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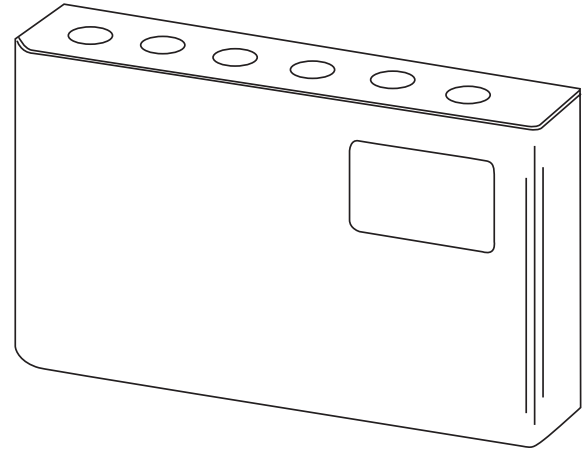
TAC Erie™ SRx01 Series

TAC Boiler Boss® Multi-Zone Circulator Control Relays General Instructions

Application

The SR multiple-zone series control relays incorporate up to six zone relays (SR601-6/601-6AT) to provide a way to control up to six circulators and a boiler operating control in a multi-zone hydronic heating system. Field selectable priority for zone 1 eliminates the need for additional relays to provide domestic hot water priority.

SR601-6 models can be expanded from four zone to six zone capacity with the purchase of two additional EXP10 relays.



SR601-6 Control

Features

- Field selectable priority zone
- Sealed contact relays
- Field replaceable relays
- High capacity transformer
- LED status window
- Common 24 Vac transformer terminal
- Add-on expansion zones available

SPECIFICATIONS

Inputs

Power (L1-L2): 120 Vac 50/60 Hz, 10 VA (SR201/301), 1 A (SR601-6).

Thermostat/Heat Demand Dry Contacts (T1 through T6):

24 Vac, 0.12 A, Class 2,

(Power supplied by this unit - do not connect external power source),

(Set thermostat anticipator per thermostat instructions to measured current or 0.12 A),

Outputs

SR201/301 Thermostat Supply (R-C): 24 Vac, 5VA, Class 2 (15VA transformer secondary)

SR601-6 Thermostat Supply (R-C): 24 Vac, 6VA, Class 2 (25VA transformer secondary)

Line Voltage Boiler Output (Dry Contact X1-X2), and Line Voltage Circulator Outputs (C1 through C6):

Motor: 1/3 hp @ 120 Vac

Motor: 1/2 hp @ 240 Vac (SR201/301 only)

General Purpose: 10 A @ 120/240 Vac (SR201/301 only)

Resistive: 10 A @ 120 Vac (SR201/301), 7.4A @ 120 Vac (SR601-6)

CAUTION: Total load not to exceed 20 A (SR201/301) or 30A/2hp (SR601-6)

Environment

Temperature Limits:

Maximum Ambient, 110°F (43°C).

Maximum Humidity: 85% RH non-condensing.

Shipping Weight: SR201/301 series, 4 lbs (1812 g); SR601-6 series, 6 lbs (2718 g).

Location: NEMA Type 1 (IP20).

Agency Listings

UL/CUL: File # E9429.

Table-1 Model Chart.

Model	Description
SR201	2 zone relay with Priority Plus. ¹
SR201B	2 zone relay with Priority. ²
SR201AT	2 zone relay with Auto-Test and Priority Plus. ¹
SR301	3 zone relay with Priority Plus. ¹
SR301B	3 zone relay with Priority. ²
SR301AT	3 zone relay with Auto-Test and Priority Plus. ¹
SR601-6	4 zone expandable to 6 zone relay with Priority Plus. ^{1,3}
SR601-6B	4 zone expandable to 6 zone relay with Priority. ^{2,3}
SR601-6AT	4 zone expandable to 6 zone relay with Auto-Test and Priority Plus. ^{1,3}
EXP 10	Relay for 1 zone expansion or replacement for All SR relays.

¹ In addition to priority only logic, Priority Plus allows non-priority heating zones to be locked out for up to one hour on a call for priority domestic hot water heating.

