

**MECHANICAL ROOM IN A BOX<sup>™</sup>**

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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)

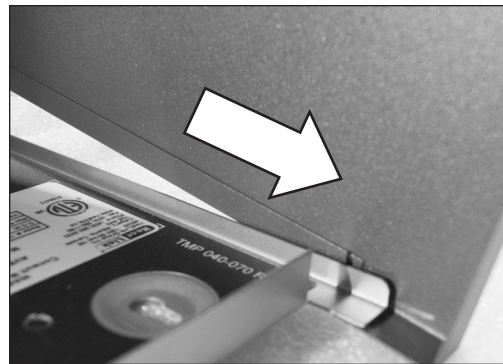
## Function

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 TMP040/TMP070 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

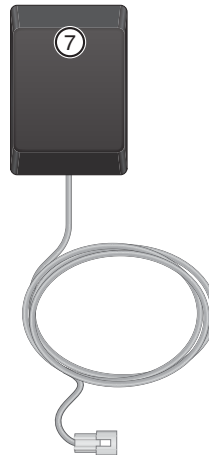
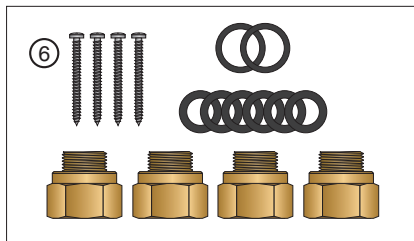
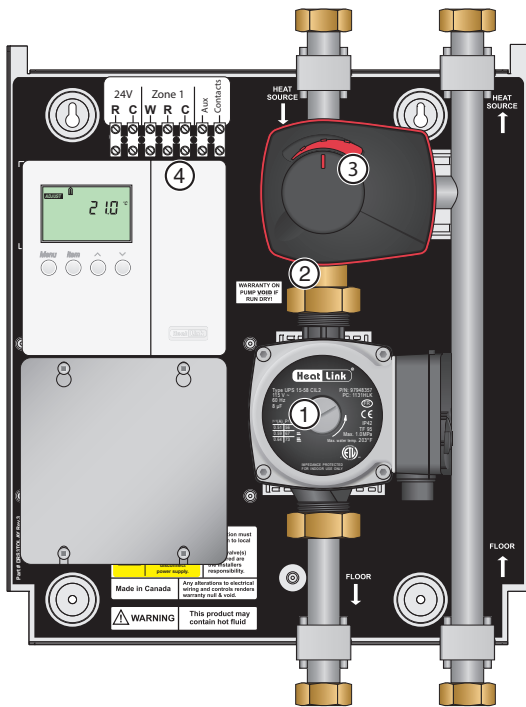
- Step 1** Examine carton for any damage that may have occurred during shipping. If damage is visible notify your courier and supplier immediately.
- Step 2** Open the carton by removing the staples.
- Step 3** Remove the cardboard spacers from the carton, then remove the panel from the carton. Lift the panel by the base, not the enclosure.
- Step 4** Remove the enclosure from the panel by slightly spreading the bottom and sliding upwards until it comes off.



**Step 5** Verify the following items:

- (4) Mounting screws
- (4) 3/4" G M × 1" FIP adapters
- (6) 3/4" rubber washers (2 spares)
- (2) 1" rubber washers (spares)
- (1) 24Vac Plug-in Transformer

### Panel Components

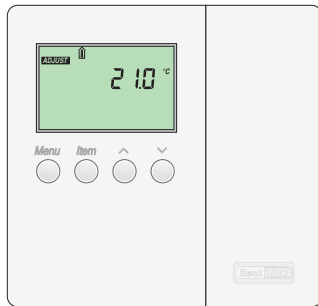


#	Component	Part Number
		TMP070RS
①	Circulator	PUMP1558
②	Three Way Diverting Valve	–
③	Mixing Valve	
④	Mixing Reset Control	31355
⑤	Enclosure	n/a
⑥	Accessory Pack	ACCTMP04
	3/4" Washer	NTRWSH34
	1" Washer	NTRWSH1
⑦	24Vac Plug-in Transformer	PLINTR24

## Specifications

	TMP070RS
Listing	cETLus
Conforms to	CAN/CSA-C22 No.14, UL508
Dimensions	14-3/4"H x 12-1/2"W X 6-1/2"D
Weight	17 lbs.
Nominal panel output	70,000 Btu/hr
Nominal flow	7.0 US gpm @ 20°F ΔT
Nominal pressure drop outside of panel	8 ft
Max ambient temperature	120°F
Max water temperature	200°F
Power supply: pre-wired on system controller	110 V(ac); max. current 1A
Power supply: mixing reset control, pre-wired	24V(ac) plug-in transformer
Circulator	Non-ferrous, Grundfos UPS15-58CIL2
Auxiliary terminal	Yes, dry contacts, 1x2 terminal strip, screw type, max. load 1.5A
Temperature control method	1" 3-Way Mixing
Temperature control range	70-180°F
Mix Valve Cv	7.3
Piping	3/4" 304 Stainless steel tubing
Piping connections	1" FNPT
Backplate	Galvanized steel
Enclosure	Powder coated steel

## Panel Component Specifications



### Mixing Reset Control

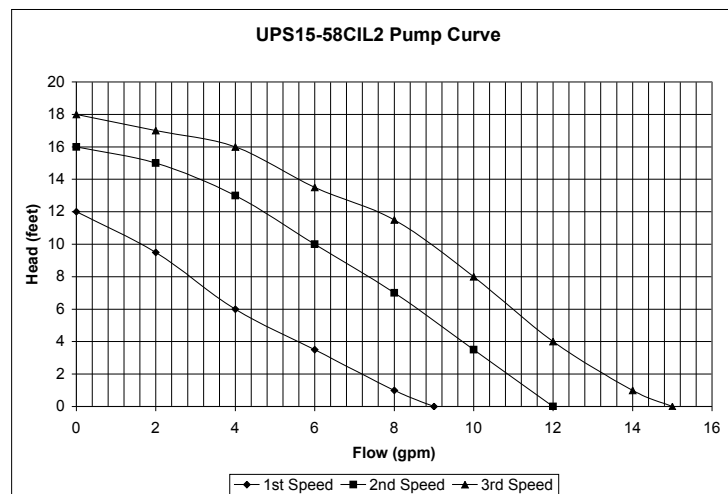
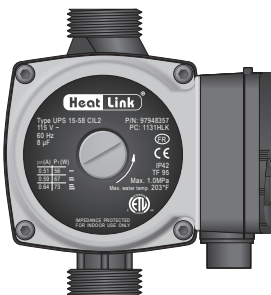
The Compact Mixing Reset Control 31355 regulates the supply water temperature of an automated mixing valve in order to provide outdoor reset or setpoint operation.

