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WARNINGS

The Zone Control Panel must be installed by a qualified installer/service technician. This product must be installed and operated in strict accordance with the terms and conditions 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 or # 2 Robertson square drive
Phillips head bit # 2

FUNCTION

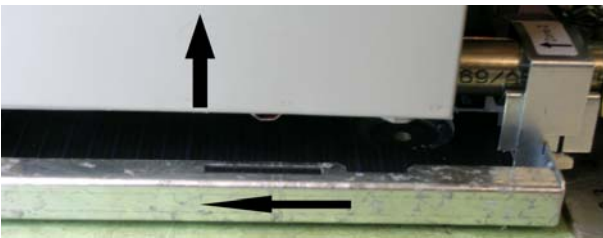
This ZCP can provide mixing, distribution, and zoning for a wide variety of hydronic heating applications.

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 4-9).

NOTE: This ZCP does not regulate or monitor the operating safety limit temperatures of the fluid leaving the heat source. Dependant on local codes, the DRS2050 panel **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

Fig. 1



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 carton carefully, pull tape off of carton – do not cut tape or you may damage the finish on the panel.

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 sliding the cover upwards until it stops, then gently pulling outwards (*Fig. 1*).

Step 5 Verify the following items (*Fig. 2*):

- (4) Mounting screws
- (4) $\frac{3}{4}$ "M x $\frac{3}{4}$ "FIP adapters
- (2) $\frac{3}{4}$ "M x 1" FIP adapters
- (9) $\frac{3}{4}$ " rubber washers (3 spares)
- (4) 1" rubber washers (spares)