² Priority only logic locks out non-priority heating zones indefinitely.

³ Purchase two additional EXP10 relays to expand SR601-6 models from 4-zone to 6-zone capacity.

TYPICAL APPLIACTIONS (wiring diagram)

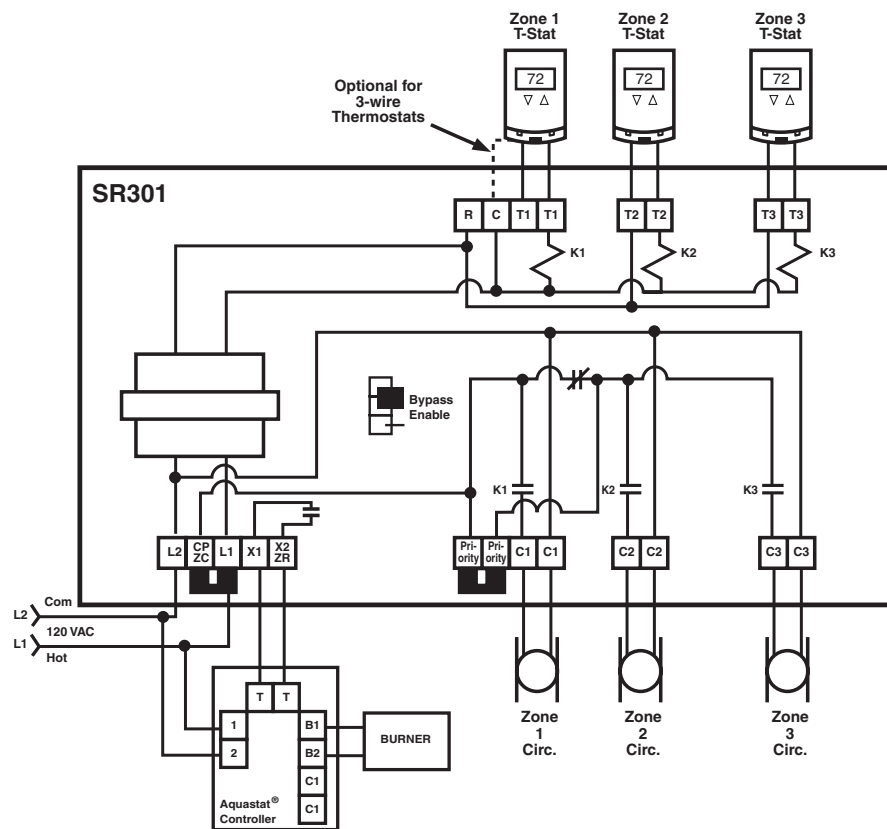


Figure-1 Typical Wiring SR201, SR301, and SR601-6 - Boiler Controller.