### Circulator

The circulator moves the heated fluid through the hydronic system when there is a call for heat from the thermostat.

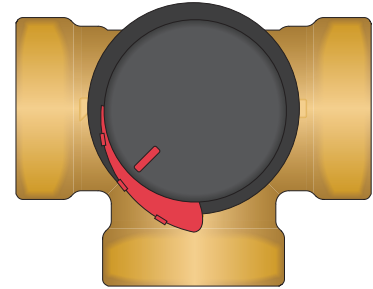
Specifications:

- The following pump curves apply.



**Control Valve**

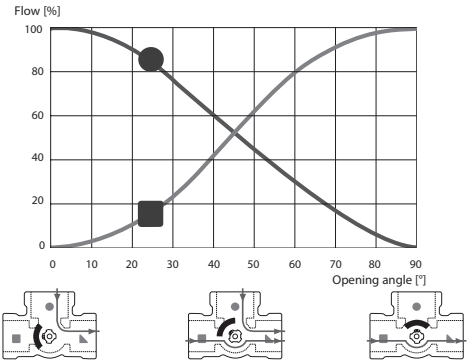
3-way brass mixing valve regulates the temperature in the hydronic system with the help of the electric motor actuator and system controller.



**Technical Data - 3-way Mixing Valve**

Mixing Valve Nominal Size:	1"
Mixing Valve Cv:	7.3
Material - Valve Body & Slide:	Brass DZR
Material - Shaft & Bushing:	PPS composite
Material - O-ring:	EPDM
Max. Operating Temperature:	230°F (110°C)
Min. Operating Temperature:	-15°F (-10°C)
Max. Operating Pressure:	145 psi (10 bar)
Max. Differential Pressure:	Mixing - 14.5 psi (1 bar) Diverting - 20 psi (2 bar)
Leaking in % of flow*:	Mixing - <0.05% Diverting - <0.02%
Max. Torque:	<44lbf*in (<5Nm)

\*based on diff. pressure of 14.5 psi (1 bar)



**Mixing Valve Motor**

The mixing valve motor is mounted to the control valve and moves the valve appropriately to allow the heated fluid to enter. This motor works in conjunction with the system controller.

**Manual Operation of Mixing Valve Motor**

NOTE: Mixing Valve Motor should not be placed in manual mode for an extended period of time.

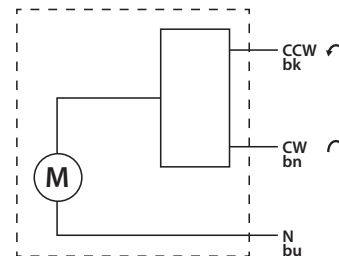
- Pull knob out on motorized actuator.
- Rotate knob clockwise or counter-clockwise.
- To return to automatic mode, push the knob in.



**Technical Data - 3 Point Floating Mixing Valve Motor**

Ambient Temperature:	max. 131°F (55°C) min. 23°F (-5°C)
Power Supply:	24 ± 10% VAC 50/60 Hz
Enclosure Rating:	IP41
Protection Class:	II
Torque:	6 Nm
Power Consumption - Dimensioning:	24V: 3 VA
Rating Auxiliary Switch:	6(3)A 250VAC
Running Time 90°:	45/120 sec

The motor should be preceded by a multi-pole contact breaker in the fixed installation.



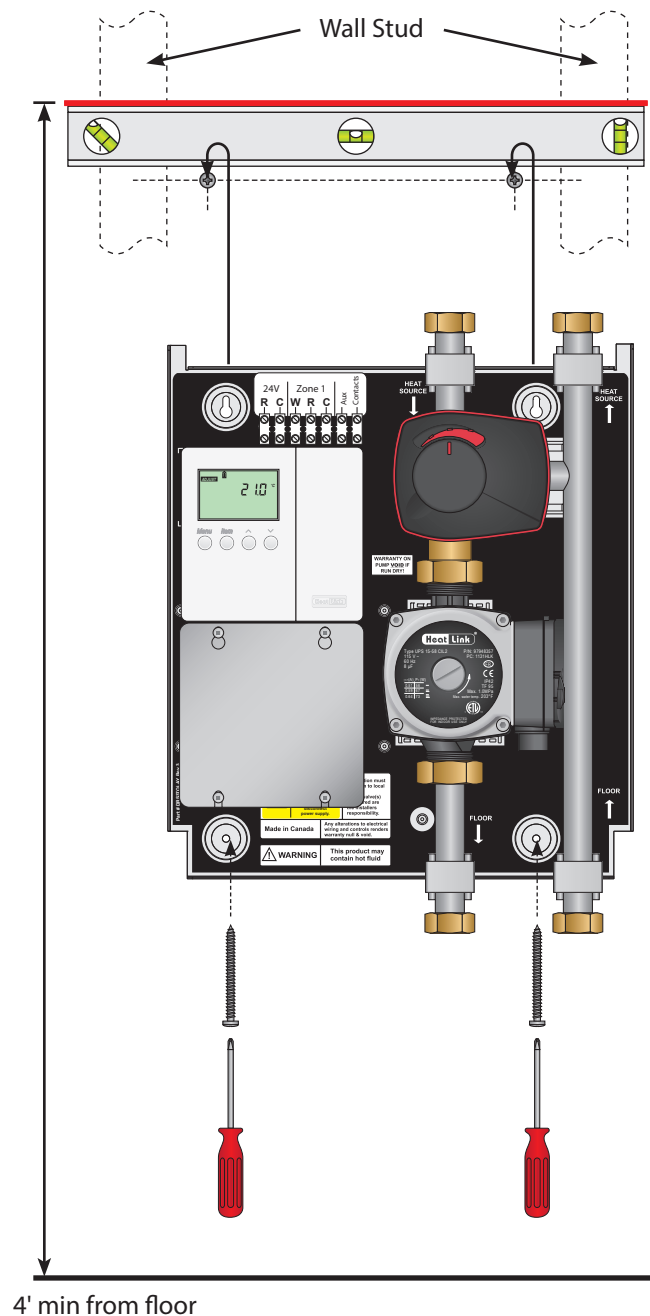
CE LVD 2006/95/EC  
 EMC 2004/108/EC  
 RoHS 2011/65/EC

