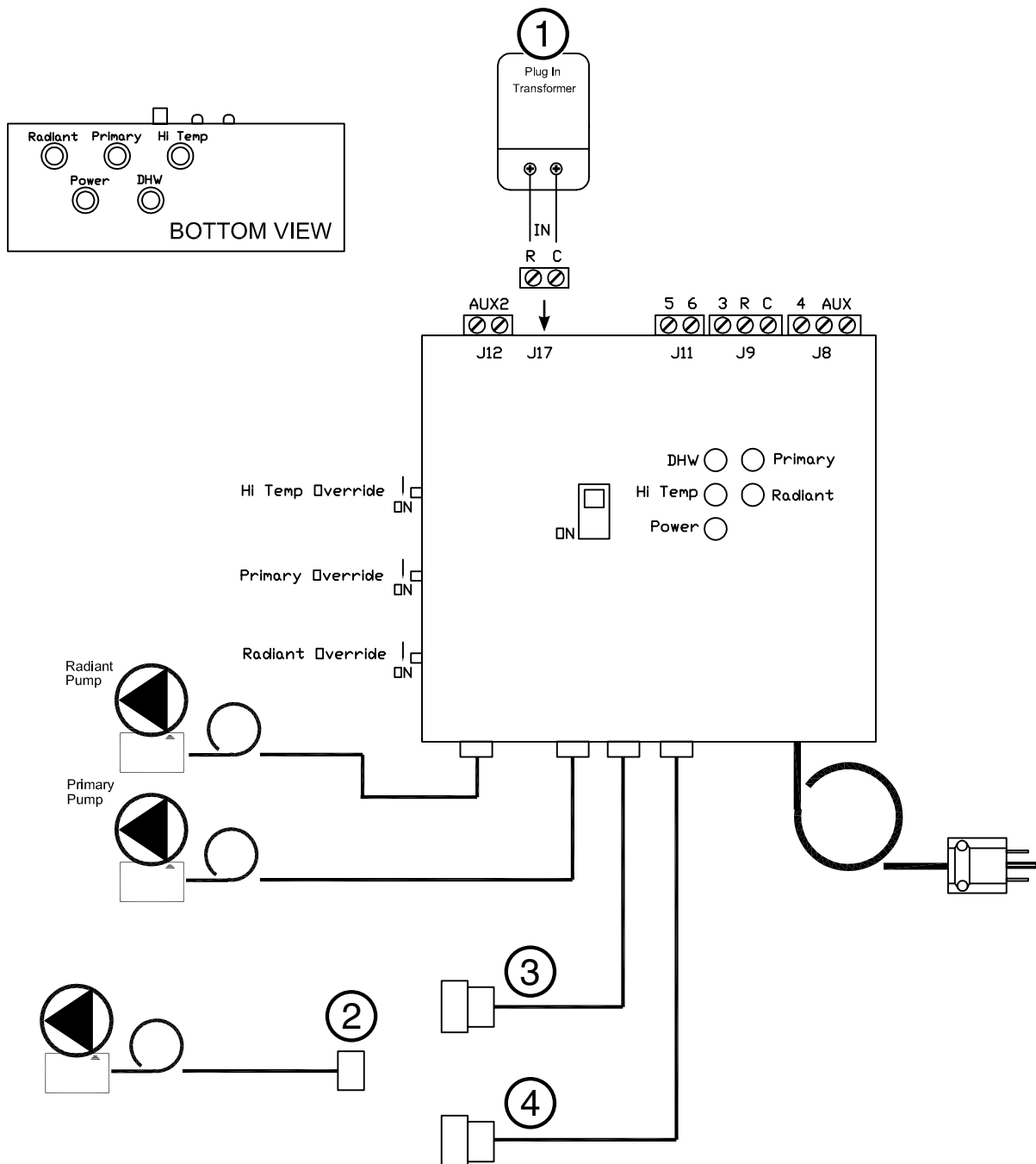
Note: Terminal headers are removable to make wiring connections easier.

24Vac Plug-in Transformer

Plug the terminal header of the 24Vac plug-in transformer into the marked plug on the power box.