Fig. 2



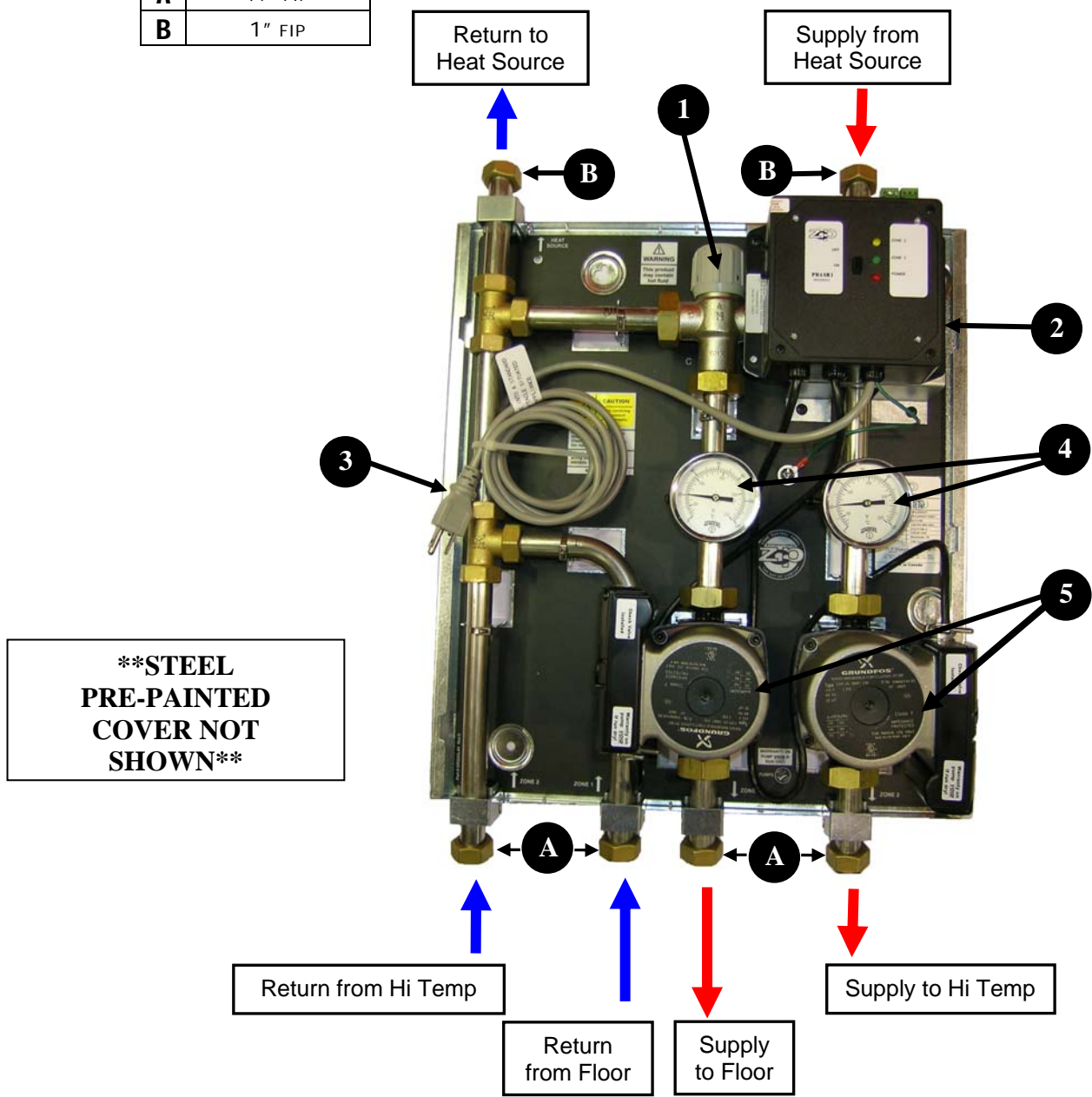
PANEL COMPONENTS

DRS20502T

1	Thermostatic Mixing Valve	AM102-US-1
2	Power Box/Control Module	PWPB4A00R1
3	Power Cord	
4	Strap On Thermometer	T167000000
5	Grundfos Circulator UPS15-58RU	5989674900
6	Steel Enclosure (Not Shown)	TBD

Panel Connections	
A	3/4" FIP
B	1" FIP

For Adapter connections see page 8, Step 1



SPECIFICATIONS

Dimensions

Panel	Height	Width	Depth	Weight (dry)
DRS20502T	18 ¼"	16 ¼"	8"	26 lbs.

Capacity

Panel Capabilities (based on 20 ⁰ differential Delta T)					
Panel	Panel Output	Circulator	Part Number	Max Flow	Max Feet of Head (FOH) outside of Panel
DRS20502T	50,000 BTU	UPS15-58RU	5989674900	5 USGPM	10 FOH
<ul style="list-style-type: none"> Flow capacity of the DRS20502T panel is based on up to 5 loops per zone of ½" nominal PEX tubing at a maximum of 0.6 USGPM per loop, with loops of up to 250ft (based on 100% water). Panel output is based upon the temperature differential of 20°F between the radiant system supply (secondary) and return (secondary). 					

MAXIMUMS

Ambient Temp. in mechanical room	Supply from Primary heat source	Supply to secondary (system outlet temp.)	Operating pressure (on secondary side)
120	180	145	100psi

PANEL COMPONENT SPECIFICATIONS



DESCRIPTION/FUNCTION

POWER BOX/CONTROL MODULE

Description

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

Specifications:

- Requires 115v power and standard 15A grounded receptacle.