### Mounting

Prior to mounting the panel, ensure the wall is capable of supporting the weight of the panel.

Ensure that a 120V 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 8" 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 9-11 for fill and purge, and proper wiring instructions.



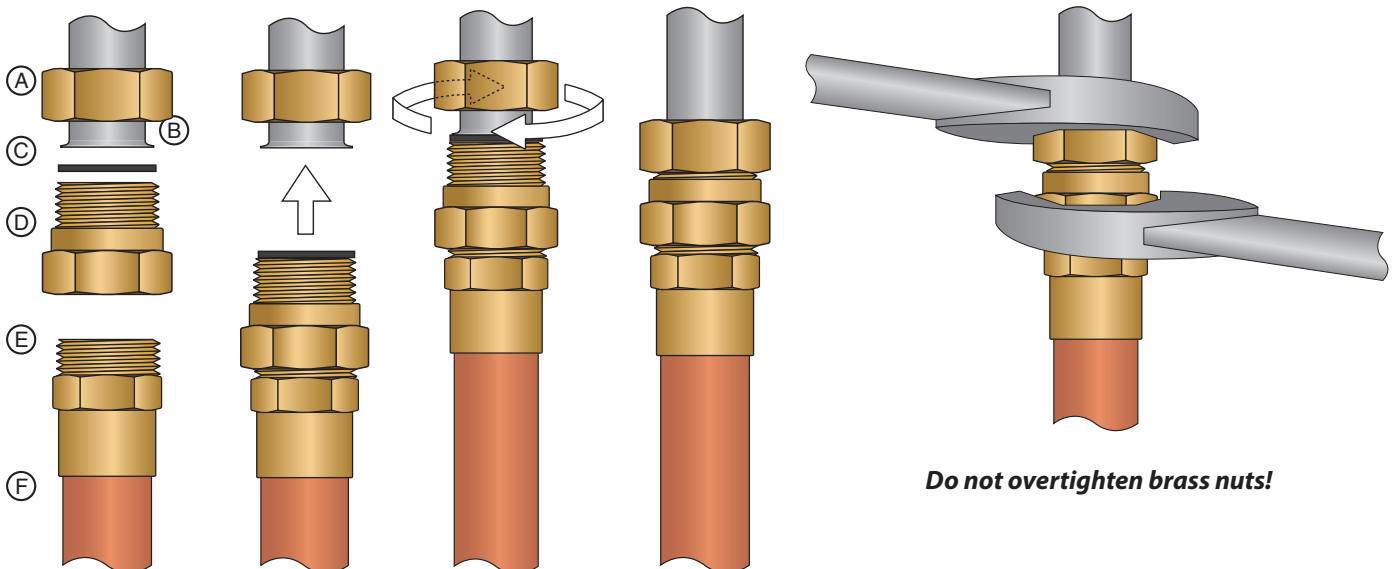
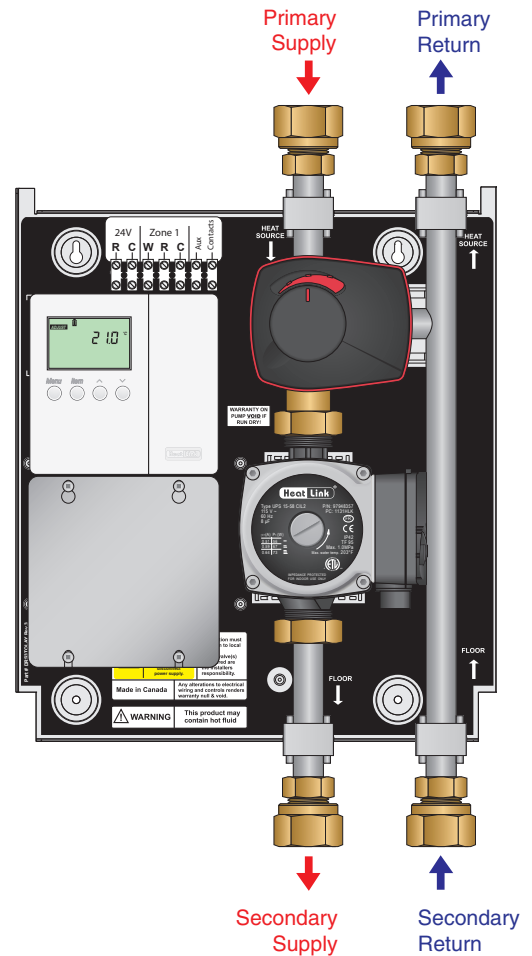


### Piping Hookup

**Step 1** Before making any connections, identify the required connections to and from the panel. Adapters are  $\frac{3}{4}$ " M BSPP x  $\frac{3}{4}$ " M NPT and must use the supplied adapters and rubber washers.