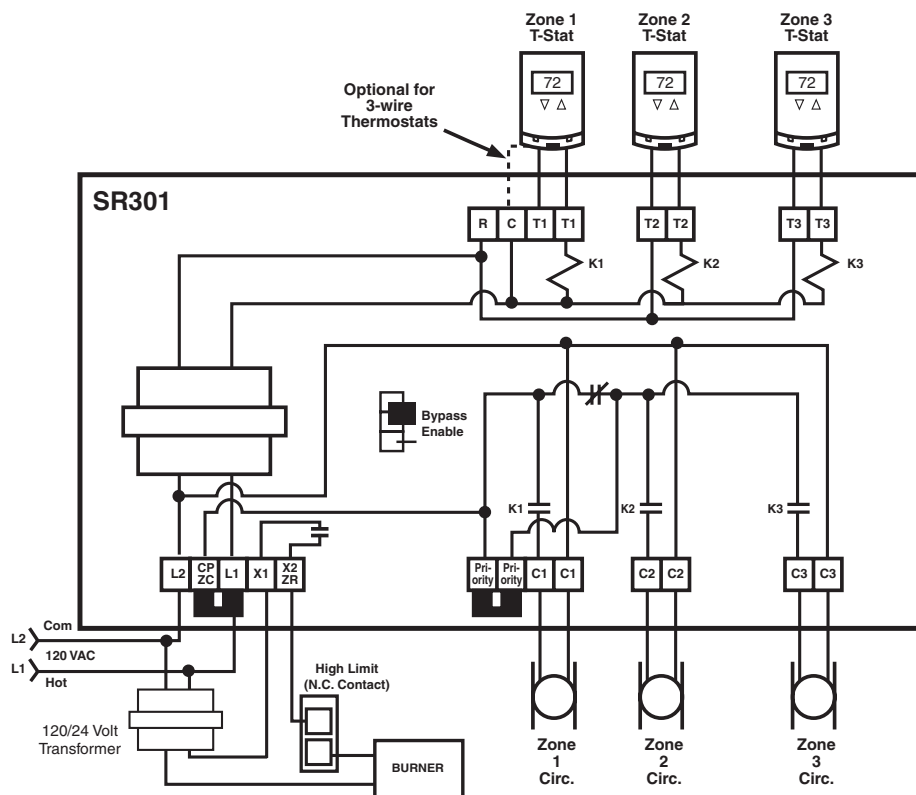
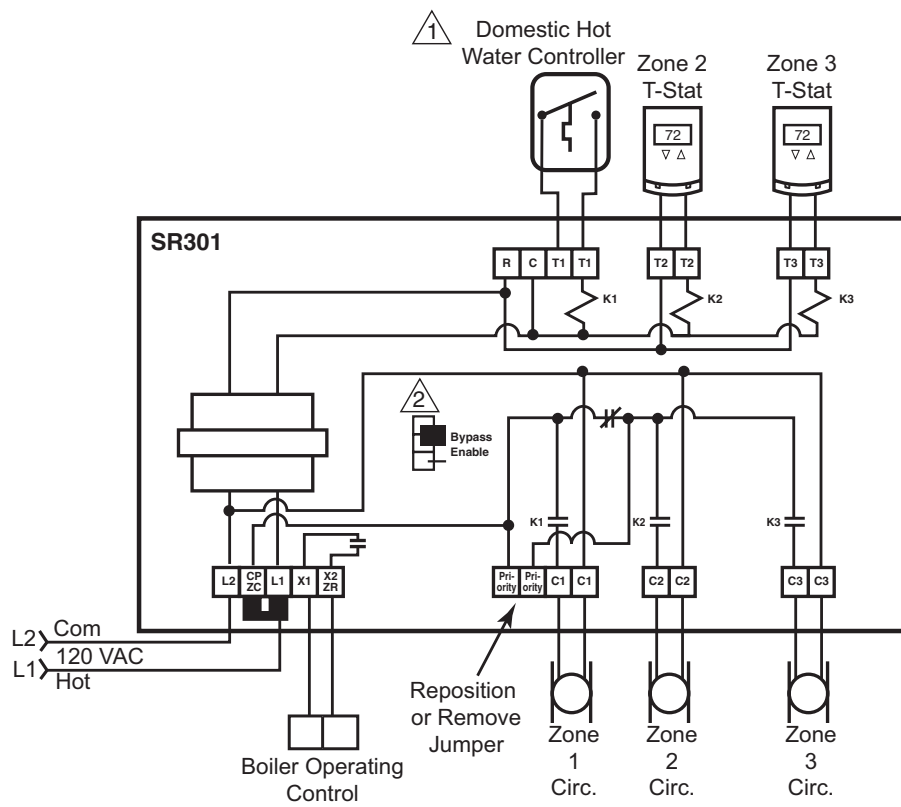


