

Z-one™ Relay Multi-Zone Pump Control

ZSR10X series

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Function

The ZSR Z-one™ series is a multi-zone pump and boiler operating control for multiple zone hydronic heating or cooling systems. The ZSR series interfaces with low voltage thermostats, or any other low voltage controllers having a switching action. The ZSR series controls up to 3, 4, 5 or 6 heating circulator pumps (depending on model selected), a primary pump and has LED indicators to provide functional status and easy system troubleshooting.

- Compatible with low voltage 2, 3, or 4 wire thermostats
- R, W, C and T T COM dual labeling at thermostat terminals
- Z-oneLink™ unlimited zone expansion
- 120 VAC pump outputs
- Remote Enable input 24 - 120 VAC
- Selectable Priority with 1 hour time-out
- Selectable Post Purge and Exercise
- Dry contacts for ZONE 1 (DHW), capable of switching line voltage
- High capacity transformer
- Large terminal connections
- Simplified wiring with extra ground terminals
- Heavy duty sealed relays
- All pumps fuse protected (with spare fuse)

Product range

Code ZSR103 Z-one Relay pump control.....three zone
 Code ZSR104 Z-one Relay pump control.....four zone
 Code ZSR106 Z-one Relay pump control.....six zone

Technical specifications

Materials

Housing plastic: ABS
 Front display lights: LED
 Electrical knockouts: (12) 1/2" size

Performance

Power supply: 120 VAC, 50/60 Hz
 Transformer voltage: 24 VAC
 Maximum transformer load: 40 VA
 Electrical switch rating pump output: 120 VAC, 5A each (20A max combined)
 Dry contact rating, Zone 1 ES, XX, AUX: 120 VAC max, 2A each
 Replaceable fuses: Type 2AG, 5A slow blow
 Working temperature range: 32°F (0°C)—115°F (45°C)
 Maximum humidity: 90% non-condensing
 Approvals: Conforms to UL873 / Certified to CSA C22 No 24, listed by ETL



SAFETY INSTRUCTION: This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**

CONSIGNE DE SÉCURITÉ Ce symbole d'alerte de sécurité sera utilisé dans ce manuel pour attirer l'attention sur les instructions relatives à la sécurité. Lorsqu'il est utilisé, ce symbole signifie. **ATTENTION! DEVEZ-ALERTE ! VOTRE SÉCURITÉ EST EN JEU ! NE PAS SUIVRE CES INSTRUCTIONS PEUT PROVOQUER UN RISQUE DE SÉCURITÉ.**



WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warning.ca.gov.

AVERTISSEMENT: Ce produit peut vous exposer à des produits chimiques comme le plomb, qui est connu dans l'État de Californie pour causer le cancer, dommages à la naissance ou autre. Pour plus d'informations rendez-vous www.P65Warnings.ca.gov.



CAUTION: All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes ordinances.

ATTENTION: Tous les travaux doivent être effectués par du personnel qualifié, formé à l'utilisation, à l'installation et à l'entretien adéquats des systèmes, conformément à tous les codes et ordonnances applicables.



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

AVERTISSEMENT: Risque de choc électrique. Débranchez l'alimentation avant l'installation pour éviter les chocs électriques ou les dommages matériels. Assurez-vous que toutes les connexions sont conformes au schéma de câblage électrique et aux codes électriques nationaux et locaux.



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

AVERTISSEMENT: Évitez les interférences de bruit électrique. Ne pas installer à proximité de gros conducteurs, de machines électriques ou d'équipements de soudage. Évitez les endroits où une humidité excessive, des fumées corrosives, des vibrations ou des vapeurs explosives sont présentes.

CALEFFI HYDRONIC SOLUTIONS SHALL NOT BE LIABLE FOR DAMAGES RESULTING FROM MISAPPLICATION OR MISUSE OF ITS PRODUCTS.

