



# Instruction Sheet

## SR501-EXP-4 Switching Relay

102-385

SUPERSEDES: March 1, 2013

EFFECTIVE: December 20, 2013

Plant ID# 9300-2872

**Operation:** When the thermostat calls for heat, the circulating pump is energized and the isolated end switch (X and X) will start the boiler.

**Priority Operation:** When the priority dip switch is set to ON and the zone is actuated, all other connected zoning panels will stop operation until the zone is satisfied. When the priority dip switch is set to OFF and the zone is actuated, all other connected zoning panels will operate independently.

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

**Primary Pump Operation:** When the dip switch is set to OFF, the primary circulating pump output will not energize when zone calls for heat. When the dip switch is set to ON, the primary circulating pump output will energize when zone calls for heat.

**Post Purge Operation:** When the dip switch is set to ON, the circulation pump 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 the zone (priority) on master zone panel calls for heat continuously for more than one hour, then power is returned to the space heating zones allowing all the zones to function independently. Once the zone (priority) on master zone panel is satisfied, the control's auto-reset is activated and the zone is again allowed to have priority for up to one hour.

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

**End Switch:** The switch closes when the thermostat calls for heat and the mode switch is set to NORMAL. The end switch also closes when the mode switch is set to RESET and a PC Series boiler reset power control 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).

**120 VAC Connections (N is Neutral, H is Hot):**

- Power Input** Connect 120 Volt AC power.
- Primary** Primary Pump (optional)
- N/O Zone** Circulator Zone
- N/C Zone** Normally closed terminal for the Circulator Zone. Will deactivate on a thermostat call.
- N** Connect to pump neutral leads.

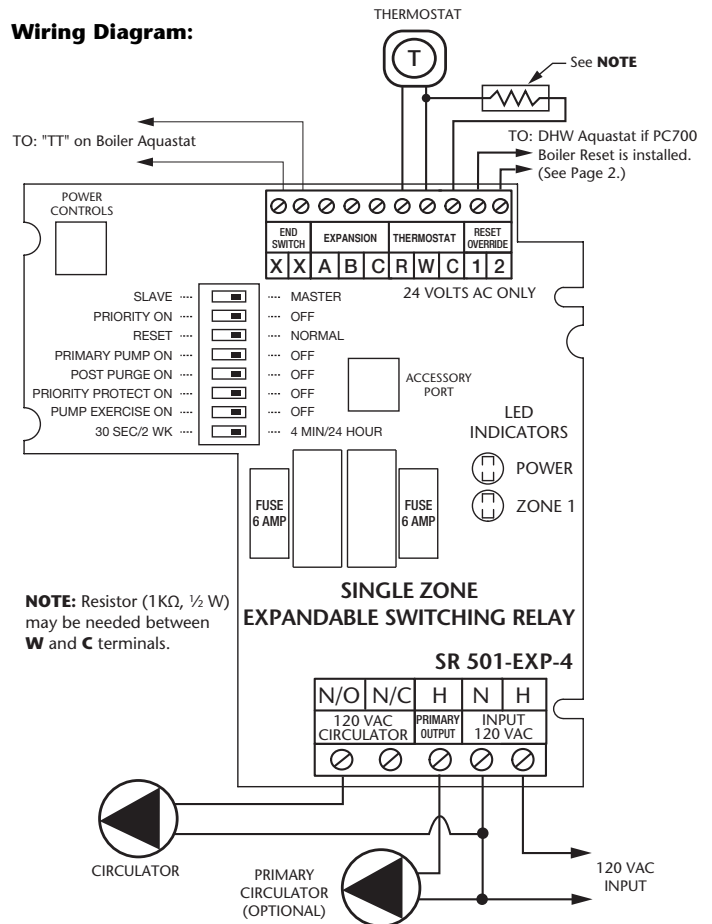
**Specifications:**

PRODUCT NUMBER	NUMBER OF ZONES	INPUT VOLTAGE	MAXIMUM COMBINED LOAD	WIDTH	TYPE 1 ENCLOSURE HEIGHT	DEPTH
SR501-EXP-4	1	120/60/1 VAC	12 amps	4 7/8"	6 5/8"	2 3/8"

All circulator relay connections, including ZC/ZR, are rated 1/3 hp (6 FLA, 36 LRA) at 120 VAC. The end switch connection is rated 24 VAC, 1 amp. The thermostat connection supplies 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.