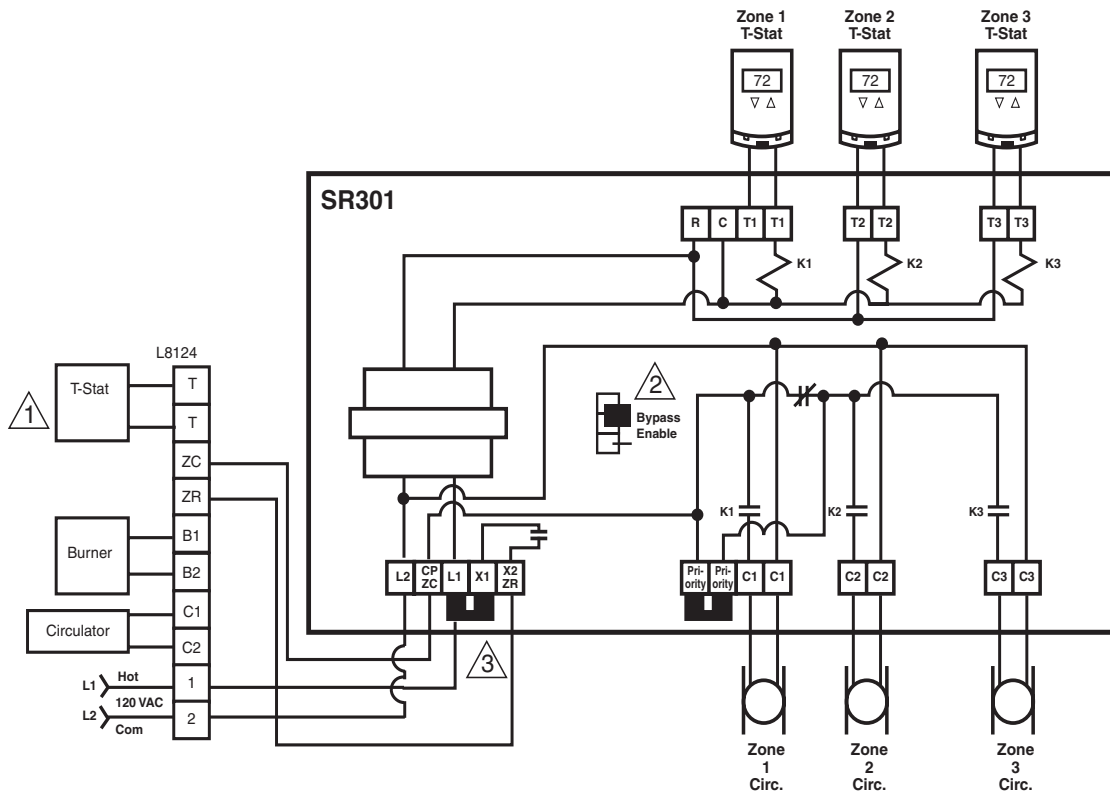
Figure-2 Typical Wiring SR201, SR301, and SR601-6 - 24 Vac High Limit & Gas Valve.



1 DHW Controller must provide dry contacts.

2 For Priority Plus, place Bypass/Enable jumper on Enable.

Figure-3 Typical Wiring SR201, SR301, and SR601-6 - Domestic Hot Water Priority.



- 1 Aquastat controller switch logic terminals ZC and ZR:
ZC, is powered with 120 Vac when the low temperature limit is satisfied.
ZR, is powered with 120 Vac when the low limit is not satisfied or if any zone calls for heat.
- 2 Bypass/Enable jumper in Bypass.
- 3 Move this jumper from terminal pair CP-ZC/L1 to terminal pair L1/X1.

Figure-4 Typical Wiring SR301 - Tankless Coil Application.

