WIRSBO®
Life, Safety, Comfort Systems

Warm Cozy Floors

proPANEL™ Series
Installation Manual





RADIANT FLOORS
COMFORT HEATING

Bringing *comfort* to life

uponor

proPANEL™ Series
Installation Manual
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Section 1
Overview

The time-consuming process of planning and piping the mechanical room is now obsolete. The Wirsbo proPANEL™ units are pre-assembled, pre-wired and pre-piped control panels designed around the function and capabilities of the Wirsbo pro Series controls. These controls integrate multiple hydronic system controls into one cost-effective and efficient system.

With built-in flexibility, contractors can use a stand-alone proPANEL for a small application or connect multiple panels together to meet the needs of a more demanding application. Wiring is effortless as a modular connection cable simply attaches one panel to the next. No additional controls or wiring is required. Easy to mount, contractors save time and money.

The Wirsbo proPANEL series includes:

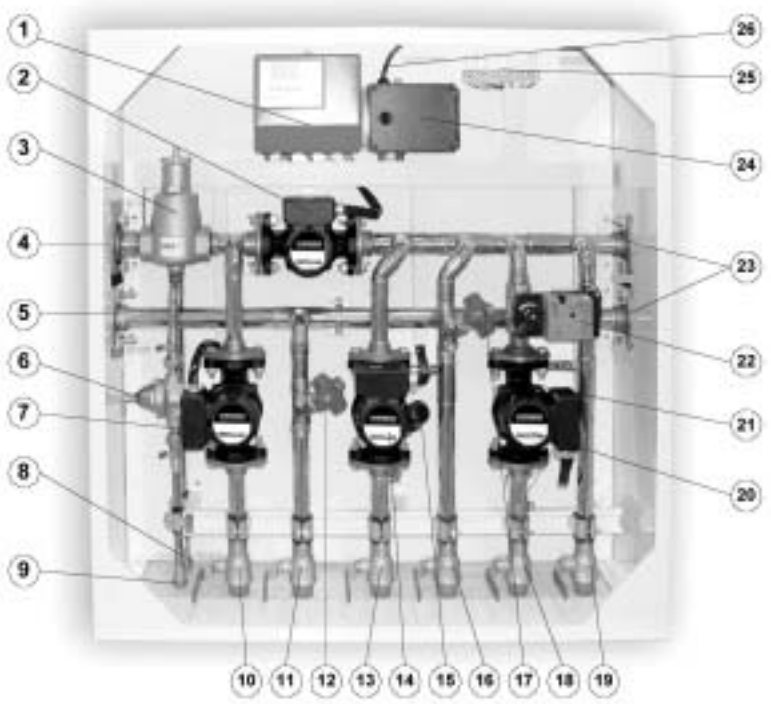
- proPANEL™ 311-V
- proPANEL™ 311-P
- proPANEL™ 212
- proPANEL™ 101
- proPANEL™ 201

Wirsbo proPANEL 311-V

The Wirsbo proPANEL 311-V offers:

- Boiler reset
- Boiler protection
- Domestic hot-water priority (DHW)
- High-temperature components (e.g., baseboard, fan coils)
- One mixed temperature
- Floating action mixing valve

1. Wirsbo SYSTEMpro™ 311 Control
2. Primary Circulator (P3)
3. Air Eliminator
4. 1¼" Supply from Boiler
5. 1¼" Return to Boiler
6. Fill Valve
7. DHW Circulator (P6)
8. Connection to Expansion Tank
9. Connection of Water Source
10. Isolation Ball Valve (DHW supply)
11. Isolation Ball Valve (DHW return)
12. Flow Balancing Valve for DHW
13. Isolation Ball Valve (high temp supply)
14. High Temperature Circulator (P7)
15. Differential Pressure By-pass Valve
16. Isolation Ball Valve (high temp return)
17. Flow Balancing Valve for High Temp
18. Isolation Ball Valve (radiant supply)
19. Isolation Ball Valve (radiant return)
20. Secondary Loop (radiant) Circulator (P1)
21. Differential Pressure By-Pass Valve
22. 1" Floating Action Mixing Valve
23. 1¼" Through Connections or U-pipe Connection
24. Power Supply
25. Terminal Strip
26. 120VAC Power Cord
27. Physical Information
    Height — 36"
    Width — 36"
    Depth — 13"
    Weight — 160 lbs.



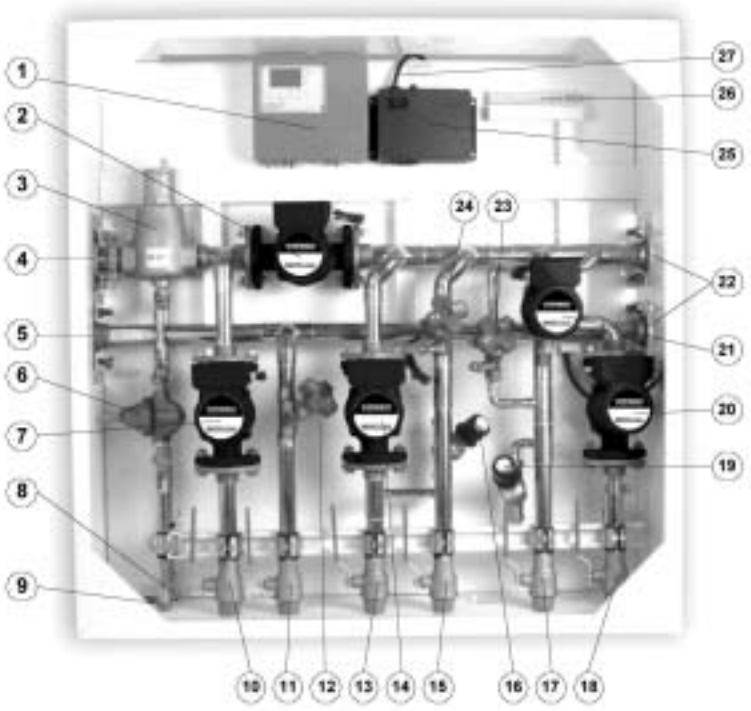
Note: For information about applications not shown (e.g., snow and ice melting), contact Uponor Wirsbo Technical Services, toll free, at (800) 321-4739.

Wirsbo proPANEL 311-P

The Wirsbo proPANEL 311-P offers:

- Boiler reset
- Boiler protection
- DHW priority
- High-temperature components (e.g., baseboard, fan coils)
- One mixed temperature
- Variable speed injection mixing

1. Wirsbo SYSTEMpro 311 Control
2. Primary Circulator (P3)
3. Air Eliminator
4. 1¼" Supply from Boiler
5. 1¼" Return to Boiler
6. Fill Valve
7. DHW Circulator (P6)
8. Connection to Expansion Tank
9. Connection of Water Source
10. 1" Isolation Ball Valve (DHW supply)
11. 1" Isolation Ball Valve (DHW return)
12. Flow Balancing Valve for DHW
13. 1" Isolation Ball Valve (high temp supply)
14. High Temperature Circulator (P7)
15. 1" Isolation Ball Valve (high temp return)
16. Differential Pressure By-pass Valve
17. 1" Isolation Ball Valve (radiant return)
18. 1" Isolation Ball Valve (radiant supply)
19. Differential Pressure By-pass Valve
20. Secondary Loop (radiant) Circulator (P1)
21. Variable Speed Injection Pump (P4)
22. 1¼" Through Connections or U-pipe Connection
23. Balancing Valve on Return Injection Loop Leg
24. Flow Balancing Valve for High Temp
25. Power Supply
26. Terminal Strip
27. 120VAC Power Cord
28. Physical Information
    Height — 36"
    Width — 36"
    Depth — 13"
    Weight — 160 lbs.



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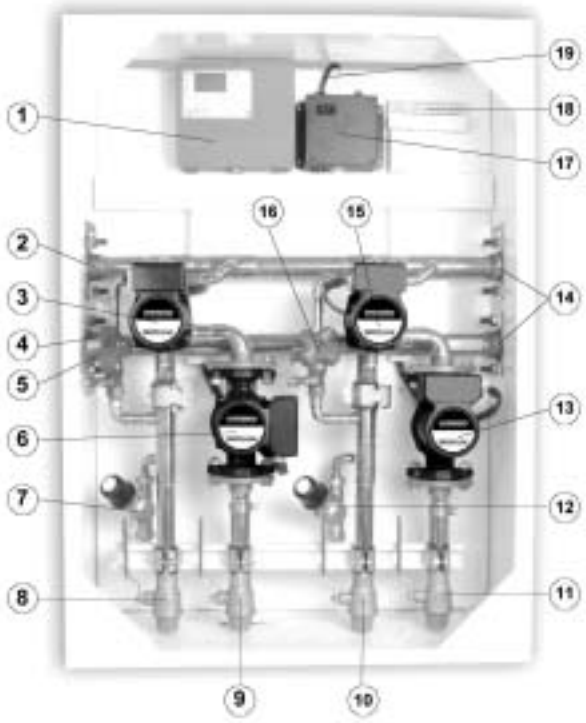
Wirsbo proPANEL 212

The Wirsbo proPANEL 212 offers:

- Boiler enable
- Boiler protection
- Two mixed temperature
- Variable speed injection mixing
- Reset or setpoint modes

1. Wirsbo proMIX™ 212 Control
2. 1¼" Supply from Boiler
3. Variable Speed Injection Pump (P4)
4. 1¼" Return to Boiler
5. Balancing Valve on Return Injection Loop Leg
6. Secondary Loop (radiant) Circulator (P1)
7. Differential Pressure By-pass Valve (system #1)
8. 1" Isolation Ball Valve (system #1 return)
9. 1" Isolation Ball Valve (system #1 supply)
10. 1" Isolation Ball Valve (system #2 return)
11. 1" Isolation Ball Valve (system #2 supply)
12. Differential Pressure By-pass Valve (system #2)
13. Secondary Loop (radiant) Circulator (P2)
14. 1¼" Through Connections or U-pipe Connection
15. Variable Speed Injection Pump (P5)
16. Balancing Valve on Return Injection Loop Leg
17. Power Supply
18. Terminal Strip
19. 120VAC Power Cord
20. Physical Information
    Height — 36"
    Width — 26"
    Depth — 13"
    Weight — 110 lbs.



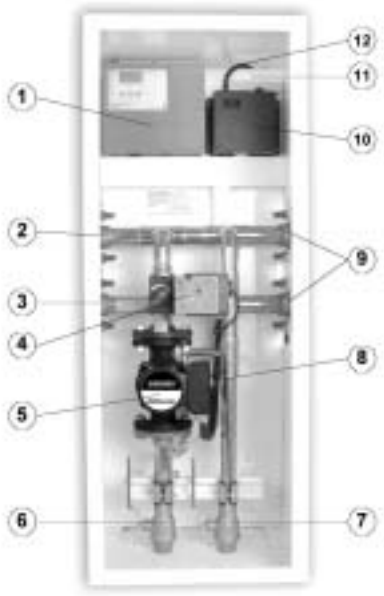
Note: For information about applications not shown (e.g., snow and ice melting), contact Uponor Wirsbo Technical Services, toll free, at (800) 321-4739.

Wirsbo proPANEL 101

The Wirsbo proPANEL 101 offers:

- Boiler enable
- Boiler protection
- One mixed temperature
- Floating action mixing valve
- Reset or setpoint modes

1. Wirsbo proMIX™ 101 Control
2. 1¼" Supply from Boiler
3. 1¼" Return to Boiler
4. 1" Floating Action Mixing Valve
5. Secondary Loop (radiant) Circulator (P1)
6. 1" Isolation Ball Valve (system supply)
7. 1" Isolation Ball Valve (system return)
8. Differential Pressure By-pass Valve (behind pump)
9. 1¼" Through Connections or U-pipe Connection
10. Power Supply
11. Terminal Strip
12. 120VAC Power Cord
13. Physical Information
    Height — 36"
    Width — 14"
    Depth — 13"
    Weight — 70 lbs.



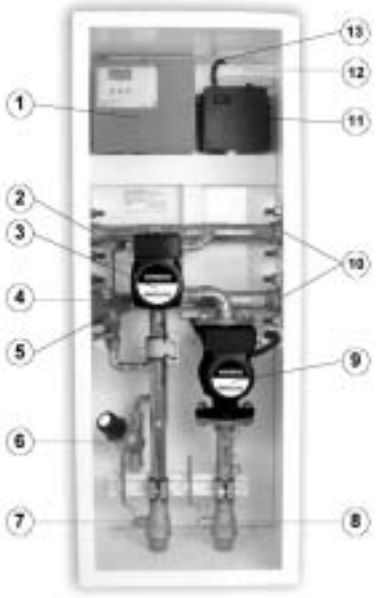
Note: For information about applications not shown (e.g., snow and ice melting), contact Uponor Wirsbo Technical Services, toll free, at (800) 321-4739.