CIRCULATORS

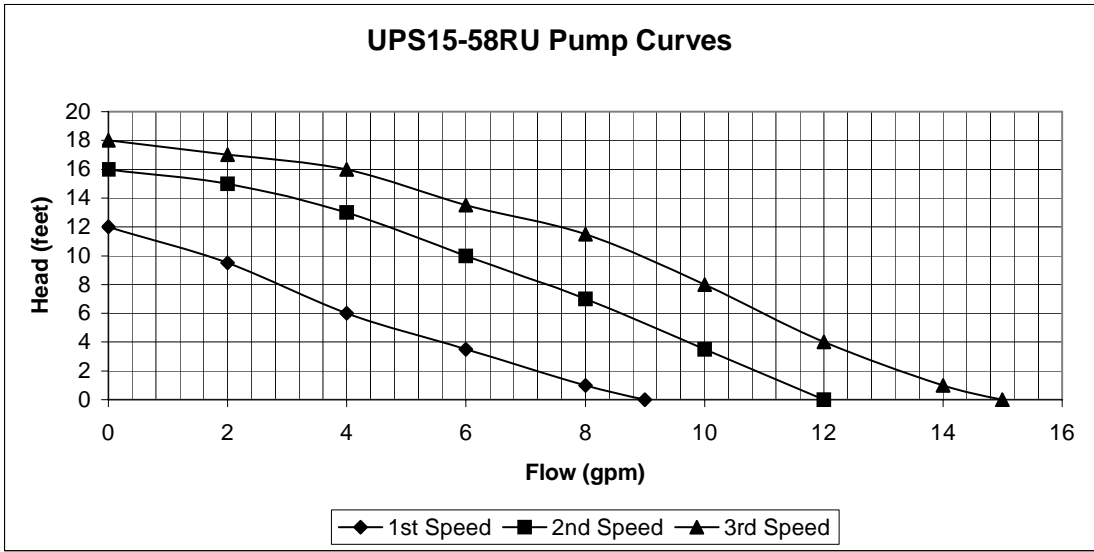
Description

The circulators move the heated fluid through the hydronic system when there is a call for heat from the thermostat. Factory set to 3rd speed.

Specifications:

- See chart on next page for pump curves.

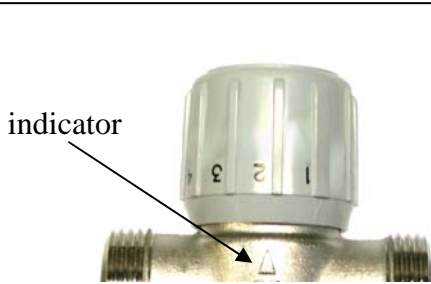




DESCRIPTION/FUNCTION

THERMOSTATIC MIXING VALVE

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



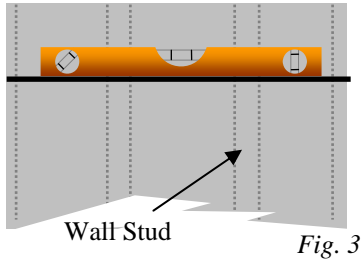
THERMOMETER

The pipe mounted thermometer reads the supply or return fluid temperature.

Specifications:

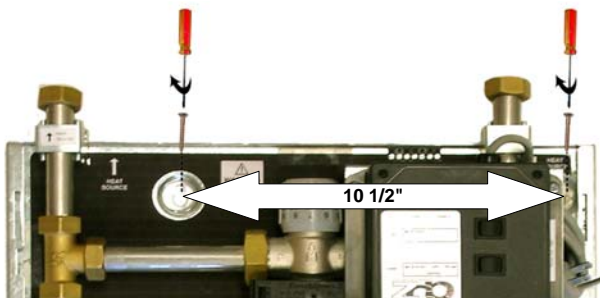
- Temperature range of 30-250°F (0-120C).

MOUNTING



Prior to mounting the ZCP, 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. Using a level (*Fig. 3*), secure a plywood backing board to the wall at a minimum height of 4'. Using a level again, draw a straight line at the desired height on the plywood (min. 4').