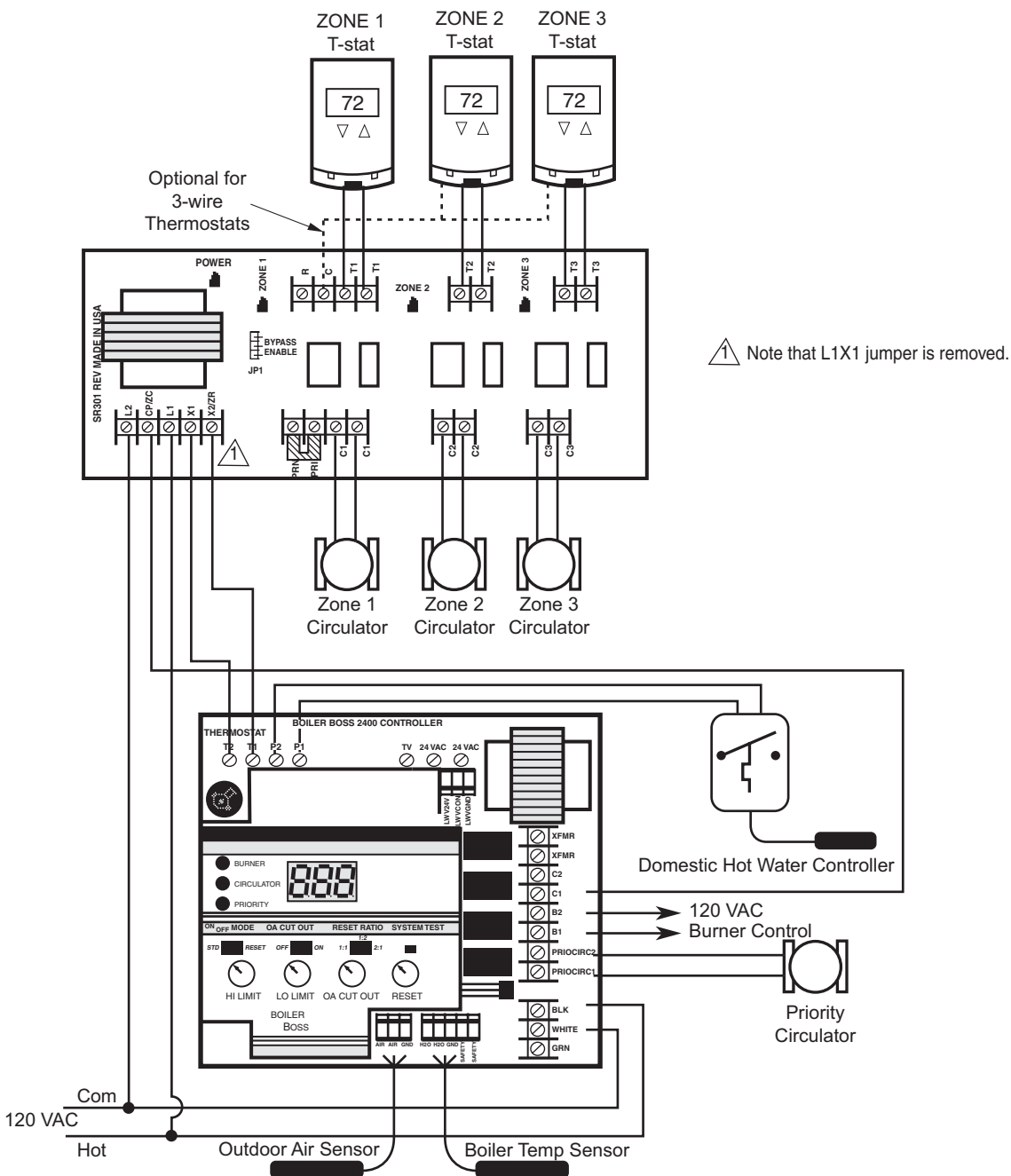


Figure-5 Typical Wiring SR301 - BB2400 Series With Domestic Hot Water Priority.

INSTALLATION

Inspection

Inspect the package for damage. If damaged, notify the appropriate carrier immediately. If undamaged, open the package and inspect the device for obvious damage. Return damaged products.

Requirements

- Tools (not provided)
 - Digital multimeter
 - Screwdriver
 - Drill
- Training: Installer must be a qualified, experienced technician

Precautions

General

▼ **WARNING**

- Electrical shock hazard! Disconnect power before installation to prevent electrical shock or equipment damage.
- Make all connections in accordance with the electrical wiring diagram and in accordance with national and local electrical codes.

▼ **CAUTION**

- Avoid locations where excessive moisture, corrosive fumes, explosive vapors, or vibration are present.
- Avoid electrical noise interference. Do not install near large conductors, electrical machinery, or welding equipment.

