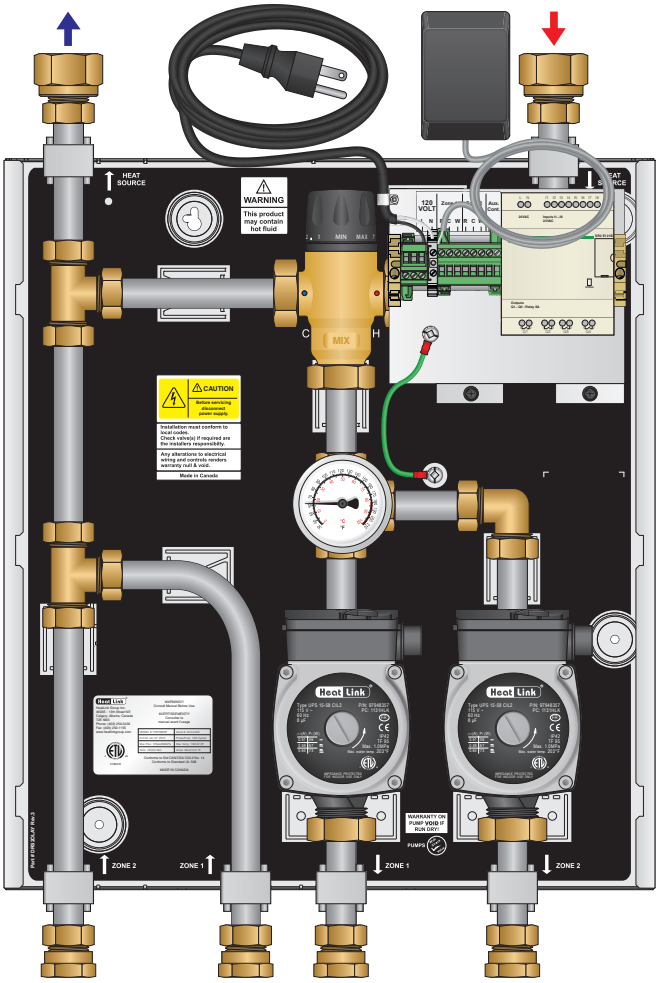
TMP085DP

Dual Pump Mixing Panel

Installation, Operation, and Maintenance Manual



MECHANICAL ROOM IN A BOX™

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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 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 (refer to pages 5-7).

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 TMP085DP panel model ***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.

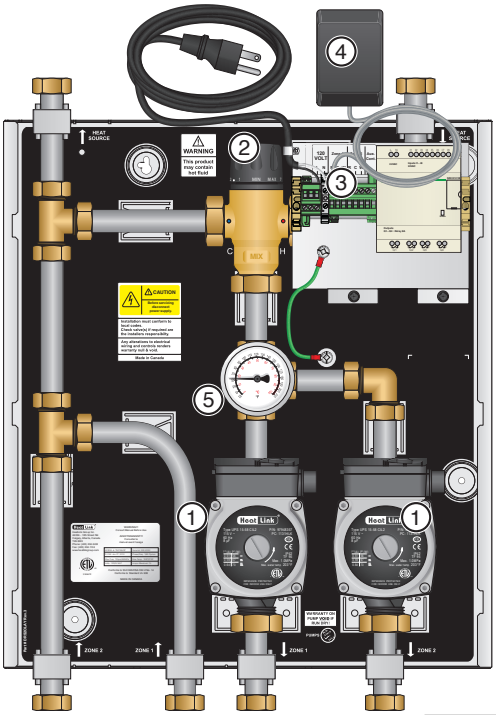
Step 4 There are 2 screws holding the enclosure in place during shipping. They are located at the top left & right of the panel base. Remove these 2 screws.

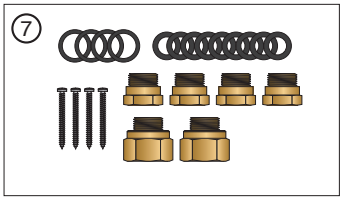
Step 5 Remove the enclosure from the panel by sliding it upwards until it stops, then gently pulling outwards off.

Step 6 Verify the following items:

- (4) Mounting screws
- (4) ¾" MBSP × ¾" FNPT adapters
- (2) ¾" MBSP × 1" FNPT adapters
- (9) ¾" rubber washers (3 spares)
- (4) 1" rubber washers (spares)

Panel Components



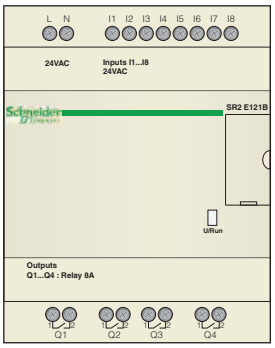


#	Component	Part Number TMP085DP
1	Circulator Grundfos UPS15-58	PUMP1558
2	Thermostatic Mixing Valve	–
3	PLC (Programmable Logic Control)	–
4	24V(ac) 40VA Plug-in Transformer	PLINTR40VA
5	Thermometer	76940
6	Enclosure	n/a
7	Accessory Pack	ACCTMPD
	¾" Washer	WHTWSH34
	1" Washer	NTRWSH1

Specifications

	TMP085DP
Listing	cETLus
Conforms to	CAN/CSA-C22 No.14, UL508
Dimensions	18-¼"H x 16-¼"W x 7-¾"D
Weight	30 lbs.
Nominal panel output	85,000 Btu/hr
Nominal flow	2× 4.25 US gpm @ 20°F ΔT
Nominal pressure drop outside of panel	4 ft
Max ambient temperature	120°F
Max water temperature	200°F
Min required flow for correct temp control	1 US gpm
Power supply: pre-wired on system controller	110 V(ac); max. current 2A
Zone 1 circulator	Non-ferrous, Grundfos UPS15-58CIL2
Zone 2 circulator	Non-ferrous, Grundfos UPS15-58CIL2
Auxiliary terminal	Yes, dry contacts, max. load 10A
Temperature control method	1" 3-Way thermostatic
Temperature control range	110-140°F
Mix Valve Cv	3.0
Piping	¾" 304 Stainless steel tubing
Piping connections	1" FNPT primary, ¾" FNPT secondary
Backplate	Galvanized steel
Enclosure	Powder coated steel

Panel Component Specifications



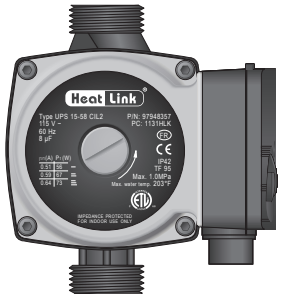
PLC (Programmable Logic Control)

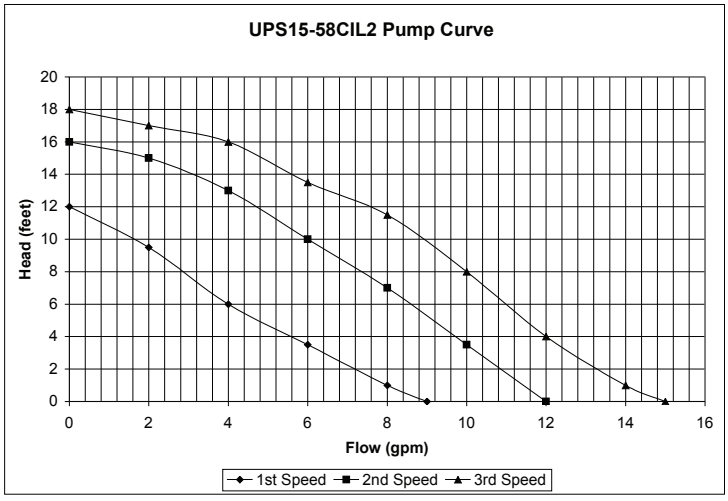
This module provides the control and switching for the panel.

