



# Instruction Sheet

## ZVC404-EXP-4 Zone Valve Control

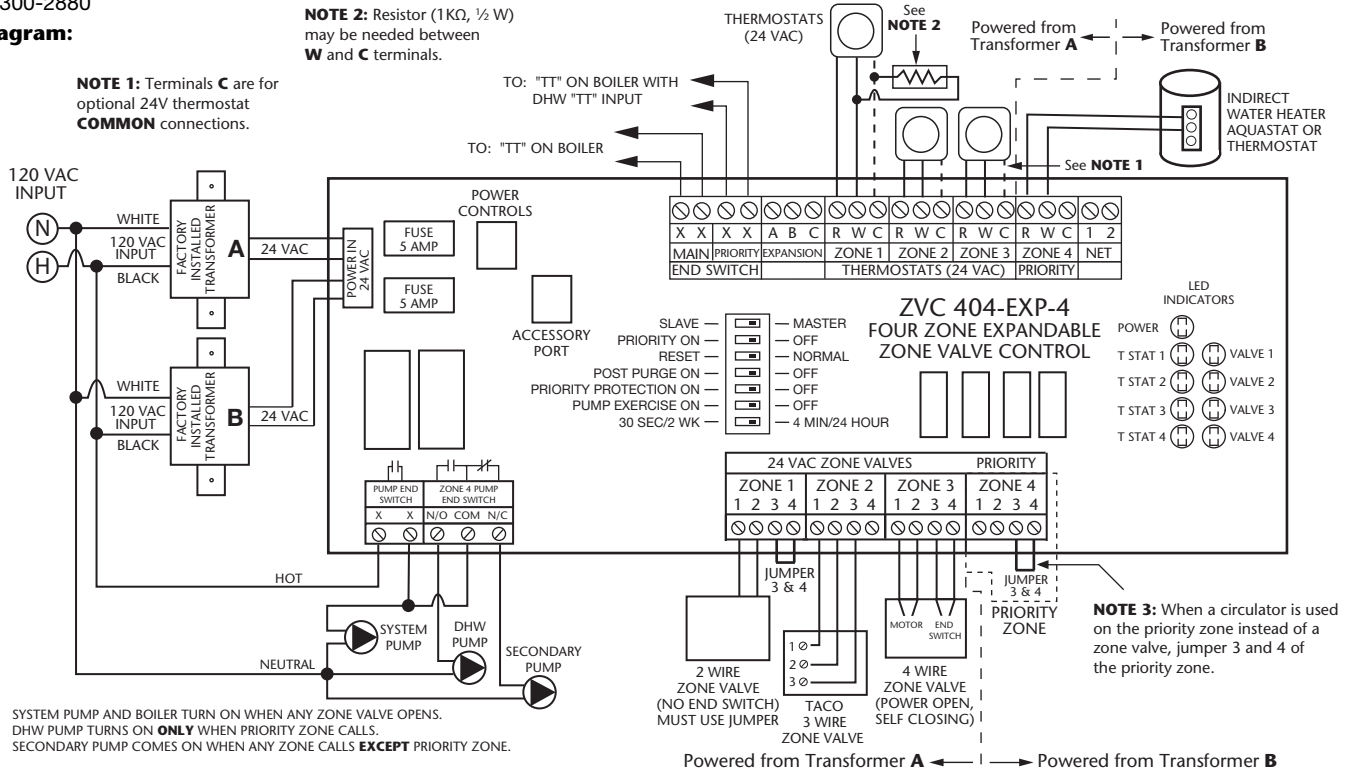
102-399

SUPERSEDES: March 1, 2013

EFFECTIVE: December 20, 2013

Plant ID# 9300-2880

### Wiring Diagram:



**Operation/External Diagnostics:** When any thermostat calls for heat, the appropriate zone valve is energized and the yellow light goes on. When the zone valve is fully open, the red light goes on and energizes the end switch relay. The green light should always be on, indicating that power is connected.

**Priority Operation:** When the priority dip switch is set to ON and the priority zone is actuated, all other zones will stop operation until priority zone is satisfied. When not switched to priority, all zones will operate independently.

**Mode Operation:** When the dip switch is set to NORMAL, the end switch relay will be energized if any zone is in operation. When the switch is set to RESET, the end switch relay will only be energized if the priority zone is in operation, or through the operation of a plug-in reset control.

**Post Purge Operation:** When the dip switch is set to ON, the priority zone output will stay energized for 2 minutes after its thermostat or aquastat is satisfied, but not operate the boiler.

