



Certified to CSA C22-2 No.24
Conforms to UL Standard 873

Z-one™ Relay

ZSR101 - Single Zone Switching Relay

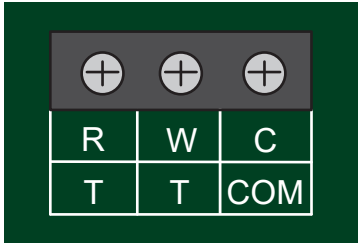
Overview

- Compatible with 2, 3 and 4-wire thermostats or other low voltage controllers with switching action
- 120 VAC input
- Heavy duty, sealed, DPDT, fuse protected relay (with spare fuse)
- Two dry contact outputs (Relay 1 and Relay 2) for operating 120 VAC pump with boiler enable or two devices without boiler enable
- 5 A capacity each relay - 10 A total
- Rear knock-outs for mounting onto 4"x4" junction box
- High capacity 6VA transformer
- Simplified wiring with pre-installed jumper
- 100% factory tested with 3 year warranty
- ETL certified

See technical brochure 01284 NA for more product information.

Operating Principles

When a zone has a demand from a thermostat (TT or R W) the relay will close sending 120 VAC to Relay #1 NO terminal and switching the pump on, and the C to NO dry contact on relay #2 closes, signaling the boiler of a heating demand.



R, W, C and T T Comm dual labeling at thermostat terminals. Compatible with low voltage 2, 3, or 4 wire thermostats or any other low voltage devices having a switching action.

Supply 120 VAC hot to terminal L and 120 VAC neutral to N. A factory installed jumper from L terminal to the C terminal of Relay 1 is supplied for simplified pump connection.



If dry contacts are desired from relay #1, remove the factory installed jumper between L and C.

Cover removal



Hold either the left or the right end of the box up and at an angle. Use body for stabilizing relay box. Insert screwdriver and push tab inward.



Turn box and repeat inserting screwdriver and pushing tab inward on opposite side, cover should release from base.



Slide cover off base.

Dual labeled T-stat terminals.
Compatible with 2, 3 and 4
wire T-stats.

Replaceable fuses.

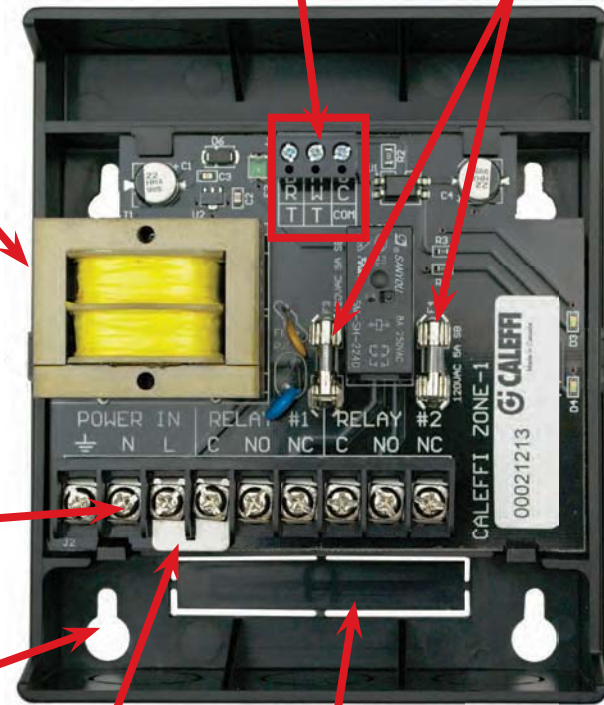
6 VA Transformer.

120VAC input
power connection

Keyhole mounting
which fits a 4X4
junction box.

