

# SRH1 Series Single-Phase, Integrated Heatsink Type SSR

## Single-Phase, Integrated Heatsink Type SSR

### ■ Features

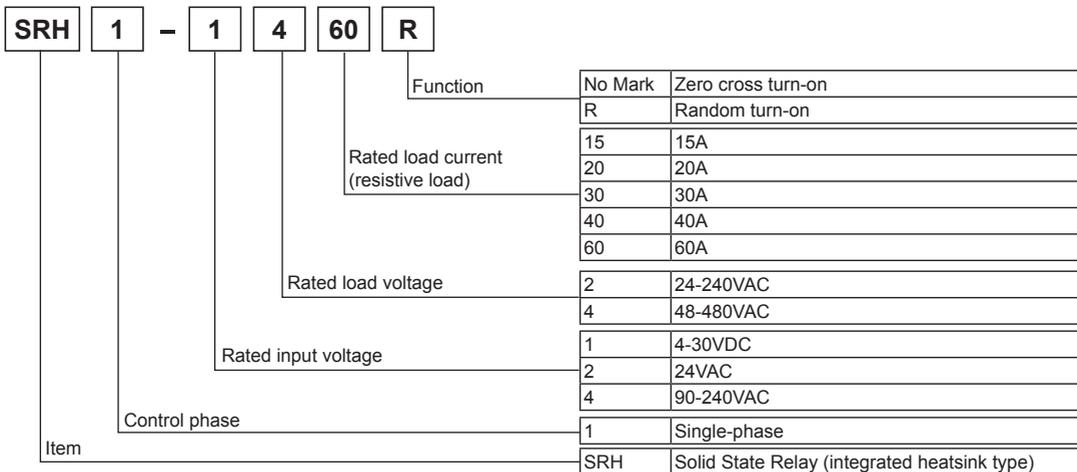
- DIN rail mount or panel mount installation
- Dielectric strength: 4000 VAC
- High heat dissipation efficiency with ceramic PCB and integrated heatsink
- Zero cross turn-on, random turn-on models available
- Input Indicator (green LED)



**⚠ Please read "Safety considerations" in operation manual before using.**



### ■ Ordering Information



Model	Rated input voltage	Rated load current	Rated load voltage	Function
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		
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		Zero cross turn-on
SRH1-1430R	4-30VDC			Random turn-on
SRH1-2430	24VAC			Zero cross turn-on
SRH1-1460	4-30VDC	60A		Zero cross turn-on
SRH1-1460R	4-30VDC			Random turn-on
SRH1-2460	24VAC			Zero cross turn-on

- (A) Photoelectric Sensors
- (B) Fiber Optic Sensors
- (C) Door/Area Sensors
- (D) Proximity Sensors
- (E) Pressure Sensors
- (F) Rotary Encoders
- (G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
- (H) Temperature Controllers
- (I) SSRs / Power Controllers
- (J) Counters
- (K) Timers
- (L) Panel Meters
- (M) Tacho / Speed / Pulse Meters
- (N) Display Units
- (O) Sensor Controllers
- (P) Switching Mode Power Supplies
- (Q) Stepper Motors & Drivers & Controllers
- (R) Graphic/ Logic Panels
- (S) Field Network Devices
- (T) Software

# SRH1 Series

## ■ Specifications

### ○ Input

Rated input voltage range	4-30VDC≒	24VACrms~ (50/60Hz)	90-240VACrms~ (50/60Hz)
Allowable input voltage range	4-32VDC≒	19-30VACrms~ (50/60Hz)	85-264VACrms~ (50/60Hz)
Max. input current	9mA (Zero cross turn-on), 13mA (Random turn-on)	12mA <sub>rms</sub> (24VACrms~)	7mA <sub>rms</sub> (240VACrms~)
Pick-up voltage	Min. 4VDC≒	Min. 19VACrms~	Min. 85VACrms~
Drop-out voltage	Max. 1VDC≒	Max. 4VACrms~	Max. 10VACrms~
Turn-on time	Zero cross turn-on	Max. 0.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms
	Random turn-on	Max. 1ms	—
Turn-off time	Max. 0.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms

### ○ Output

Rated load voltage range	24-240VACrms~ (50/60Hz)					48-480VACrms~ (50/60Hz)				
Allowable load voltage range	24-264VACrms~ (50/60Hz)					48-528VACrms~ (50/60Hz)				
Rated load current	Resistive load (AC-51) <sup>※1</sup>	15A <sub>rms</sub>	20A <sub>rms</sub>	30A <sub>rms</sub>	40A <sub>rms</sub>	60A <sub>rms</sub>	20A <sub>rms</sub>	30A <sub>rms</sub>	60A <sub>rms</sub>	
		Min. load current	0.15A <sub>rms</sub>	0.2A <sub>rms</sub>	0.2A <sub>rms</sub>	0.5A <sub>rms</sub>	0.5A <sub>rms</sub>	0.5A <sub>rms</sub>	0.5A <sub>rms</sub>	0.5A <sub>rms</sub>
Max. 1 cycle surge current (60Hz)		190A	270A	330A	500A	1000A	300A	500A	1000A	
Max. non-repetitive surge current (I <sup>2</sup> t, t=8.3ms)		150A <sup>2</sup> s	300A <sup>2</sup> s	500A <sup>2</sup> s	1000A <sup>2</sup> s	4000A <sup>2</sup> s	350A <sup>2</sup> s	1000A <sup>2</sup> s	4000A <sup>2</sup> s	
Peak voltage (non-repetitive)		600V					1200V (Zero cross turn-on), 1000V (Random turn-on)			
Leakage current (Ta=25°C)		Max. 10mA <sub>rms</sub> (240VAC~/60Hz)					Max. 10mA <sub>rms</sub> (480VAC~/60Hz)			
Output on voltage drop[V <sub>pk</sub> ] (Max. load current)		Max. 1.6V								
Static off-state dv/dt		500V/μs								

※1: AC-51 is utilization category at IEC60947-4-3.

### ○ General Specifications

Dielectric strength (Vrms)	400VAC~ 50/60Hz for 1 min (Input-Output, Input/Output-Case)	
Insulation resistance	Over 100MΩ (at 500VDC≒ megger) (Input-Output, Input/Output-Case)	
Indicator	Input indicator: Green LED	
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 min
Shock	Mechanical	300m/s <sup>2</sup> (approx. 30G) in each X, Y, Z direction for 3 times
	Malfunction	100m/s <sup>2</sup> (approx. 30G) in each X, Y, Z direction for 3 times
Environment	Ambient temp.	-30 to 80°C (in case of the rated input voltage 90-240VAC~: -20 to 70°C), storage: -30 to 100°C (The rated load current capacity is different depending on ambient temperature. Refer to ■ SSR Derating Curve'.)
	Ambient humi.	45 to 85%RH, storage: 45 to 85%RH
Input terminal connection	Min. 1×0.5mm <sup>2</sup> (1×AWG 20) Max. 1×1.5mm <sup>2</sup> (1×AWG 16) or 2×1.5mm <sup>2</sup> (2×AWG 16)	
Output terminal connection	<ul style="list-style-type: none"> <li>Rated load current 15A/20A: Min. 1×0.75mm<sup>2</sup> (1×AWG18), Max. 1×4mm<sup>2</sup> (1×AWG12) or 2×2.5mm<sup>2</sup> (2×AWG14)</li> <li>Rated load current 30A/40A/60A: Min. 1×1.5mm<sup>2</sup> (1×AWG16), Max. 1×16mm<sup>2</sup> (1×AWG6) or 2×6mm<sup>2</sup> (2×AWG10)</li> </ul> ※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	<ul style="list-style-type: none"> <li>Rated load current 15A/20A: 1.0 to 1.35N·m</li> <li>Rated load current 30A/40A/60A: 1.6 to 2.2N·m</li> </ul>	
Approval		
Weight <sup>※1</sup>	<ul style="list-style-type: none"> <li>Rated load current 15A/20A: Approx. 298g (approx. 225g)</li> <li>Rated load current 30A/40A: Approx. 500g (approx. 410g)</li> <li>Rated load current 60A: Approx. 770g (approx. 680g)</li> </ul>	

※1: The weight includes packaging. The weight in parenthesis is for unit only.

※Environment resistance is rated at no freezing or condensation.

※For wiring the terminal, an O-ring terminal must be used.