Wirsbo proPANEL 201

The Wirsbo proPANEL 201 offers:

- Boiler enable
- Boiler protection
- One mixed temperature
- Variable speed injection mixing
- Reset or setpoint modes

1. Wirsbo proMIX™ 201 Control
2. 1¼" Supply from Boiler
3. Variable Speed Injection Pump (P4)
4. 1¼" Return to Boiler
5. Balancing Valve on Return Injection Loop Leg
6. Differential Pressure By-pass Valve
7. 1" Isolation Ball Valve (system return)
8. 1" Isolation Ball Valve (system supply)
9. Secondary Loop (radiant) Circulator (P1)
10. 1¼" Through Connections or U-pipe Connection
11. Power Supply
12. Terminal Strip
13. 120VAC Power Cord
14. Physical Information
    Height — 36"
    Width — 14"
    Depth — 13"
    Weight — 70 lbs.



Note: For information about applications not shown (e.g., snow and ice melting), contact Uponor Wirsbo Technical Services, toll free, at (800) 321-4739.

Tools Required

- A ¼-inch socket, ¼-inch nut driver or ¼-inch driver bit

Section 2
Preparation

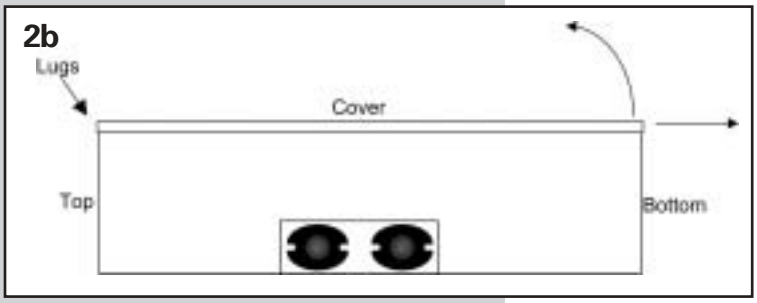
Step 1 — Inspect Contents

Step 1a: Unpack and ensure the following contents are included.

- Appropriate proPANEL
- Appropriate pro Series Manual
- proPANEL Installation Manual
- Modular connection cable (1)
- By-pass instructions
- Return bend (1)
- Flanges (2)
- Gasket (4)
- Mounting rail (1)
- Flow Setter Instructions

Step 1b: Inspect the product to ensure no damage occurred during shipping.

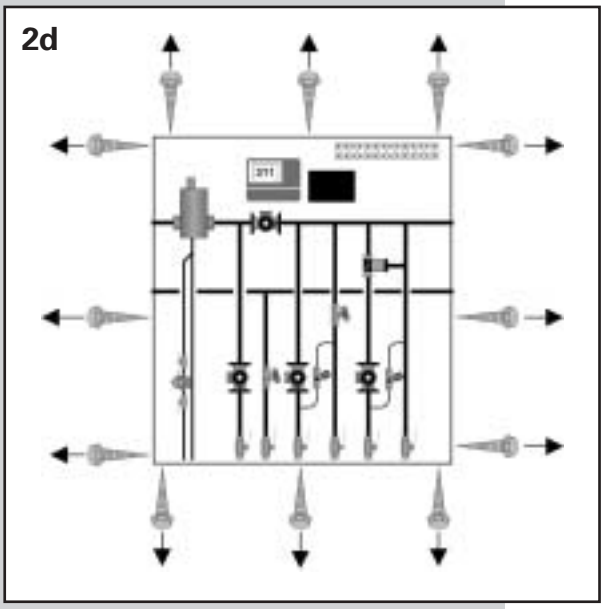
Step 2 — Remove Cover and Enclosure



Step 2a: Lay the proPANEL flat on the floor or a stable surface.

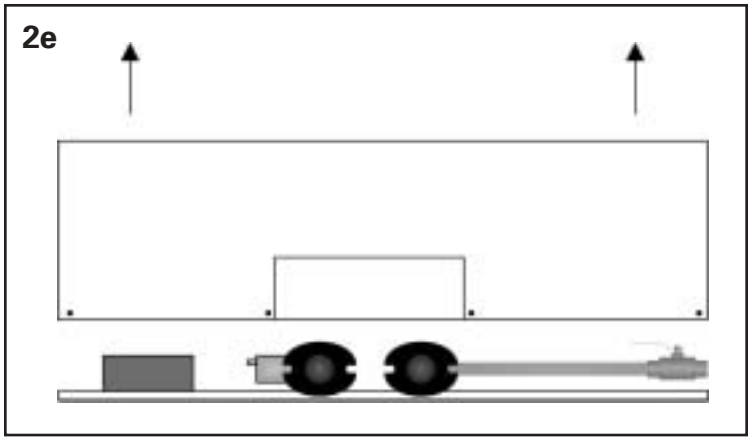
Step 2b: Remove the cover and enclosure. Pull the cover away from the bottom of the enclosure and lift off from the top alignment lugs (see **Figure 2b**). Set the cover to one side to avoid damage.

Step 2c: Remove the loose contents (e.g., return bend, mounting rail, modular connection cable).



Step 2d: Remove the ¼-inch hex head sheet metal screws that attach the enclosure to the backer board (see **Figure 2d**).

Step 2e: Lift the enclosure from the backer board (see **Figure 2e**). Set the enclosure to one side to avoid damage.

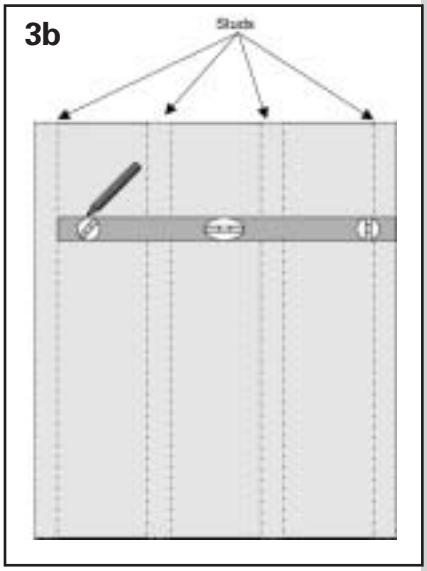


Section 3
Mounting the proPANEL

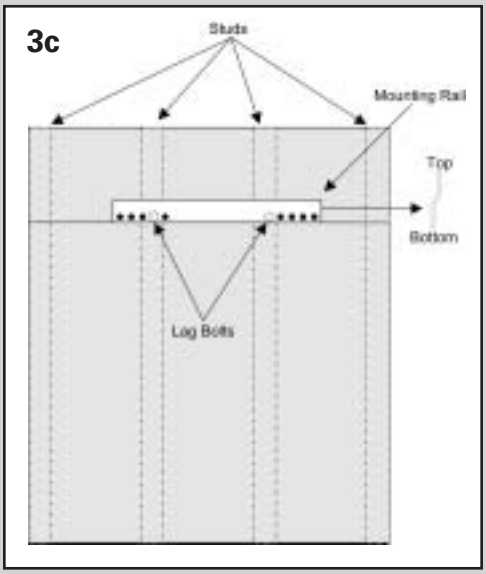
Tools Required	Hardware Required
• Level • Drill • ¼" drill bit • ⅜" socket set	• Four 5⁄16" x 2½" lag bolts or appropriate anchors

Step 3a: Position the mounting rail at the recommended height (between 60 and 72 inches) to ensure the control is at or near eye level.

Step 3b: Using a level, mark a reference line for the bottom of the mounting rail (see **Figure 3b**).

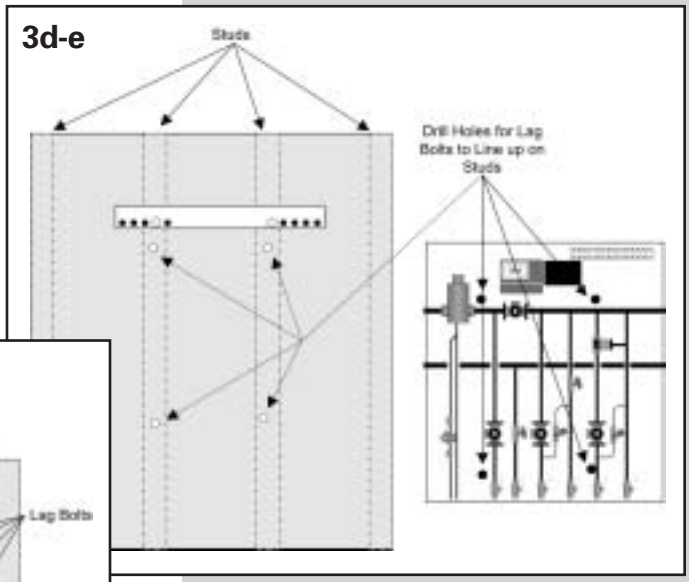


Step 3c: With the offset lip facing up, place the mounting rail on the line. Secure to the studs or into the masonry using lag bolts or appropriate mansonry anchors. See **Figure 3c**.



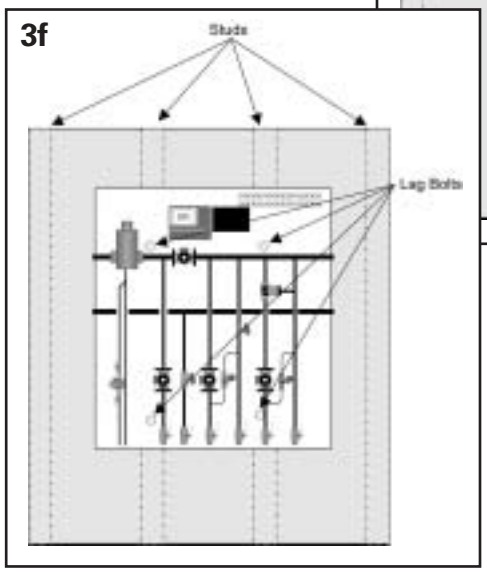
Step 3d: Mark the stud spacing dimensions on the proPANEL backer board. See **Figure 3d**.

Step 3e: Using the ⅜-inch drill bit, drill four pilot holes in the stud for the lag bolts to pass through. Drill two holes near the top and two near the bottom of the backer board in an easily accessible area. See **Figure 3e**.



Step 3f: Lift the proPANEL and slide down onto the mounting rail. Apply enough pressure to properly seat fully into the rail. See **Figure 3f**.

Step 3g: Secure the proPANEL to the wall using the 5⁄16 x 2½-inch lag bolts and socket set. A ¼-inch pilot hole is recommended.



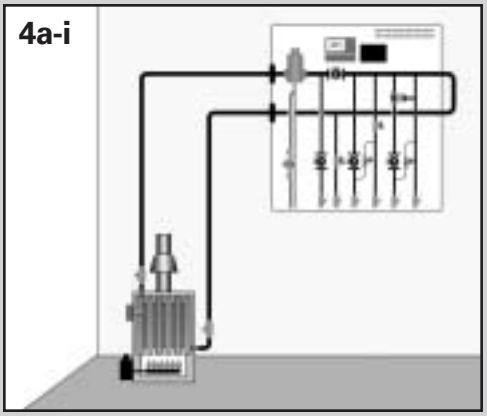
Step 3h: If using masonry anchors, mark the mounting hole locations on the wall. Remove the proPANEL. Drill appropriately sized holes and insert the anchors. Reattach the proPANEL and secure to the wall using the proper lag bolts and socket set.

Tools Required
- Torch and basic soldering equipment
- ⅝" and 1 1/16" box wrenches
- Assorted pipe wrenches and pliers

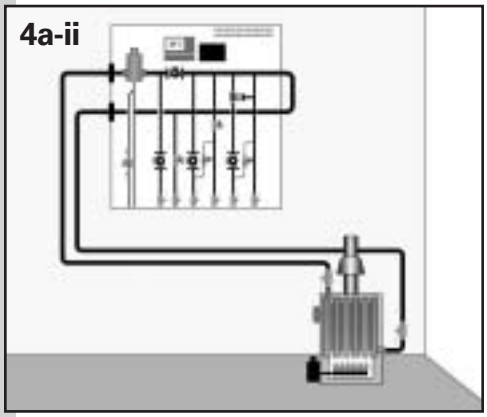
Section 4
Piping Connections and Configurations

Step 4a: Locate the heat source and determine the route from the supply and return to the proPANEL. The heat source may be located on the right or left of the panel and only a slight change in the piping configuration is required (see **Figures 4a-i and 4a-ii**).

4a-i

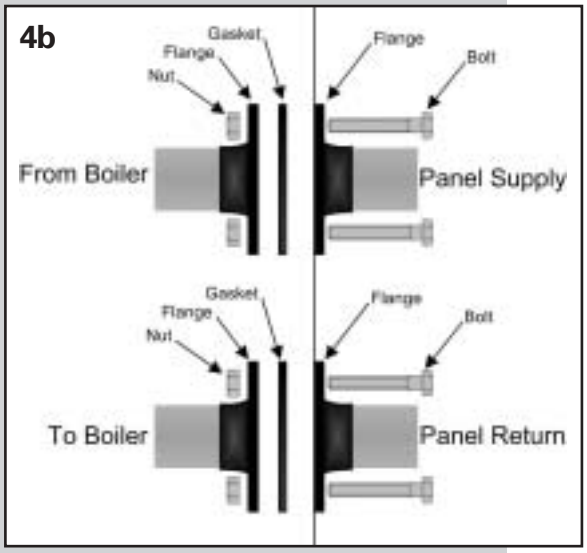


4a-ii



Step 4b: Attach the supply and return to the proPANEL using the provided flanges. Install the required gasket between the flanges. See **Figure 4b**.

