

Solid State Relay SRH1 SERIES

M A N U A L

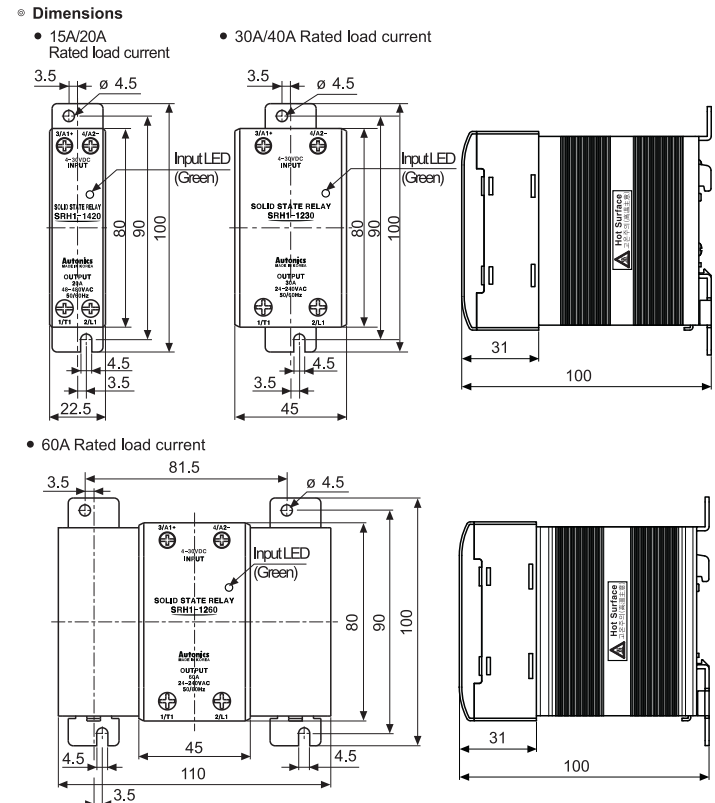


Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

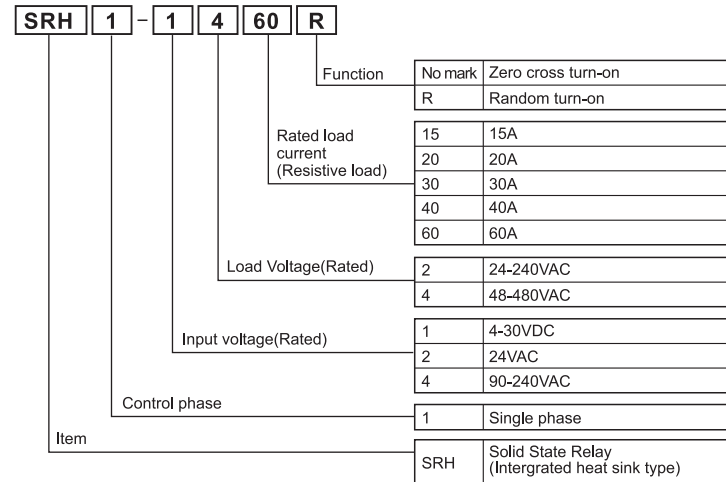
- ⚠ Please keep these instructions and review them before using this unit.
 - ⚠ Please observe the cautions that follow;
 - Warning** Serious injury may result if instructions are not followed.
 - Caution** Product may be damaged, or injury may result if instructions are not followed.
 - ⚠ The following is an explanation of the symbols used in the operation manual.
 - ⚠ Caution: Injury or danger may occur under special conditions.
- Warning**
- In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.**
It may cause a fire, human injury or damage to property.
 - Install the unit on a panel.**
It may give an electric shock.
 - Do not connect, inspect or repair when power is on.**
It may give an electric shock.
 - Do not disassemble the case. Please contact us if it is required.**
It may cause an electric shock or a fire.
- Caution**
- This unit shall not be used outdoors.**
It might shorten the life cycle of the product or give an electric shock.
 - Please observe the rated specifications.**
It might shorten the life cycle of the product and cause a fire.
 - In cleaning unit, do not use water or an oil-based detergent and use dry towels.**
It may cause an electric shock or a fire.
 - Do not use this unit in place where there are flammable or explosive gas, humidity, direct ray of the light, radiant heat, vibration and impact etc.**
It may cause a fire or an explosion.
 - Do not inflow dust or wire dregs into the unit.**
It may cause a fire or a malfunction.
 - Do not touch SSR output terminals right after power switch OFF.**
It may cause an electric shock due to an electric charge in snubber circuit.

