Single-Phase, Integrated Heatsink Type SSR

■ Features

- Dielectric strength: 4000 VAC (also 2,500VAC model)
- High heat dissipation efficiency with ceramic PCB and integrated heatsink
- Zero cross turn-on, random turn-on models available
- Input Indicator (green LED)
- DIN rail mount or panel mount installation

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

■ Ordering Information

SRH 1 – 1 2 15 ☐ – N

Version	N	New
Function	No Mark	Zero cross turn-on
	R	Random turn-on
Rated load current (resistive load)	15	15A
	20	20A
	30	30A
	40	40A
	60	60A
Rated load voltage	2	24-240VAC
	4	48-480VAC
Rated input voltage	1	4-30VDC
	2	24VAC
	4	90-240VAC
Control phase	1	Single-phase
Item	SRH	Solid State Relay (integrated heatsink type)

Model	Rated input voltage	Rated load voltage	Rated input current	Function
SRH1-1215-N	4-30VDC	15A	24-240VAC	Zero cross turn-on
SRH1-2215-N	24VAC			
SRH1-4215-N	90-240VAC			
SRH1-1220-N	4-30VDC	20A		
SRH1-2220-N	24VAC			
SRH1-4220-N	90-240VAC			
SRH1-1230-N	4-30VDC	30A		
SRH1-2230-N	24VAC			
SRH1-4230-N	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				Random turn-on
SRH1-2420	24VAC			Zero cross turn-on
SRH1-1430	4-30VDC	30A		Zero cross turn-on
SRH1-1430R				Random turn-on
SRH1-2430	24VAC			Zero cross turn-on
SRH1-1460	4-30VDC	60A		Zero cross turn-on
SRH1-1460R				Random turn-on
SRH1-2460	24VAC			Zero cross turn-on

▣ Specifications

◎ Input

● **SRH1-□□□□-N**

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		18mA	15mArms (24VACrms~)	18mArms (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. 2 cycle of load source + 1ms	Max. 2 cycle of load source + 1ms
Turn-off time		Max. 0.5 cycle of load source + 1ms	Max. 2 cycle of load source + 1ms	Max. 2 cycle of load source + 1ms

● **SRH1-□□□□**

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)	12mArms (24VACrms~)	7mArms (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	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)※1	15Arms	20Arms	30Arms	40Arms	60Arms	20Arms	30Arms	60Arms
Min. load current		0.15Arms	0.2Arms	0.5Arms	0.5Arms	0.5Arms	0.5Arms	0.5Arms	0.5Arms
Max. 1 cycle surge current (60Hz)		160A	250A	400A	500A	1000A	300A	500A	1000A
Max. non-repetitive surge current (I^2t, t=8.3ms)		$130A^2s$	$300A^2s$	$910A^2s$	$1000A^2s$	$4000A^2s$	$350A^2s$	$1000A^2s$	$4000A^2s$
Peak voltage (non-repetitive)		600V					1200V (Zero cross turn-on), 1000V (Random turn-on)		
Leakage current (Ta=25℃)		Max. 10mArms (240VAC~/60Hz)					Max. 10mArms (480VAC~/60Hz)		
Output on voltage drop[Vpk] (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)		• SRH1-□□□□-N: 2500VAC~ 50/60Hz 1 min (Input-Output, Input/Output-Case) • SRH1-□□□□: 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/s² (approx. 30G) in each X, Y, Z direction for 3 times
	Malfunction	100m/s² (approx. 30G) in each X, Y, Z direction for 3 times
Environment	Ambient temp.	-30 to 80℃ (in case of the rated input voltage 90-240VAC~: -20 to 70℃), storage: -30 to 100℃ (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. 1×0.5mm² (1×AWG 20) Max. 1×1.5mm² (1×AWG 16) or 2×1.5mm² (2×AWG 16)
Output terminal connection		• Rated load current 15A/20A: Min. 1×0.75mm² (1×AWG18), Max. 1×4mm² (1×AWG12) or 2×2.5mm² (2×AWG14) • Rated load current 30A/40A/60A: Min. 1×1.5mm² (1×AWG16), Max. 1×16mm² (1×AWG6) or 2×6mm² (2×AWG10) ※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		• Rated load current 15A/20A: 1 to 1.35N·m • Rated load current 30A/40A/60A: 1.6 to 2.2N·m
Approval		CE c UL us (except SRH1-□□□□-N)
Weight※1		• Rated load current 15A/20A: Approx. 298g (approx. 225g) • Rated load current 30A/40A: Approx. 500g (approx. 410g) • Rated load current 60A: Approx. 770g (approx. 680g)