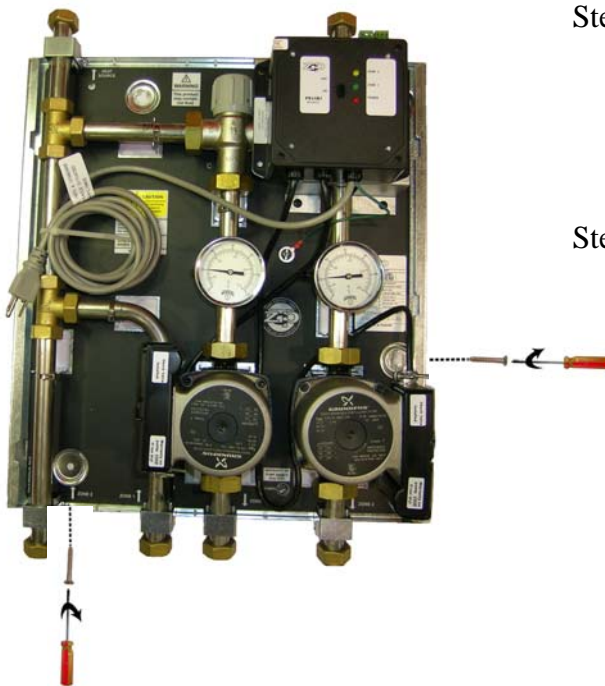


Step 2 Screw two of the supplied mounting screws into the backing plywood 2" from the top of desired height, and 10 1/2" apart, leaving 1/4" of screw out from the wall. (*Fig. 4*).

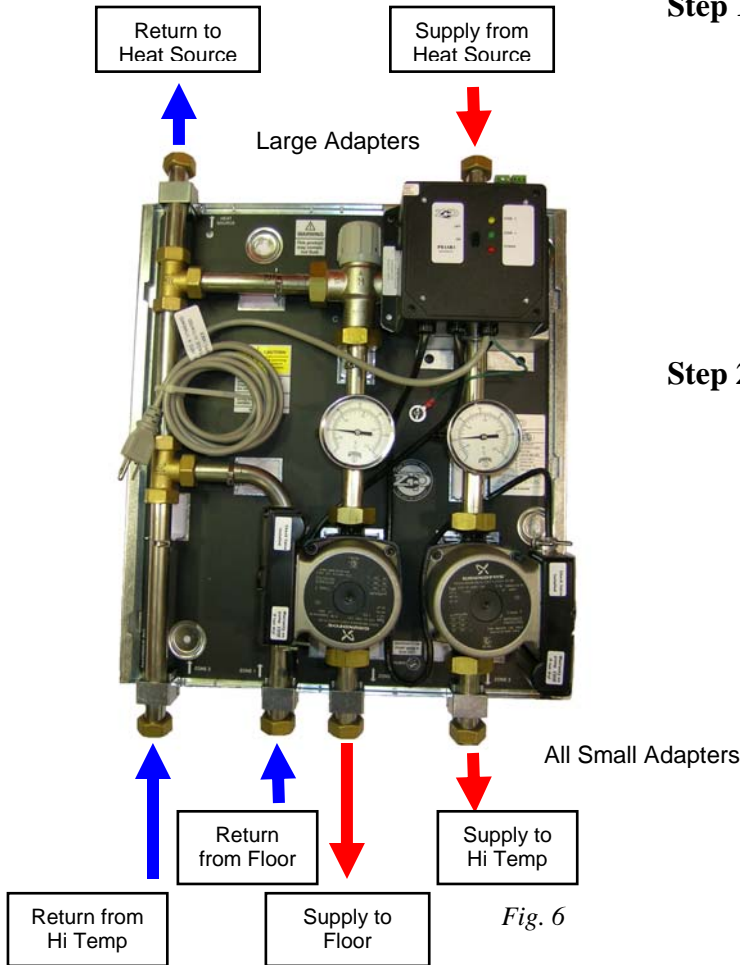
Step 3 Lift and place the panel onto the mounting screws (*Fig. 5*).

Step 4 Screw the two remaining mounting screws into the holes at the bottom of the panel and tighten the top two screws (*Fig. 5*).

Step 5 Before replacing the enclosure, refer to pages 8-11 for piping, fill and purge, and proper wiring instructions.



PIPING HOOKUP



Step 1

Before making any connections, identify the required connections to and from the panel (*Fig. 6*). Connections are FIP and must use the supplied adapters and rubber washers. Top connections (Heat Source) are $\frac{3}{4}$ "M BSPP x 1" FIP adapters; bottom connections (Floor) are $\frac{3}{4}$ "M BSPP x $\frac{3}{4}$ " FIP adapters.

Step 2

Connect all adapters to appropriate connections (as above)(*Fig. 7*).