Dimensions & Mounting

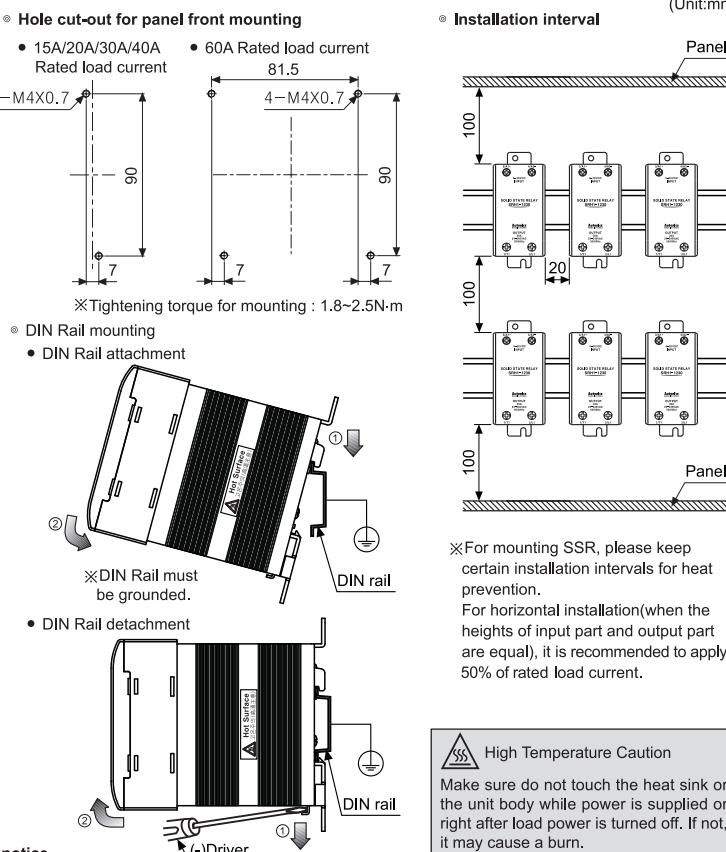


⚠ The above specifications are subject to change and some models may be discontinued without notice.

Ordering information



Model	Input voltage	Rated load current	Load voltage	Zero cross turn-on/Random turn-on
SRH1-1215	4-30VDC	15A	24-240VAC	Zero cross turn-on
SRH1-2215	24VAC			
SRH1-4215	90-240VAC			
SRH1-1220	4-30VDC	20A		
SRH1-2220	24VAC			
SRH1-4220	90-240VAC			
SRH1-1230	4-30VDC	30A		
SRH1-2230	24VAC			
SRH1-4230	90-240VAC			
SRH1-1240	4-30VDC	40A	48-480VAC	Zero cross turn-on
SRH1-2240	24VAC			
SRH1-4240	90-240VAC			
SRH1-1260	4-30VDC	60A		
SRH1-2260	24VAC			
SRH1-4260	90-240VAC			
SRH1-1420	4-30VDC	20A	48-480VAC	Zero cross turn-on
SRH1-1420R	4-30VDC			Random turn-on
SRH1-2420	24VAC	Zero cross turn-on		
SRH1-1430	4-30VDC	30A		Random turn-on
SRH1-1430R	4-30VDC			Random turn-on
SRH1-2430	24VAC	Zero cross turn-on		
SRH1-1460	4-30VDC	60A	Random turn-on	
SRH1-1460R	4-30VDC		Random turn-on	
SRH1-2460	24VAC	Zero cross turn-on		