4b



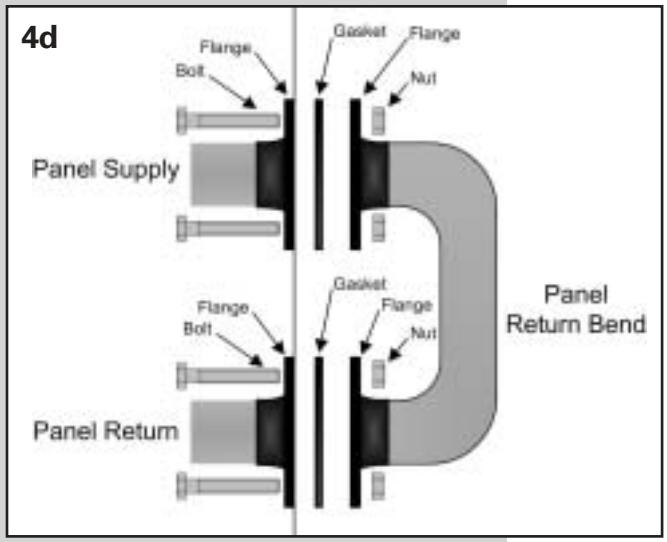
Note: To avoid damage, connect the piping to the flanges before attaching to the proPANEL.

Step 4c: Using the supplied bolts and the ⅝ and 1 1/16-box wrenches, bolt the flanges to their companions on the proPANEL.

Step 4d: Attach the return bend to the other end of the primary loop in the same manner using the same tools and hardware as described in Step 4c. See **Figure 4d**.

Step 4e: Install isolation valves between the heat source and the proPANEL on both the supply and return to help purge air during start up and to isolate during repair.

4d



Note: The proPANEL units are capable of flows up to 15 gallons per minute (gpm) on the primary circuit, which require a minimum of 1¼-inch piping. Use 1-inch piping when the flow requirements are less than 8 gallons per minute (gpm).

When using the proPANEL 311-V or proPANEL 311-P, a supply line is required. Connect the water supply to the pipe at the bottom left of the proPANEL 311. This is a ½-inch sweat connection. Note that a backflow preventor may be required. Check the local code. A ½-inch female threaded tapping is provided on the proPANEL 311 and is intended to pipe in the expansion tank.

Section 5
Wiring Connections

Tools Required
- Wire cutters and strippers
- Small flat-blade screwdriver

Note: Connect the low voltage and sensors first. Make all connections on the terminal strip, which are clearly marked.

Step 5a: Connect the outdoor sensor first to the terminal marked S4/outdoor sensor. See **Figure 5a**.

Step 5b: If applicable, connect the DHW sensor (marked S6/DHW sensor) next. See **Figure 5b**.

Note: If using a DHW sensor, do not use a DHW demand.

Step 5c: Connect the various demands to their respective terminals. These demands include mix, high temperature, boiler, DHW. A 40VAC transformer (provided in the proPANEL power supply unit) powers the terminals. No additional transformers are required. See **Figure 5c**.

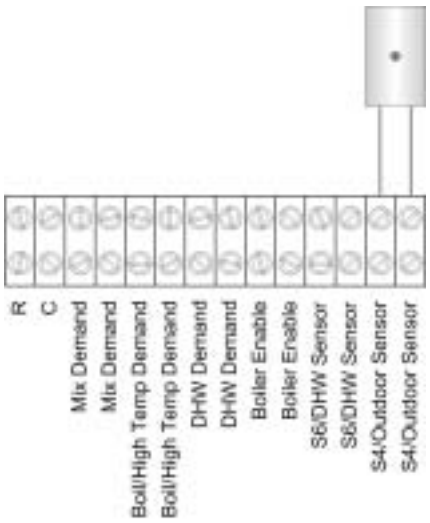
Note: If using a DHW demand, do not use a DHW sensor.

Step 5d: Connect the boiler enable (TT from the boiler control) to the terminals (marked Boiler Enable). The modular jack on the power supply is also a boiler enable. It can connect to the boiler, but is intended to link up two or more proPANEL units. See **Figure 5d**.

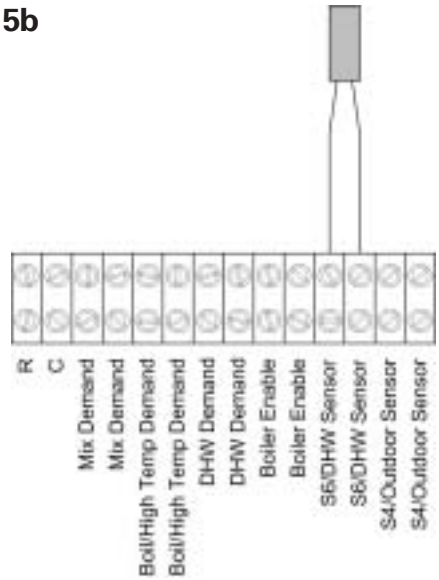
Step 5e: With the provided cord, connect the line voltage to a dedicated 15amp circuit.

Note: Do not start the proPanel until the system is filled with water and is properly purged. This eliminates any potential damage to the circulating pumps.

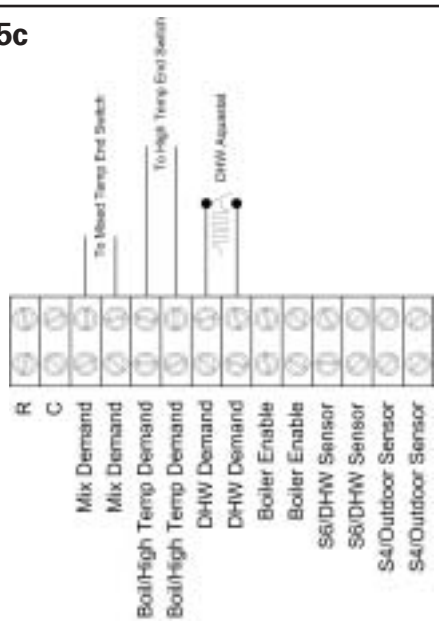
5a



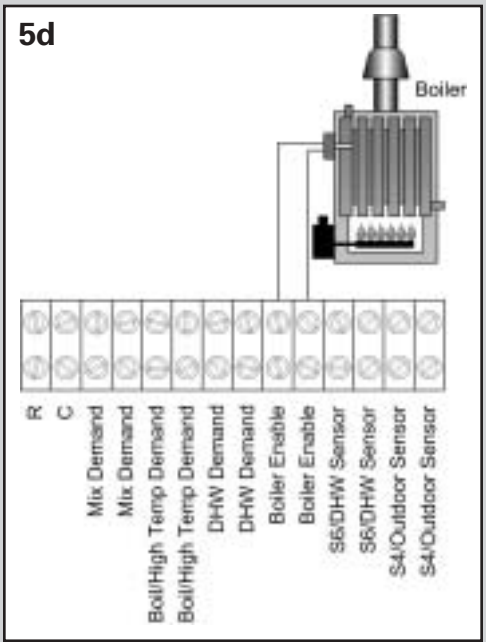
5b



5c



5d



CAUTION

All wiring must be performed by a licensed professional and comply with local trade practices and codes.

Wirsbo does not take responsibility for any damage caused due to failure to comply.

WIRSBO®
Life, Safety, Comfort Systems

Tools Required
- ⅝ and 1 1⁄16-inch box wrenches

Section 6
Multiple proPANEL Units

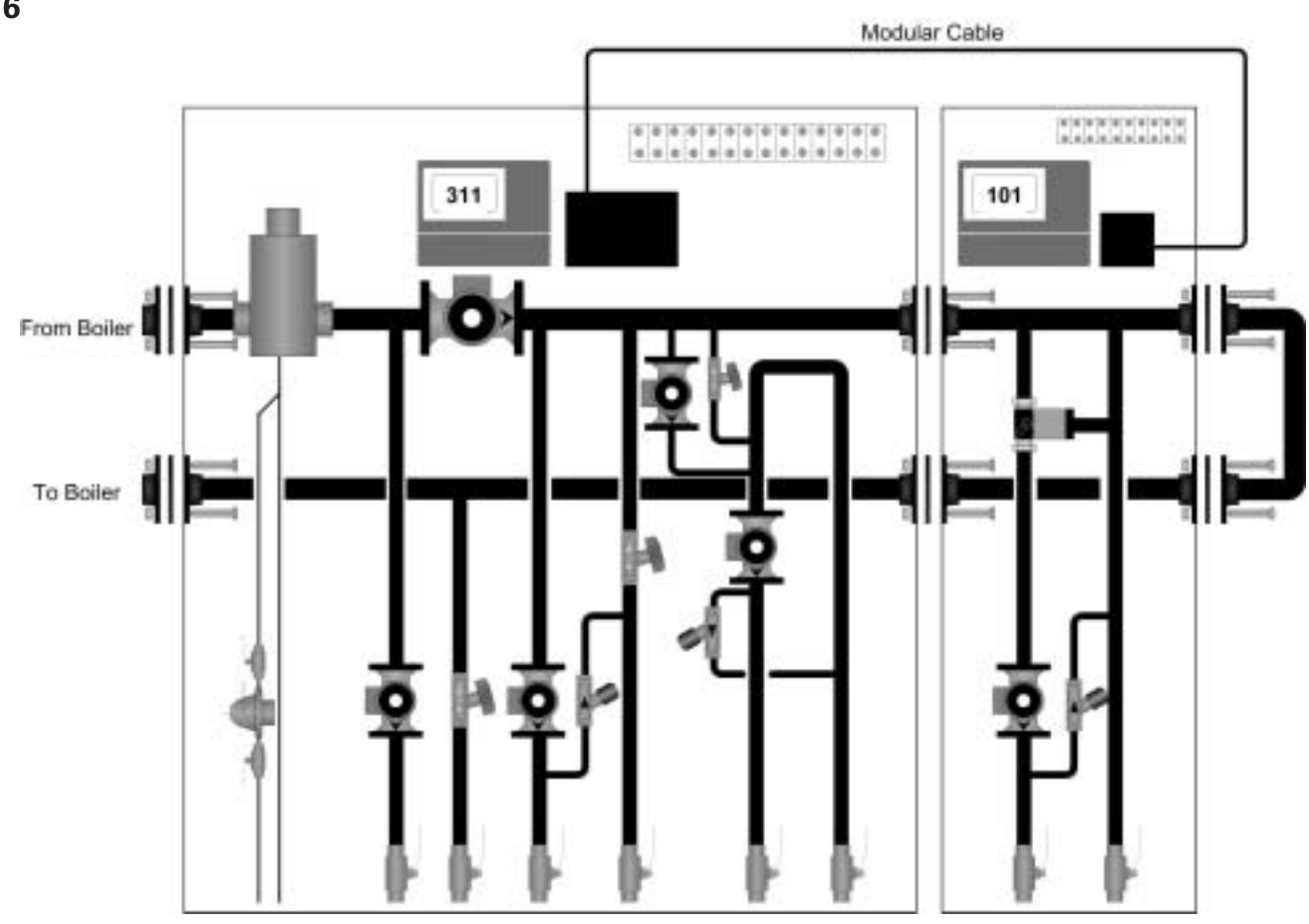
For larger or sophisticated systems, you may connect two or more proPANEL units together. See **Figure 6**.

Step 6a: Connect the piping with the same flanges and tools used to connect the boiler piping and return bends in Section 4. Simply bolt the flanges together using the supplied hardware and tighten them with ⅝ and 1 1⁄16-inch box wrenches.

Step 6b: To complete the primary loop, attach the return bend to the end of the finished assembly of panels.

Step 6c: Simply connect the proPANEL units together using the supplied modular cables. A modular jack is located on the top of each power supply box.

6



Section 7
Start Up

After all the piping and wiring connections are made and the system is filled and purged, the system is ready to start up. Refer to the Wirsbo Radiant Floor Installation Handbook for specific instructions.

Step 7a: After purging is completed, start the system and program the pro Series control as needed. The appropriate pro Series manual is enclosed with each proPANEL to program the control.

Step 7b: Once the control is programmed, cycle the individual demands to ensure proper operation.

Step 7c: Set the circuit setters to the required flows using the provided instructions. See **Figure 7c**.

Step 7d: Properly adjust the pressure bypass valve using the provided instructions. See **Figure 7d**.