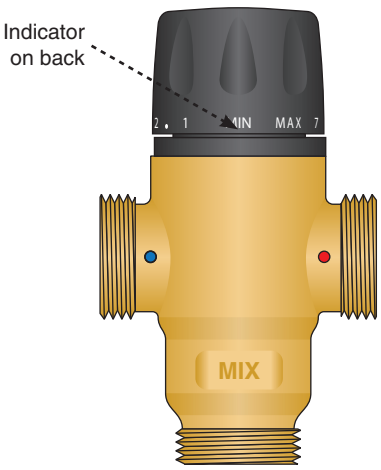
Circulator

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.

Specifications:
• The following pump curves apply.



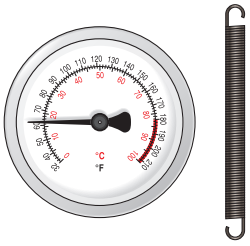




3-Way Thermostatic Mixing Valve (TMV)
The TMV controls the temperature of the hydronic system via a self regulating thermostat.

Setting the TMV
The indicator for the valve is located at the base of the knob on the back. The mixed (desired) temperature is a function of 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.

Unit	Mixed Fluid Temperature								
	Min.	1	2	3	4	5	6	7	Max.
°F	81	90	100	111	120	127	136	145	152
°C	27	32	38	44	49	53	58	63	67



Thermometer (76940)

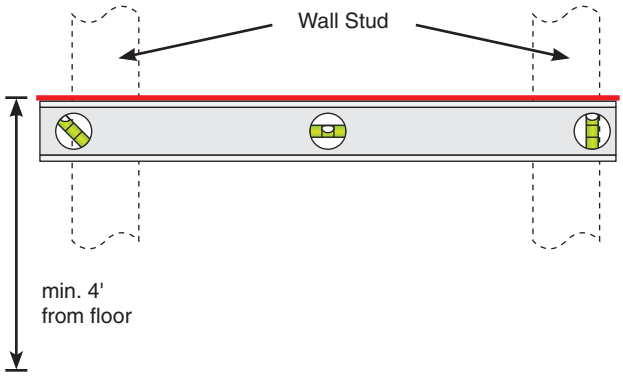
The pipe mounted thermometer reads the supply fluid temperature.

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

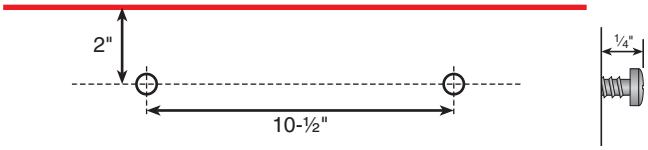
Mounting

Prior to mounting the panel, ensure the wall is capable of supporting the weight of the panel.
Ensure that a 115V receptacle is within reach of the 6-foot cord and plug.

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.

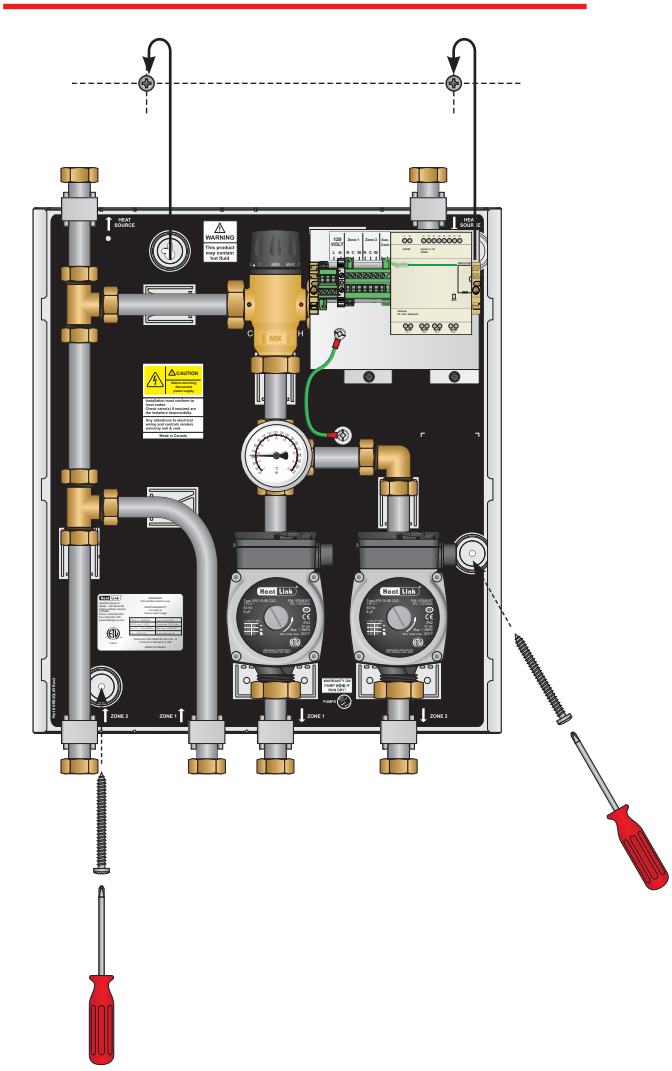


Step 2 Screw two of the supplied mounting screws into the wall studs (or backing plywood) 2" from the top of desired height, and 10-½" apart, leaving ¼" of screw out from the wall.



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.



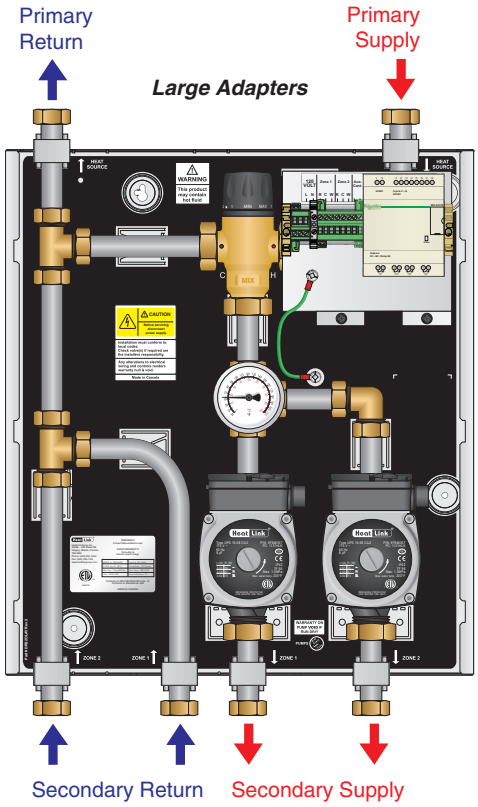
Step 5 Before replacing the enclosure, refer to pages 9-11 for fill and purge, and proper wiring instructions.