Mounting

Mount the SR201/301/601-6 series to a suitable surface. Slotted keyholes and standard holes are provided for mounting purposes. Do not mount on a surface that exceeds 110°F (43°C).

Status Indicators

An illuminated LED indicates the presence of power at the transformer (power) or zones (zone 1 through zone 6).

Wiring

Terminal Description

Line Voltage Terminals

L1, 120 Vac hot input.

L2, 120 Vac neutral input.

CP/ZC, circulator power input.

PRIORITY, Zone 1 priority select.

C1/C1, Zone 1 120 Vac circulator power.

C2/C2, Zone 2 120 Vac circulator power.

C3/C3, Zone 3 120 Vac circulator power.

C4/C4, Zone 4 120 Vac circulator power.

C5/C5, Zone 5 120 Vac circulator power.

C6/C6, Zone 6 120 Vac circulator power.

Dry Contact Terminals

X1, Dry contact heat demand.

X2/ZR, Dry contact heat demand.

Low Voltage Terminals

R, 24 Vac transformer hot.

C, 24 Vac transformer com and optional for 3-wire thermostat.

T1/T1, Zone 1 24 Vac thermostat.

T2/T2, Zone 2 24 Vac thermostat.

T3/T3, Zone 3 24 Vac thermostat.

T4/T4, Zone 4 24 Vac thermostat.

T5/T5, Zone 5 24 Vac thermostat.

T6/T6, Zone 6 24 Vac thermostat.

Typical Installation

To wire the SR301 as a typical 3 zone heating circulator relay with dry contact output for turning on a boiler controller, 24 Vac gas valve or auxiliary equipment (refer to Figure-1 and Figure-2).

Line Voltage

1. Remove knockout below L1 & L2 terminals.
2. Connect line voltage: Connect 120 Vac hot line voltage to L1 and 120 Vac neutral to L2. Connect ground screw (green) to earth ground.
3. Remove knockout below C1/C1 terminals.
4. Connect zone 1 120 Vac load (circulator): Connect the switched hot 120 Vac to C1 left and 120 Vac neutral to C1 right.
5. Remove knockout below C2/C2 terminals.
6. Connect zone 2 120 Vac load (circulator): Connect the switched hot 120 Vac to C2 left and 120 Vac neutral to C2 right.
7. Remove knockout below C3/C3 terminals.
8. Connect zone 3 120 Vac load (circulator): Connect the switched hot 120 Vac to C3 left and 120 Vac neutral to C3 right.

Thermostats

1. Remove knockout above T1/T1 terminals.
2. Connect zone 1 controller (thermostat): Connect RH-24 Vac hot to T1 left and the switching leg to T1 right. C-24 Vac common connects to C.
3. Remove knockout above T2/T2 terminals.

NOTE

C terminal optional for electronic thermostats.

4. Connect zone 2 controller (thermostat): Connect RH-24 Vac hot to T2 left and the switching leg to T2 right.
5. Remove knockout above T3/T3 terminals.
6. Connect zone 3 controller (thermostat): Connect RH-24 Vac hot to T3 left and the switching leg to T3 right.

Boiler/Burner Controller (Refer to Figure-1)

1. Remove knock out below X1 & X2/ZR terminals.
2. Connect boiler/burner controller: Connect the boiler/burner controller to X, and the 24 Vac high limit connects to X2/ZR.

Boiler/Burner Controller 24 Volt Gas Valve (Refer to Figure-2)

1. Remove knock out below X1 & X2/ZR terminals.
2. Connect secondary 24 V transformer: Connect 24 Vac transformer to X1 and the gas valve to X2/ZR.

Domestic Hot Water Priority

1. Remove the jumper between the PRIORITY/PRIORITY terminals on the lower portion of the printed circuit board (Refer to Figure-3).

NOTE

Zone 1 must be used for Priority or Priority Plus if required.

Zone link SR201s and SR601-6s

1. On master board remove PRIORITY/PRIORITY jumper.
2. On remaining slave boards remove CP/ZC jumper.
3. Connect a wire between the right side priority terminal on the master board to the CP/ZC terminal on the slave board.
4. Repeat steps 2 and 3 to link remaining slave boards.