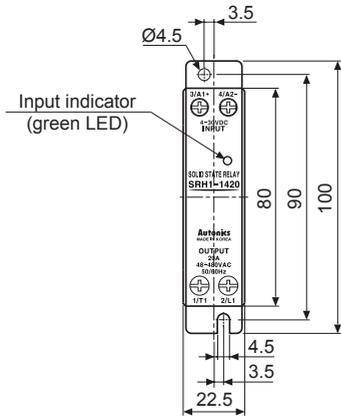
# Single-Phase, Integrated Heatsink Type SSR

## ■ Dimensions & Mounting

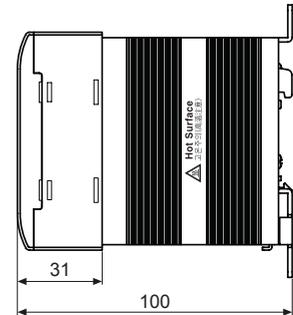
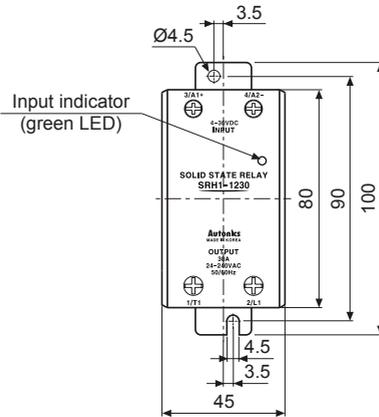
### ○ Dimensions

(unit: mm)

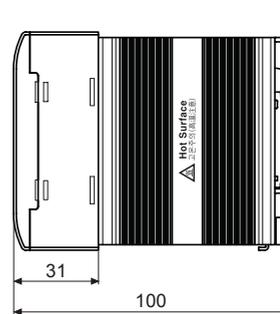
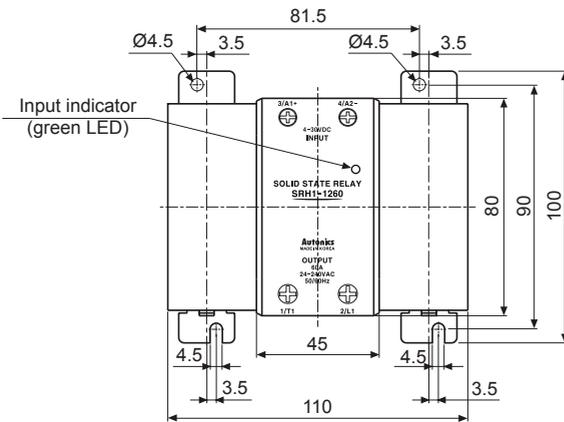
#### ● Rated load current 15A/20A



#### ● Rated load current 30A/40A

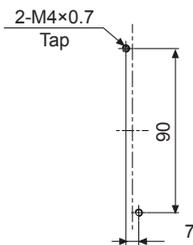


#### ● Rated load current 60A

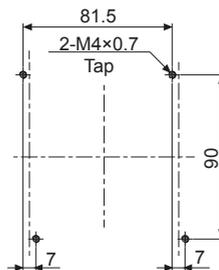


### ○ Hole cut-out for panel front mounting

#### ● Rated load current 15A/20A/30A/40A



#### ● Rated load current 60A



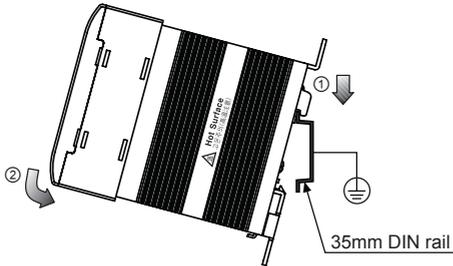
※Screw tightening torque for mounting: 1.8 to 2.5N·m

(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
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# SRH1 Series

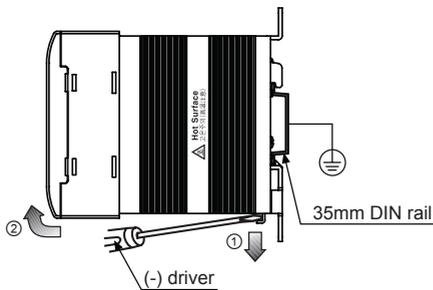
## ○ DIN rail mounting

### ● DIN rail attachment



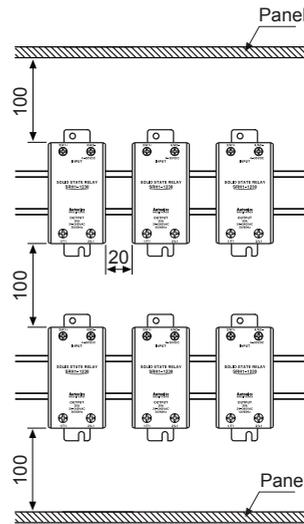
※DIN rail must be grounded.