**Step 2** Connect all adapters.

1. Connect FPT adapter (E) to copper pipe or tubing (F).
2. Screw supplied M BSPP x M NPT 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 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.



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 six (see page 7).

**Step 3** Fully close valves (A), (B), (C), (D), and (F). Fully open valve (E).

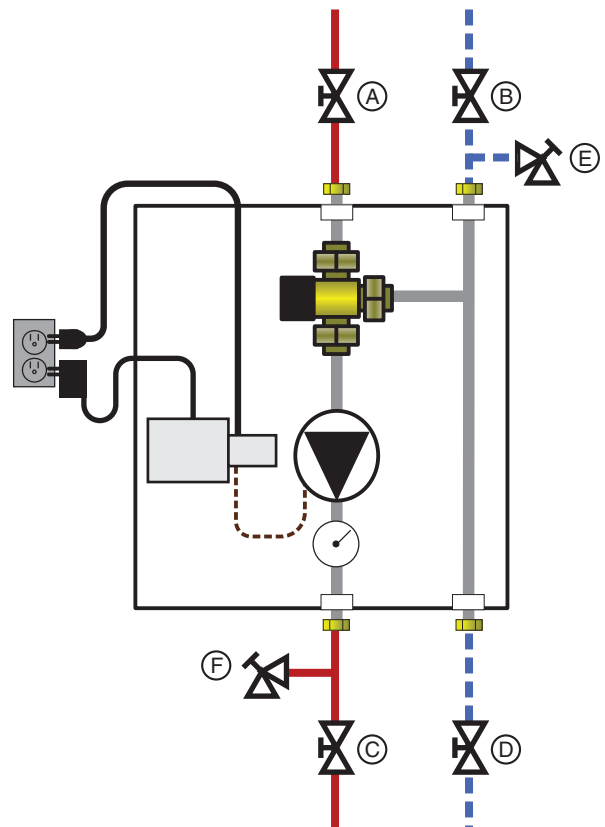
**Step 4** Attach a purge hose (not included) to (E) and a fill hose (not included) to (F). Open valve (F).

**Step 5** When exiting water from (E) is free of bubbles, close valve (E), then valve (F).

**Step 6** Remove hoses from drain valves and full open valves (A), (B), (C), and (D).

**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

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

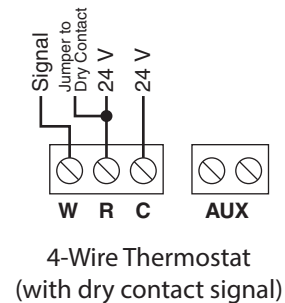
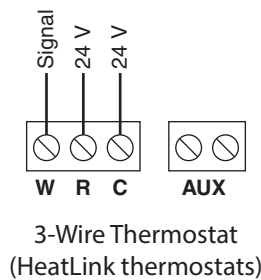
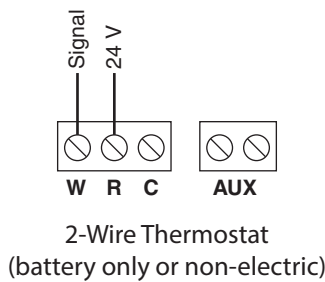
### Thermostat Wiring



- 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.



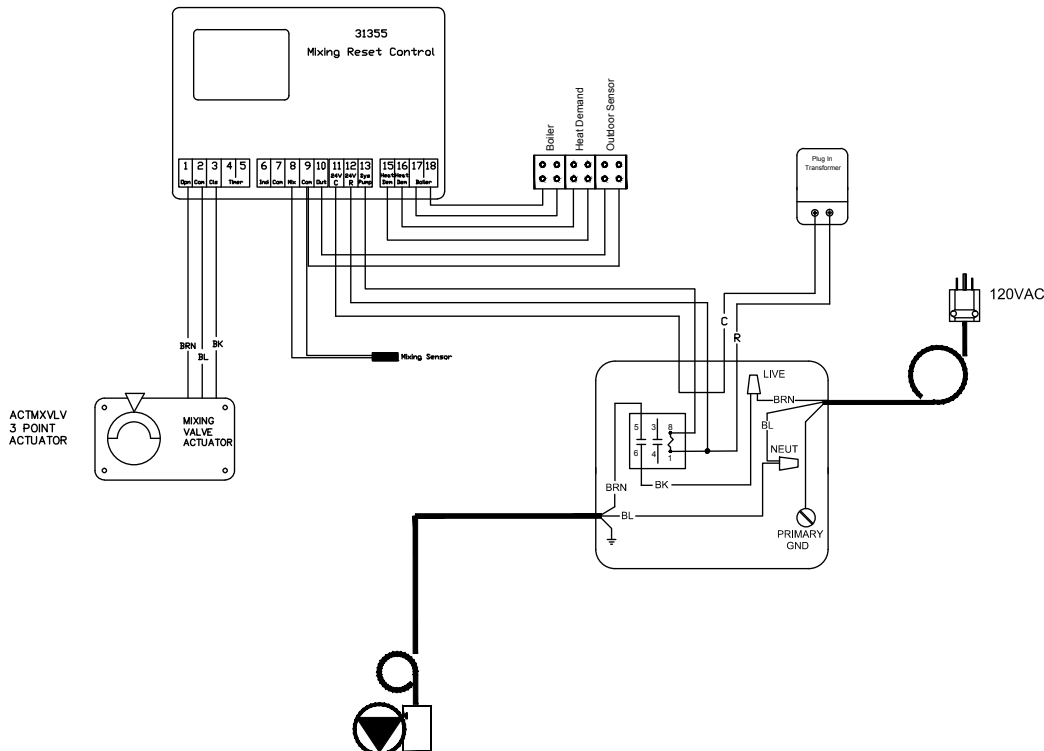
- Do not exceed 2VA per thermostat.
- Do not cross terminals C and R – this will damage the Power Box.



