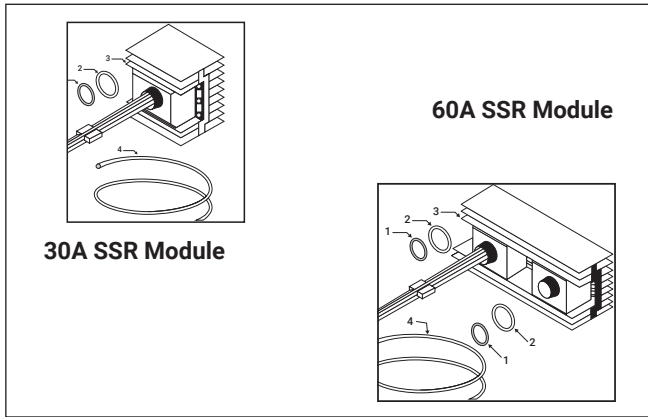




RAYCHEM

SSR Modules

Installation Instructions for 30 a SSR and 60 a SSR Modules



DESCRIPTION

Enclosure Type:	Type 4X (CSA)
Ingress Protection:	IP66 (CSA, FM)
Ambient Operating Temperature Range:	-40°C to +60°C

TOOLS REQUIRED

- Drill, drill bits
- Diagonal cutters
- Wire strippers
- 3/4 in. NPT knockout punch
- Channel lock pliers

KIT CONTENTS

Qty	Description
1	Lock Ring
2	Lock Ring - nVent RAYCHEM SSH6
1	Sealing Gasket
2	Sealing Gasket - SSH6
1	30 A/60 A Heat Sink/SSR assembly
1	#10 AWG white wire

APPROVALS / CERTIFICATIONS



Class 1, Division 2, Groups A, B, C, D
Ex nA, IIC, T4
Class 1, Zone 2: AEx nA IIC T4
Type 4X/IP66



Class 1, Division 2, Groups A, B, C, D
T4, IP66

Model Parameter	Description	Model	Notes
Control Input	4 – 32 Vdc		
Output Rating	30 A, 277 Vac, Single Pole	SSR-SS3	Standard nVent RAYCHEM SSR module
	30 A @ 40°C	SSR-SS3Z	Standard nVent RAYCHEM SSR module with ZHW*
	15 A @ 60°C		
	30 A, 600 Vac, Single Pole	SSR-SSH3	Standard nVent RAYCHEM SSR module with high voltage
	30 A @ 40°C	SSR-SSH3Z	Standard nVent RAYCHEM SSR module with high voltage and ZHW*
	15 A @ 60°C		
	60 A, 600 Vac, Single Pole	SSR-SSH6	High Voltage and high inrush current nVent RAYCHEM SSR module
	60 A @ 40°C	SSR-SSH6Z	High Voltage and high inrush current nVent RAYCHEM SSR module with ZHW*
	45 A @ 60°C		
Derating	0.75 A/C above 40°C		

*ZHW- Zero Halogen Wire

⚠ WARNING:

Fire Hazard: The contents of the component kit must be installed correctly to ensure proper operation and to prevent unsafe conditions. Be sure to read and understand these important warnings and carefully follow all the installation instructions.

⚠ IMPORTANT:

- Maintain proper spacing between SSR assemblies
- Tighten the lock ring to maintain the weatherproof seal, but not so much as to strip the threads or crack the hub
- Ensure the ground wire is installed in the grounding bar
- Strip all wires the proper length for the terminals being used
- Wire the SSR assemblies following the included diagram

Installation and Wiring

⚠ WARNING: Be sure all personnel involved in installation, servicing, and programming are qualified and familiar with electrical equipment, their ratings and proper practices and codes. Multiple voltages and signal levels may be present during the installation, operation, and servicing of this product. Do not power the product until the safety provisions outlined in the controller manual have been observed.

Operator Safety Considerations

The RAYCHEM Solid-state relay (SSR) assembly is suitable for Class 1, Division 2, Groups A, B, C, D and Zone 2 Hazardous areas. Hazardous areas are defined by article 500 of the National Electrical Code and Section 18 of the Canadian Electrical Code.