1. Connect MIP adapter (E) to copper pipe or tubing (F).
2. Screw supplied M x FIP 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 (*Fig. 7a*). Then, using two 30mm wrenches, tighten the nut (*Fig. 7b*) taking care not to overtighten the nut, as this will damage the rubber washer. Repeat for all connections.

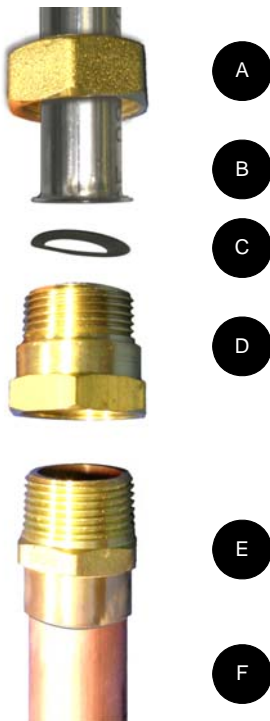


Fig. 7

Fig. 7a



Fig. 7b



FILL AND PURGE

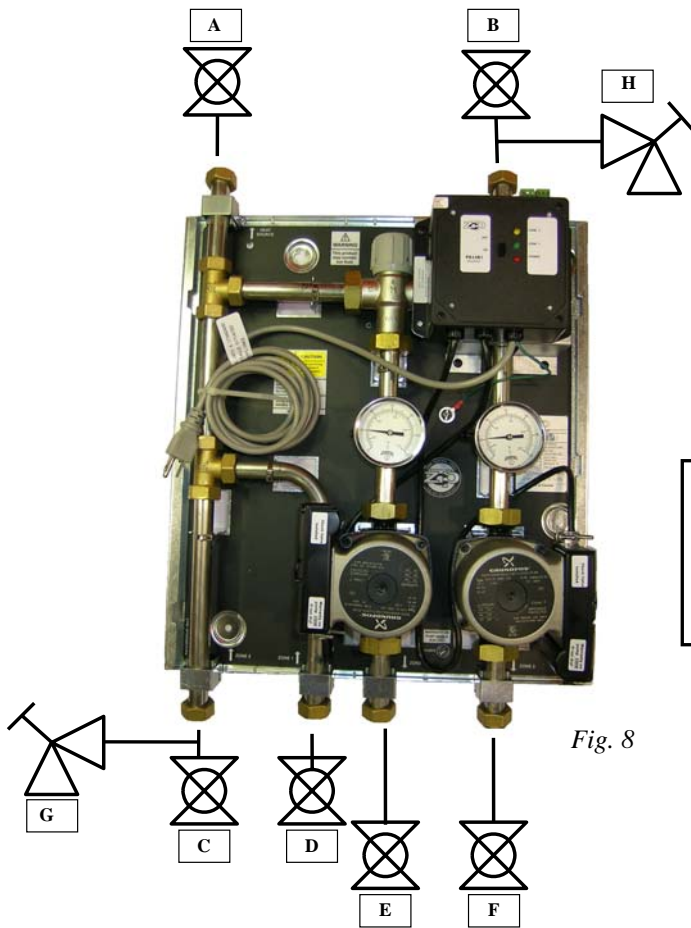


Fig. 8

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 ZCP.



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 A – H are not included with the ZCP, but are necessary to properly fill and purge the panel, and to isolate the panel for service (Fig. 8).

- | | | | |
|---------------|--|---------------|---|
| Step 1 | Ensure the panel is <u>not</u> plugged in. | Step 6 | Remove hoses and open valves A and B. |
| Step 2 | Fully open the thermostatic mixing valve to a position of six (see page 6 for instructions). | Step 7 | Check for leaks at the connections. If any leaks are found, use a back-up wrench and carefully tighten until leak stops. Do <u>not</u> overtighten. |
| Step 3 | Fully close valves A, B, and G. Ensure that valve H is fully open. | Step 8 | Readjust the setting of the thermostatic mixing valve to provide a proper mixed fluid temperature to the hydronic system (see page 6). |
| Step 4 | Attach a purge hose (not included) to H, and a fill hose (not included) to G. Open valve G. | | |
| Step 5 | When water exiting from H is free of bubbles, close valve H, then G. | | |