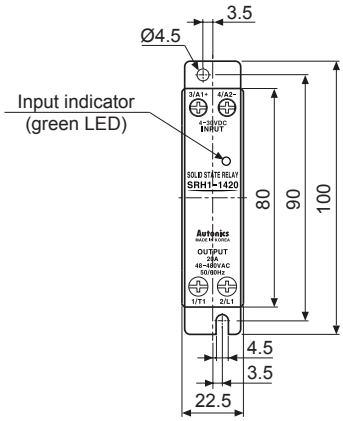
※1: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.
※For wiring the terminal, an O-ring terminal must be used.

▣ Dimensions & Mounting

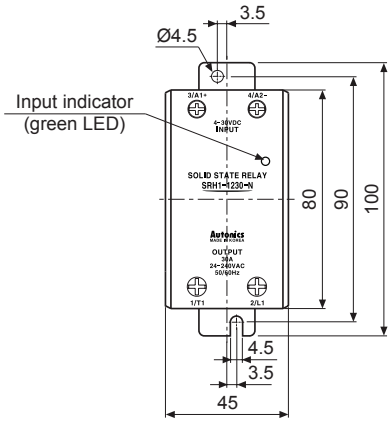
◎ Dimensions

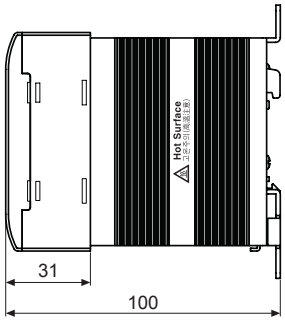
(unit: mm)

● **Rated load current 15A/20A**

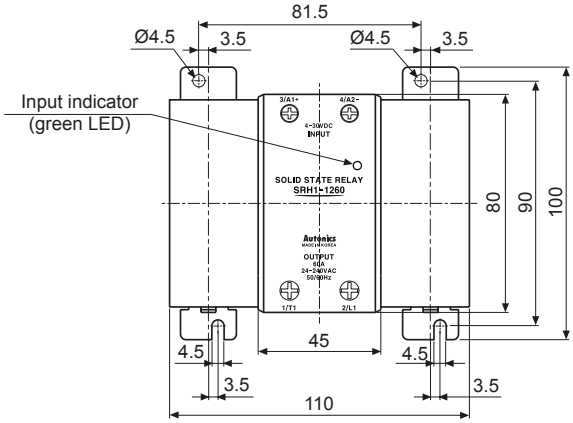


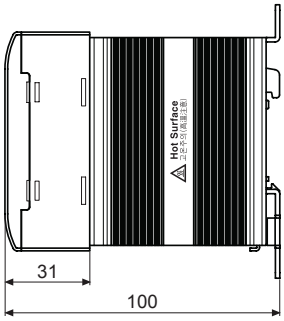
● **Rated load current 30A/40A**





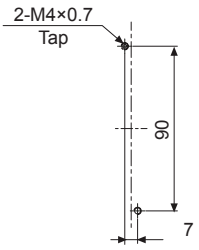
● **Rated load current 60A**



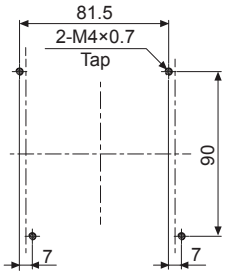


◎ Hole cut-out for panel front mounting

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



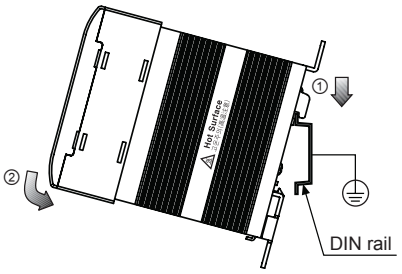
● **Rated load current 60A**



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

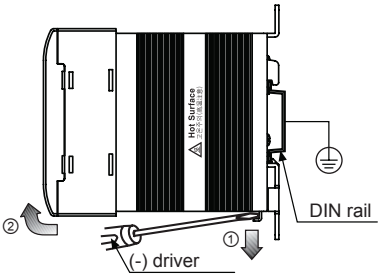
◎ DIN rail mounting

● **DIN rail attachment**



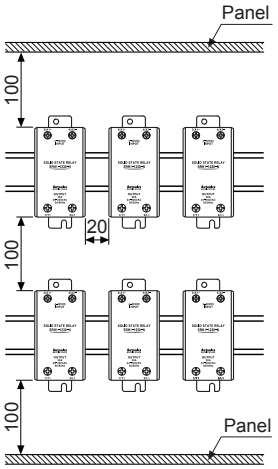
※DIN rail must be grounded.