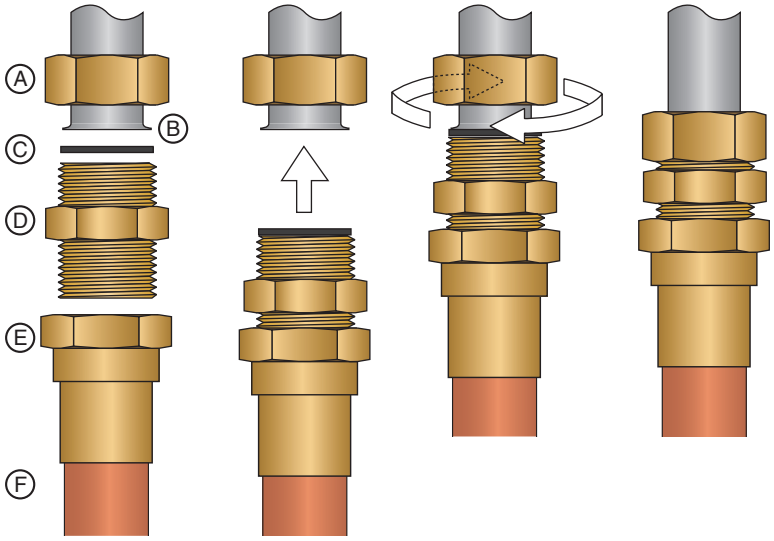
Piping Hookup

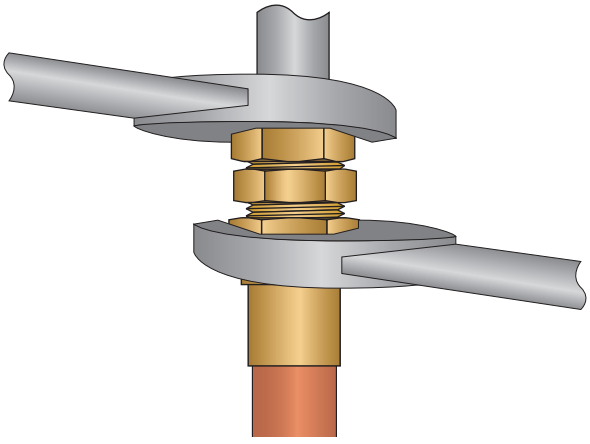
Step 1 Before making any connections, identify the required connections to and from the panel. Adapters are ¾" M BSPP × ¾" FNPT or ¾" M BSPP x 1" FNPT, and must use the supplied adapters and rubber washers.

Step 2 Connect all adapters.

1. Connect MNPT adapter Ⓔ to copper pipe or tubing Ⓕ.
2. Screw supplied M × FNPT adapter Ⓓ onto Ⓔ using appropriate thread sealant.
3. Take assembly ⒹⒺⒻ and place rubber washer Ⓒ on flat surface of Ⓓ.
4. Without disturbing rubber washer Ⓒ, place assembly against flanged stainless steel pipe Ⓑ.
5. Slide nut Ⓐ over adapter Ⓓ and first 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.







Do not overtighten brass nuts!

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 7).

Step 3 Fully close valves Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ, Ⓕ, and Ⓖ. Fully open valve Ⓗ.

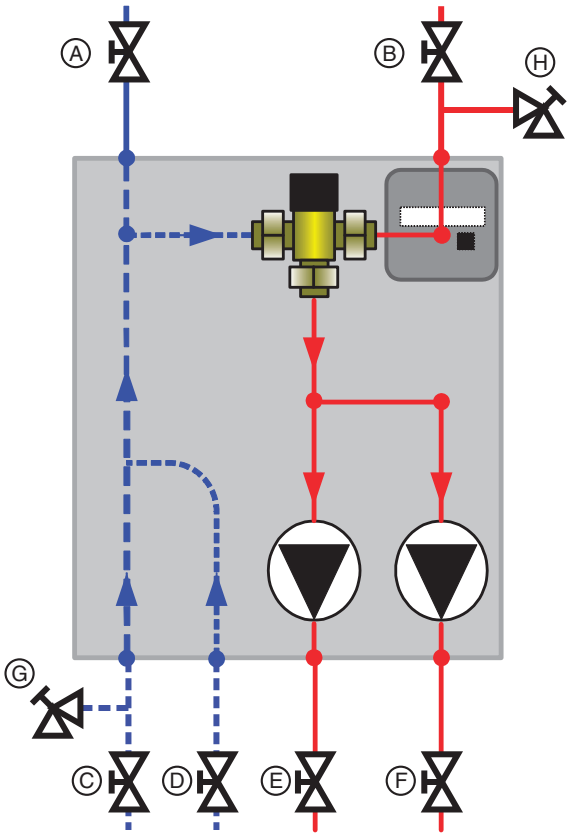
Step 4 Attach a purge hose (not included) to Ⓗ and a fill hose (not included) to Ⓖ. Open valve Ⓖ.

Step 5 When exiting water from Ⓗ is free of bubbles, close valve Ⓗ, then valve Ⓖ.

Step 6 Remove hoses from drain valves and full open valves Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ, and Ⓕ.

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 7).

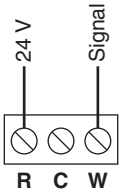


Panel Wiring

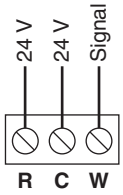
Thermostat Wiring

- 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.

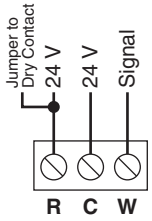
- **Do not exceed 2VA per thermostat.**
- **Do not cross terminals *C* and *R***



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



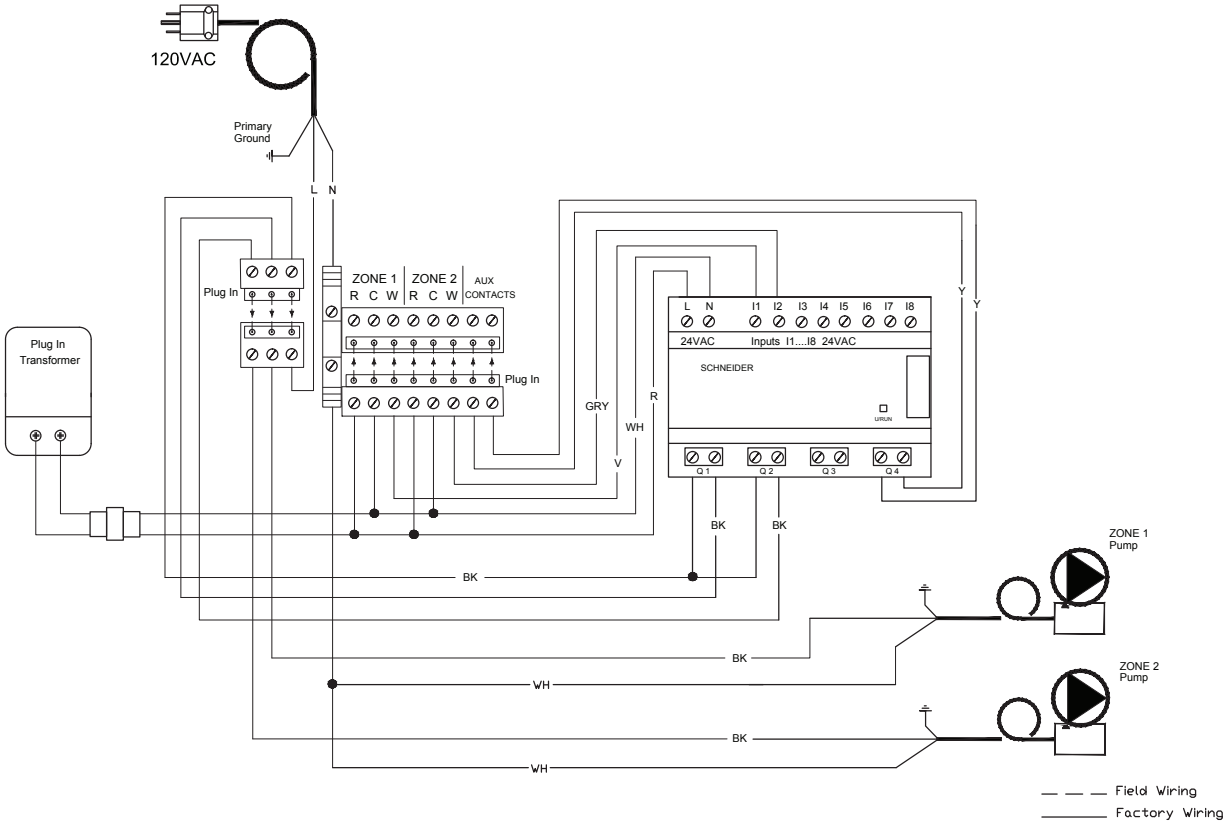
3-Wire Thermostat
(HeatLink thermostats)



4-Wire Thermostat
(with dry contact signal)

Other Terminals

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.