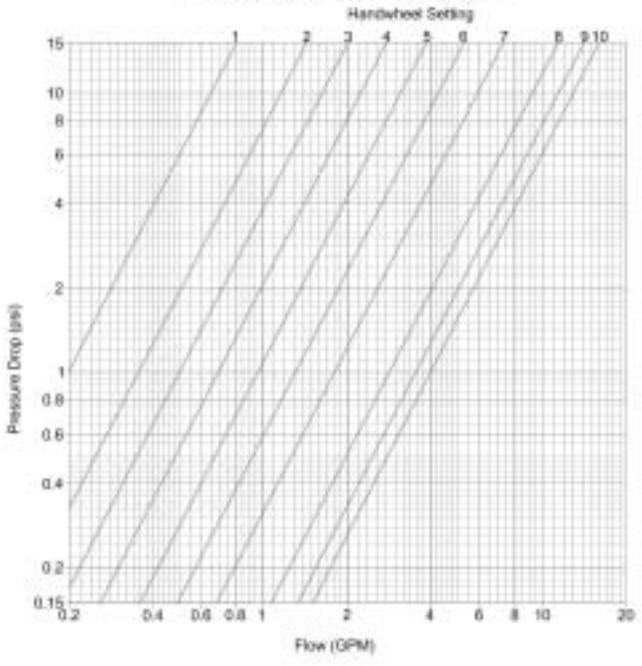
7c Handwheel settings based on gpm required at design conditions

gpm - Setting		
0.20 = 2.5	1.0 = 7.5	1.8 = 9.5
0.40 = 4.9	1.2 = 7.8	2.0 = 10.0
0.60 = 5.8	1.4 = 8.0	

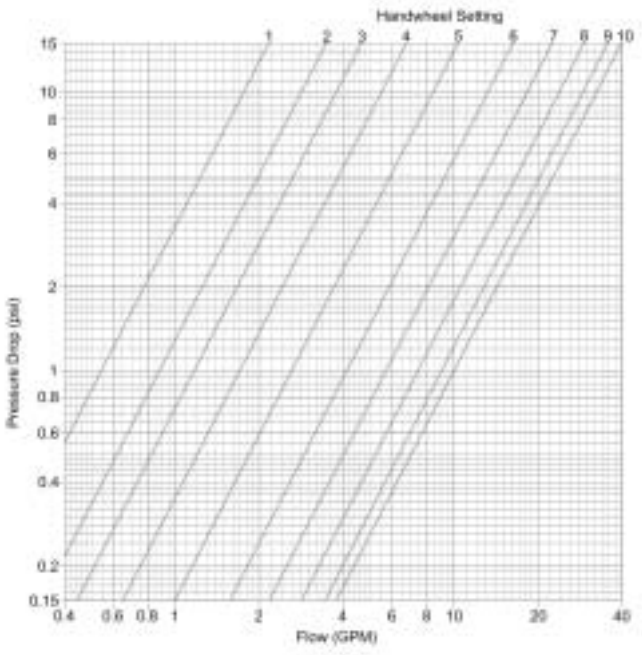
To determine the correct handwheel setting, you must know the required gallons per minute (gpm) and the pressure loss in psi (2.31 ft/hd = 1 psi) through all of the piping and the terminal unit.

Simply find the pressure drop on the left and the gpm at the bottom. The intersection of these two points is the correct handwheel setting.

½" Balancing Valve (Injection)



1" Balancing Valve (DHW, High Temp, & Radiant)



7d

1. Determine the differential head for the system with all zones open.

To determine the differential head you must know the:

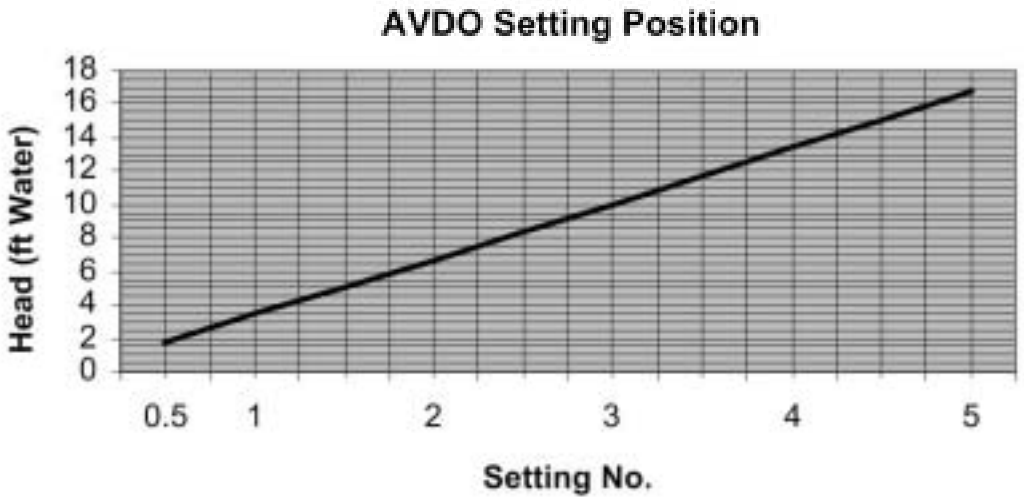
A. GPM required with all zones open.

B. The system head at that gpm.

C. The ft/hd that the circulating pump is capable of at that gpm. Use the circulator performance charts on page 14.

D. Subtract B from C to arrive at the differential head.

2. Locate the differential head on the left side of the chart.
3. Draw a horizontal line to the right until it intersects the diagonal line in the chart.
4. Draw a second line straight down. This will correspond to a number at the bottom of the chart. This is the bypass valve setting. Use the MH2O scale on the bypass valve.
5. Rotate the bypass valve handle on full turn clockwise from the position found in step 4 to ensure positive shut off when all zones are open.



Section 8
Performance Data and Physical Information

Cabinet Dimensions

Unit	Width	Height	Depth	Weight
proPANEL 311V	36"	36"	13"	160 lbs.
proPANEL 311P	36"	36"	13"	160 lbs.
proPANEL 212	26"	36"	13"	110 lbs.
proPANEL 101	14"	36"	13"	70 lbs.
proPANEL 201	14"	36"	13"	70 lbs.

Note: The companion flanges protrude ⅜" from each side of the enclosure to ensure an easy connection.

Piping Sizes and Capacities

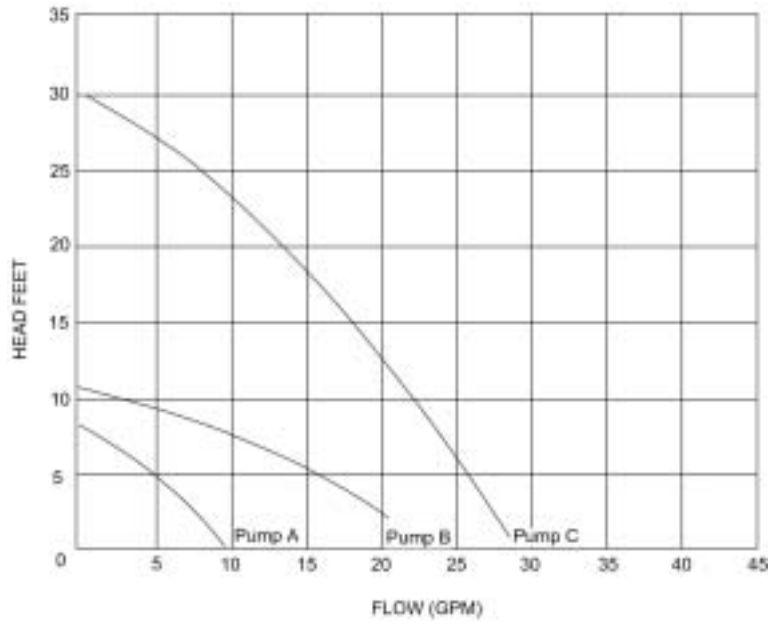
Differential Temperature[1]	BTU/h Capacity Primary Circuit (1¼")[2]	BTU/h Capacity Secondary Circuit (1")[3]
10	75,000	40,000
20	150,000	80,000
30	225,000	120,000
40	300,000	160,000

[1]Differential temperature is the difference in temperature between the primary supply and primary return and the difference between the secondary supply and secondary return.

[2]Primary circuit is based on 15 gpm.

[3]Secondary circuit based on 8 gpm.

Note: For more detail on secondary BTU/h capacity. Please refer to Appendix I in your proSeries control Manual.