### Other Terminals

#### Auxiliary Contacts

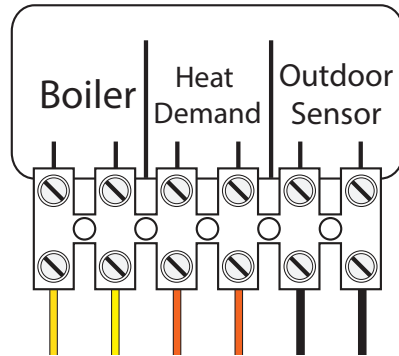
The auxiliary contact set is dry, meaning no supply of power is present at the terminal. The maximum allowable load is 1.5A. The auxiliary dry contact located on the terminal is to switch another device (ie. the heat source) when there is a call for heat from any zone.



### Panel Wiring

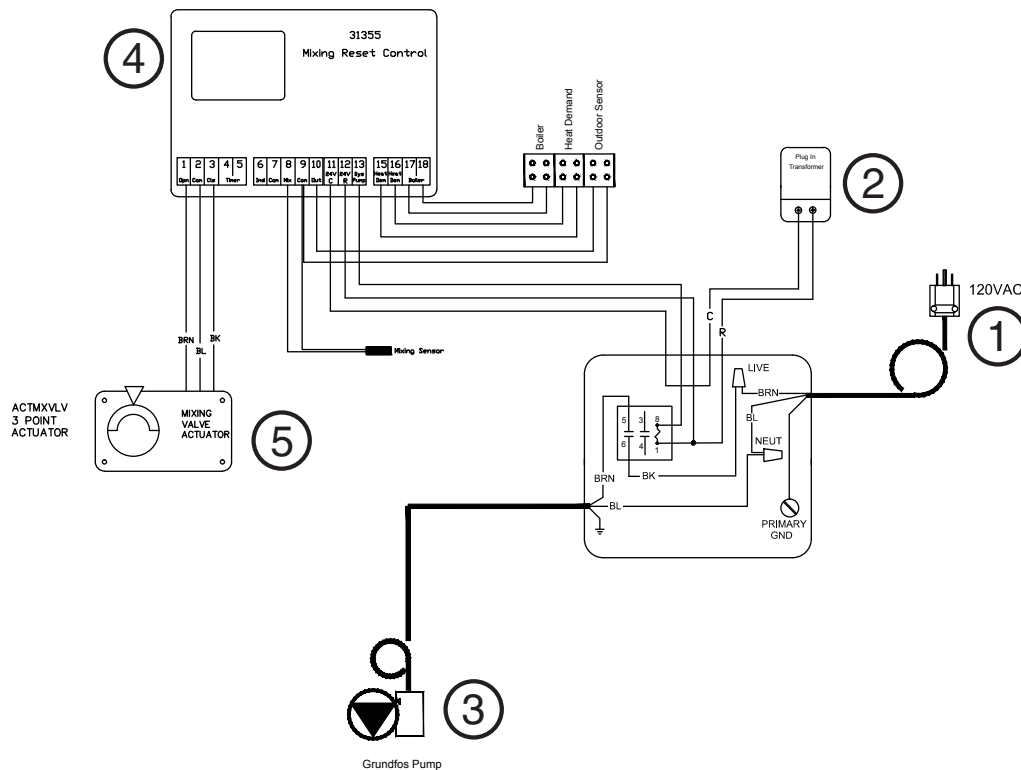


- Wiring should be done by qualified electrician and should meet local codes and jurisdictions.



### Panel Control Sequence

- With the 120V power cord ① and the 24V transformer ② plugged in the thermostat will call for heat, which will turn on the radiant pump ③, which activates the mixing reset control.
- The mixing reset control ⑤ will open or close the valve to adjust the supply water temperature according to input received by the mixing reset control ④.



## Troubleshooting

Problem	Check / Verify	Possible Cause
<b>Low Temperature Within Room</b>	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 Mixing Reset Control is not on.	There may be no power being supplied to the Mixing Reset Control. Consult a qualified electrician to ensure it is wired correctly. The Mixing Reset Control may be defective.
	Circulator is not on during a call for heat. (Use a stethoscope or similar device to verify)	The PLC control 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.
<b>High Temperature Within Room</b>	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.