CALEFFI NE SERA PAS RESPONSABLE DES DOMMAGES RÉSULTANT D'UNE MAUVAISE APPLICATION OU D'UNE MAUVAISE UTILISATION DE SES PRODUITS.

Installation

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

- Use only copper conductor supply wire suitable for at least 105° C and 300V minimum.
- All circuits must have a common disconnect and be connected to the same pole of the disconnect.

Maintenance and Repair

The Caleffi Z-one multi-zone pump control comes with a resettable fuse on the low voltage side and replaceable fuses on each 120 VAC output. If control fails or is damaged, replace control with functional one.

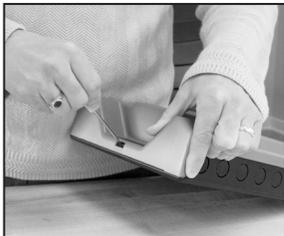
Mounting

Mount the Caleffi Z-one multi-zone pump control to a suitable surface. Slotted holes are provided for mounting purposes. Do not mount to a surface that exceeds 115°F (45°C). The unit must be only located in dry interior locations. It is not suitable for installation in hazardous locations and should not be placed close to any electromagnetic fields.



CAUTION: If unit is below 32°F (0°C), expose to room temperature for 15 minutes before pressing cover release tabs. Failure to do so could cause damage to the enclosure.

Cover removal



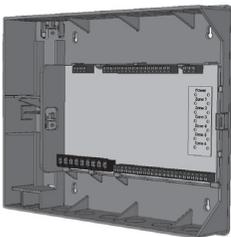
Hold either the left or the right end of the box up and at an angle.



Insert screwdriver and push tab inward, cover should release from base.



Roll cover off base.



Remove cover of relay box. Identify the four mounting holes on relay box, mark on the wall the desired location of mounting. Drill, anchor, and fasten four screws for mounting.



Hang relay box and fasten tight to desired locations. Complete wiring connections in accordance with terminal locations. Place cover back on relay box.

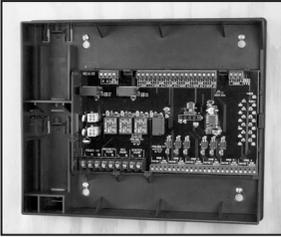
Scan to view



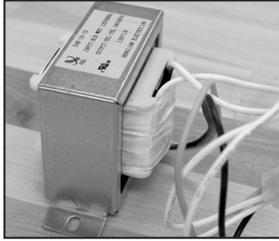
Installation Tip

ZSR Z-one™ Pump Control

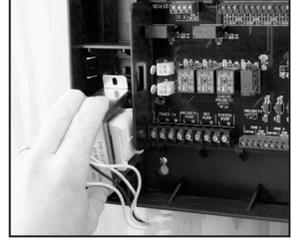
Transformer installation



Mount box on stable surface using level.



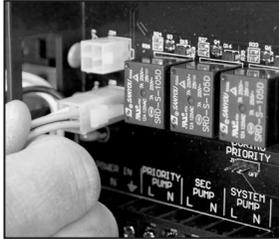
Remove transformer(s) from packaging.



Slide bottom end of transformer into bottom latch.

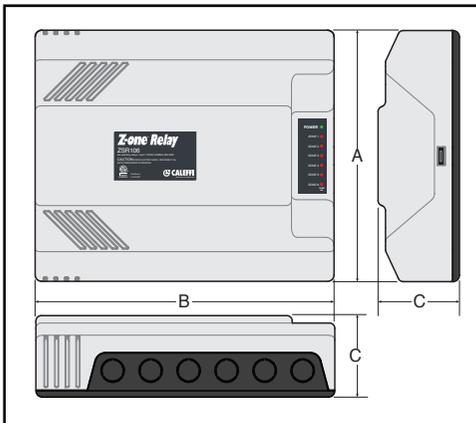


Snap top of transformer into latch arms.