▼CAUTION

Total line voltage load should not exceed 10 amps.

Tankless Coil Applications

The SR301 can also be wired for tankless coil applications to provide low limit protection for the boiler controller. If the boiler temperature drops below low limit, all circulators deactivate until the low limit is satisfied (refer to Figure-4).

To convert the SR301 for tankless coil application:

1. Remove jumper located between CP/ZC and L1 terminals and install on terminals between L1 and X1.
2. Wire as shown in Figure-4.

SR301 Series with BB2400 Series

Refer to Figure-5.

Electronic Thermostats

All SRX01 relays are compatible with electronic thermostats requiring 2 wire and 3 wire (require 24 Vac common terminal) connections. For thermostats requiring the C (24 Vac common) connection, wire C terminal from zone thermostat to the C terminal on the terminal block of the SR201/301/601-6.

Thermostat Anticipator Setting

Refer to thermostat manufacturer's anticipator setting instructions.

CHECKOUT

1. Verify jumper positions:
 - a. Priority/Priority jumper
 - b. Bypass/Enable pin jumper
 - c. CP/CZ - L1 jumpers.
2. Verify wiring of all zone thermostats and circulators.
3. Verify that 120 Vac is available across L1 and L2.
4. Verify that 24 Vac is available across R and C terminals of the SR panel.
5. To check the performance on any zone:

Disconnect the zone thermostat and install a jumper wire across the T1/T1 zone input terminals. When jumpered the zone circulator terminals C1/C1 should be powered with 120 Vac. The normally open dry contacts, X1/X2ZR terminals should be closed.
6. Repeat the check out process for each zone.
7. The relay cubes, EXP10, are interchangeable and can be removed and plugged into other zones to check for possible problems in one or more relay cubes.

THEORY OF OPERATION

Whenever an external contact closure occurs across a pair of zone input terminals T1-T1 thru T6-T6, a zone relay on the SR201/301/601-6 is powered with 24 volts, which closes the zone relay's normally open line voltage contacts. These are wired in series with the left side "C" terminal, which supplies 120 volts to the zone's circulator wired to that "C" terminal. In addition to powering the circulator, a pair of normally open dry contacts (X1-X2/ZR) will close.

Priority zone for domestic hot water.

The Domestic Hot Water (DHW) aquastat dry contacts must be wired to zone 1.

To dedicate all boiler supply water to the DHW, all heating zone circulators must be locked out. To enable the DHW logic, the Priority/Priority terminal jumper located in the lower left section must be removed.

On a call for DHW, the DHW circulator will be energized and the X1-X2/ZR dry contacts will close, completing a boiler start circuit.

Priority logic (priority/priority jumper removed or repositioned and the bypass/enable pin in the bypass position)

This will lock out zone heat circulators with no time limit to the lock out.

Priority Plus logic (priority/priority jumper removed or repositioned and the bypass/enable pin in the bypass position)

This will lock out heating zones for one hour only. This feature prevents heat zones from possible freeze up, should the DHW thermostat fail and continuously call for heat. If the DHW calls for more than one hour, it will be locked out until the Priority Plus timer is reset. The timer is reset by removing the call for DHW or by breaking and then making the 120 volt power to the panel.

Priority/Priority Plus mode selection is determined by the position of a pin jumper called the Bypass/Enable jumper. The Bypass/Enable jumper is a group of three small pins located on the circuit board to the right of the transformer. In small print the board is labeled Bypass and Enable. The center pin is the Common.

To enable Priority Plus move the jumper onto the Common and Enable pins. To disable Priority move the jumper onto the Common and Bypass pins.

NOTE

If the Priority logic has not been enabled, but the jumper is positioned in the enable mode, Priority Plus operation will still occur. The 60 minute timer will lock out heating zone 1.

Standard heat zones

Zones 2 through 6 on SR201/301/601-6 are the heating zones. On a call for heat on any of these zones, the zone circulator will be powered and the X1-X2/ZR normally open dry contacts will close. This will enable the boiler control logic. If needed, zone one may also be used as a standard heat zone by leaving the Priority/Priority jumper in place and the Bypass/Enable jumper in the Bypass position.