Panel Control Sequence

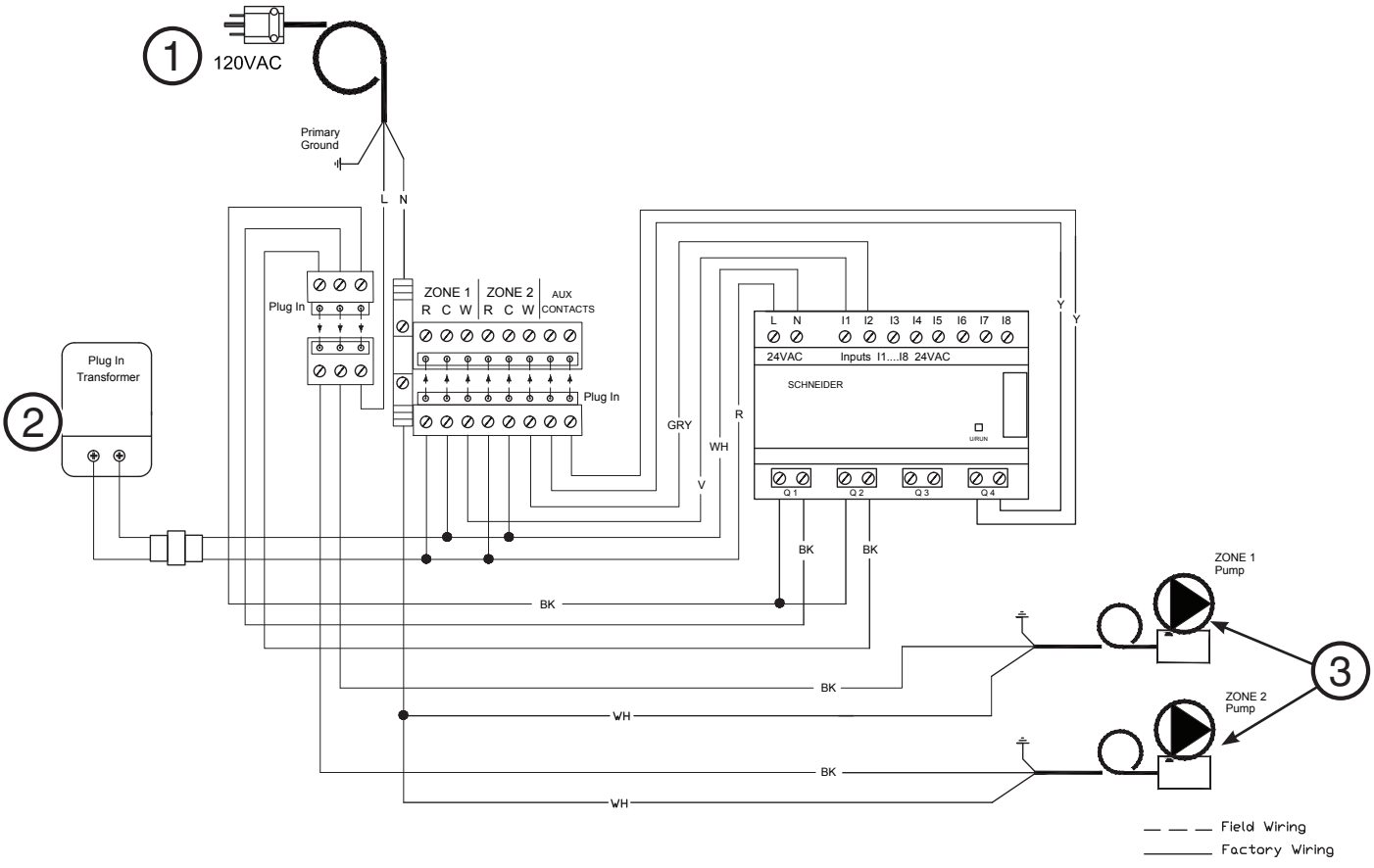
1. When the power cord from the PLC (1) is plugged in, and the 24Vac Plug-in Transformer (2) is plugged in, the Green LED is flashing on the PLC, indicating that the panel is powered.

2. When a thermostat calls for heat, its internal 24V contacts close, the auxiliary terminals close, and the appropriate circulator(s) (3) turns on.

3. As the circulator(s) moves fluid through the panel the thermostatic mixing valve adjusts the fluid temperature based on the user settings (page 7).

4. When the requirements of the thermostat are met, the internal contacts of the thermostat open, the auxiliary contacts open, and the corresponding circulator(s) stops.