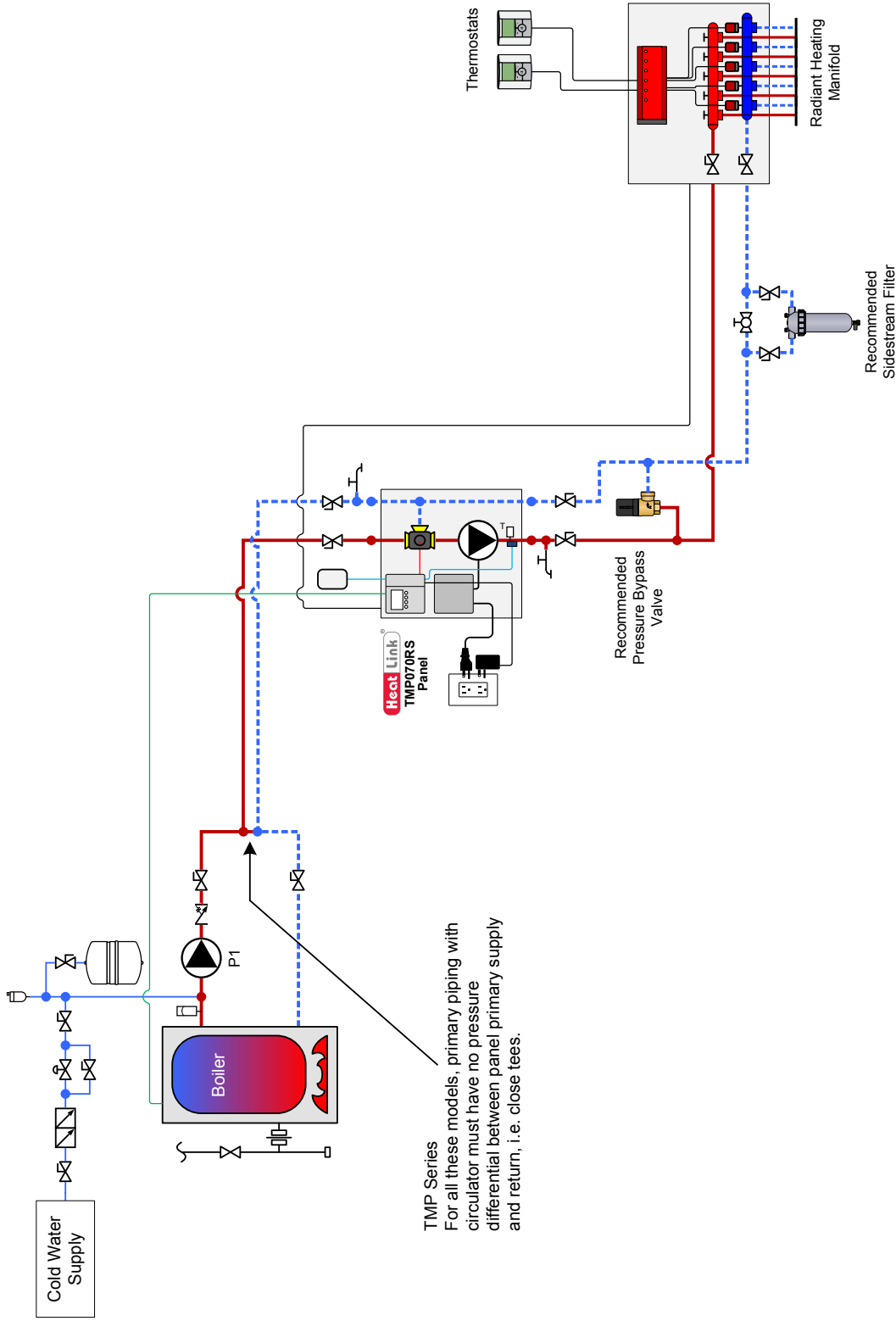
**Maintenance**

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:

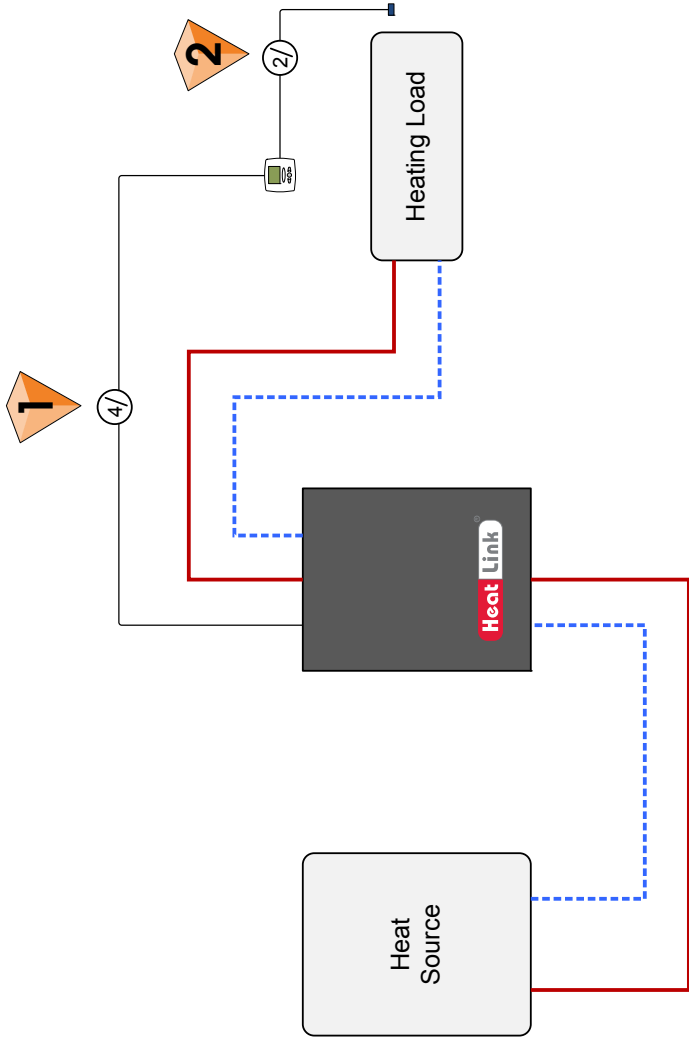
- Raise all thermostats to cause a call for heat within the system. Verify that the circulator starts, via a stethoscope or similar device.
- Confirm that the Auxiliary Contacts close.
- If applicable, verify that each zone valve opens during the call for heat – the actuator should be warm to the touch, 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.



TMP Series  
 For all these models, primary piping with circulator must have no pressure differential between panel primary supply and return, i.e. close tees.

 <a href="http://www.heatlink.com">www.heatlink.com</a> 1-866-661-5332	<b>Notes:</b> <ul style="list-style-type: none"> <li>• Drawings are for HeatLink suggested system layout only! User must determine if system layout will work for their particular application.</li> <li>• Air vents, expansion tanks, pressure relief valves, etc. for heat source as per local codes.</li> <li>• Use isolation ball valves for all circuits and components.</li> <li>• Local codes, regulations, and authorities have final jurisdiction.</li> </ul>	<b>Heat Source:</b> Boiler <b>Panel(s):</b> TMP070RS <b>Heat Load(s):</b> Radiant Heating – Multiple Zones <b>Date:</b> 2016-08-16	<b>Schematic #:</b> SCH-TMPRS-M004 <b>Rough-in wiring see:</b> SCH-MRIB-R002 <b>Wiring detail see:</b>
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**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.