Auto-Test

AT models only: Press the red button on the upper portion of the relay housing to test up to two zones at a time.

MAINTENANCE

The SR201/301/601-6AT requires no maintenance. The EXP 10 relay cubes are replaceable.

Regular maintenance of the total system is recommended to assure sustained, optimum performance.

FIELD REPAIR

Replacing Existing Relay

The EXP 10 relay cubes are replaceable.

To replace an EXP 10 relay cube:

1. Turn off power.
2. Unplug the original relay.
3. Plug in a new EXP 10 relay cube.
4. Restore power and check for proper operation.

DIMENSIONAL DATA

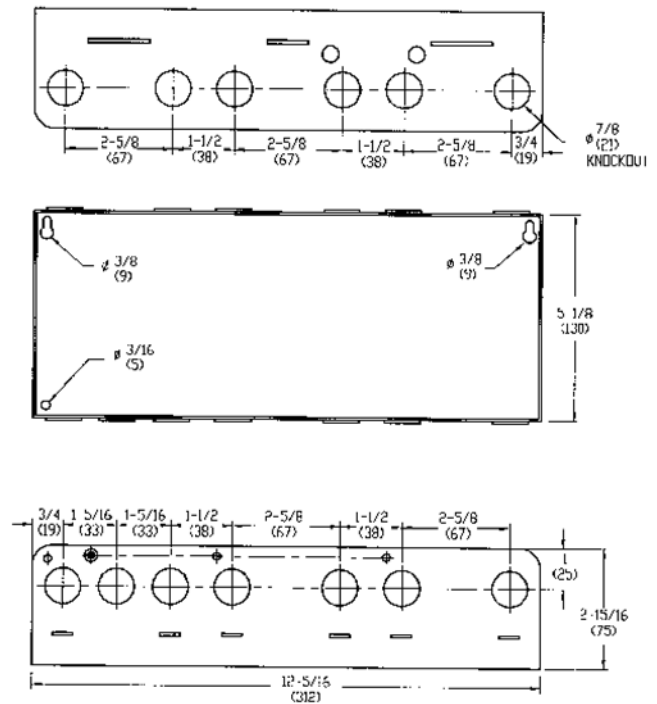


Figure-6 SR201/301 Dimensions.

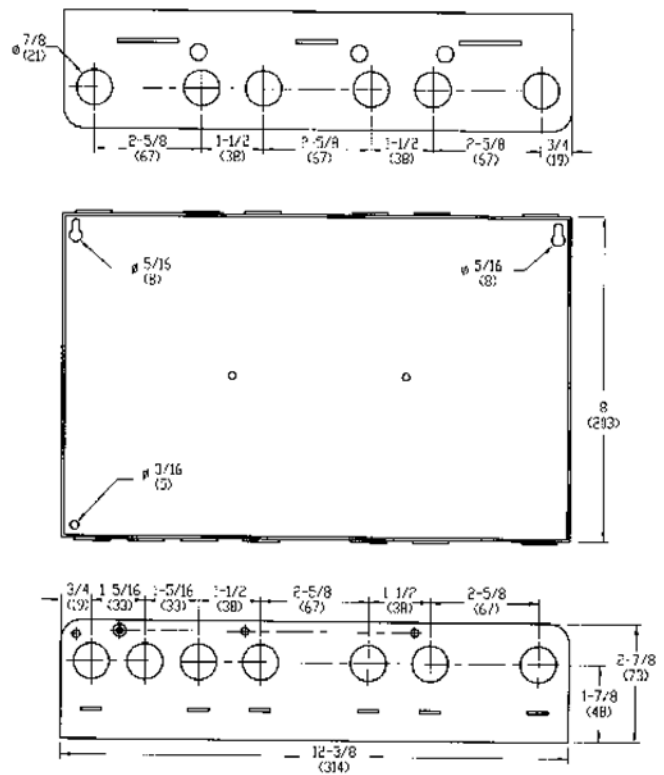


Figure-7 SR601 Dimensions.

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