● **DIN rail detachment**



◎ Installation interval

(unit: mm)

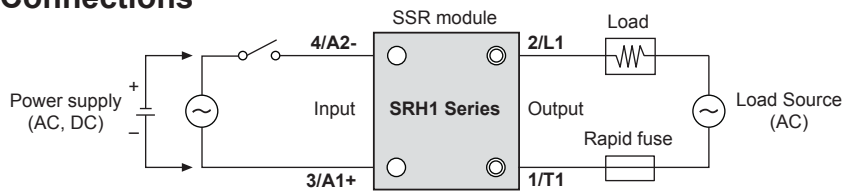


※For mounting multiple SSR, please keep certain installation intervals for heat prevention.
For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply 50% of rated load current.

High temperature caution

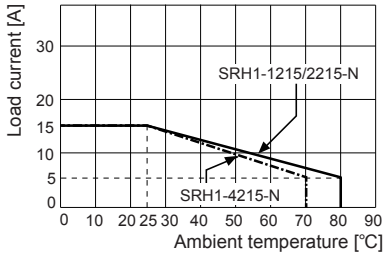
Make sure do not touch the heat sink or the unit body while power is turned off. If not, it may cause a burn.

■ Connections

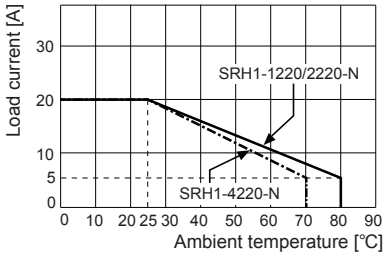


■ SSR Derating Curve

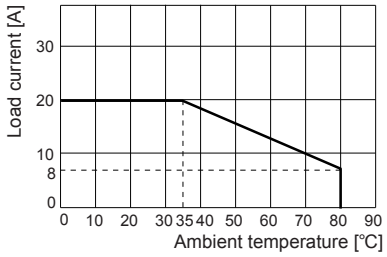
◎ SRH1-1215/2215/4215-N



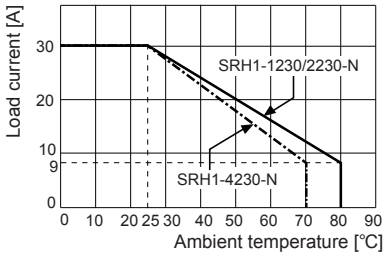
◎ SRH1-1220/2220/4220-N



◎ SRH1-1420/1420R/2420

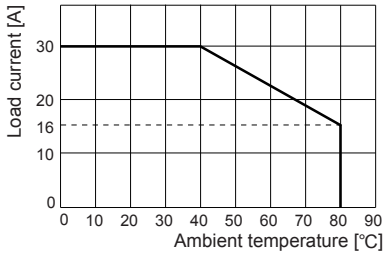


◎ SRH1-1230/2230/4230-N

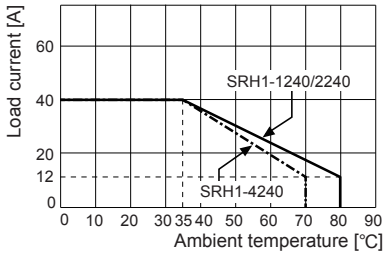


■ SSR Derating Curve

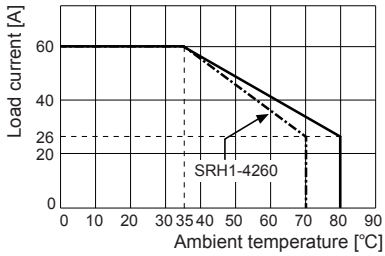
◎ SRH1-1430/1430R/2430



◎ 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.

■ 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. In case of 4-30VDC, 24VAC model, the signal input should be insulated and limited voltage/currentor Class 2, SELV power supply device.
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