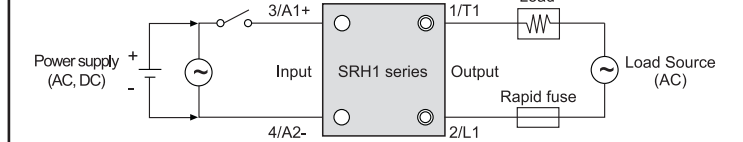
Specifications

Input	
4-30VDC input voltage	
Input voltage range	4-32VDC
Max. input current	9mA (Zero cross turn-on), 13mA (Random turn-on)
Pick-up voltage	4VDC
Drop-out voltage	1VDC
Turn-on time	Max. 0.5 cycle of load source + 1ms
Turn-off time	Max. 1ms
Turn-off time	Max. 0.5 cycle of load source + 1ms
24VAC input voltage	
Input voltage range (50/60Hz)	19-30VACrms
Max. input current	12mArms (24VACrms)
Pick-up voltage	19VACrms
Drop-out voltage	4VACrms
Turn-on time	Max. 1.5 cycle of load source + 1ms
Turn-off time	Max. 1.5 cycle of load source + 1ms
90-240VAC input voltage	
Input voltage range (50/60Hz)	85-264VACrms
Max. input current	7mArms (240VACrms)
Pick-up voltage	85VACrms
Drop-out voltage	10VACrms
Turn-on time	1.5 cycle of load source + 1ms
Turn-off time	1.5 cycle of load source + 1ms
Output	
24-240VAC load voltage	
Load voltage range (50/60Hz)	24-264VACrms
Rated load current (AC-51)	15Arms, 20Arms, 30Arms, 40Arms, 60Arms
Min. load current	0.15Arms, 0.2Arms, 0.2Arms, 0.5Arms, 0.5Arms
Max. 1 cycle surge current (60Hz)	190A, 270A, 330A, 500A, 1000A
Max. non-repetitive surge current (I ^t , t=8.3ms)	150A ² s, 300A ² s, 500A ² s, 1000A ² s, 4000A ² s
Peak voltage (Non-repetitive)	600V
Leakage current (240VAC/60Hz, Ta=25°C)	Max. 10mArms
Output ON voltage drop [V _{pk}](Max. load current)	Max. 1.6V
Static off state dv/dt	500V/μs
48-480VAC load voltage	
Load voltage range (50/60Hz)	48-528VACrms
Rated load current (AC-51)	20Arms, 30Arms, 60Arms
Motor load (AC-53a)	5Arms, 8Arms, 15Arms
Min. load current	0.5Arms, 0.5Arms, 0.5Arms
Max. 1 cycle surge current (60Hz)	300A, 500A, 1000A
Max. non-repetitive surge current (I ^t , t=8.3ms)	350A ² s, 1000A ² s, 4000A ² s
Peak voltage (Non-repetitive)	1200V (Zero cross turn-on), 1000V (Random turn-on)
Leakage current (480VAC/60Hz, Ta=25°C)	Max. 10mArms
Output ON voltage drop [V _{pk}](Max. load current)	Max. 1.6V
Static off state dv/dt	500V/μs