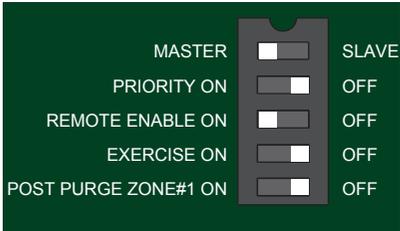
Feed wiring through hole near the top of the transformer and insert transformer plug into the socket.

Dimensions



Code	Zones	A	B	C	Wgt. (lbs)
ZSR103	3	9¼"	11"	3"	3.2
ZSR104	4	9¼"	11"	3"	3.2
ZSR106	6	9¼"	11"	3"	3.2

Dip switch settings



The ZSR series of control is programmed by positioning five dip switches for the following operations.

Master / Slave: allows for unlimited expansion to additional ZSR or ZVR relays boards.

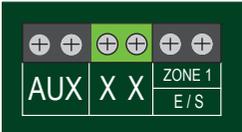
Priority ON / OFF: When priority switch is ON, upon demand to TSTAT 1 , ZONE 1 will operate as priority and all other zones are temporarily switched off (with 1 hour time-out). When priority is OFF, any zones that were active when ZONE 1 was switched on will remain on.

Remote Enable ON / OFF: When remote enable mode is ON, the ZSR board will hold off all zones until it receives an external 24 - 120 VAC signal to the Remote Enable terminals.

Exercise ON / OFF: When exercise mode is ON, each circulator is switched on for 30 seconds following 72 hours of inactivity.

Post Purge Zone #1 ON / OFF: When post purge is ON, Zone 1 pump continues operating for 2 minutes after the priority zone is switched off.

Boiler Connections



XX = Dry contact rated up to 120 VAC, 2 Amps, which is typically connected to T T on boiler control, closes when any zone calls including priority. ZONE 1 / ES (DHW) = Dry contact, rated up to 120 VAC, 2 Amps, close with any call to ZONE 1, it is typically used to close DHW contact on boiler controls equipped with these features. AUX = Dry contact, rated up to 120 VAC, 2 Amps, close when any zone calls and can be used as signal to a variable speed self regulated pump or other controls.

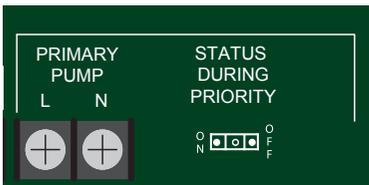
Thermostats



When a zone has a demand from a thermostat (T T / RW) the control will send 120 VAC to the corresponding zone pump, primary pump and the (X X) dry contact will close to signal the boiler of a heating demand. AUX dry contact

will also close as a signal to a variable speed self regulated pump or other controls. ZONE 1 can be used for priority. When the priority dip switch is ON, a demand from T-STAT 1 will activate PRIORITY PUMP 1 and all other zone pumps will be switched OFF. The Priority has a 1 hour time out and will go back to operating zones 2 - 6. The ZONE 1 (DHW) dry contact will also close. Depending upon "Status During Priority" jumper, the primary pump will either be ON or OFF.

Jumper



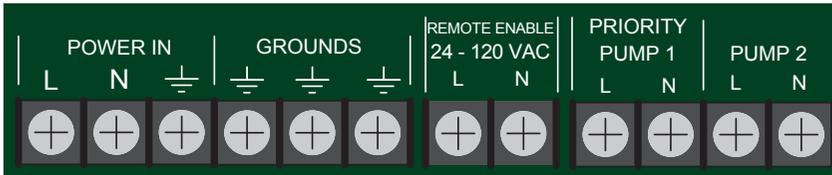
Status During Priority ON / OFF: When status jumper is placed on the ON pins, the primary pump will continue to operate during ZONE 1 priority demand. When jumper is placed on the OFF pins, the primary pump will be OFF during ZONE 1 priority demand.