PANEL WIRING

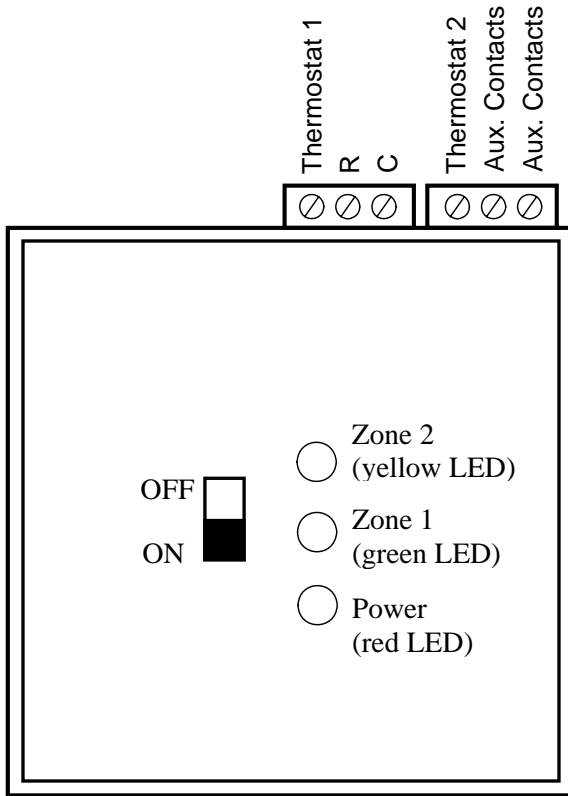
THERMOSTAT WIRING



- 24VAC 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.

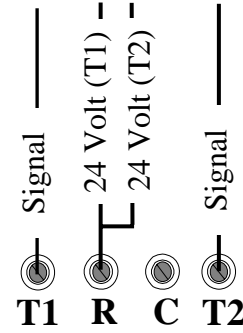


- Do not exceed 2VA per thermostat.
- Do not cross terminals **C** and **R** – this will damage the Control Module.

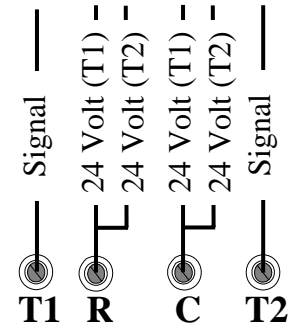


Proper Wiring for Thermostats

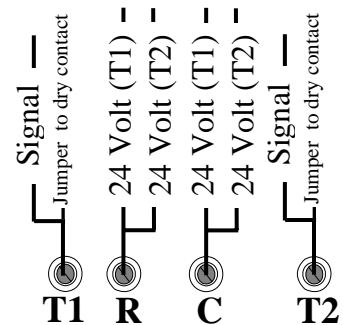
Wire originating from thermostat



2-Wire
Thermostat



3-Wire Thermostat



4-Wire Thermostat
(With Dry Contact Signal)