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

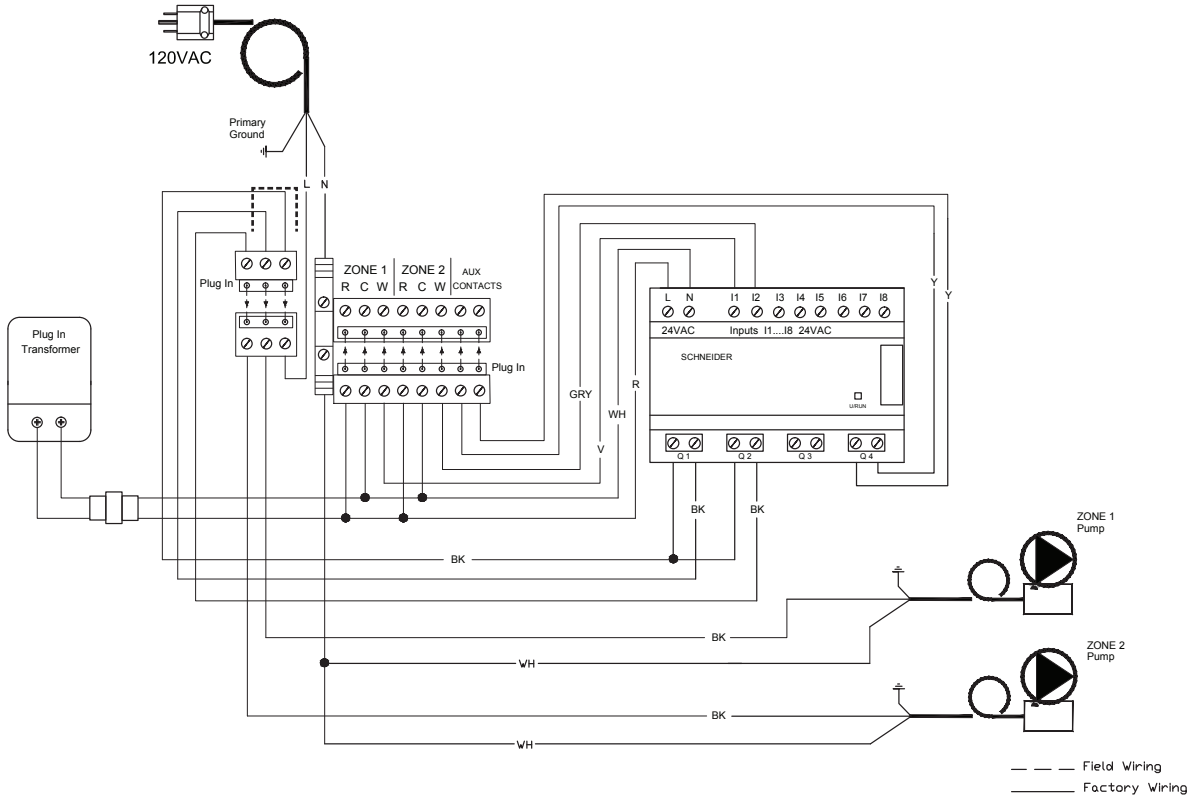


Troubleshooting

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 thermostatic mixing valve 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.
	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.
	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.

Troubleshooting (continued)

Temporarily create a "permanent" heat demand by installing a jumper between Zone 1 W & R. The zone 1 pump should run and the auxiliary contacts should close.
Remove the Zone 1 jumper and temporarily create a "permanent" heat demand by installing a jumper between Zone 2 W & R. The zone 2 pump should run and the auxiliary contacts should close.

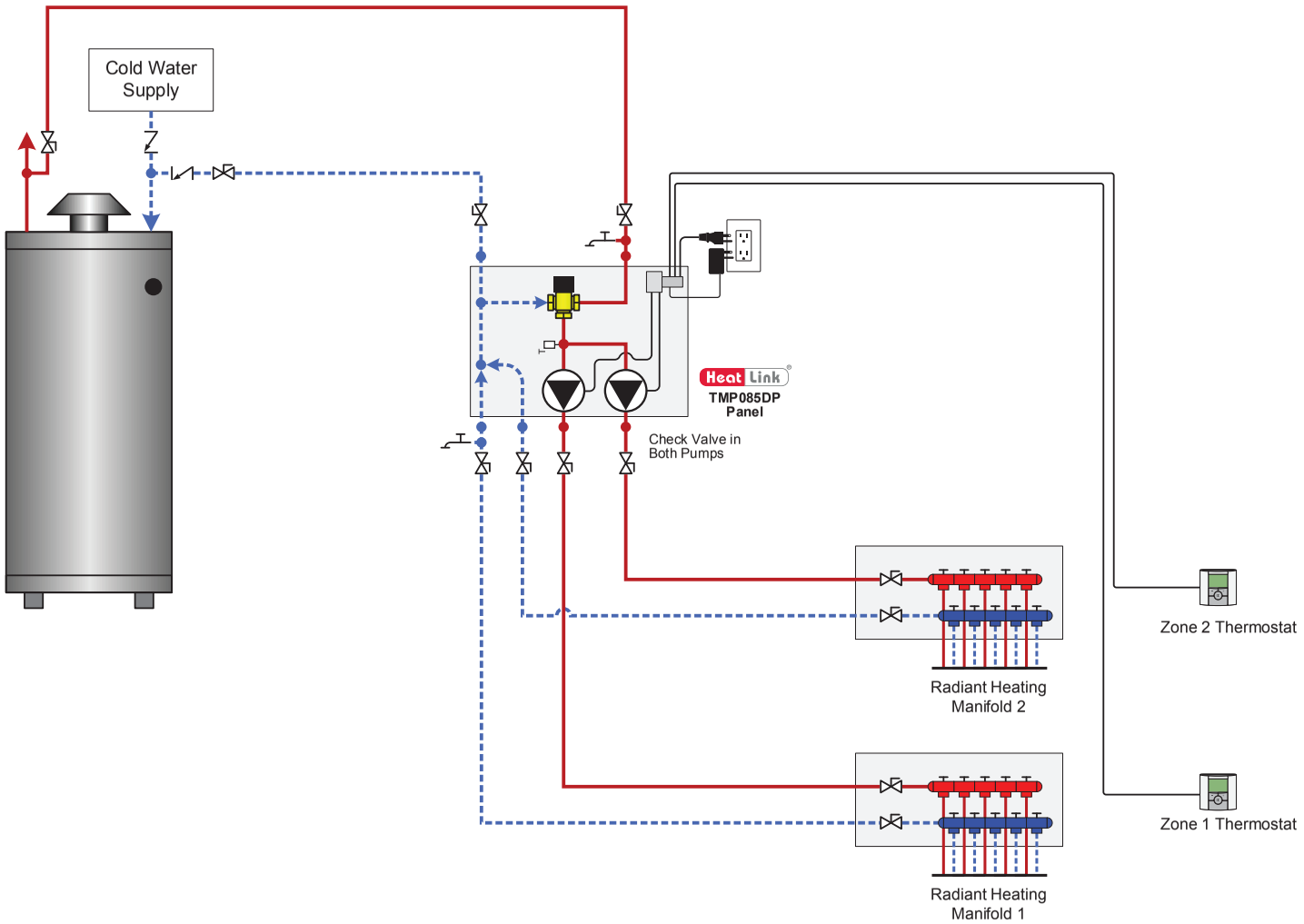


Maintenance

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.