External Pump

If the external pump ② is to be used for DHW, connect the pump cable to the "DHW Pump" cable ③ of the power box. If the external pump ② is to be used for a high temp circuit, connect the pump cable to the "Hi Temp Pump" cable ④ of the power box.



Panel Wiring continued

Thermostat Wiring

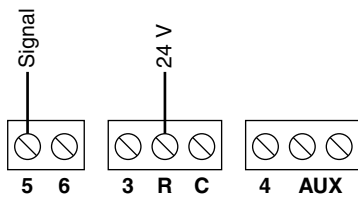


- 24V low voltage power may be supplied to the thermostat. Wiring of thermostat should be done by qualified electrician and should meet local codes and jurisdictions. Wiring to the terminal strip requires 18 gauge 4 wire.

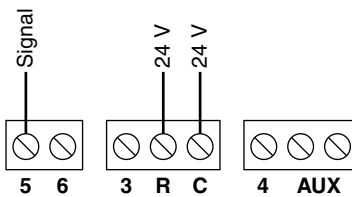


- **Do not exceed 2VA per thermostat.**
- **Do not cross terminals C and R – this will damage the Power Box.**

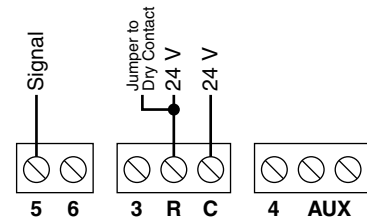
Radiant Input



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

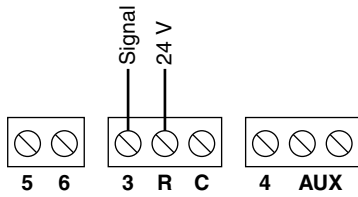


3-Wire Thermostat
(HeatLink thermostats)

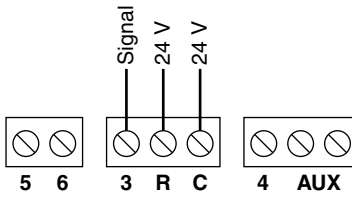


4-Wire Thermostat
(with dry contact signal)

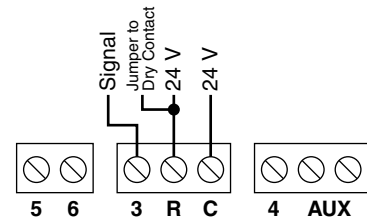
High Temp Input (if applicable)



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



3-Wire Thermostat
(HeatLink thermostats)