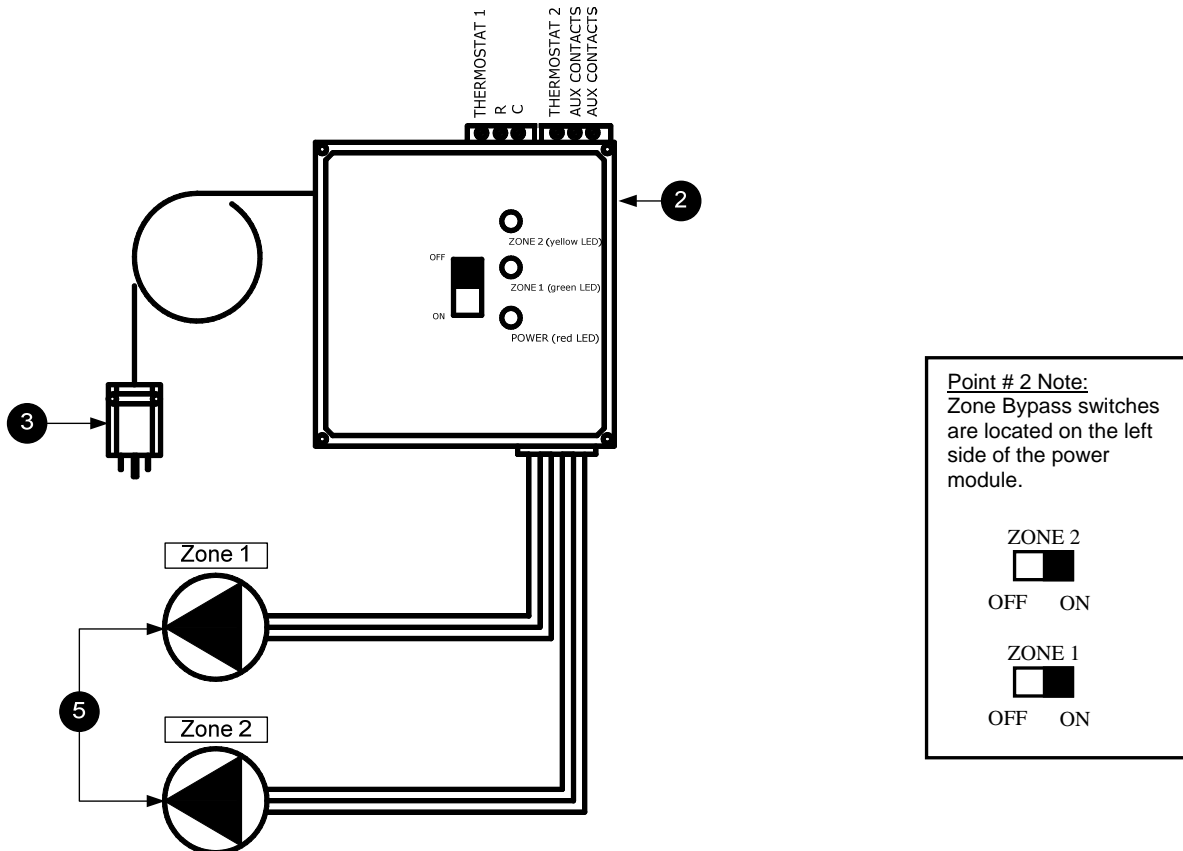
OTHER TERMINALS

Auxiliary Contacts

The auxiliary contact set is dry, meaning no supply of power is present at the terminal. The maximum allowable load is 2A. 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 CONTROL SEQUENCE

1. When the power cord (3) from the power module is plugged in, and the Power switch located on the front of the module is placed in the ON position the red LED will be lit, indicating that the panel is powered with 110V.
2. The factory setting for the Bypass switches located on the left side of the power module are to remain in the OFF position. Only switch the Zone 1 or Zone 2 Bypass switches to ON if the red and green and/or yellow 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. When a thermostat calls for heat, its internal 24V contacts close, the auxiliary terminals close, and the appropriate circulator(s) turns on.
4. As the circulator(s) moves fluid through the panel the thermostatic mixing valve adjusts the fluid temperature based on the user settings (page 6).
5. 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.



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.
	Installed 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 system controller to the appropriate setting.
	Wiring from heat source to ZCP panel.	Check that the wiring is done properly. Consult qualified electrician prior to alteration of wiring between heat source and ZCP 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 and/or yellow 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 Zone 1 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 Zone 1 pump will run. When the Zone 2 Bypass switch is placed in the BY-PASS (ON) position, the yellow LED will be lit, indicating that the panel is powered with 110V, and the Zone 2 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 system controller 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 by-pass mode. This will provide constant circulation so long as there is still 110V power to the panel. Prior to by-pass mode selection, any zone valves must be opened manually to avoid dead-heading of the circulator.	

Problem	Check / Verify	Possible Cause
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.

MAINTENANCE

Yearly maintenance should be done on the ZCP 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 circulators start, via a stethoscope or similar device.
- Confirm that the Auxiliary Contacts close.
- Return all thermostats to a desirable setting.

You are now ready for another heating season with ZCP.

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