Communication terminals

Z-oneLink™ unlimited expansion allows connecting additional ZSR & ZVR series relay controls to a Master ZSR or ZVR. Communication is accomplished by connecting three wires (thermostat wire) to the communication terminals located in the upper right hand corner. The dip switch is positioned to Master / COMMS Slave position. A demand for heat from any zone will fire the boiler and start the pump. Only one relay board can be the Master and Priority, Slave is used for subsequent boards.



Wiring terminals



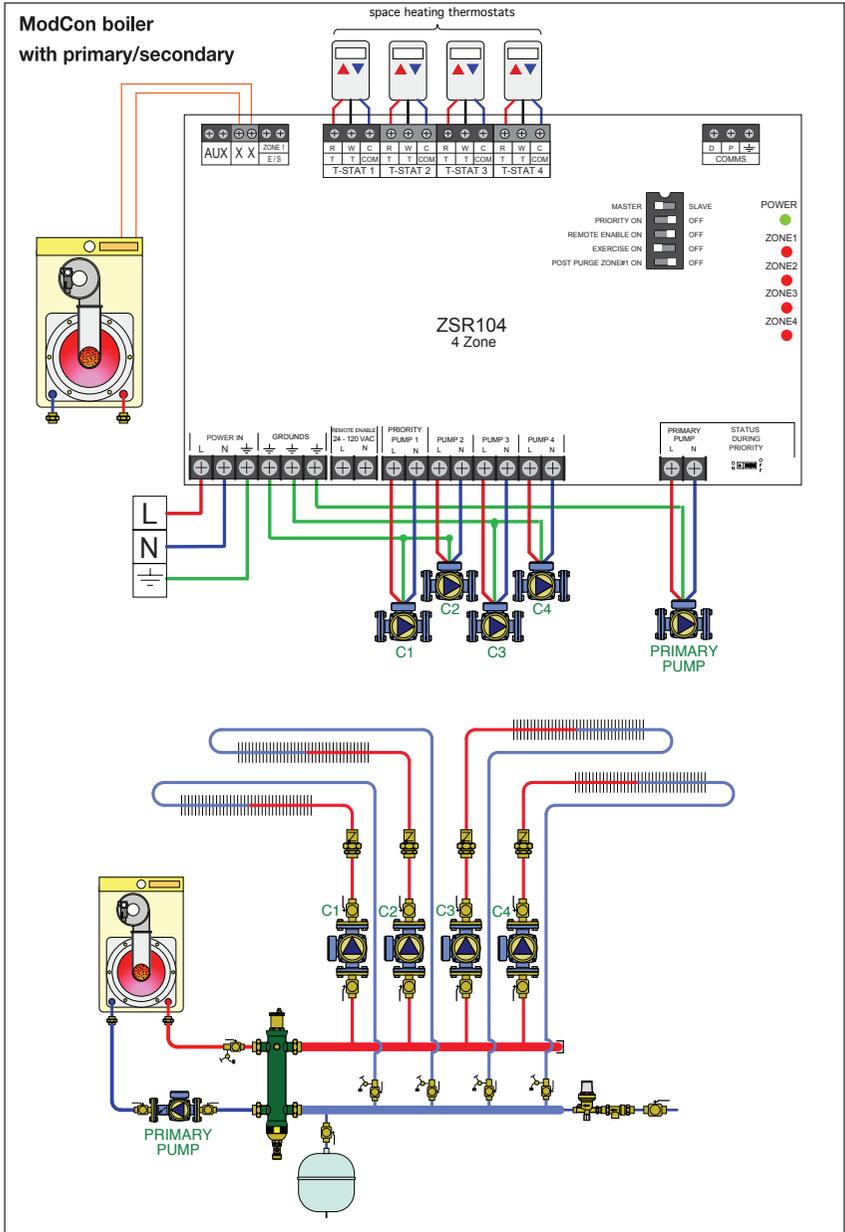
Large screw terminal connections makes wiring easy. Three extra ground screw terminals connection allows fast grounding of pumps eliminating the need for extra wire connectors. Pump terminals have 120 VAC outputs for simplified pump connection.