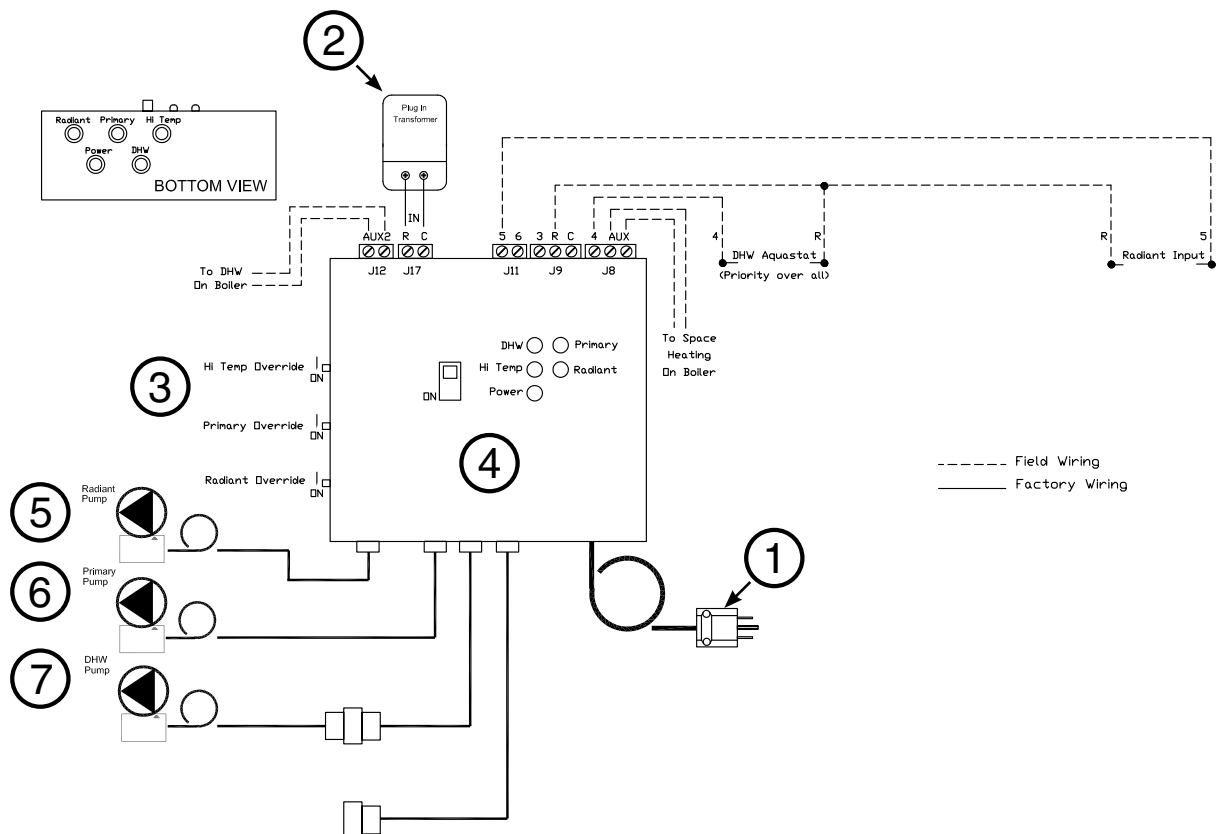
4-Wire Thermostat
(with dry contact signal)

Panel Control Sequence & Wiring - DHW Pump

1. When the power cord ① from the power module and the 24vac plug-in transformer ② are plugged in, and the front power switch is placed in the ON position, the red LED will be lit. This indicates that the panel is powered (110V).
2. The factory setting for the BYPASS switches ③ (located on the left side of the power module) are to remain in the OFF position. The Primary, High Temp, or Radiant Pump Bypass switches may be switched to ON only if the red and green LED's on the power module do not light up during a call for heat. Please refer to the troubleshooting section of the manual for further details.
3. With the closure of the dry contact switch, a heat demand occurs at R and 5 (Radiant Input). The Primary ⑥ and Radiant ⑤ circulators turn on, and fluid moving through the panel and the Thermostatic Valve adjusts the fluid temperature. This adjustment is based on user settings (see page 8). The power module ④ also closes the auxiliary contacts connected to the heat source, thus activating its space heating function.

When the heat demand is removed, the auxiliary contacts open and the circulators operate for approximately 3 minutes purging the heat from the heat source.

4. When the DHW Aquastat calls for heat, the Primary ⑥ and DHW ⑦ circulators will turn on and disable the Radiant ⑤ circulator. The power module ④ also closes the AUX2 contacts connected to the heat source to activate its DHW heating function. When the DHW requirements are met, the AUX2 contacts open and the circulators operate for approximately 3 minutes purging the heat from the heat source.