**Priority Protection Operation:** When the dip switch is set to ON, and if the priority zone calls continuously for more than one hour, power is returned to all the other zones, allowing each zone to function independently. Once the priority zone is satisfied, the control's auto-reset is activated and the priority zone is again allowed to have priority for up to one hour starting from when it calls next.

**Pump Exercise Operation:** When the dip switch is set to ON, the solid state timer cycles all the zone valves and circulating pumps that are attached to the Expandable Zone Valve Control at the selected time interval. The time interval can be set for the valves and pumps to run for either 30 seconds every 2 weeks or for 4 minutes every 24 hours.

**End Switches (Dry Contacts):** The main end switch closes when any zone thermostat calls for heat and the mode switch is set to NORMAL. The main end switch also closes when the mode switch is set to RESET and a PC Series boiler reset power control is calling for heat. The priority end switch closes only when the priority zone thermostat or aquastat is calling for heat.

**Expansion Connections:** Set the expansion switch to MASTER on the switching relay that has the designated priority zone or is utilizing the PC Series plug-in option. Set all other daisy chained controls to SLAVE. Using thermostat wire (18-22 gauge) connect between terminals A, B, C on the master control to the corresponding A, B, C on the SLAVE control(s). Controls may be daisy chained up to 20 zoning panels using any combination of -EXP controls (120 zones if all are 6 zone panels).

### Thermostat Input (24 vac):

- R** Hot side of transformer. Connect to **R** on thermostat.
- W** Switched **R** signal from thermostat. Connect to **W** on thermostat.
- C** Common side of transformer. Connect to **COM** on thermostat (optional).
- NET** Network terminals 1 & 2 are tied together for wiring convenience when using communicating style thermostats (optional).

### Power Input (120 vac):

Connect neutral (white) leads on transformers to 120 volts ac neutral power supply.  
Connect hot (black) leads on transformers to 120 volts ac hot power supply.

### Pump End Switch (Dry Contacts):

Connect hot power supply to the right side of the pump end switch terminal on board.  
Connect hot input lead of the circulator to the left side of the pump end switch terminal on board.

### Zone 4 Pump End Switches (Dry Contacts):

- N/O** Normally open terminal of the priority zone relay.
- COM** Common terminal of the priority zone relay.
- N/C** Normally closed terminal of the priority zone relay.

### End Switch Pump Neutral Connections:

Connect neutral power supply directly to neutral lead on circulator(s).

### Specifications:

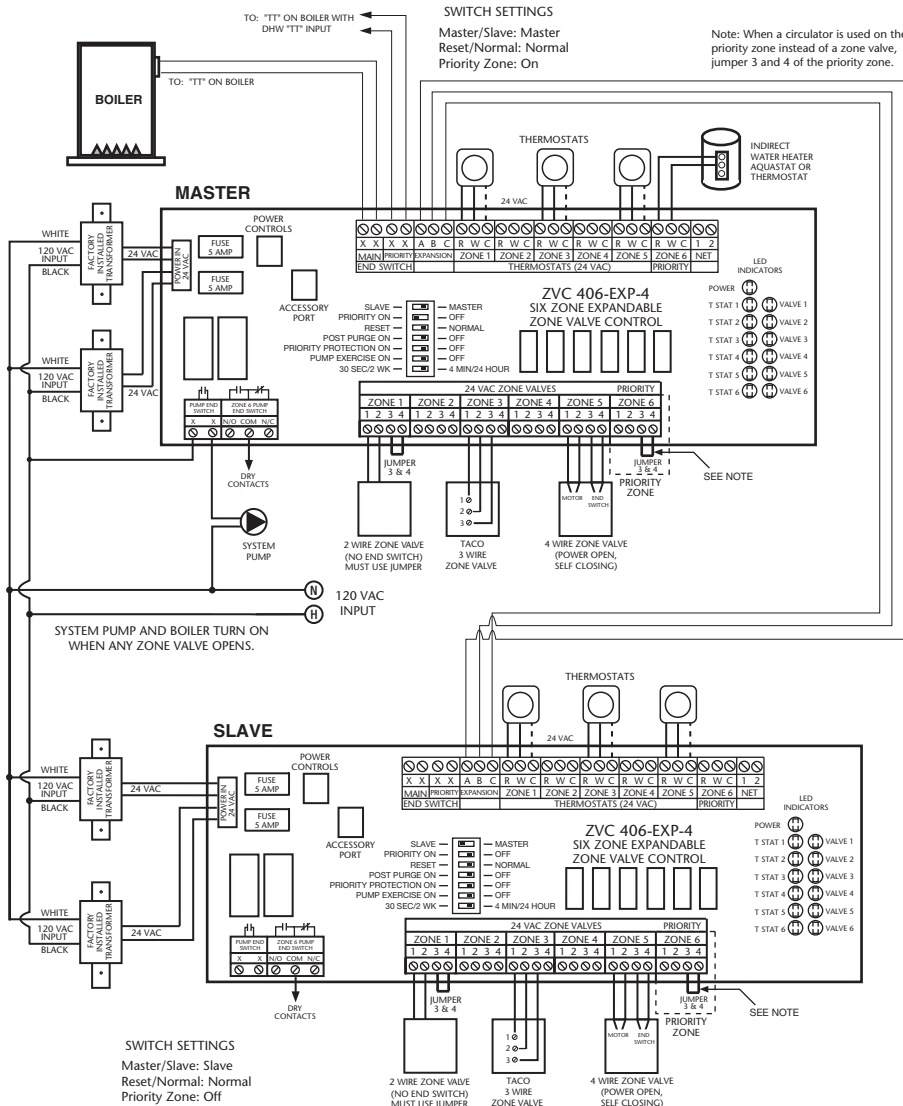
PRODUCT NUMBER	NUMBER OF ZONES	INPUT VOLTAGE	MAX 24 VAC OUTPUT @ 25°C	TYPE 1 ENCLOSURE WIDTH	HEIGHT	DEPTH
ZVC404-EXP-4	4 with Priority	120/60/1 VAC, 3A	24 VA per Zone 40 VA per Transformer	12¼"	8"	3"