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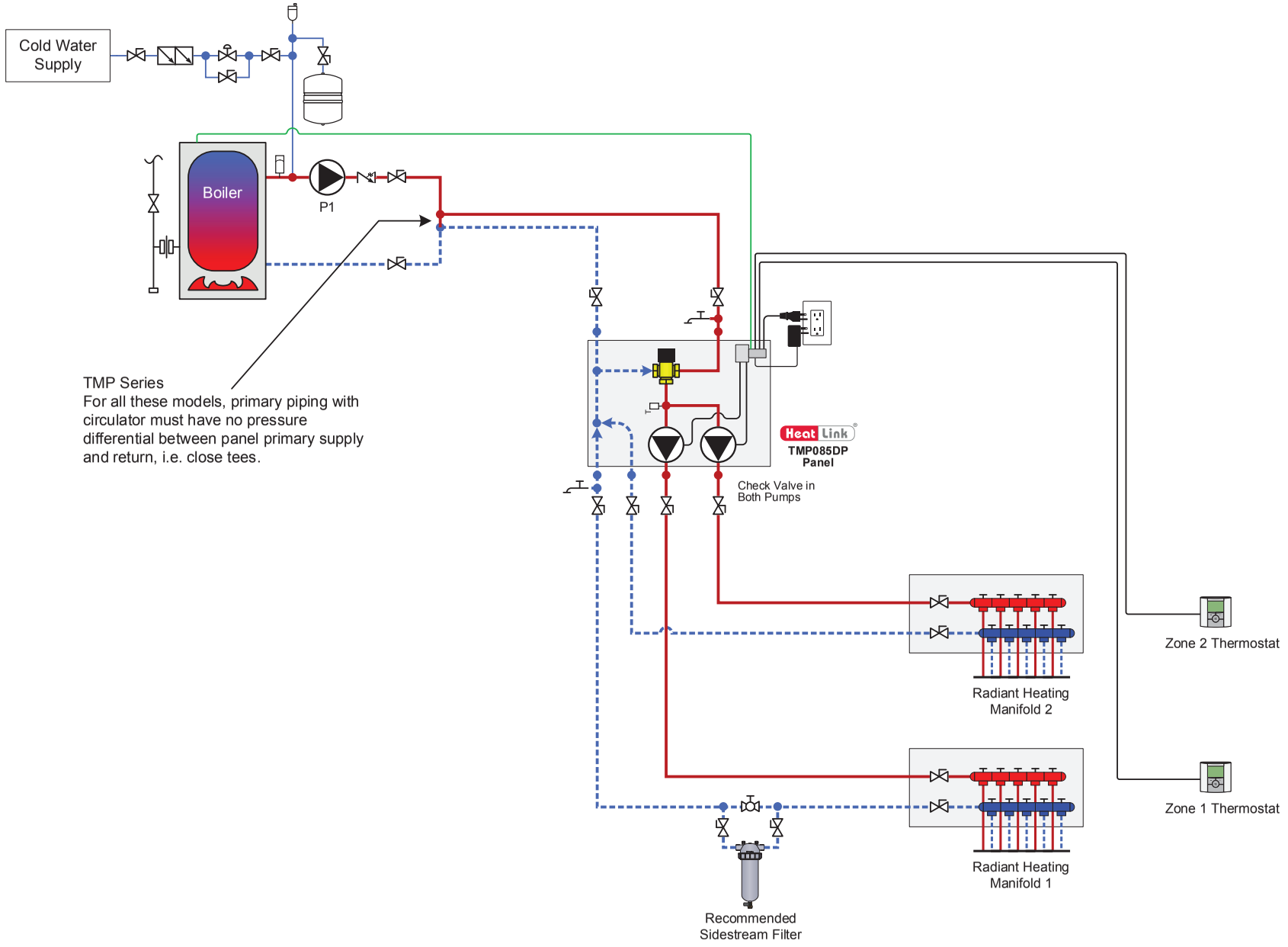
Notes:
- Drawings are for HeatLink suggested system layout only! User must determine if system layout will work for their particular application.
- Air vents, expansion tanks, pressure relief valves, etc. for heat source as per local codes.
- Use isolation ball valves for all circuits and components.
- Local codes, regulations, and authorities have final jurisdiction.

Heat Source: Hot Water Tank
Panel(s): TMP085DP
Heat Load(s): Radiant Heating – Dual Zones

Date: 2014-12-09

Schematic #: **SCH-TMPDP-M002**
Rough-in wiring see: SCH-MRIB-R001
Wiring detail see: SCH-TMPD-E001



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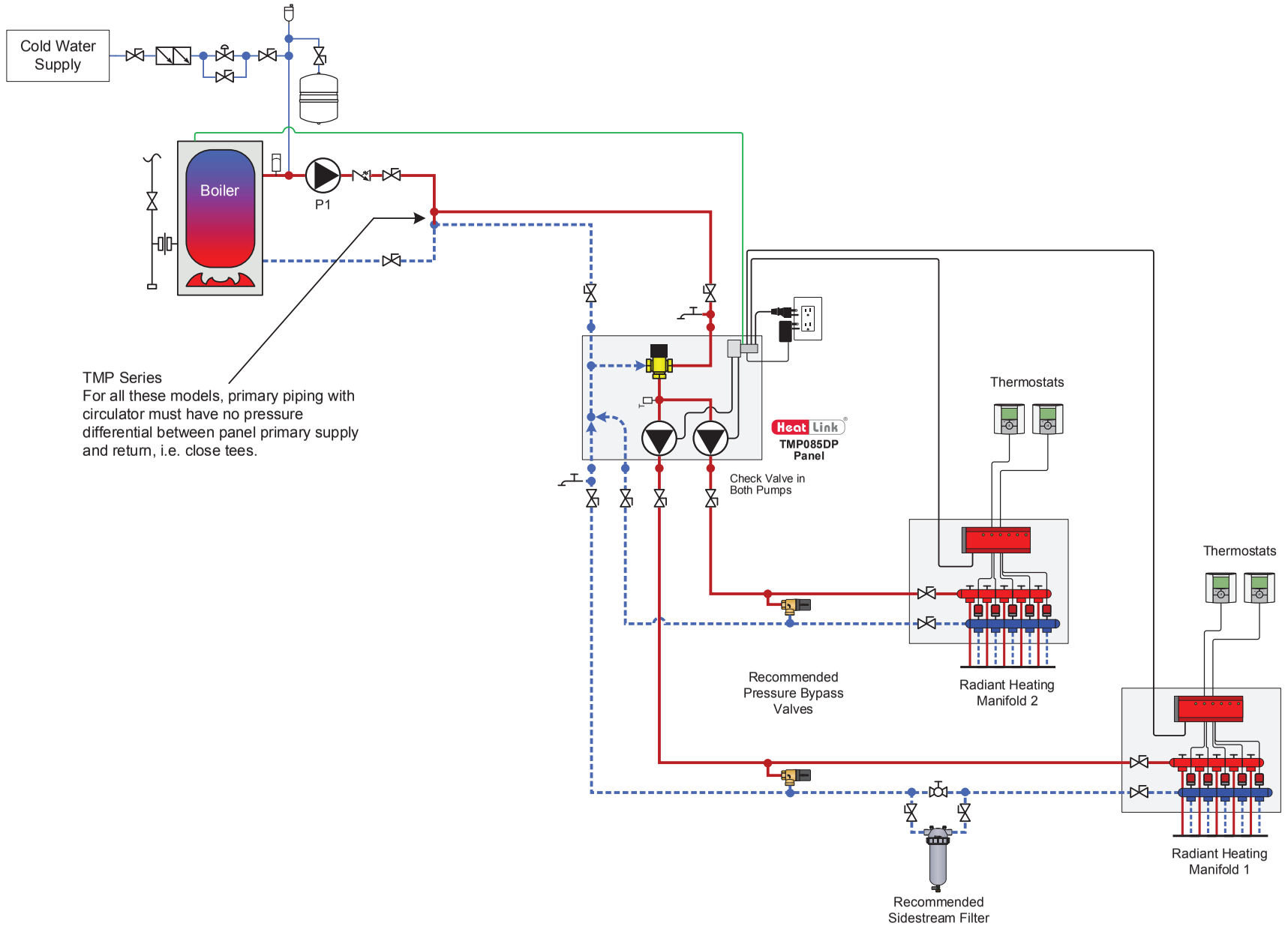
Heat Source: Boiler
Panel(s): TMP085DP
Heat Load(s): Radiant Heating – Dual Zones
Date: 2014-12-09

Schematic #: **SCH-TMPDP-M003**
Rough-in wiring see: SCH-MRIB-R001
Wiring detail see: SCH-TMPD-E003