⚠ WARNING: Many wiring configurations will use more than one power source and all must be de-energized prior to performing any maintenance on a controller circuit.

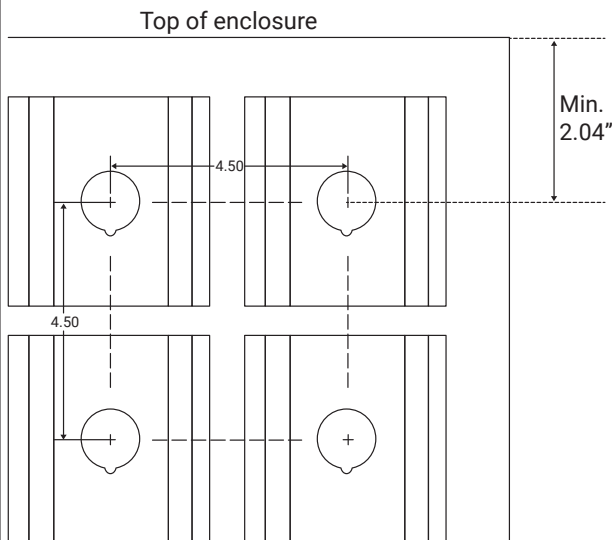
Initial Inspection

- Inspect the shipping container for damage. If the shipping container or cushioning material is damaged it should be kept until the contents of the shipment have been verified for completeness and the equipment has been checked mechanically and electrically. Procedures for configuring and operating the heat trace controller are given in the manual. If the shipment is incomplete, there is mechanical damage or a defect, or the switch does not pass the electrical performance tests, notify the nearest nVent representative. If the shipping container is damaged, or the cushioning material shows signs of stress, notify the carrier as well as your nVent representative. Keep the shipping materials for the carrier's inspection.

Mounting Procedures

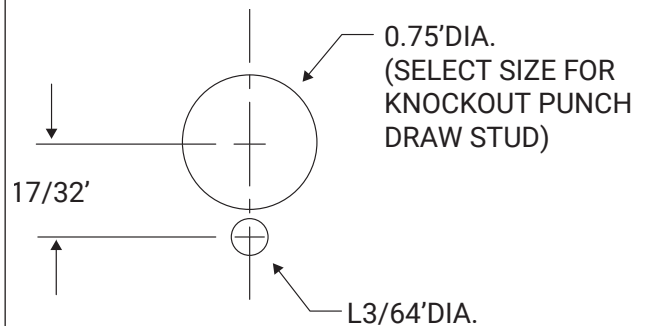
1

- Mounting hole pattern for the SS3 / SS3Z / SSH3 / SSH3Z / SSH6 / SSH6Z assembly is shown. Follow this pattern to maintain the spacing required for proper heat dissipation, also note the minimum mounting height from the top of the enclosure.



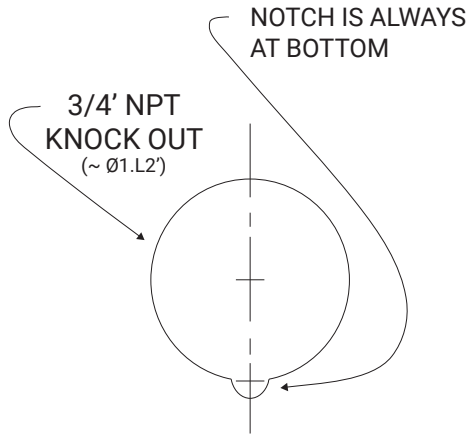
2

- Mark out the center (or centers) for the number of SSR assemblies you wish to add. If you are adding a multi pole circuit, you must place that circuit's switches all on the same side of the enclosure (due to wire length).
- Once the centers are marked, drill the pilot holes as shown. The 0.75 in. hole may vary depending on the draw stud you are using.