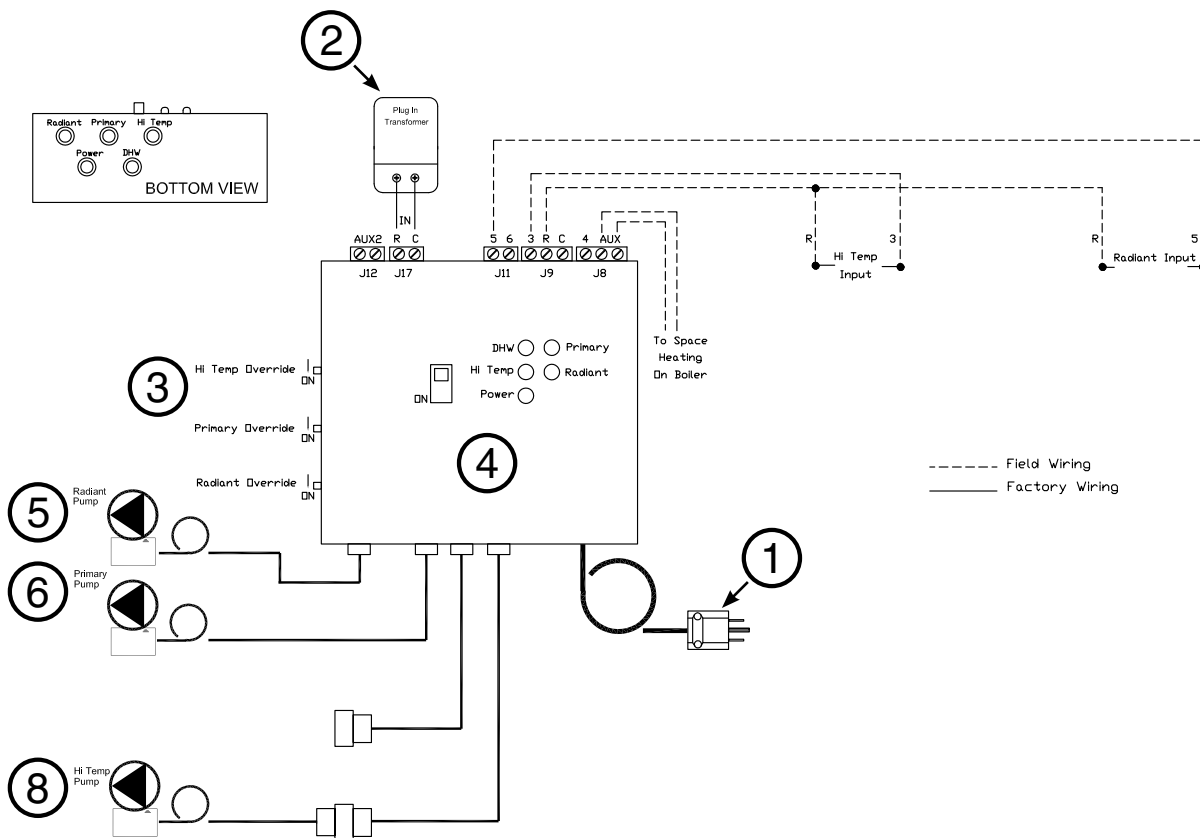


Panel Control Sequence & Wiring - High Temp Pump

1. When the power cord ① from the power module and the 24vac plug-in transformer ② are plugged in, and the front power switch is placed in the ON position, the red LED will be lit. This indicates that the panel is powered (110V).
2. The factory setting for the BYPASS switches ③ (located on the left side of the power module) are to remain in the OFF position. The Primary, High Temp, or Radiant Pump Bypass switches may be switched to ON only if the red and green LED's on the power module do not light up during a call for heat. Please refer to the troubleshooting section of the manual for further details.
3. With the closure of the dry contact switch, a heat demand occurs at R and 5 (Radiant Input). The Primary ⑥ and Radiant ⑤ circulators turn on, and fluid moving through the panel and the Thermostatic Valve adjusts the fluid temperature. This adjustment is based on user settings (see page 8). The power module ④ also closes the auxiliary contacts connected to the heat source, thus activating its space heating function.

When the heat demand is removed, the auxiliary contacts open and the circulators operate for approximately 3 minutes purging the heat from the heat source.

4. When a heat demand occurs at R and 3 (Hi Temp Input), it follows the above sequence using the Primary ⑥ and Hi-Temp ⑧ circulators.