The Remove Enable feature allows the ZSR to be controlled from an external power source. If the Remove Enable dip switch is positioned to ON, the ZSR must have 24 - 120 VAC supplied to the Remote Enable terminals in order for the zone pumps to run. A typical application is to connect the boiler's circulator output to the Remote Enable terminals so the zone pumps will not run during warm weather shutdown. This feature can also be used to hold off the zone pumps if the boiler is equipped with a DHW pump output.

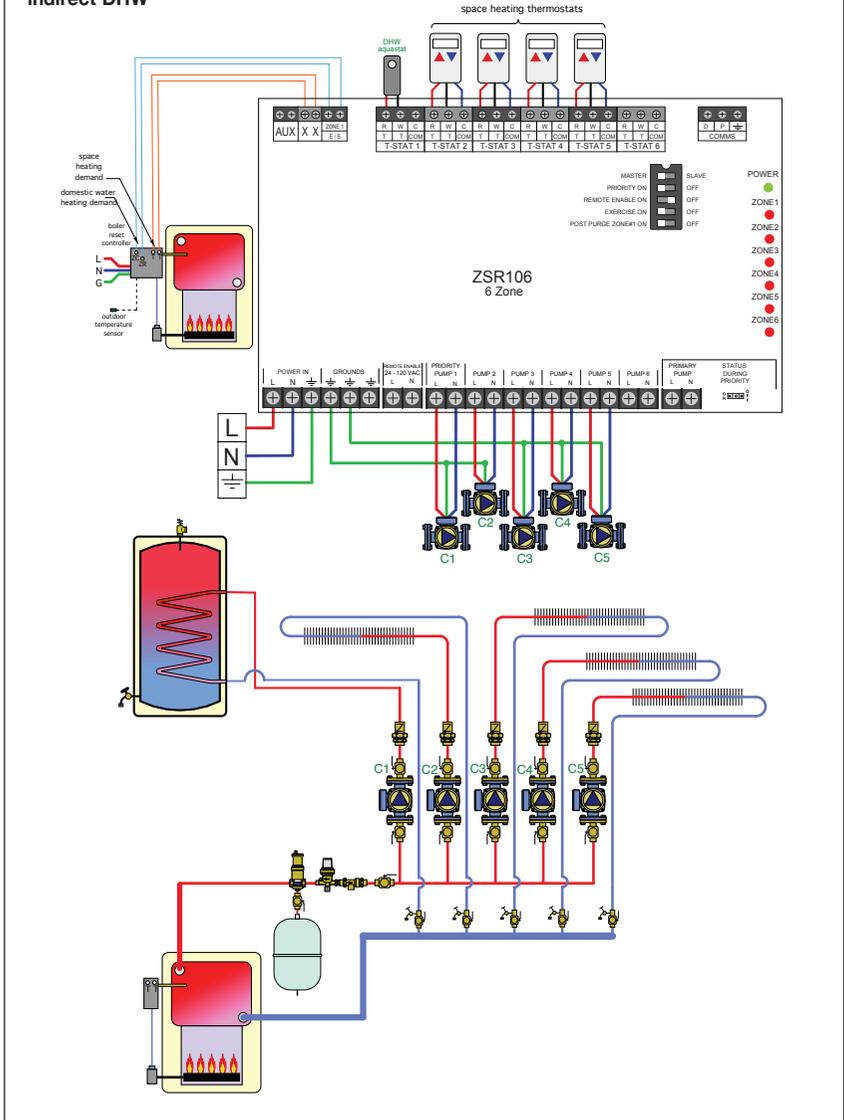
Pump 1 will be become the Priority pump when the Priority dip switch is positioned to ON.

Example Wiring Diagram

Please reference Z-one™ Relay wiring guide for complete listing of wiring diagrams.



Non-Condensing boiler with indirect DHW



LEAVE THIS MANUAL WITH THE USER.

Laissez ce manuel à la disposition de l'utilisateur.



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