**Wiring Diagram:**



**NOTE:** Resistor (1KΩ, 1/2 W) may be needed between **W** and **C** terminals.

**Dip Switch Settings:**

- SLAVE —  — MASTER
- ZONE PRIORITY ON —  — OFF
- RESET —  — NORMAL
- PRIMARY PUMP FUNCTION ON —  — OFF
- POST PURGE ON —  — OFF
- PRIORITY PROTECTION ON —  — OFF
- PUMP EXERCISE ON —  — OFF
- 30 SEC/2 WK —  — 4 MIN/24 HOUR

**Troubleshooting:**

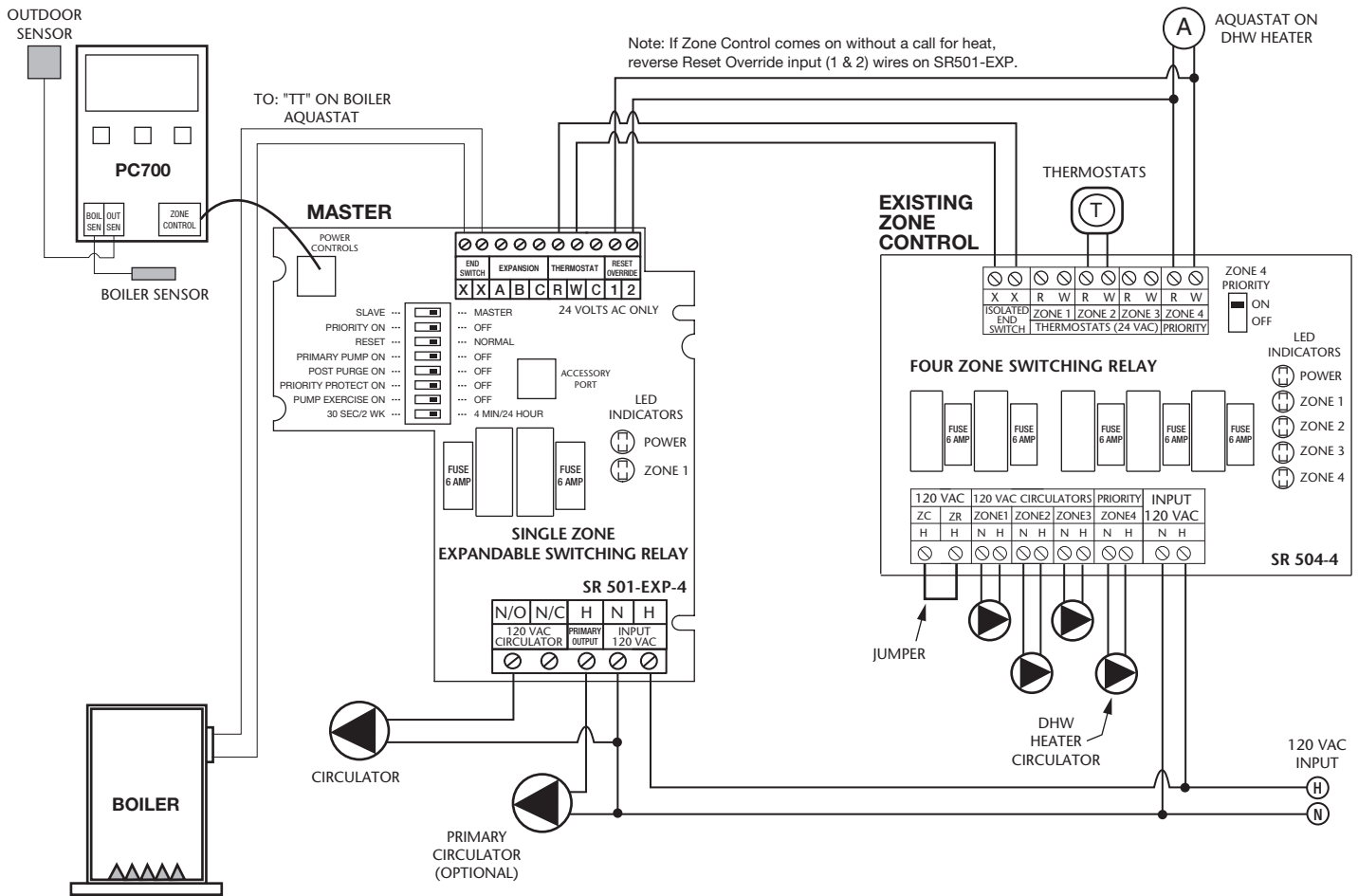
- **Problem:** Digital thermostats do not work correctly when connected to a switching relay.
- **Solution:** Some thermostats are a "Power Stealing" type which means they are powered by the switching relay with just 2 wires (**R** & **W**). A resistor may be needed in order to have the thermostat work properly. This resistor should be placed between the **W** & **C** (**common**) terminals of the switching relay. 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. 8the 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 solid-state fuse is good. When there is a call for heat, the red LED will come on indicating power to the zone circulator. This indicates the thermostat is working correctly. If the red LED does not come on, then check the thermostat and thermostat wiring for errors.

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.



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

# SR501-EXP and PC700 Boiler Reset Control Connected to an Existing Switching Relay



**For additional wiring diagrams, see [www.taco-hvac.com](http://www.taco-hvac.com).**

Replacement Switching Relay fuses part number: SR6A-001RP (Manufacture: Littelfuse, Part Number: 229006)

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

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