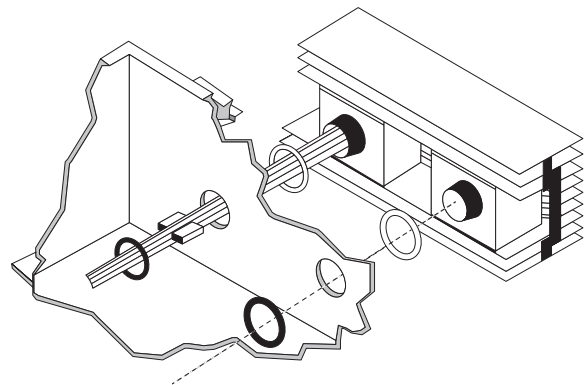
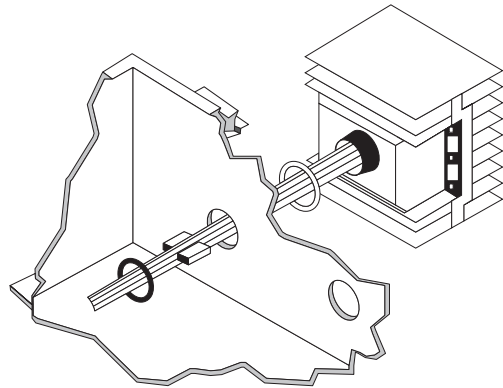
3

- Once the pilot holes are drilled, use the knockout punch to complete the hole pattern. Make sure the notch is at the bottom.



4

- After all the required knockout holes are punched, install each SS3 / SS3Z / SSH3 / SSH3Z / SSH6 / SSH6Z heat sink assembly as shown. Make sure the gasket is between the enclosure and the switch, and the boss on the plastic hub fits in the notch at the bottom of the knockout hole.
- After the SSR assembly is positioned in the hole, carefully feed the lock ring over the wires, and thread onto the hub finger tight.
- Using channel lock pliers, tighten the ring enough to maintain a weatherproof seal, but not so tight as to crack the plastic hub. About ¼ turn past finger tight should be adequate.



Power Connections

One SSR Application

(120/277 V for SS3 / SS3Z, 347 V for SSH3 / SSH3Z)

- Wire the switch according to Figure 1 at the end of this document. The #10 green wire is connected to the ground bar on the enclosure backplane. Feed one of the #10 black wires through the top tube of the switch interface (SIS) labeled LINE, cut and strip to length, and then wire into the power terminals. Wire the other #10 black wire to the power terminals (do not feed through the switch interface). Feed the separate piece of the #10 white wire through one of the other tubes in the switch interface and connect one end to power terminal. Cut and strip to length the other end and connect to power terminal.
- Make sure the control wire cable is plugged into the connector coming out of the switch, and connected to terminals 1 & 2 of the switch interface. Note that the blue wire goes to terminal 1 and yellow wire to terminal 2 (control wire is included with SIS kit).

Two SSR Application

(208/240 V for SS3 / SS3Z, 480/600 V for SSH3 / SSH3Z / SSH6 / SSH6Z)

- Wire the switches according to Figure 2 at the end of this document. The #10 green wire of each SSR assembly is connected to the ground bar on the enclosure backplane. Feed one of the #10 black wires of the first SSR assembly through the top tube of the switch interface (SIS) labeled LINE, cut and strip to length, and then wire into the power terminals. Wire the other #10 black wire to the power terminals (do not feed through the switch interface). Feed one of the #10 black wires of the second SSR assembly through one of the other tubes in the switch interface, cut and strip to length, and connect to power terminal. Wire the other #10 black wire of the second SSR assembly to power terminal.
- Make sure the control wire cable is plugged into the connector coming out of switch #1, and connected to the terminals 1 & 2 of the switch interface. Note that the blue wire goes to terminal 1 and the yellow wire to terminal 2 (control wire is included with SIS kit). Plug the other connector of switch #1 to the mating connector of the switch #2.

Three Switch Application

(208 V for SS3 / SS3Z, 480/600 V for SSH3 / SSH3Z / SSH6 / SSH6Z)

- The three SSR assembly application follows the same instructions as for the two SSR application, with the addition of one more SSR assembly. After the first two SSR's are wired (as per Figure 1), add the third one the same way. Connect the #10 ground wire of the last SSR to the grounding bar on the enclosure backplane. Feed one of the #10 black wires through the third tube of the switch interface. Cut and strip to length, and connect it to the power terminals. Wire the other #10 black to the power terminals.
- Make sure to plug the two mating connectors together (from SSR 2 & 3) to daisy chain the control signals to the last SSR assembly.