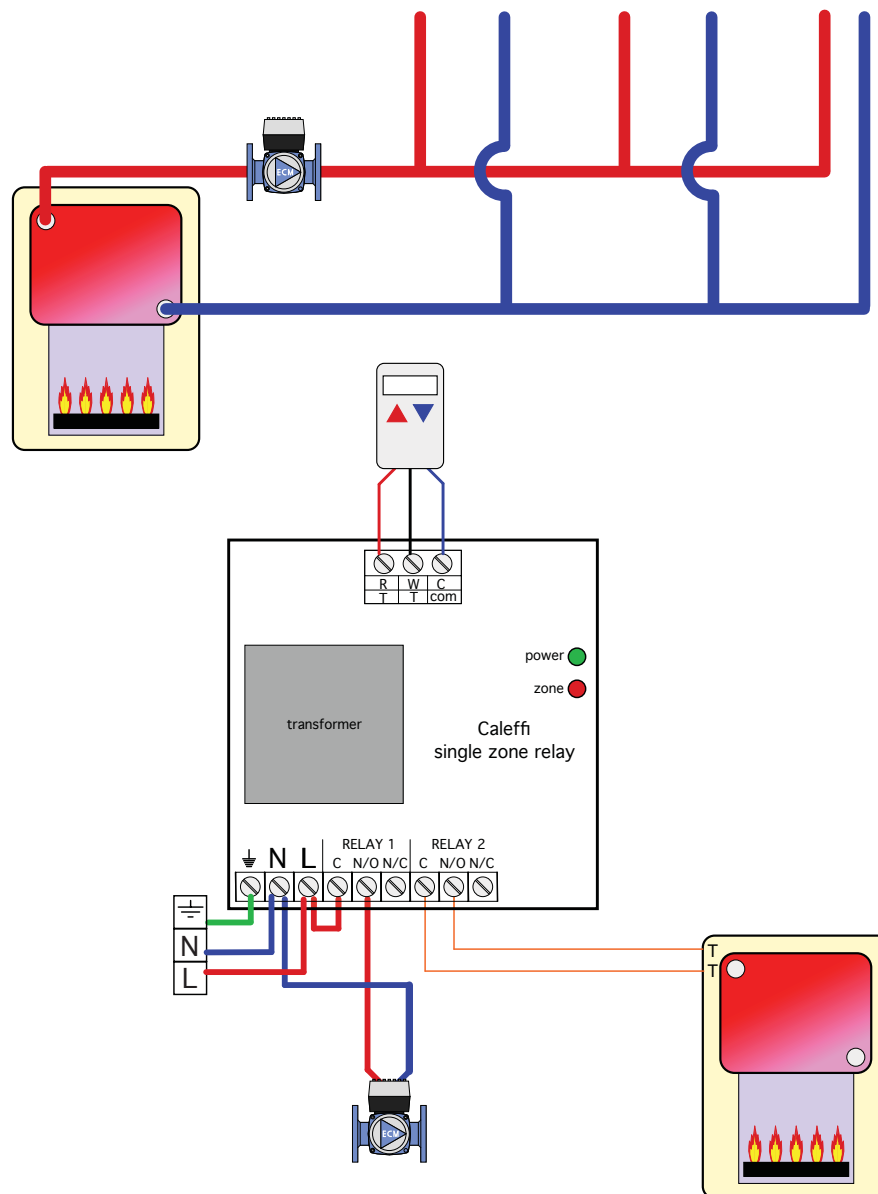
Pre-installed jumper.

Rear knockout for
4X4 junction box.



Mounting: Do not mount to a surface that exceeds 115°F (45°C). The unit must be only located in dry interior locations. Use only copper conductor supply wire suitable for at least 105° C. All circuits must have a common disconnect and be connected to the same pole of the disconnect. It is not suitable for installation in hazardous locations.

A1 - Single thermostat



Hydronic diagram is for illustration purposes only, some components have been removed for simplicity.

Description of terminals

⏏	= Ground
N	= Neutral (Common leg of 120 VAC)
L	= Line (live leg of 120 VAC)
C	= Common terminal
NO	= Normally Open terminal
NC	= Normally Closed terminal

Note: There is a factory installed jumper between the 120 VAC line (L) and the common terminal of relay #1 (C).