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Notes:
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- Air vents, expansion tanks, pressure relief valves, etc. for heat source as per local codes.
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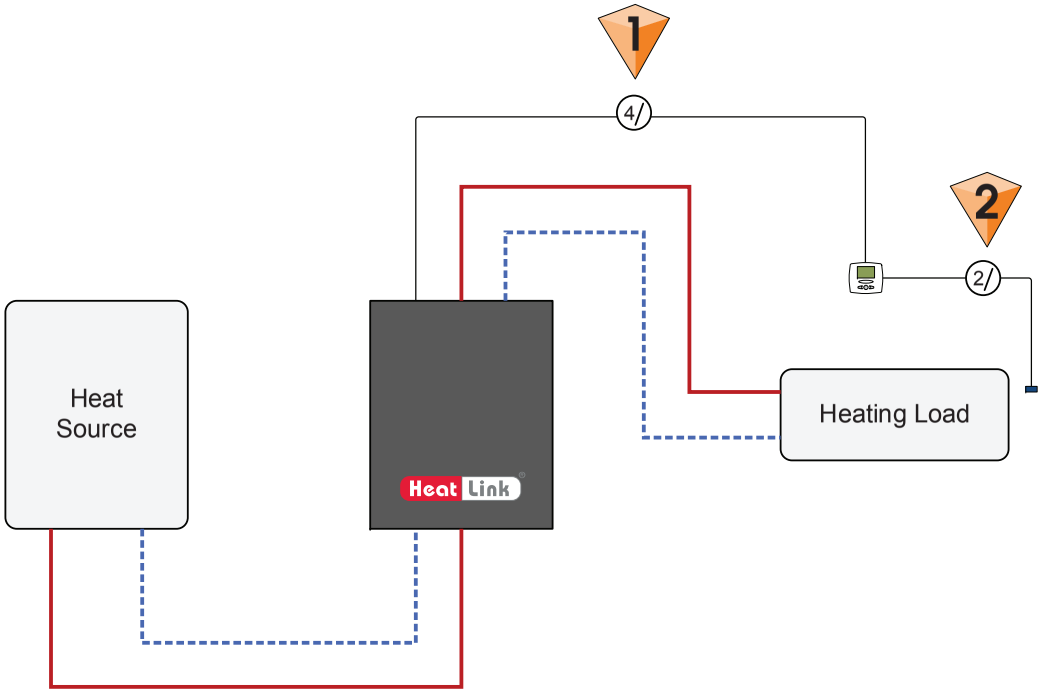
- Local codes, regulations, and authorities have final jurisdiction.

Heat Source: Boiler
Panel(s): TMP085DP
Heat Load(s): Radiant Heating – Multiple Zones

Date: 2014-12-09

Schematic #: **SCH-TMPDP-M004**
Rough-in wiring see: SCH-MRIB-R002
Wiring detail see: SCH-TMPD-E002



1 **Room Thermostat**
Standard 4-wire to be run from thermostat to mechanical room.

2 **Floor Sensor (optional)**
Standard 2-wire to be run from thermostat to floor sensor.

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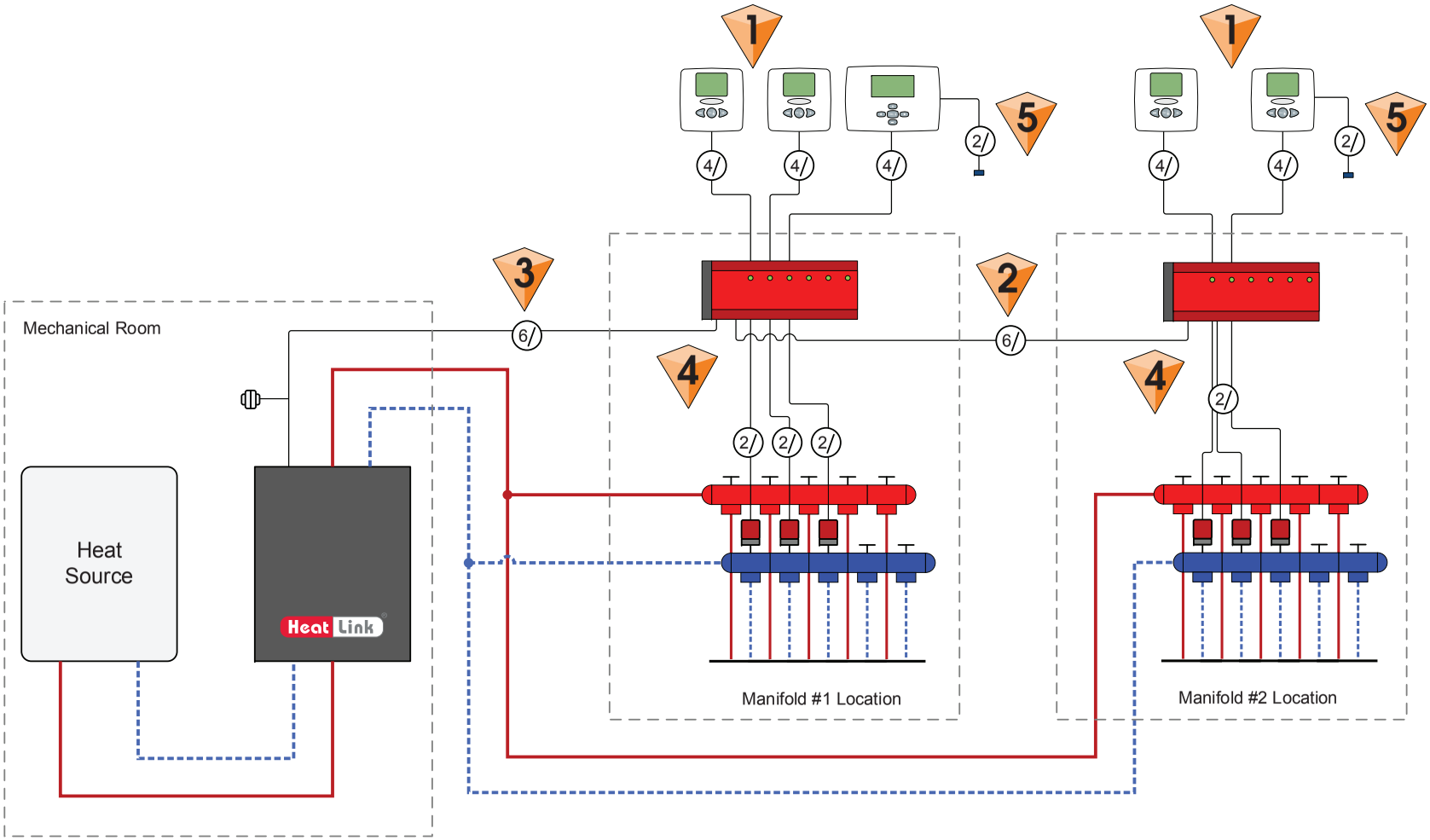
Notes:
- Drawings are for HeatLink suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink schematics with manufacturer schematics of each particular control chosen.
- In all cases manufacturer equipment schematics will take precedence over HeatLink electrical schematics.
- Local codes, regulations, and authorities have final jurisdiction.

Application: Rough-in Wiring for One Zone Heating

Date: 2012-10-19

Schematic #: **SCH-MRIB-R001**



1 Room Thermostats
Standard 4-wire to be run from each zone back to the corresponding manifold location.

2 6-wire Jumper
6-wire to be run between each manifold location. This allows for the transfer of the clock signal, heat demand information, and power from module to module.

3 6-wire Jumper
6-wire to be run from the last manifold location to the mechanical room. This allows for the transfer of the clock signal, heat demand information, and power.

4 Optional
Allow for 110V power source to a 24V transformer at each manifold location instead of supplying 24V power from the mechanical room.