Note: Always be sure that all terminals are adequately tightened according to the terminal manufacturer's specification. See Table A below for allowable wire sizes, recommended insulation strip lengths and tightening torque. A loose terminal can cause arcing and damage to the terminal or incorrect operation of the controller.



Note: Make sure that power terminals are re-tightened several days after installation. Stranded wire will tend to compress when initially installed, therefore the terminals should be checked for tightness several times after the system is installed to ensure that a good connection is maintained. Be certain to use the proper size screwdriver for the terminal blocks to minimize the chance of damage to the terminals.

Table A 920 Series Wiring Terminal Ratings

Terminal Board	Wire size	28-12 AWG
	Strip length	0.22 in
Switch Interface	Wire size	24-14 AWG
	Strip length	0.33in
Power Terminals	30A	22-8 AWG
	Strip length	0.47 in
	Torque	16.0 lb-in
	60A	14-6 AWG
Strip length	0.47 in	
Torque	26.5 lb-in	

Input Power

The controller may be powered directly from the trace voltage (120 to 277 Vac), through a step-down transformer, or from a separate circuit. The same wiring terminal assignments are used in all configurations. Consult the appropriate EHT manual for the proper wiring diagram.

Initial Power-Up



Note: Ensure the SSR is rated for the connected load before applying power to the controller. If the total load is not known, disconnect load prior to applying power to the controller. The load should only be connected once controller has been suitably programmed for safe and correct operation.