Thermostat terminals

R	= 24 VAC
W	= Heat call
C	= Common of 24 VAC

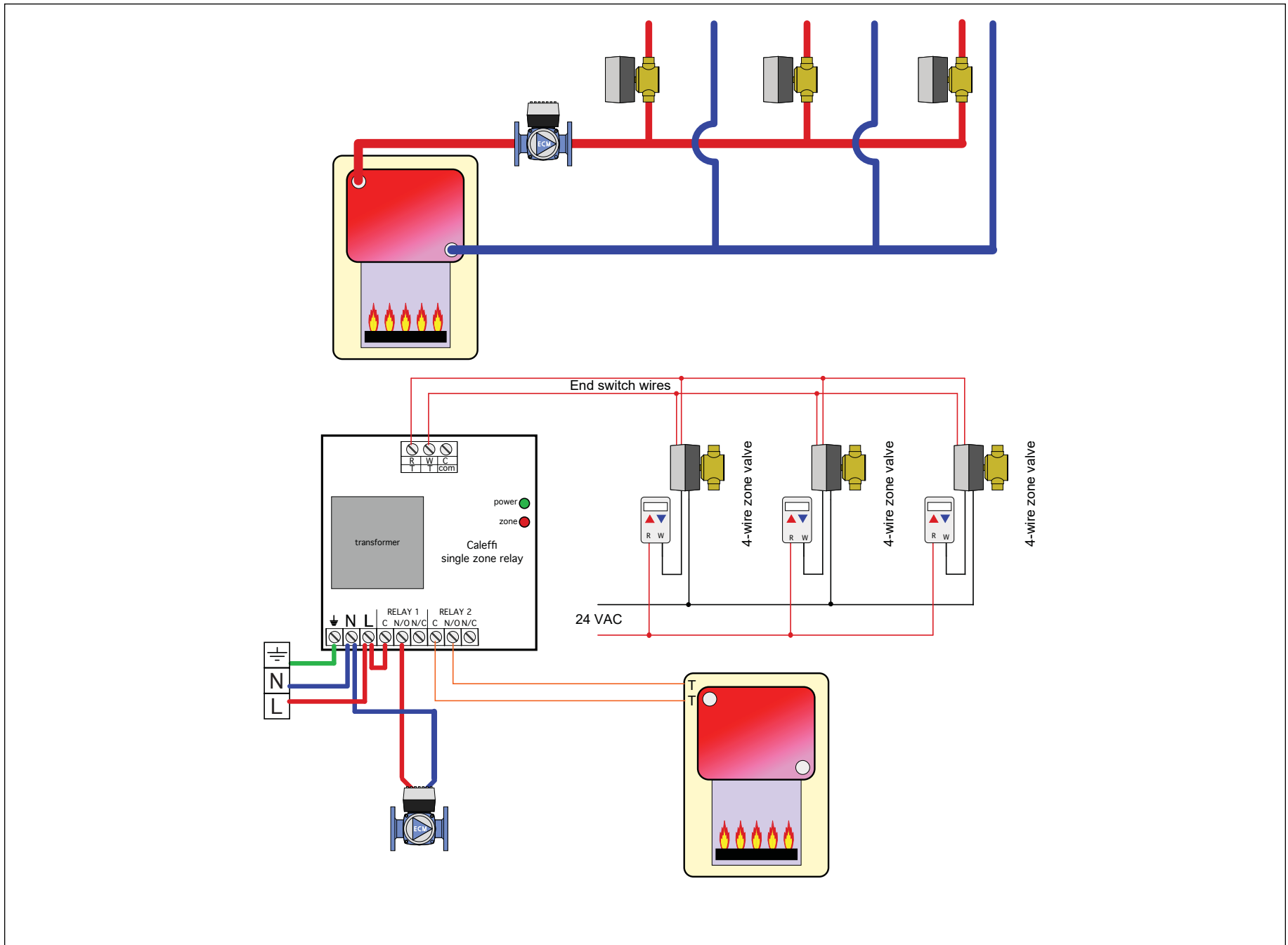
Sequence of Operation / Settings

- A demand occurs from the thermostat closing R to W on the ZSR101 control. The “ZONE” LED illuminates.
- The ZSR101 control will power relay #1 and #2 closing C to NO.
- The NO terminal of relay #1 will send out 120 VAC to your pump. Relay #2 provides a dry contact closure to signal the boiler of a demand.
- **NOTE:** Relay #1 can be used as a dry contact as well by removing the factory installed jumper between L and C.
- When the thermostat demand is satisfied R to W will open and the “ZONE” LED will turn off.
- The control will remove power from relays #1 and #2 opening C to NO. This will drop 120 VAC to your pump and terminate the demand to your boiler.



WARNING: NEVER CONNECT R & C DIRECTLY, this will be a direct short on the 24 VAC supply

A2 - Multiple thermostats



Hydronic diagram is for illustration purposes only and could be missing system components.

Description of terminals

⏚	= Ground
N	= Neutral (Common leg of 120 VAC)
L	= Line (live leg of 120 VAC)
C	= Common terminal
NO	= Normally Open terminal
NC	= Normally Closed terminal

Note: There is a factory installed jumper between the 120 VAC line (L) and the common terminal of relay #1 (C).