5 Floor Sensor (optional)
Standard 2-wire to be run from thermostat to floor sensor.

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Notes:
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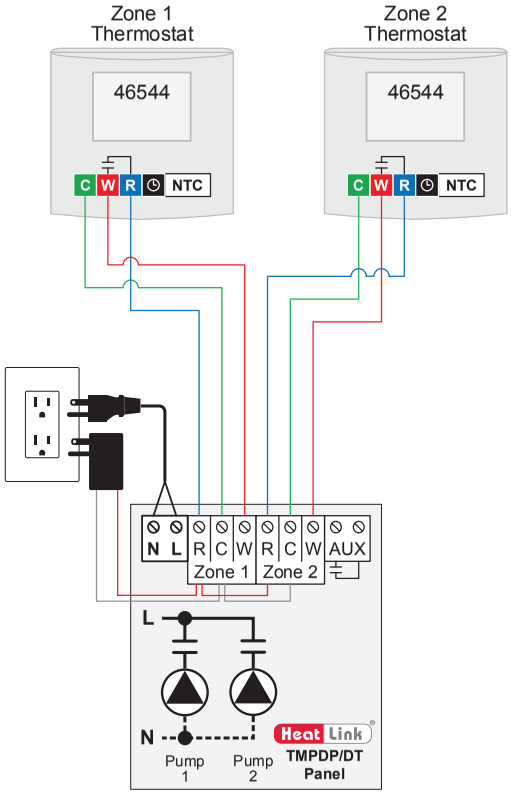
- Local codes, regulations, and authorities have final jurisdiction.

Application: Rough-in Wiring for Multiple Zone Heating with StatLink

Schematic #: **SCH-MRIB-R002**

Date: 2012-10-19



Heat Link®
www.heatlink.com
1-866-661-5332

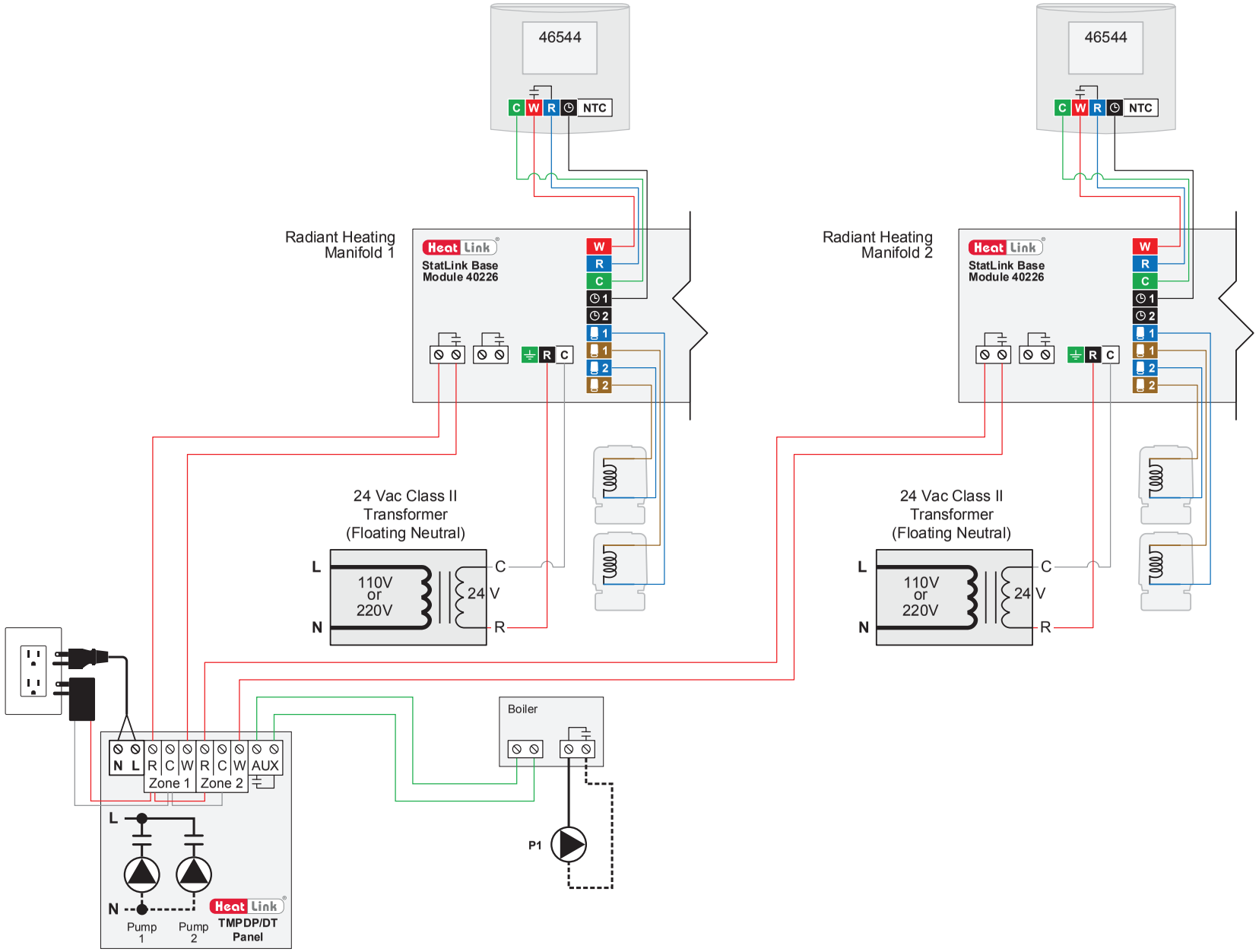
Notes:
- Drawings are for HeatLink suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink schematics with manufacturer schematics of each particular control chosen.
- In all cases manufacturer equipment schematics will take precedence over HeatLink electrical schematics.
- Local codes, regulations, and authorities have final jurisdiction.

Application: Dual Zone Heating

Date: 2014-12-09

Schematic #: **SCH-TMPD-E001**

Rough-in wiring see: SCH-MRIB-R001



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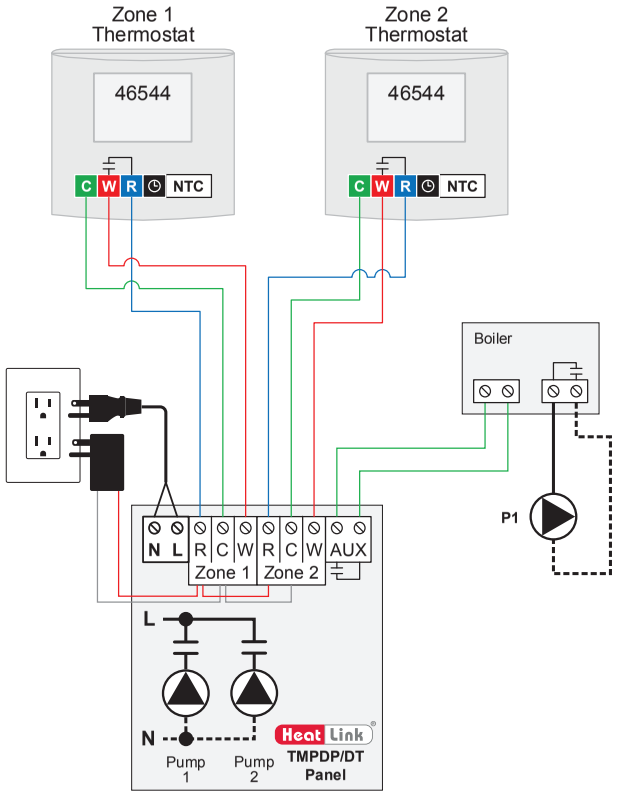
Application: Multiple Zone Heating with StatLink

Date: 2014-12-09

Schematic #: **SCH-TMPD-E002**

Rough-in wiring see: SCH-MRIB-R002



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Application: Dual Zone Heating

Date: 2014-12-09

Schematic #: **SCH-TMPD-E003**

Rough-in wiring see: SCH-MRIB-R001

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