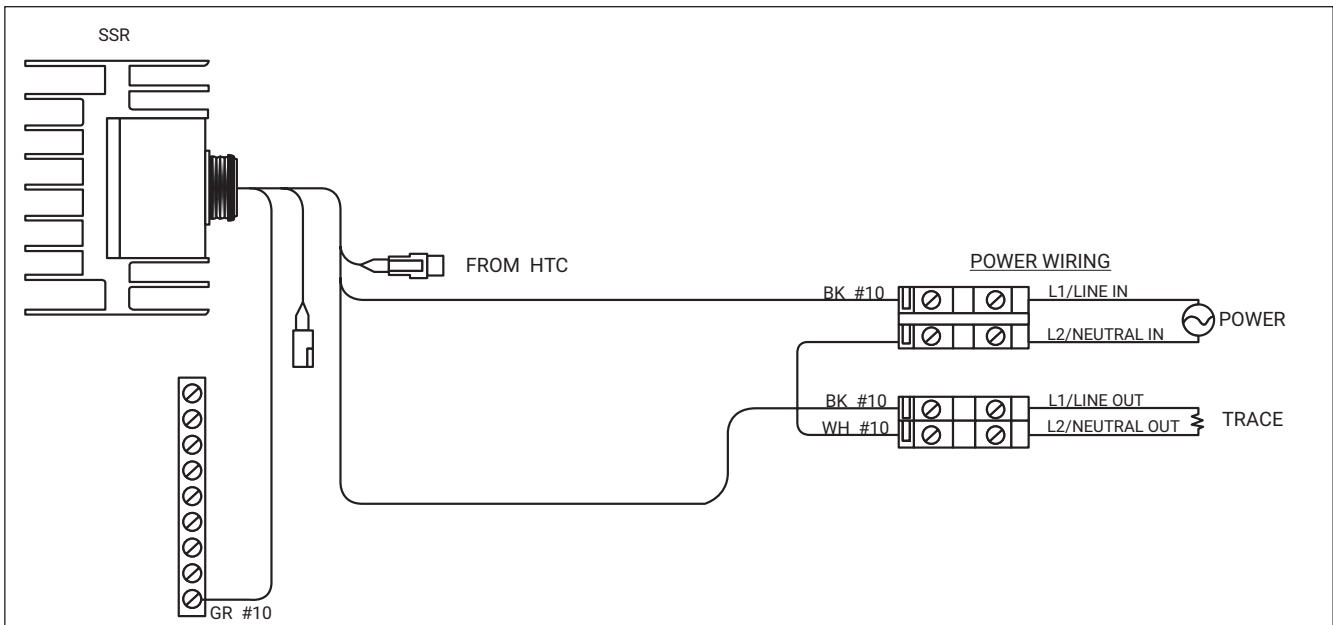


Figure 1

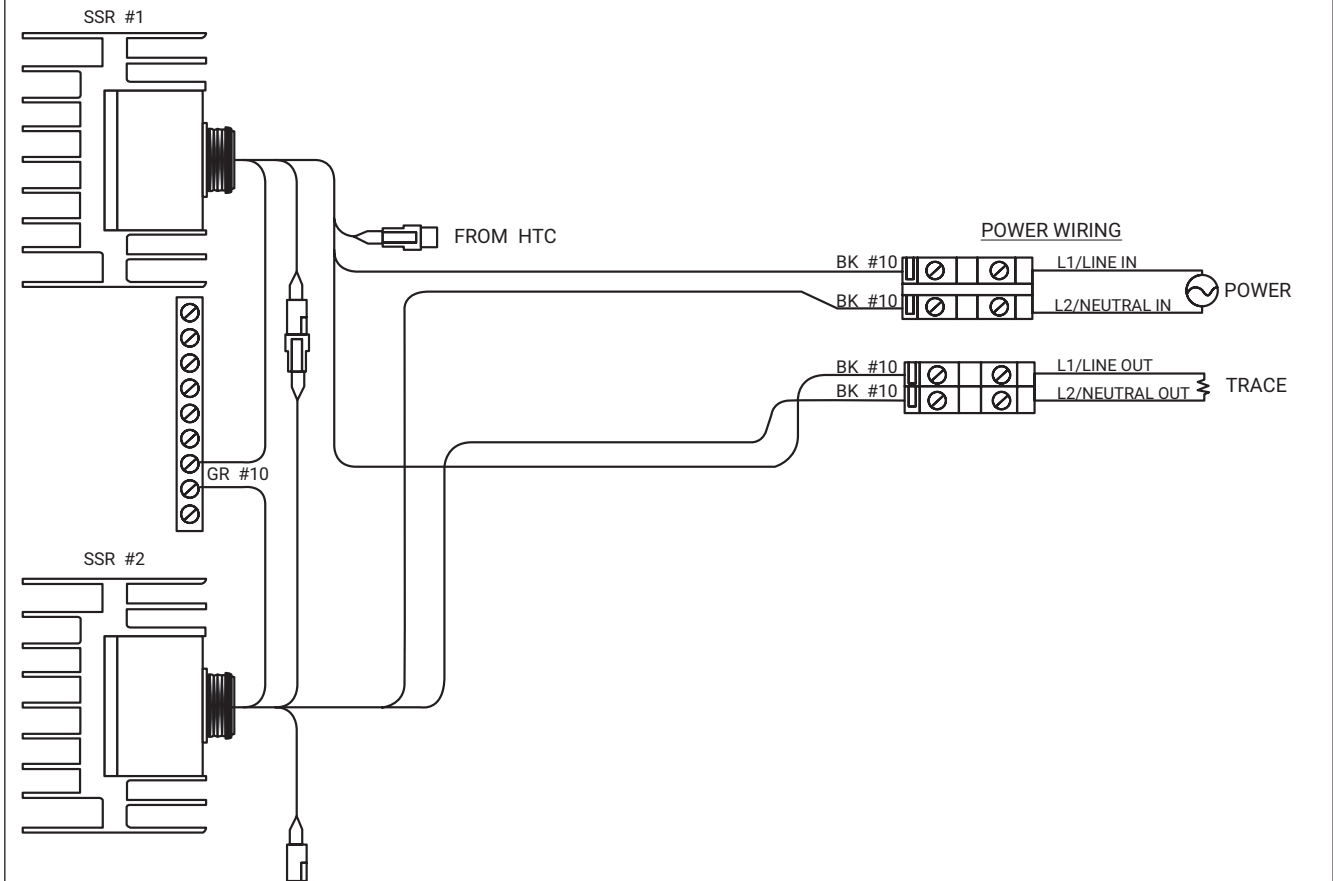


Figure 2

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