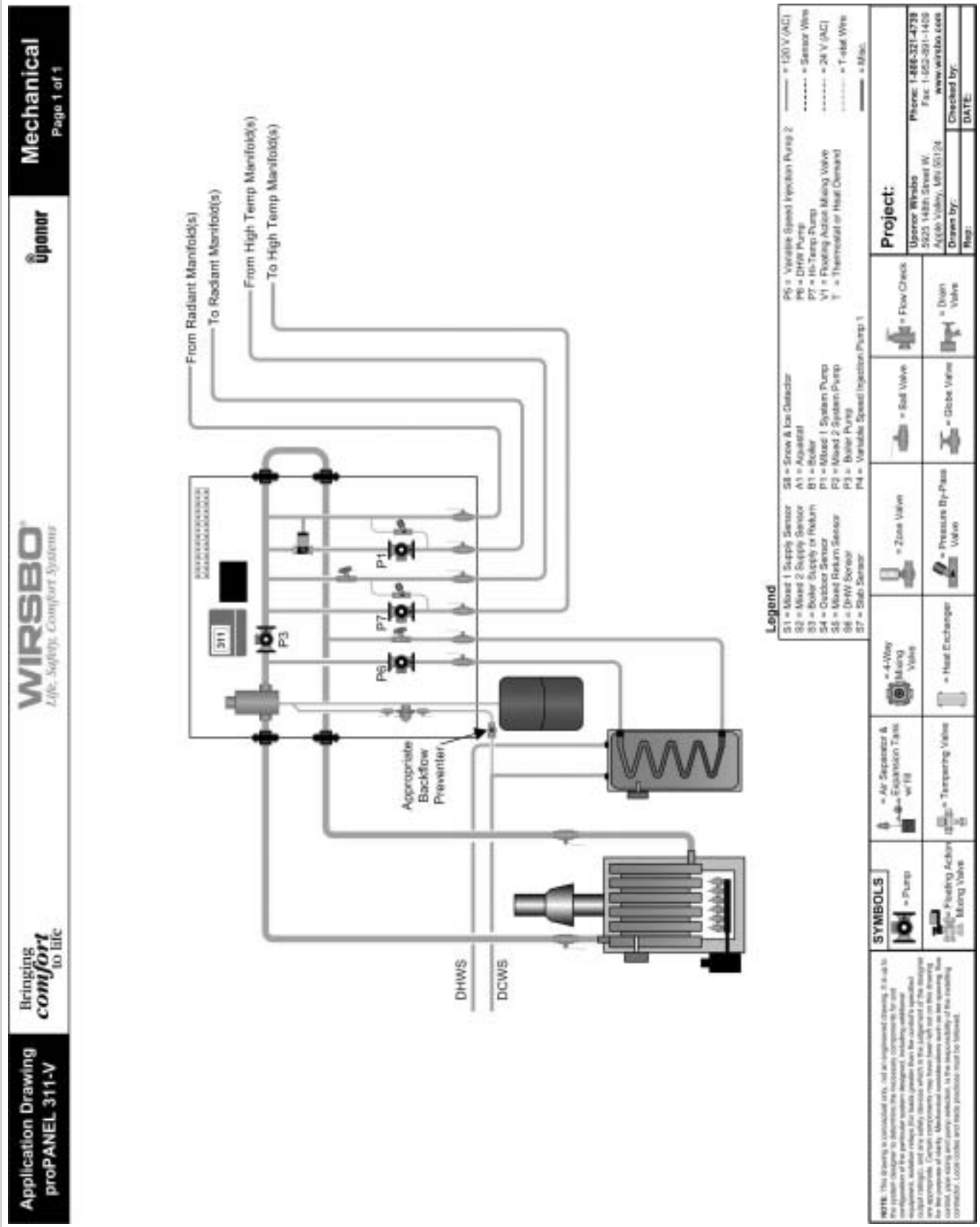
Pump Performance Curves

Pump A = Injection pumps

Pump B = Primary, high-temperature and domestic hot water pumps

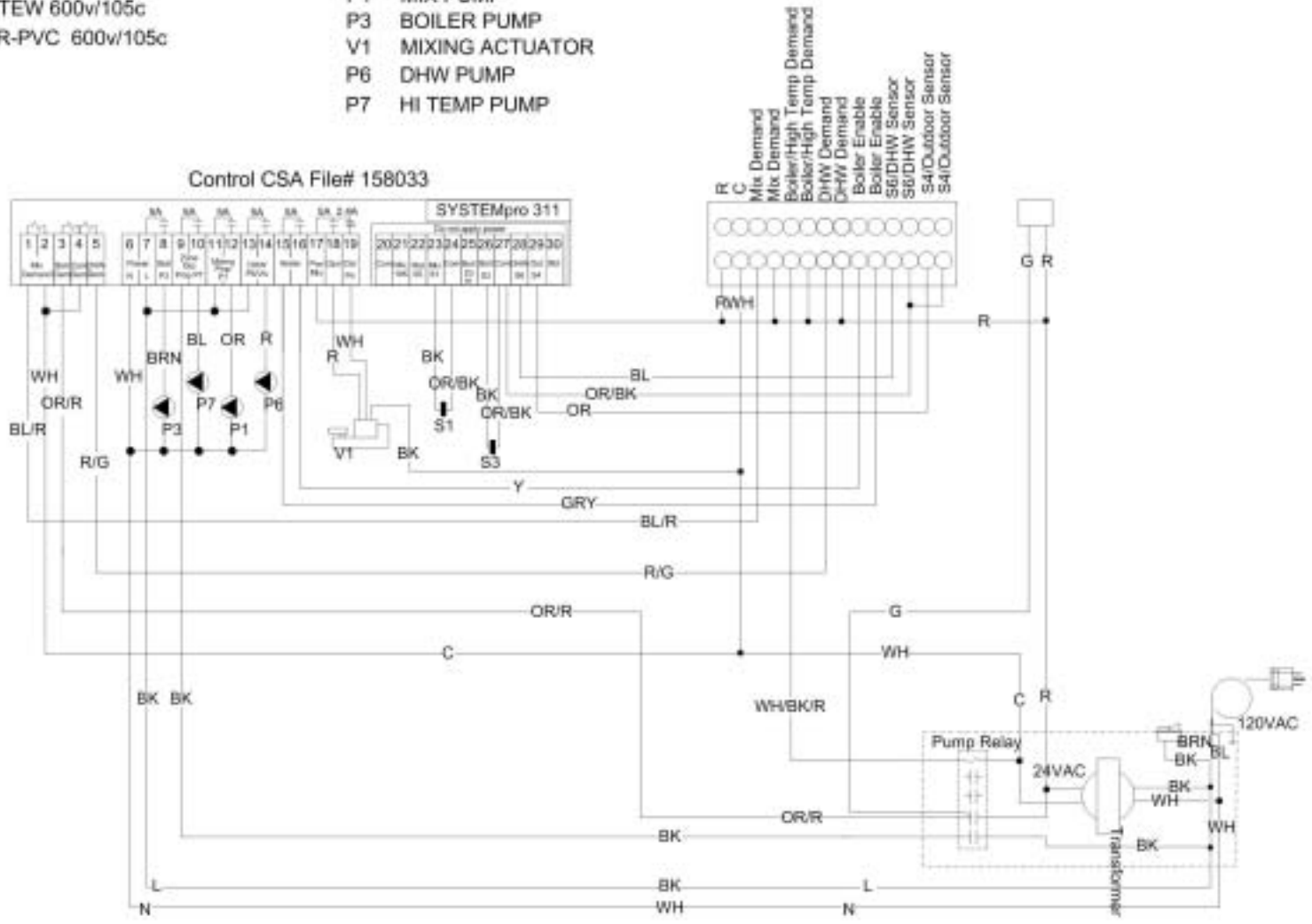
Pump C = All radiant pumps

Section 9
Mechanical and Electrical Drawings

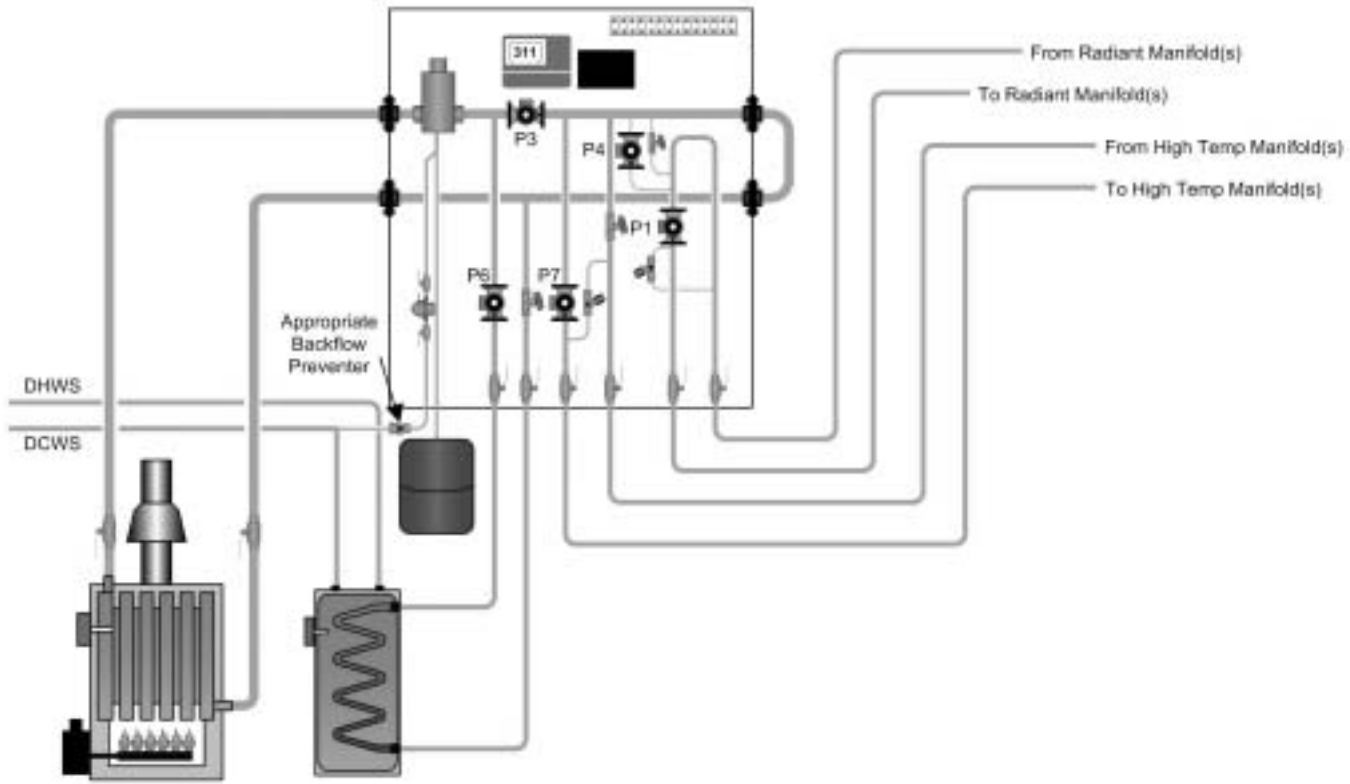


110v wiring: 16ga/TEW 600v/105c
24v wiring: 20ga/SR-PVC 600v/105c

P1	MIX PUMP
P3	BOILER PUMP
V1	MIXING ACTUATOR
P6	DHW PUMP
P7	HI TEMP PUMP



Application Drawing proPANEL 311-P	Bringing comfort to life	WIRSBO Life, Safety, Comfort Systems	Uponor	Mechanical Page 1 of 1



Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand
S6 = DHW Sensor	P3 = Boiler Pump	
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1	

——— = 120 V (AC)
- - - - - - = Sensor Wire
– – – – – = 24 V (AC)
· · · · · · = T-stat Wire
——— = Misc.

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for unit configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as tee spacing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

= Pump	= Air Separator & Expansion Tank w/ Fill	= 4-Way Mixing Valve	= Zone Valve	= Ball Valve	= Flow Check
= Floating Action Mixing Valve	= Tempering Valve	= Heat Exchanger	= Pressure By-Pass Valve	= Globe Valve	= Drain Valve

Project:

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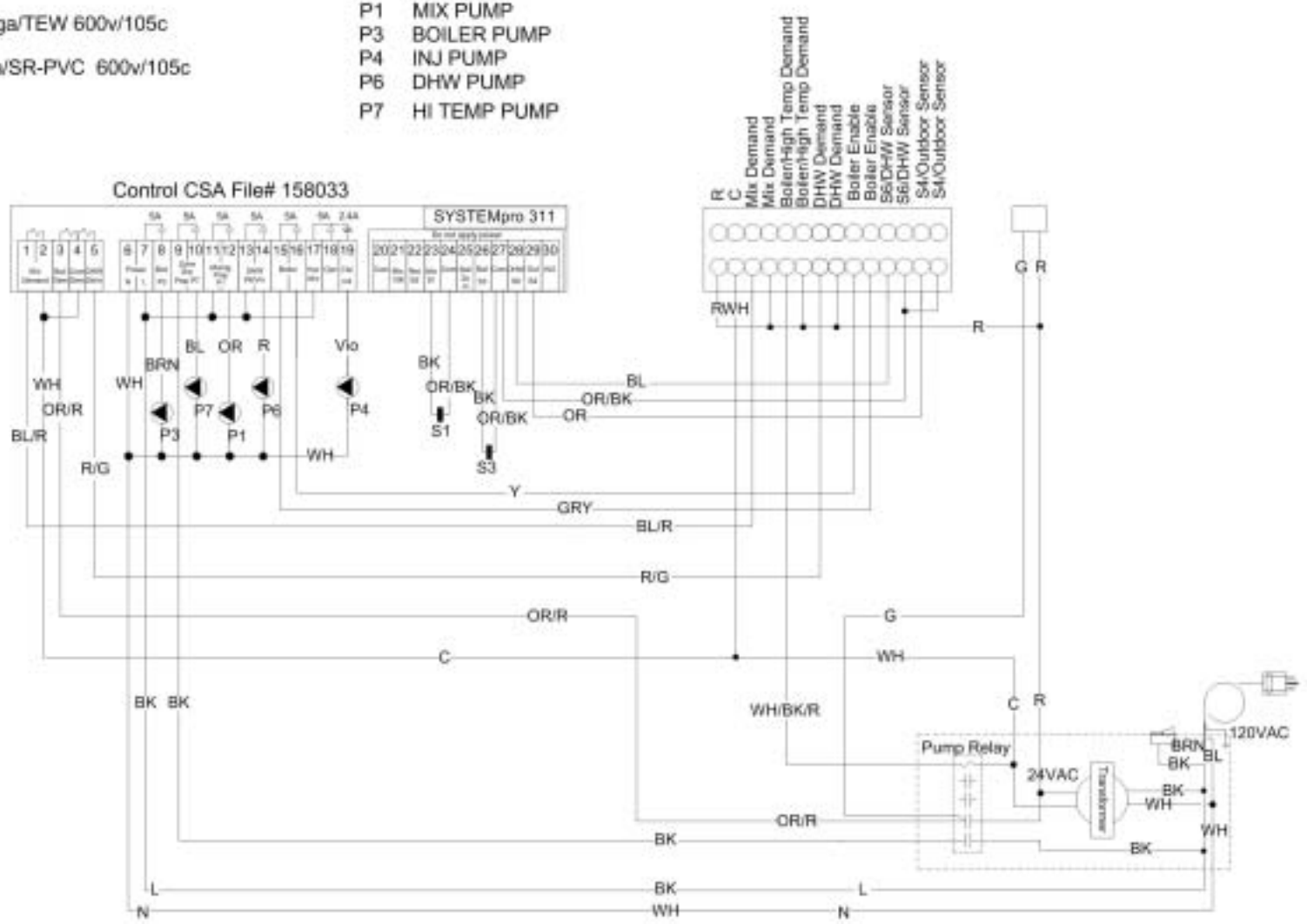
Rep:	DATE:

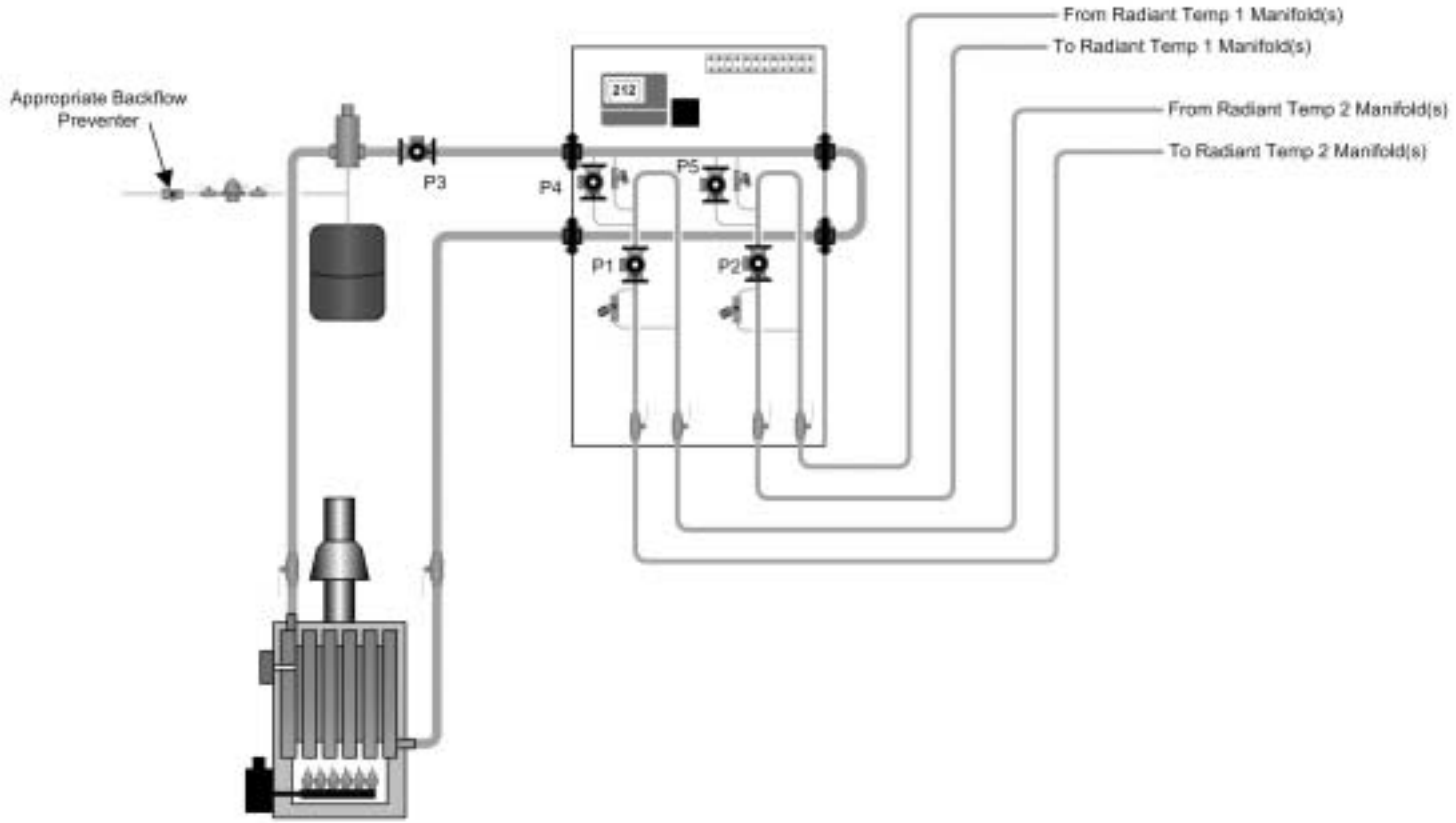
110v wiring: 16ga/TEW 600v/105c

24v wiring: 20ga/SR-PVC 600v/105c

P1 MIX PUMP
P3 BOILER PUMP
P4 INJ PUMP
P6 DHW PUMP
P7 HI TEMP PUMP



Application Drawing proPANEL 212	Bringing comfort to life	WIRSBO Life, Safety, Comfort Systems	Uponor	Mechanical Page 1 of 1



Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand
S6 = DHW Sensor	P3 = Boiler Pump	
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1	

——— = 120 V (AC)
- - - - - - = Sensor Wire
- - - - - - = 24 V (AC)
- - - - - - = T-stat Wire
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SYMBOLS

= Pump
= Air Separator & Expansion Tank w/ fill
= 4-Way Mixing Valve
= Zone Valve
= Ball Valve
= Flow Check
= Floating Action Mixing Valve
= Tempering Valve
= Heat Exchanger
= Pressure By-Pass Valve
= Globe Valve
= Drain Valve

Project:

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www.wirsbo.com

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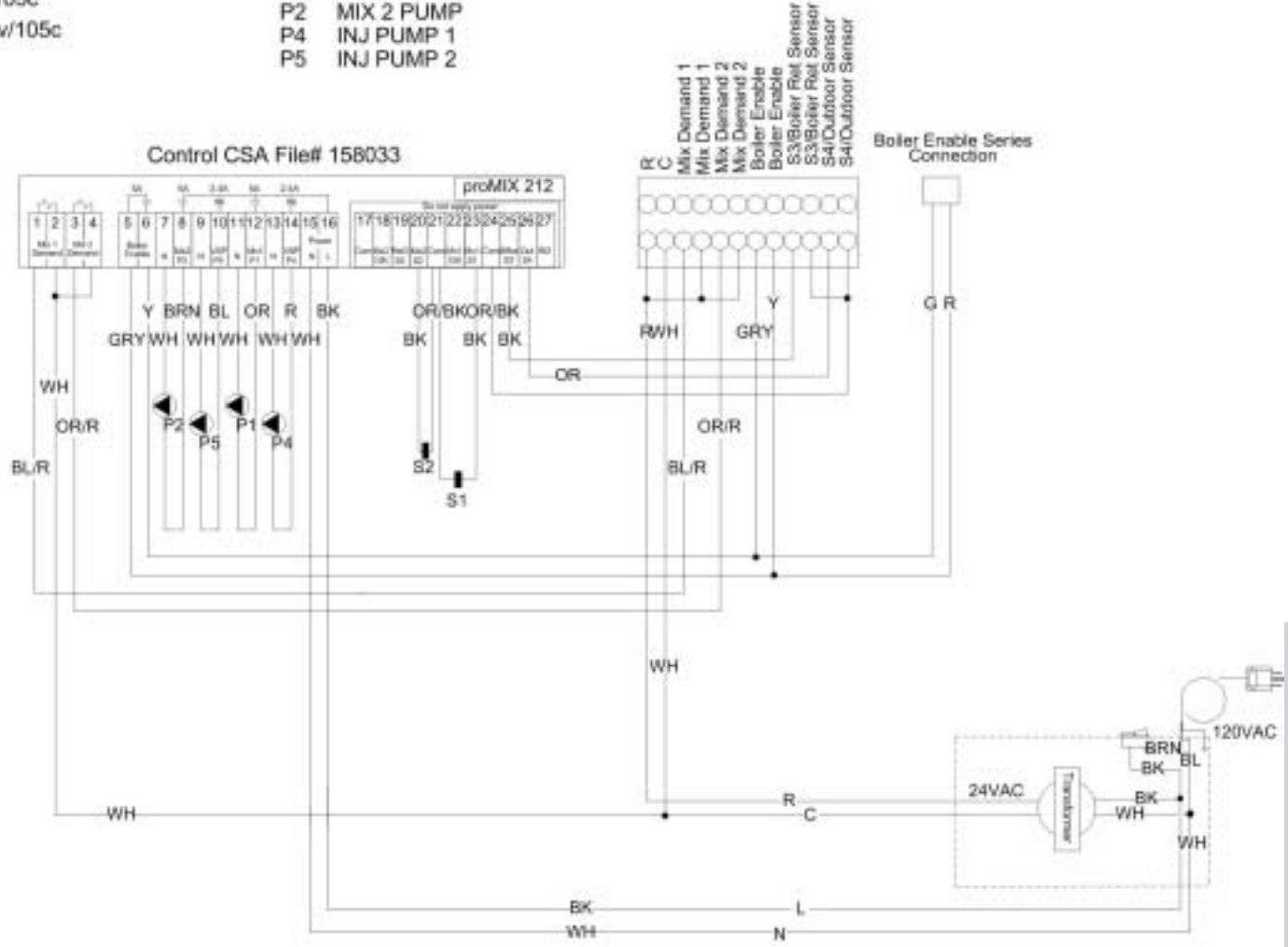
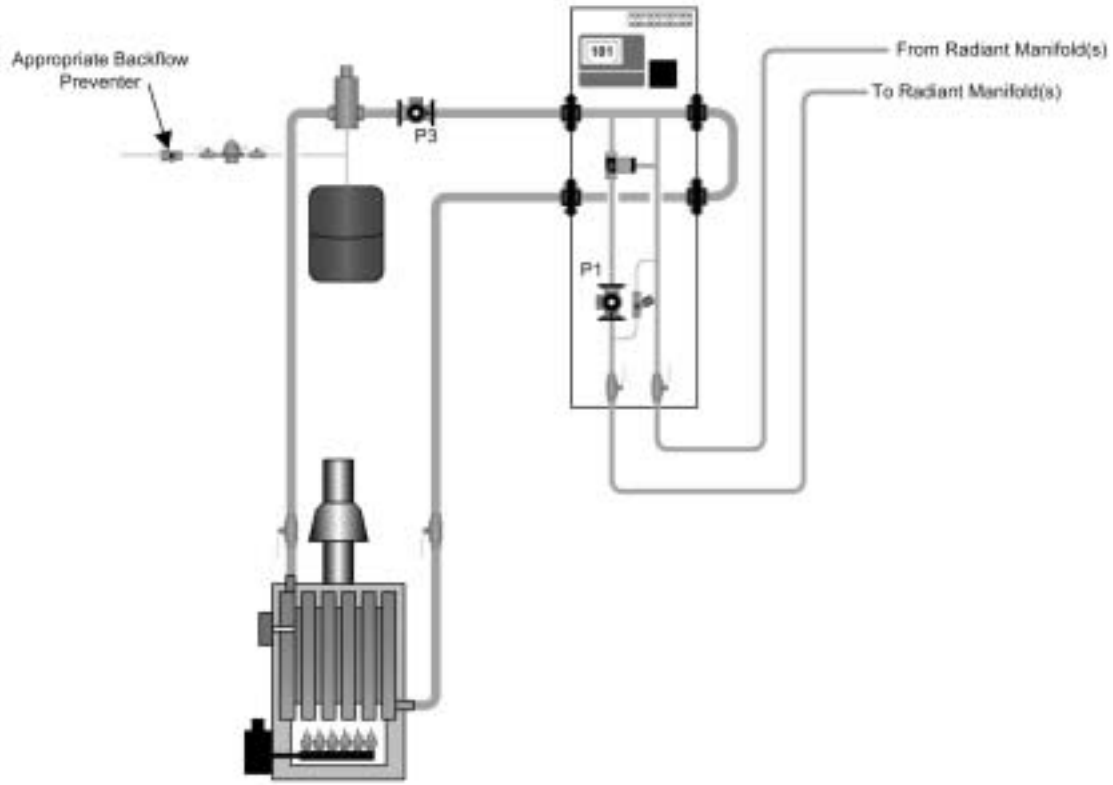
Rep:	DATE:

110v wiring: 16ga/TEW 600v/105c
24v wiring: 20ga/SR-PVC 600v/105c

P1 MIX 1 PUMP
P2 MIX 2 PUMP
P4 INJ PUMP 1
P5 INJ PUMP 2



Application Drawing proPANEL 101	Bringing comfort to life	WIRSBO Life, Safety, Comfort Systems	Uponor	Mechanical Page 1 of 1



Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P6 = Variable Speed Injection Pump 2	——— = 120 V (AC)
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P8 = DHW Pump	- - - - - = Sensor Wire
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump	- - - - - = 24 V (AC)
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve	- - - - - = T-stat Wire
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand	——— = Misc.
S6 = DHW Sensor	P3 = Boiler Pump		
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1		

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for and configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as line sizing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

= Pump	= Air Separator & Expansion Tank w/ fill	= 4-Way Mixing Valve	= Zone Valve	= Ball Valve	= Flow Check
= Floating Action Mixing Valve	= Tempering Valve	= Heat Exchanger	= Pressure By-Pass Valve	= Globe Valve	= Drain Valve

Project:

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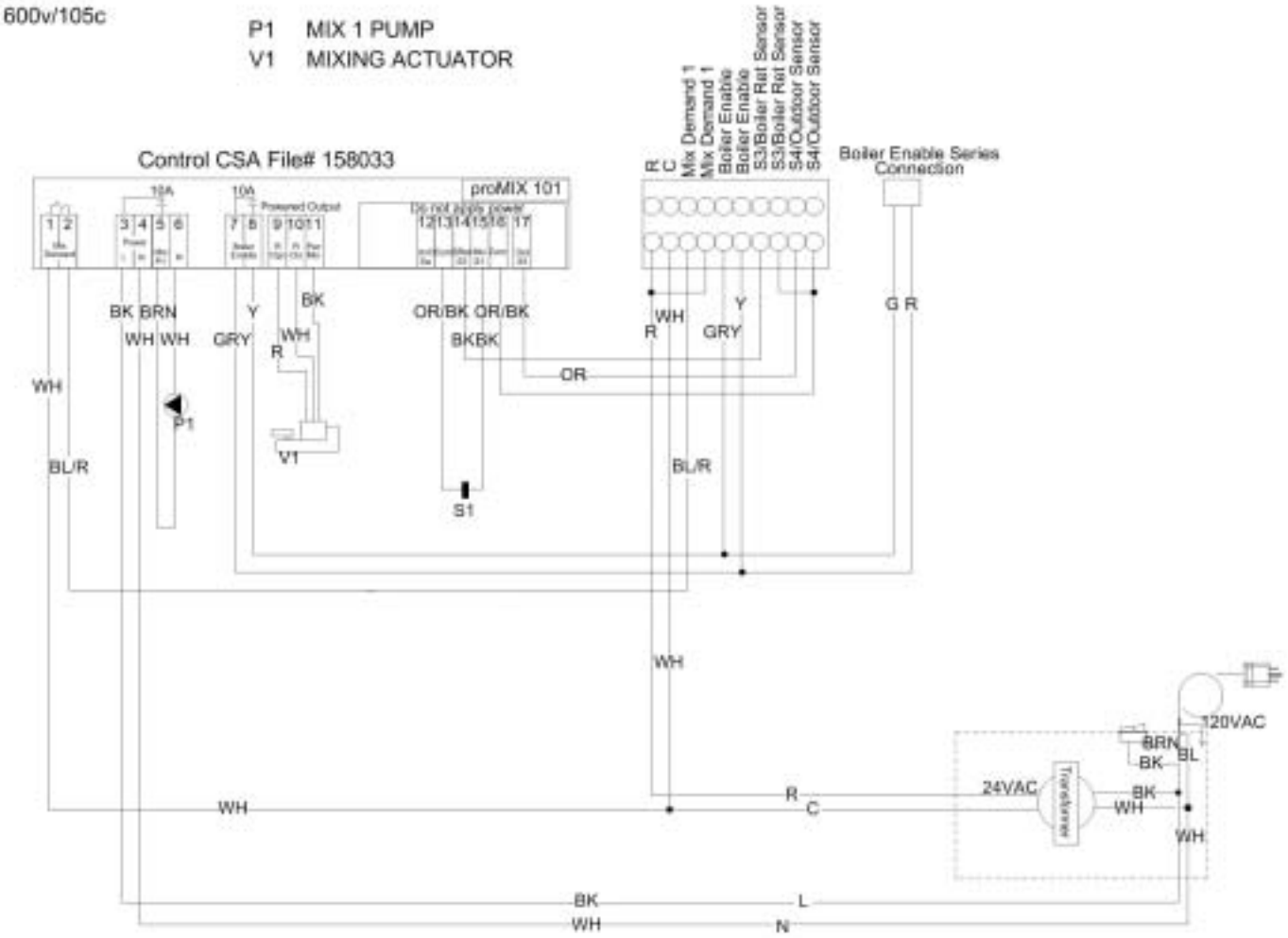
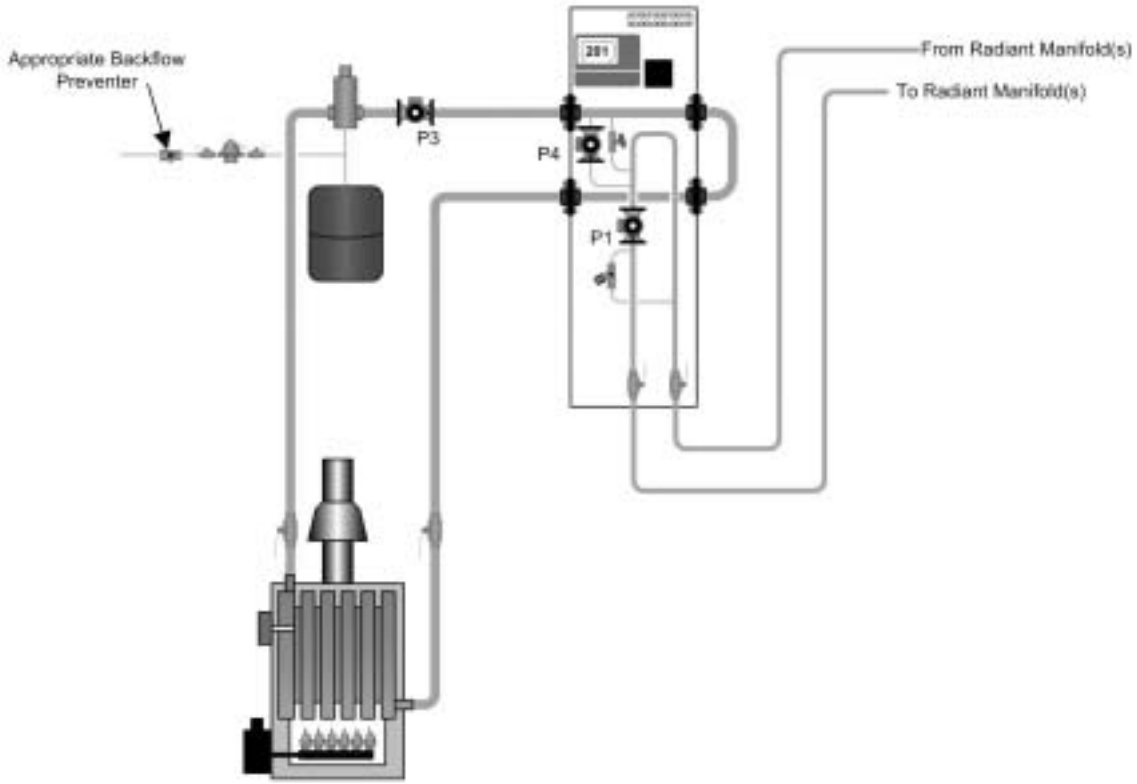
110v wiring: 16ga/TEW 600v/105c
24v wiring: 20ga/SR-PVC 600v/105c