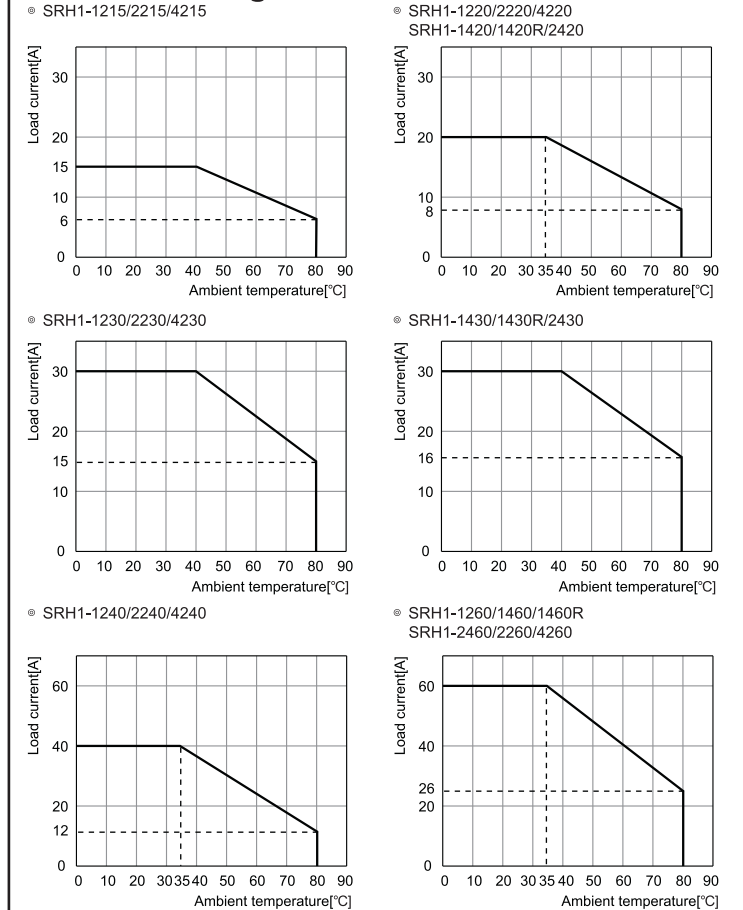
General Specifications	
Certification	UL508, CSA22.2 No.14 and IEC/EN 60947-4-3
Type of the coordination of conditional short-circuit current	type 1
Dielectric strength (Vrms)	4000VAC 50/60Hz for 1 min. (Input-Output, I/O-Case)
Insulation resistance	Min. 100MΩ (500VDC megger)
Vibration	10 to 55Hz double amplitude 0.75mm in each X, Y, Z direction for 1 hour
Input LED	Green
Environment	Ambient temperature: -20 to 80°C Storage: -30 to 100°C (Rated load current capacity is different based on the surrounding temperature. Refer to ■ SSR Derating curve.) Ambient humidity: 45 to 85%RH, Storage: 45 to 85%RH
Input terminal connection	Min. 1X0.5mm ² (1XAWG 20) Max. 1X1.5mm ² (1XAWG 16) or 2X1.5mm ² (2XAWG 16)
Output terminal connection	• Case width 22.5mm (M4 terminal bolt): Min. 1X0.75mm ² (1XAWG 18) Max. 1X4mm ² (1XAWG 12) or 2X2.5mm ² (2XAWG 14) • Case width 45mm (M5 terminal bolt): Min. 1X1.5mm ² (1XAWG 16) Max. 1X16mm ² (1XAWG 6) or 2X6mm ² (2XAWG 10) • Use wires compliant with load current capacity to connect to the terminal.
Input terminal fixed torque	0.75 to 0.95N·m
Output terminal fixed torque	• Case width 22.5mm (M4 terminal bolt): 1 to 1.35N·m • Case width 45mm (M5 terminal bolt): 1.6 to 2.2N·m
Unit weight	• Rated load current (Resistive load) 15A/20A: Approx. 225g • Rated load current (Resistive load) 30A/40A: Approx. 410g • Rated load current (Resistive load) 60A: Approx. 680g

⚠ Condition for use in Environment is no freezing or condensation.

Connections



SSR Derating curve



Caution for using

- Ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
 - For mounting multiple SSR, please keep certain installation intervals for heat prevention. For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply less than 50% of the rated load current.
 - Make sure do not touch the heatsink or the unit body while power is supplied or right after load power is turned OFF. If not, it may cause a burn.
 - Connect the proper cable for the rated load current with output terminal.
 - Use rapid fuse of which I^t is under 1/2 of SSR I^t in order to protect the unit from load short-circuit current.
 - In case of a short-circuit please replace the fuse with a 1/2 of SSR I^t value specified semiconductor protective type.
 - In case that load's current is lower than SSR min. load current, connect dummy resistance to the load in parallel so as to make load current higher than SSR min. load current.
 - When selecting phase control with random turn-on model, install the noise filter between load and load source.
 - Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
 - Do not touch the load terminal even if output is OFF. It may cause an electric shock.
 - The signal input of the 4-30VDC/24VAC model should be supplied by the insulated and limited voltage/current or by Class 2 power supply.
 - Proper application environment (Avoid following environments to install)
 - ① Where temperature / humidity is beyond the specification
 - ② Where dew condensation occurs due to temperature change
 - ③ Where inflammable or corrosive gas exists
 - ④ Where direct rays of light exist
 - ⑤ Where severe shock, vibration or dust exists
 - ⑥ Where near facilities generating strong magnetic forces or electric noise
 - Installation environment
 - ① It shall be used indoor
 - ② Altitude Max. 2,000m
 - ③ Pollution Degree 2
 - ④ Installation Category III
- ⚠ It may cause malfunction if above instructions are not followed.

Major products

- Photoelectric sensors
- Fiber optic sensors
- Door sensors
- Door side sensors
- Area sensors
- Proximity sensors
- Pressure sensors
- Rotary encoders
- Connector/Sockets
- Switching mode power supplies
- Control switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper motors/drivers/motion controllers
- Graphic/Logic panels
- Field network devices
- Laser marking system (Fiber, CO₂, Nd:YAG)
- Laser welding/soldering system
- Temperature controllers
- Temperature/Humidity transducers
- SSR/Power controllers
- Counters
- Timers
- Panel meters
- Tachometer/Pulse(Rate) meters
- Display units
- Sensor controllers

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