The pump end switches are rated ½ hp, 5 amps at 120 VAC. The main and priority end switch connections are rated 24 VAC, 1 amp. All thermostat and zone valve connections supply a 24 VAC class 2 output.

**WARNING:** Wiring connections must be made in accordance with all applicable electrical codes. Use copper wire only. 120 VAC wiring must have a minimum temperature rating of 75°C. Failure to follow this instruction can result in personal injury or death and/or property damage. 12-18 gauge wire recommended for 120 VAC connections, 14-22 gauge wire for thermostat connections, and 14-22 gauge wire for 24 VAC source connections.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## 2 EXP Zone Valve Controls Connected Together with System Pump



### Troubleshooting:

- Problem:** Digital thermostats do not work correctly when connected to a zone valve control.
- Solution:** Some thermostats are a "Power Stealing" type which means they are powered by the zone control with just 2 wires (R & W). A resistor may be needed in order to have the thermostat work properly. This resistor should be placed between the W & C (common) terminals of the zone control. If the thermostat manufacturer does not supply a resistor, a 1000 ohm 1/2 watt resistor has proven to work with most models and is readily available at electronic supply outlets (e.g. Radio Shack). If the thermostat is battery powered, then check that the batteries are fresh and installed correctly.
- Problem:** No heat in a zone or room of building.
- Solution:** LED diagnostic lights will help find a component that is not working properly. The green LED should always be on, indicating that power is connected and the fuse is good. When there is a call for heat, the yellow LED will come on indicating power to the zone valve. This indicates the thermostat is working correctly. When the zone valve fully opens and its end switch makes contact, the red LED will come on, the boiler turns on and a circulator will start if connected to the zone control.

For information on Taco's Zone Valve Controls (ZVC) including catalog sheet, instruction sheets, Visio stencils and our highly praised Zone Controls Wiring Guide, scan the QR code to the right or go to our website: <http://www.taco-hvac.com>.



### Dip Switch Settings

SLAVE	<input type="checkbox"/>	MASTER
PRIORITY ON	<input type="checkbox"/>	OFF
RESET	<input type="checkbox"/>	NORMAL
POST PURGE ON	<input type="checkbox"/>	OFF
PRIORITY PROTECTION ON	<input type="checkbox"/>	OFF
PUMP EXERCISE ON	<input type="checkbox"/>	OFF
30 SEC/2 WK	<input type="checkbox"/>	4 MIN/24 HOUR

Replacement Zone Valve Controls fuses part number: SR5A-005RP  
(Manufacturer: Littelfuse, Part Number: 229005)

Optional power stealing thermostat resistor part number: SRTR-001RP  
(Value: 1000 Ohms, 1/2 watt or higher)

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