Thermostat terminals

R	= 24 VAC
W	= Heat call
C	= Common of 24 VAC

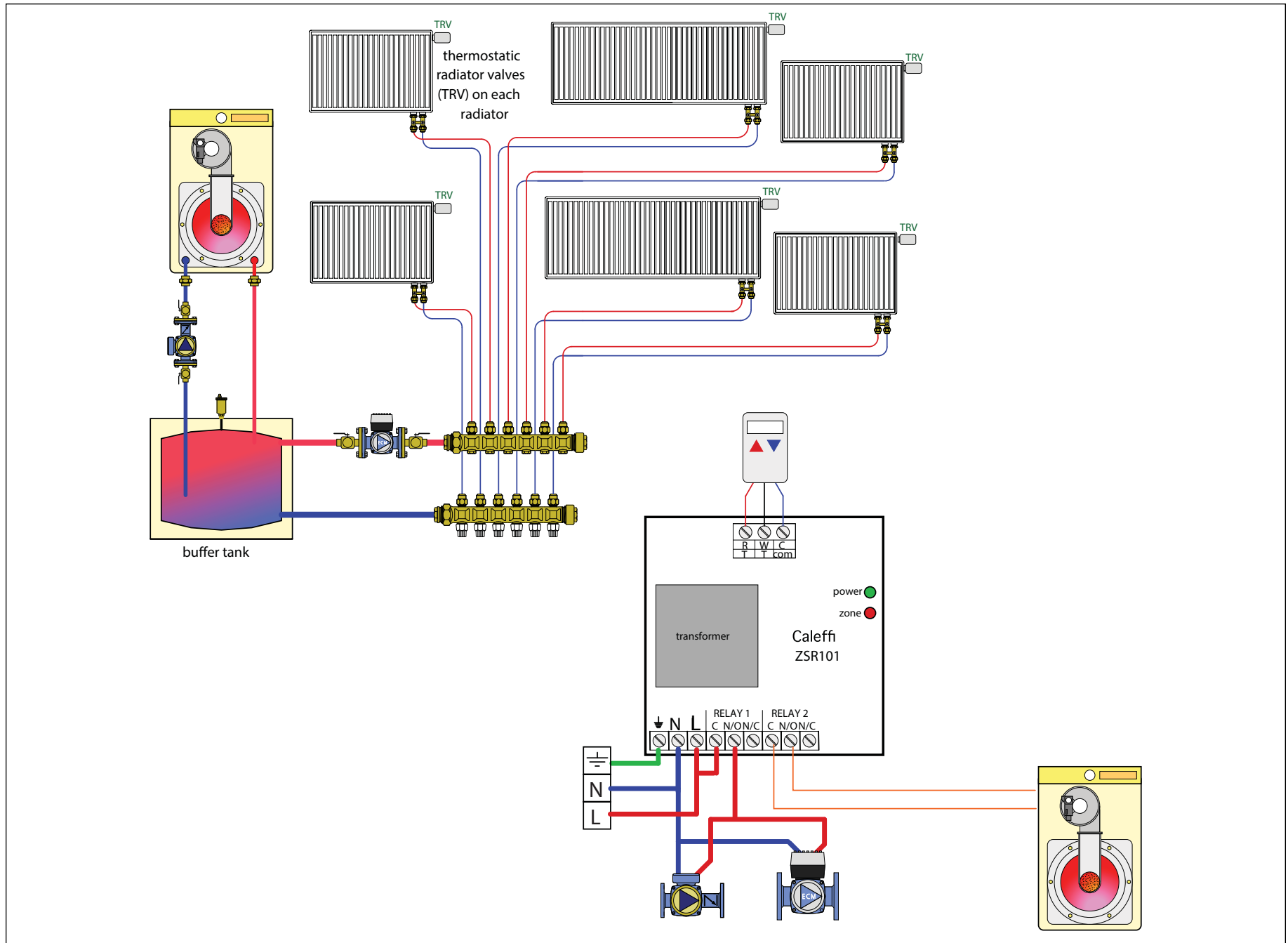
Sequence of Operation / Settings

- A demand occurs from one of the thermostats which sends power (from a separately sourced transformer) to the corresponding zone valve.
- When the zone valve opens the end switch will close R to W on the ZSR101 control. The “ZONE” LED illuminates.
- The ZSR101 control will power relay #1 and #2 closing C to NO.
- The NO terminal of relay #1 will send out 120 VAC to your pump. Relay #2 provides a dry contact closure to signal the boiler of a demand.
- **NOTE:** Relay #1 can be used as a dry contact as well by removing the factory installed jumper between L and C.
- When all the thermostat demands are satisfied the zone valves will close and the end switch will open R to W. The “ZONE” LED will turn off.
- The control will remove power from relays #1 and #2 opening C to NO. This will drop 120 VAC to your pump and terminate the demand to your boiler.



WARNING: NEVER CONNECT R & C DIRECTLY, this will be a direct short on the 24 VAC supply

A3 - Single master thermostat, panel radiators with TRVs, variable speed pump



Hydronic diagram is for illustration purposes only, some components have been removed for simplicity.

Description of terminals

⏚	= Ground
N	= Neutral (Common leg of 120 VAC)
L	= Line (live leg of 120 VAC)
C	= Common terminal
NO	= Normally Open terminal
NC	= Normally Closed terminal

Note: There is a factory installed jumper between the 120 VAC line (L) and the common terminal of relay #1 (C).