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.
	Low supply mixed fluid temperature.	Adjust the power box to the appropriate setting.
	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.
	The red and green LED's on the power module do not light up during a call for heat.	The zone valve controller may be defective or there is no power being supplied to the panel or the power module is not on. If this is so, switch the power module to by-pass mode. When the Primary Bypass switch is placed in the BY-PASS (ON) position, the green LED will be lit, indicating that the panel is powered with 110V, and the Primary pump will run. When the Radiant Bypass switch is placed in the BY-PASS (ON) position, the green LED will be lit, indicating that the panel is powered with 110V, and the Radiant pump will run. When the Hi Temp Bypass switch is placed in the BY-PASS (ON) position, the green LED will be lit, indicating that the panel is powered with 110V, and the Hi Temp pump will run. This will provide constant circulation so long as there is still 110V power to the panel.
	Circulator is not on during a call for heat. (Use a stethoscope or similar device to verify)	The power box 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. If this so, switch the power module to Bypass mode. This will provide constant circulation so long as there is still 110V power to the panel. Prior to Bypass mode selection, 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.
	High supply mixed fluid temperature.	Adjust the Thermostatic Mixing Valve to the appropriate settings.
	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.
	Bypass switch(es) may be on.	Check that the Bypass switches on the power box are in the BY-PASS (OFF) position.

Troubleshooting continued

Problem	Check / Verify	Possible Cause
Low DHW Temperature	Check current setting of the aquastat.	Adjust the temperature setting on aquastat to a higher setting.
	Circulator is not on during a call for heat. (Use a stethoscope or similar device to verify)	The power box or circulator may be defective.
	The red and green LED's on the power module do not light up during a call for heat.	The power box may be defective.
High DHW Temperature	Check current setting of the aquastat.	Adjust the temperature setting on aquastat to a lower setting.

Maintenance

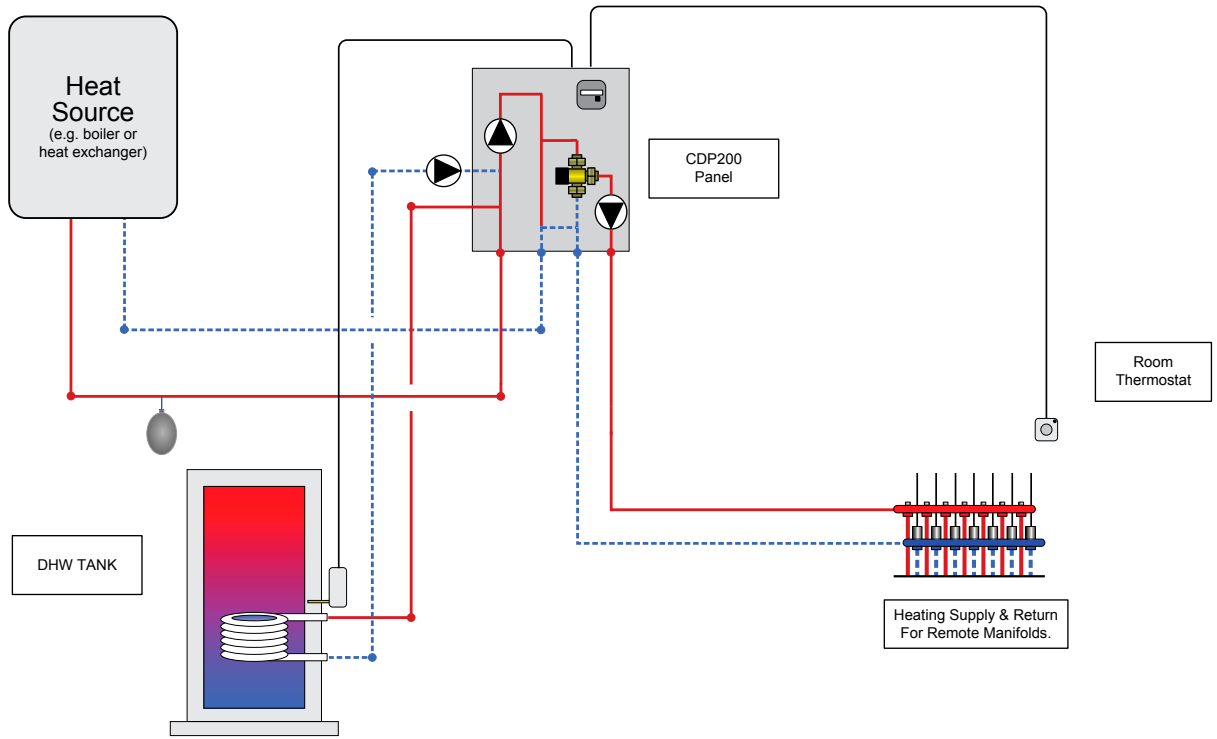
Yearly maintenance should be done on the panel prior to each heating season to ensure the efficient and accurate operation of the panel.