www.heatlinkgroup.com  
1-866-661-5332

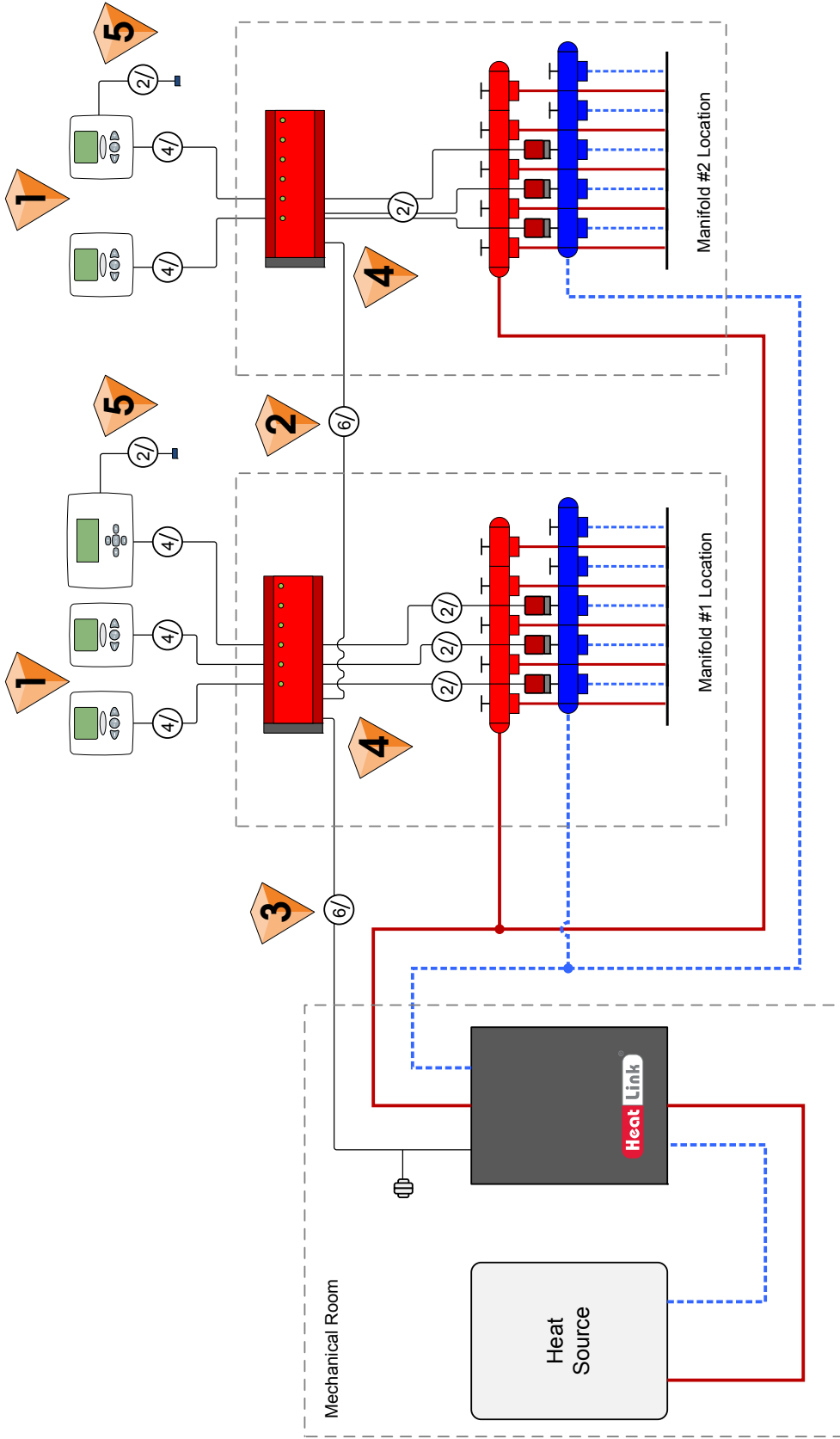
- Notes:**
- Drawings are for HeatLink suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink schematics with manufacturer schematics of each particular control chosen.
  - In all cases manufacturer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

**Application:** Rough-in Wiring for One Zone Heating

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

**Date:** 2012-10-19





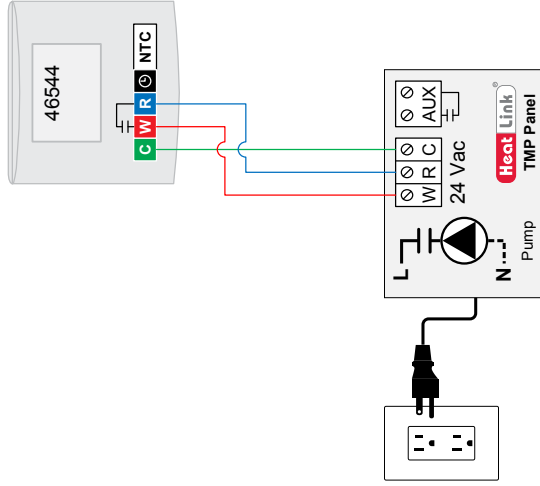
**1 Room Thermostats**  
Standard 4-wire to be run from each zone back to the corresponding manifold location.