Thermostat terminals

R	= 24 VAC
W	= Heat call
C	= Common of 24 VAC



WARNING: NEVER CONNECT R & C DIRECTLY, this will be a direct short on the 24 VAC supply

Sequence of Operation / Settings

- A demand occurs from the thermostat closing R to W on the ZSR101 control. The “ZONE” LED illuminates.
- The ZSR101 control will power relay #1 and #2 closing C to NO.
- The NO terminal of relay #1 will send out 120 VAC to your pumps. Relay #2 provides a dry contact closure to signal the boiler of a demand.
- **NOTE:** Relay #1 can be used as a dry contact as well by removing the factory installed jumper between L and C.
- When the thermostat demand is satisfied R to W will open and the “ZONE” LED will turn off.
- The control will remove power from relays #1 and #2 opening C to NO. This will drop 120 VAC to your pumps and terminate the demand to your boiler.
- **NOTE:** In this application, the single thermostat will be set to a slightly higher temperature than the desired room temperatures. The room temperatures will then be controlled by each individual thermostatic radiator valve by adjusting the flow through the radiator making this a fitting application for a variable speed (ECM) pump (between the buffer tank and radiators). When the temperature drops below the set point of the thermostat the boiler will maintain the buffer tank at its target temperature. Ideally, the boiler will operate on an outdoor reset curve to maximize efficiency and use a system temperature sensor located in the upper portion of the buffer tank.