P1 MIX 1 PUMP
V1 MIXING ACTUATOR



Application Drawing proPANEL 201	Bringing comfort to life	WIRSBO Life, Safety, Comfort Systems	Uponor	Mechanical Page 1 of 1



Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2	——— = 120 V (AC)
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump	- - - - - - = Sensor Wire
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump	- - - - - - = 24 V (AC)
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve	····· = T-stat Wire
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand	——— = Misc.
S6 = DHW Sensor	P3 = Boiler Pump		
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1		

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for unit configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as tee spacing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

= Pump	= Air Separator & Expansion Tank w/ Fill	= 4-Way Mixing Valve	= Zone Valve	= Ball Valve	= Flow Check	
= Floating Action Mixing Valve	= Tempering Valve	= Heat Exchanger	= Pressure By-Pass Valve	= Globe Valve	= Drain Valve	

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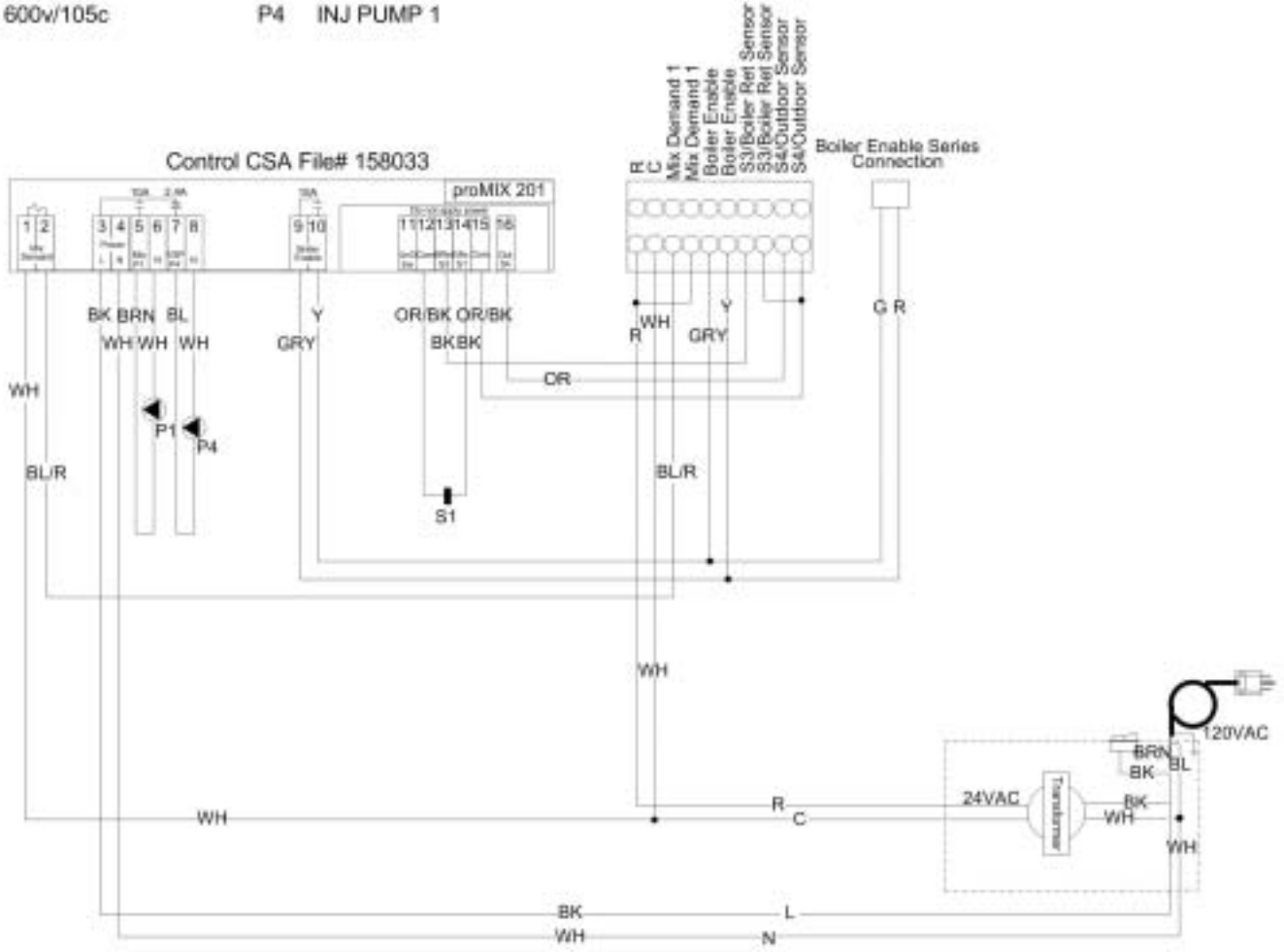
Rep:	DATE:

110v wiring: 16ga/TEW 600v/105c
24v wiring: 20ga/SR-PVC 600v/105c

P1 MIX 1 PUMP
P4 INJ PUMP 1



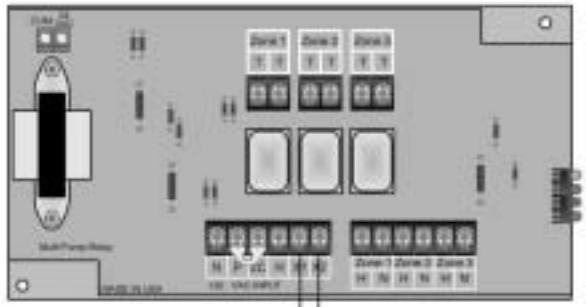
Application Drawing
MPR High Temp

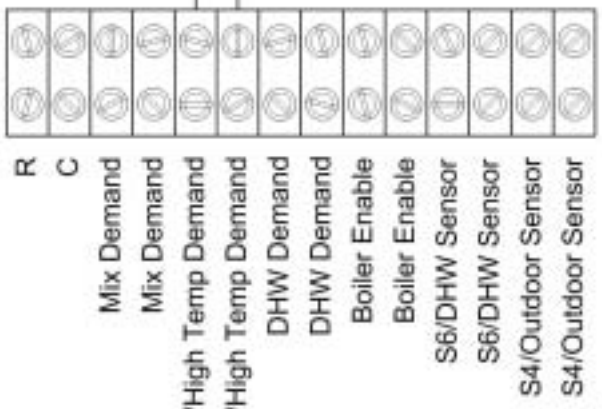
Bringing comfort to life

WIRSBO
Life, Safety, Comfort Systems

Uponor

Electrical
Page 1 of 1





Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2	= 120 V (AC)
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump	= Sensor Wire
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump	= 24 V (AC)
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve	= T-stat Wire
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand	= Misc.
S6 = DHW Sensor	P3 = Boiler Pump		
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1		

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for unit configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as line sparing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

= Pump
= Air Separator & Expansion Tank w/ Fill
= 4-Way Mixing Valve
= Zone Valve
= Ball Valve
= Flow Check
= Floating Action Mixing Valve
= Tempering Valve
= Heat Exchanger
= Pressure By-Pass Valve
= Globe Valve
= Drain Valve

Project:

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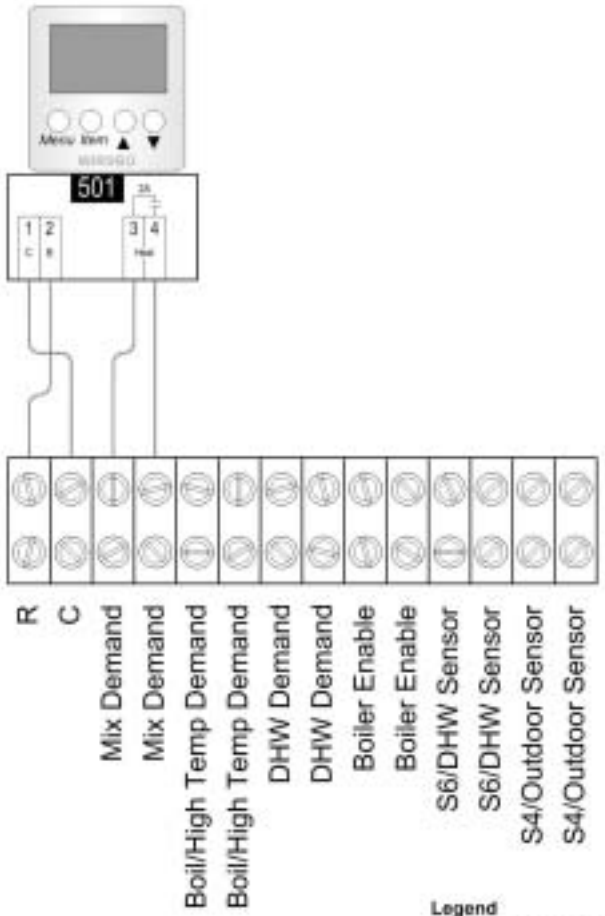
Rep:	DATE:

Wirsbo Setpoint 501
(A3040501)



Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2	= 120 V (AC)
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump	= Sensor Wire
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump	= 24 V (AC)
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve	= T-stat Wire
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand	= Misc.
S6 = DHW Sensor	P3 = Boiler Pump		
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1		

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SYMBOLS

= Pump
= Air Separator & Expansion Tank w/ fill
= 4-Way Mixing Valve
= Zone Valve
= Ball Valve
= Flow Check
= Floating Action Mixing Valve
= Tempering Valve
= Heat Exchanger
= Pressure By-Pass Valve
= Globe Valve
= Drain Valve

Project:

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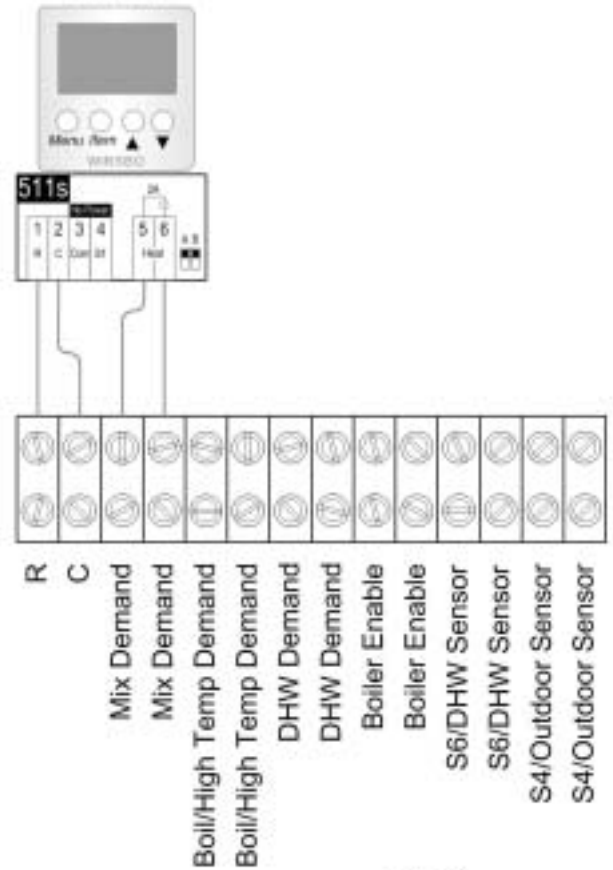
Rep:	**DATE:**

Application Drawing 511s Mix Demand	Bringing comfort to life	WIRSBO Life, Safety, Comfort Systems	Uponor	Electrical Page 1 of 1

Wirsbo Setpoint 511s
(A3841511)



Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2	——— = 120 V (AC)
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump	- - - - - - = Sensor Wire
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump	- - - - - - = 24 V (AC)
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve	- - - - - - = T-stat Wire
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand	——— = Misc.
S6 = DHW Sensor	P3 = Boiler Pump		
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1		

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for unit configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as tee spacing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

= Pump
= Air Separator & Expansion Tank w/ Fill
= 4-Way Mixing Valve
= Zone Valve
= Ball Valve
= Flow Check
= Floating Action Mixing Valve
= Tempering Valve
= Heat Exchanger
= Pressure By-Pass Valve
= Globe Valve
= Drain Valve

Project:

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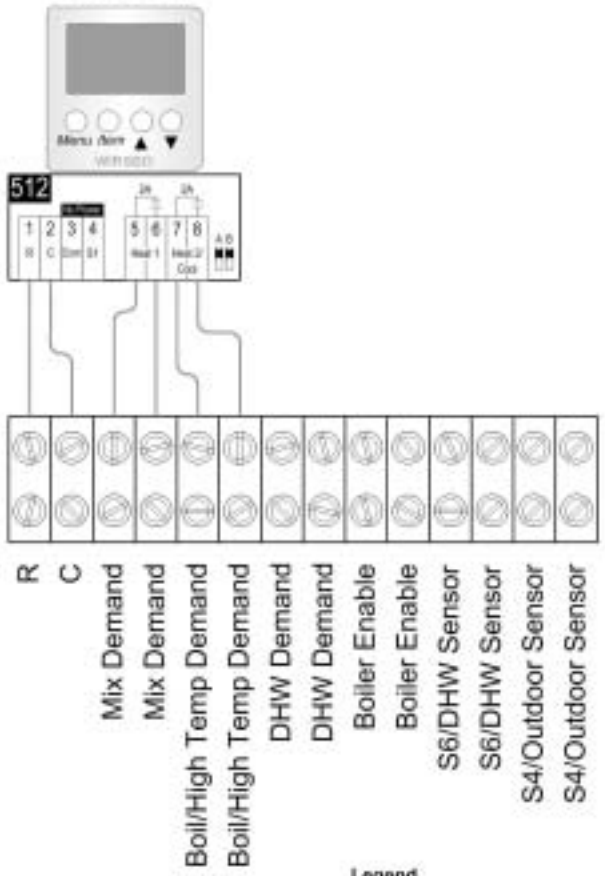
Drawn by:	Checked by:
Rep:	DATE:

Wirsbo Setpoint 512
(A3040512)



Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2	= 120 V (AC)
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump	= Sensor Wire
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump	= 24 V (AC)
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve	= T-stat Wire
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand	= Misc.
S6 = DHW Sensor	P3 = Boiler Pump		
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1		

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for unit configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as line spacing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

= Pump
= Air Separator & Expansion Tank w/ fill
= 4-Way Mixing Valve
= Zone Valve
= Ball Valve
= Flow Check
= Floating Action Mixing Valve
= Tempering Valve
= Heat Exchanger
= Pressure By-Pass Valve
= Globe Valve
= Drain Valve

Project:

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Apple Valley, MN 55124

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Drawn by:	Checked by:
Rep:	DATE:

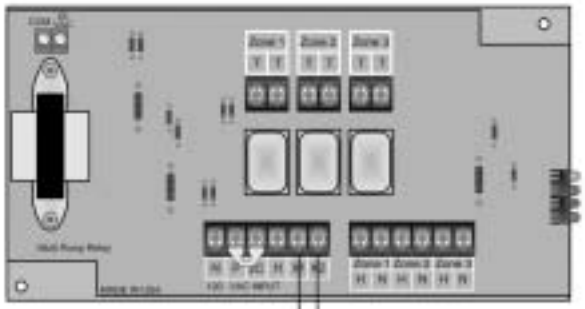
Application Drawing
MPR Mix Demand

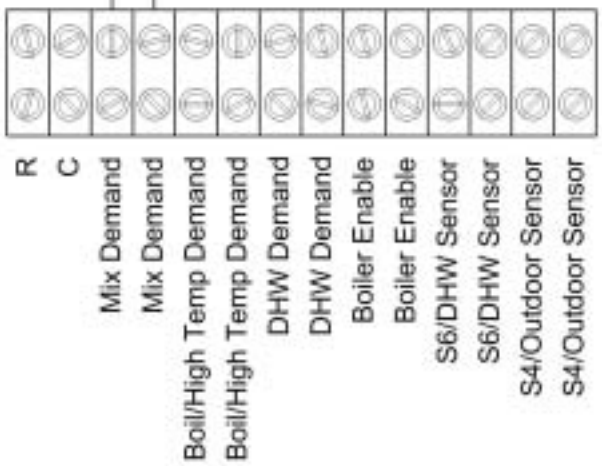
Bringing comfort to life

WIRSBO
Life, Safety, Comfort Systems

Uponor

Electrical
Page 1 of 1





Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump
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S6 = DHW Sensor	P3 = Boiler Pump	
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1	

——— = 120 V (AC)
- - - - - - = Sensor Wire
- - - - - - = 24 V (AC)
- - - - - - = T-stat Wire
——— = Misc.

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for unit configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as line sizing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

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= Floating Action Mixing Valve	= Tempering Valve	= Heat Exchanger	= Pressure By-Pass Valve	= Globe Valve	= Drain Valve

Project:

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Apple Valley, MN 55124

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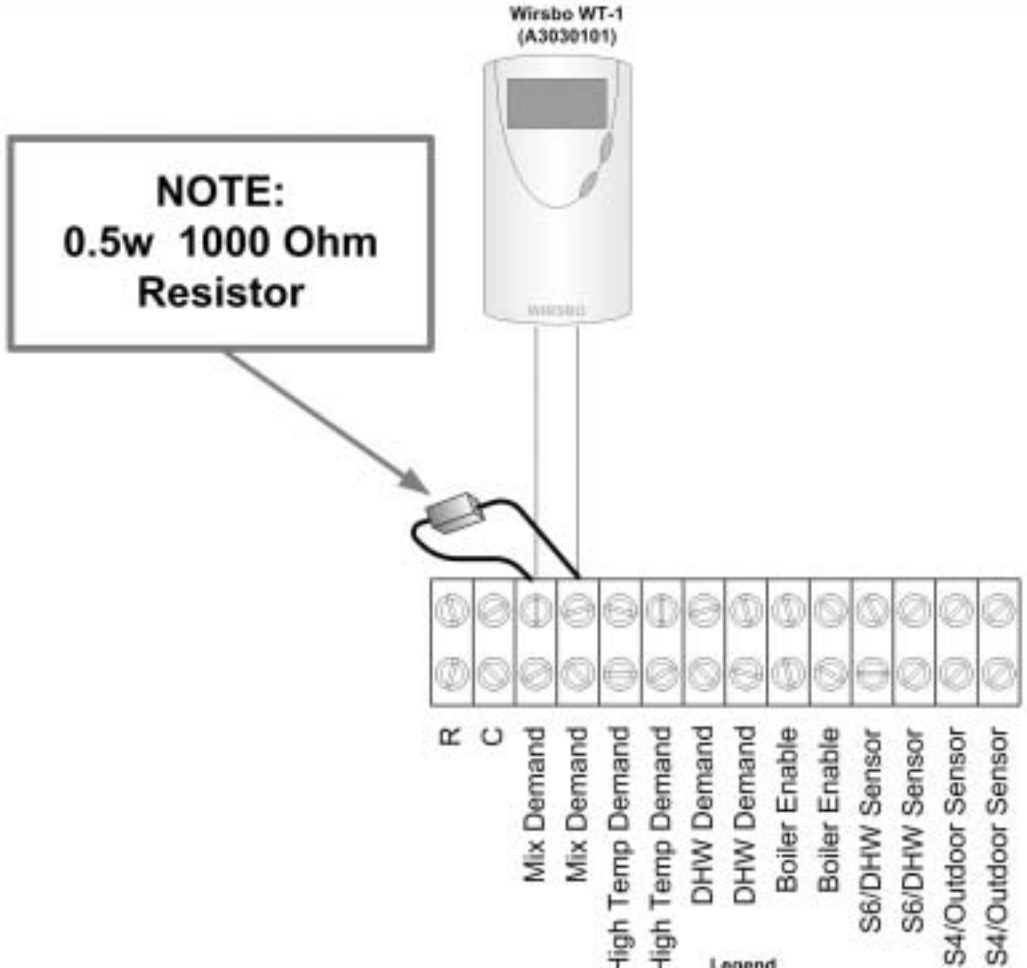
Fax: 1-952-891-1409
www.wirsbo.com

Drawn by:	Checked by:
Rep:	DATE:



Legend

S1 = Mixed 1 Supply Sensor
S2 = Mixed 2 Supply Sensor
S3 = Boiler Supply or Return
S4 = Outdoor Sensor
S5 = Mixed Return Sensor
S6 = DHW Sensor
S7 = Slab Sensor
S8 = Snow & Ice Detector
A1 = Aquastat
B1 = Boiler
P1 = Mixed 1 System Pump
P2 = Mixed 2 System Pump
P3 = Boiler Pump
P4 = Variable Speed Injection Pump 1
P5 = Variable Speed Injection Pump 2
P6 = DHW Pump
P7 = Hi-Temp Pump
V1 = Floating Action Mixing Valve
T = Thermostat or Heat Demand

= 120 V (AC)
= Sensor Wire
= 24 V (AC)
= T-stat Wire
= Misc.

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for unit configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as line sizing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

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= Pressure By-Pass Valve
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= Drain Valve

Project:

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Apple Valley, MN 55124
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Application Drawing
ZCM Mix Demand

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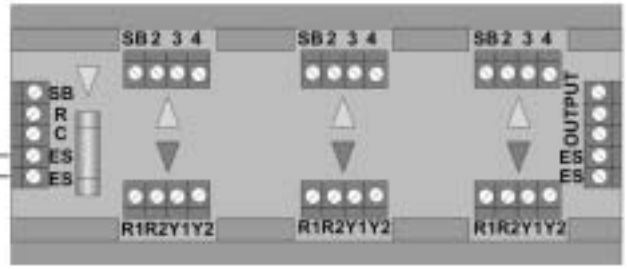
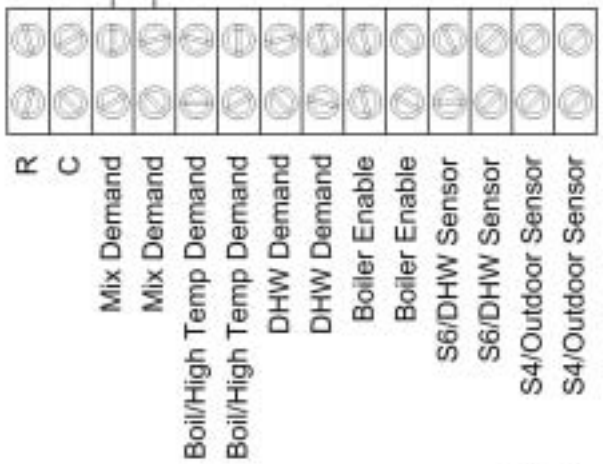
Electrical
Page 1 of 1





Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2	= 120 V (AC)
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump	= Sensor Wire
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump	= 24 V (AC)
S4 = Outdoor Sensor	P1 = Mixed 1 System Pump	V1 = Floating Action Mixing Valve	= T-stat Wire
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand	= Misc.
S6 = DHW Sensor	P3 = Boiler Pump		
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1		

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for and configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as tee spacing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

SYMBOLS

= Pump
= Air Separator & Expansion Tank w/ Fill
= 4-Way Mixing Valve
= Zone Valve
= Ball Valve
= Flow Check
= Floating Action Mixing Valve
= Tempering Valve
= Heat Exchanger
= Pressure By-Pass Valve
= Globe Valve
= Drain Valve

Project:

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