### ● DIN rail detachment



## ○ Installation interval

(unit: mm)



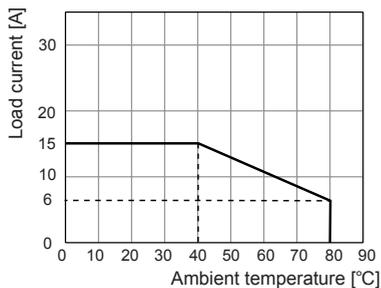
※For mounting multiple SSR, please keep certain installation intervals for heat prevention. For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply 50% of rated load current.

### ⚠ High temperature caution

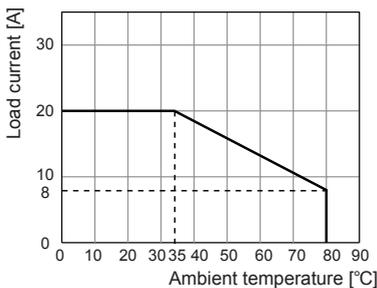
Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

## ■ SSR Derating Curve

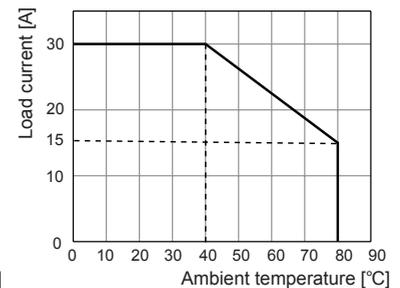
### ○ SRH1-1215/2215/4215



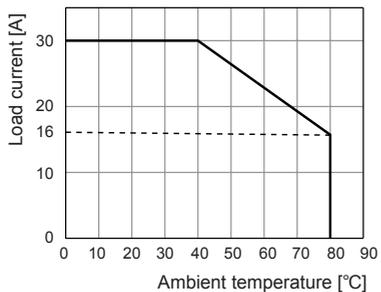
### ○ SRH1-1220/2220/4220 SRH1-1420/1420R/2420



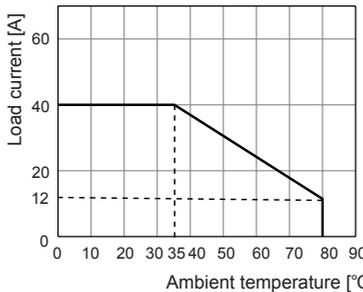
### ○ SRH1-1230/2230/4230



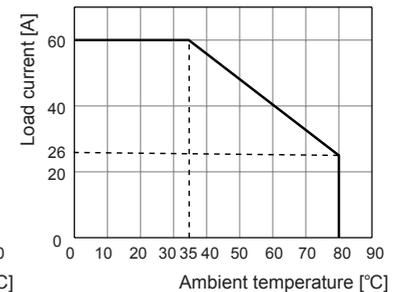
### ○ SRH1-1430/1430R/2430



### ○ SRH1-1240/2240/4240



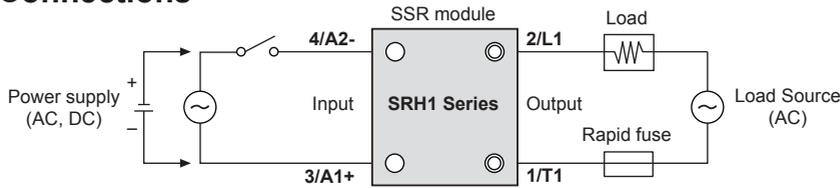
### ○ SRH1-1260/1460/1460R SRH1-2460/2260/4260



△ Please supply less than 50% of the rated load current when installing several SSRs closely due to decreasing effectiveness of protection against heat.

# Single-Phase, Integrated Heatsink Type SSR

## ■ Connections



## ■ Proper Usage



### High temperature caution

Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.



### Cautions during use

1. Ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
2. Must ground heatsink or mounted DIN rail. Failure to follow this instruction may cause electric shock.
3. 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.
4. 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.
5. Connect the proper cable for the rated load current with output terminal.
6. Use rapid fuse of which  $I^2t$  is under 1/2 of SSR  $I^2t$  in order to protect the unit from load's shortcircuit current. In case of a short-circuit please replace the fuse which has same specification.
7. 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's current higher than SSR min. load current.
8. When selecting phase control with random turn-on model, install the noise filter between load and load's source.
9. Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
10. Do not touch the load's terminal even if output is OFF. It may cause electric shock.
11. 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.
12. Avoid following environments to install this unit.
  - 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
13. This product may be used in the following environments.
  - ① Indoors
  - ② Max. altitude: 2,000m
  - ③ Pollution degree 2
  - ④ Installation category III

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

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