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.

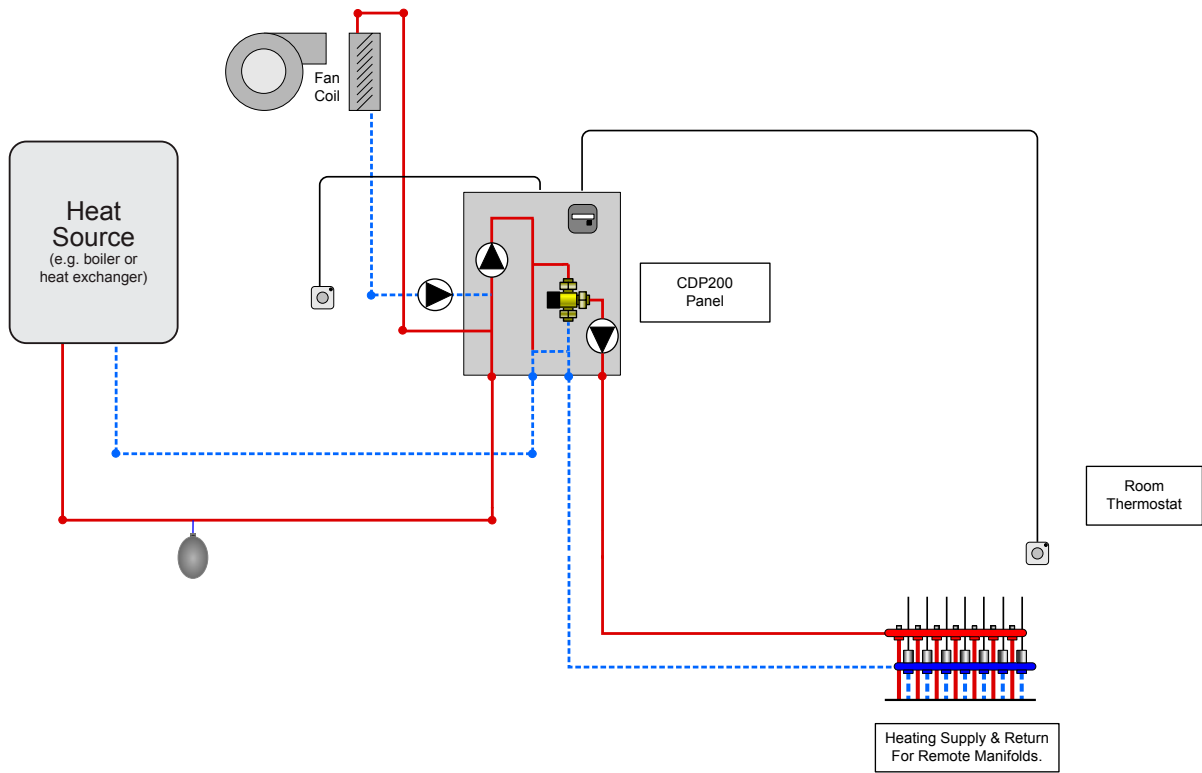
CDP 200 MBH 2-Temperature System Panel



Notes:

- A) This drawing is for illustrative purposes only. It is not intended to be used as a wiring or piping diagram.
Not all required components are shown. Local codes, regulations, and authorities have final jurisdiction.

CDP 200 MBH 2-Temperature System Panel



Notes:

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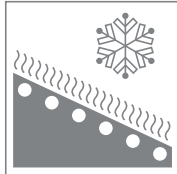


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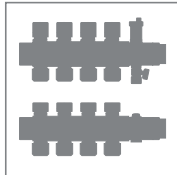


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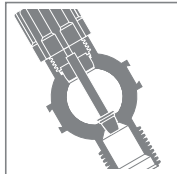


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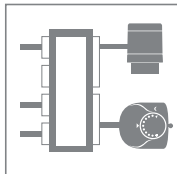
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