**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.



**Notes:**

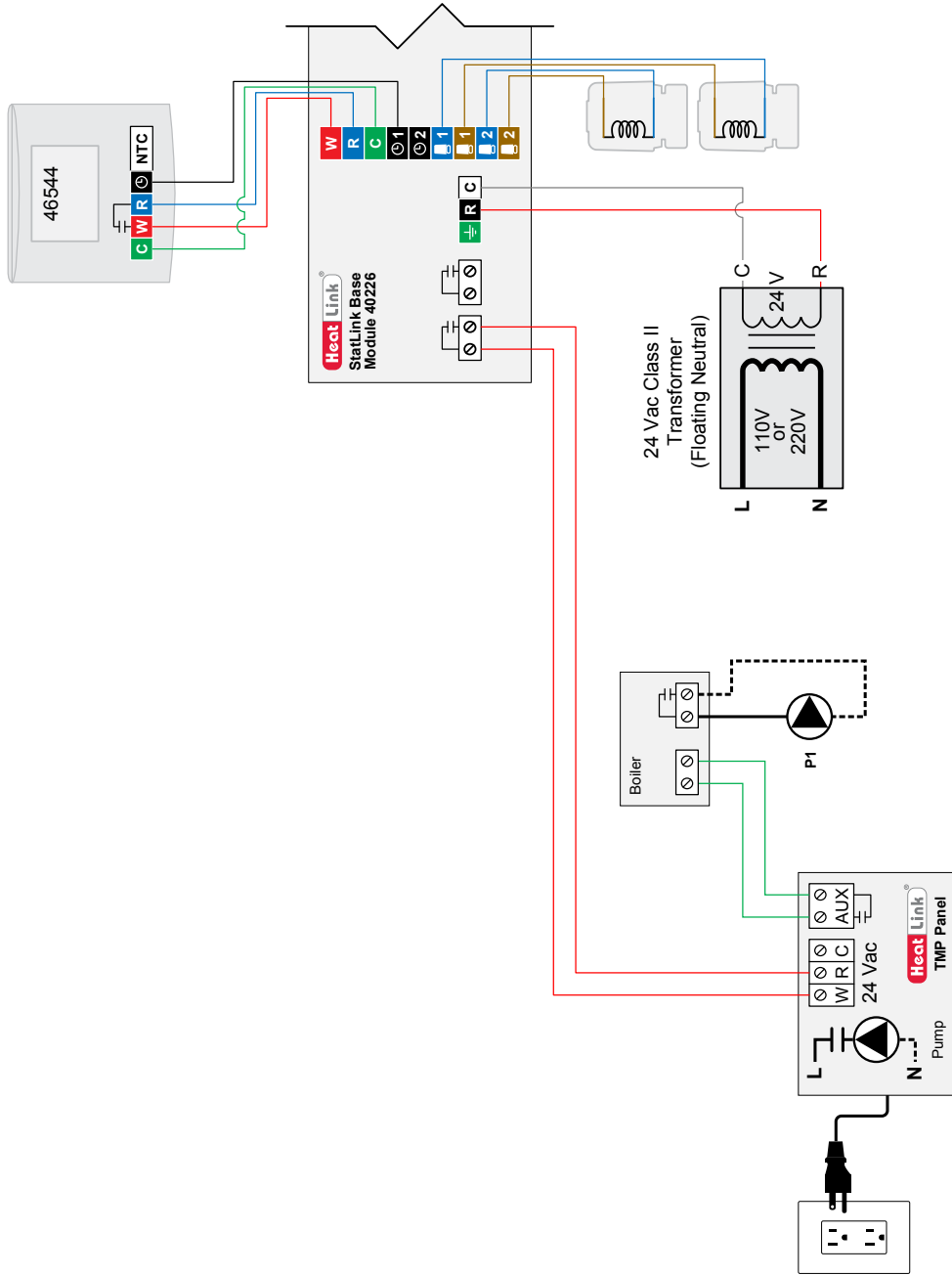
- Drawings are for HeatLink suggested electrical schematics only! User must determine if electrical schematic will work for their particular application. User must also confirm all HeatLink schematics with manufacturer schematics of each particular control chosen.
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-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

**Application:** Single Zone Heating

**Schematic #:** SCH-TMP-E001

**Rough-in wiring see:** SCH-MRIB-R001

**Date:** 2015-09-25



**Notes:**

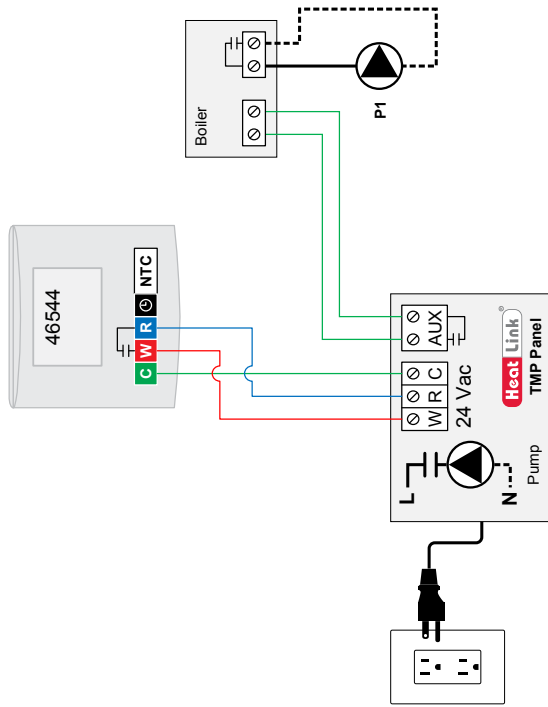
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- In all cases manufacturer equipment schematics will take precedence over HeatLink electrical schematics.
- Local codes, regulations, and authorities have final jurisdiction.

**Application:** Multiple Zone Heating with StatLink

**Schematic #:** SCH-TMP-E002

**Rough-in wiring see:** SCH-MRIB-R002

**Date:** 2015-09-25



**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: Single Zone Heating

Schematic #: SCH-TMP-E003

Rough-in wiring see: SCH-MRIB-R001

Date: 2015-09-25





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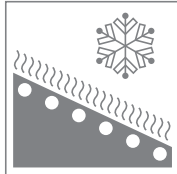
**Head Office:**

4603E - 13<sup>th</sup> Street N.E.  
Calgary, Alberta, T2E 6M3

Toll Free: 1-800-661-5332

International Phone: +1 (403) 250-3432

Fax: 1-866-450-1155

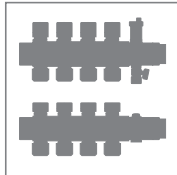


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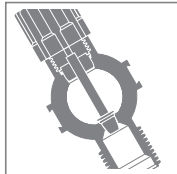
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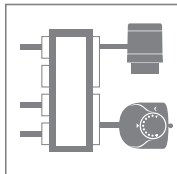


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1000 - 100<sup>th</sup> Street SW, Suite B  
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