

# SR1 Series

## Single-Phase, Detachable Heatsink Type SSR

Line-up

### Features

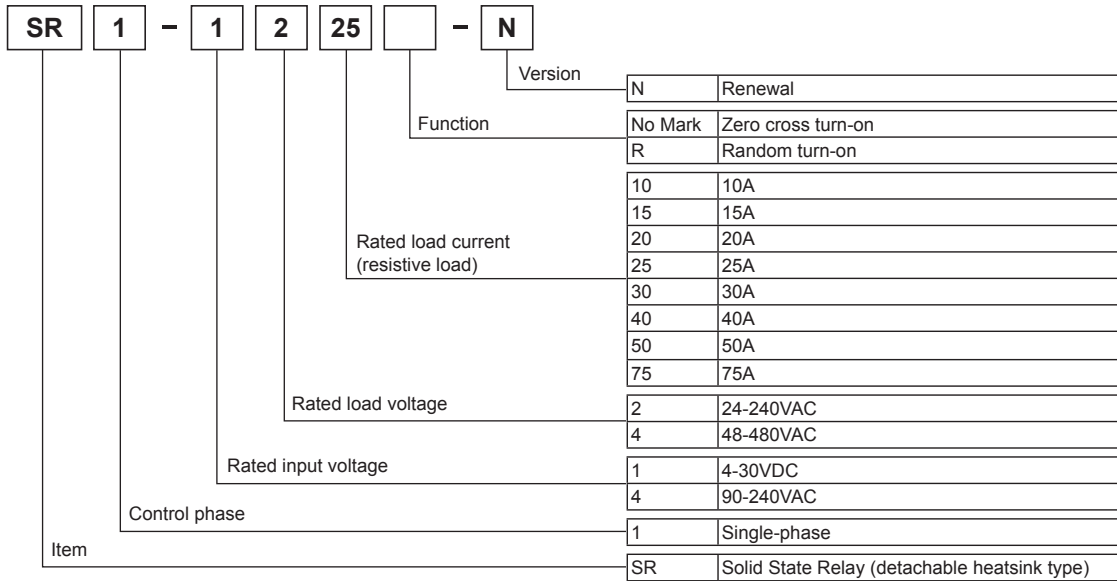
- Compact, universal design for flexible installation
- High heat dissipation efficiency with ceramic PCB
- Zero cross turn-on, random turn-on models available
- Input Indicator (green LED)



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



### Ordering Information



Model	Rated input voltage	Rated load voltage	Rated input current	Function
SR1-1210-N	4-30VDC	10A	24-240VAC	Zero cross turn-on
SR1-4210-N	90-240VAC	10A		
SR1-1215-N	4-30VDC	15A		
SR1-4215-N	90-240VAC	15A		
SR1-1220-N	4-30VDC	20A		
SR1-4220-N	90-240VAC	20A		
SR1-1225-N	4-30VDC	25A		
SR1-4225-N	90-240VAC	25A		
SR1-1230-N	4-30VDC	30A		
SR1-4230-N	90-240VAC	30A		
SR1-1240-N	4-30VDC	40A		
SR1-4240-N	90-240VAC	40A		
SR1-1250-N	4-30VDC	50A		
SR1-4250-N	90-240VAC	50A		
SR1-1275-N	4-30VDC	75A		
SR1-1410-N	4-30VDC	10A	Random turn-on	
SR1-1410R-N	4-30VDC	10A	Zero cross turn-on	
SR1-4410-N	90-240VAC	10A	Zero cross turn-on	
SR1-1415-N	4-30VDC	15A	Zero cross turn-on	
SR1-1415R-N	4-30VDC	15A	Random turn-on	
SR1-4415-N	90-240VAC	15A	Zero cross turn-on	

# Single-Phase, Detachable Heatsink Type SSR

Model	Rated input voltage	Rated load voltage	Rated input current	Function
SR1-1420-N	4-30VDC	20A	48-480VAC	Zero cross turn-on
SR1-1420R-N				Random turn-on
SR1-4420-N	90-240VAC	25A		Zero cross turn-on
SR1-1425-N				Random turn-on
SR1-1425R-N	4-30VDC	25A		Zero cross turn-on
SR1-4425-N				Random turn-on
SR1-1430-N	90-240VAC	30A		Zero cross turn-on
SR1-1430R-N				Random turn-on
SR1-4430-N	4-30VDC	30A		Zero cross turn-on
SR1-1440-N				Random turn-on
SR1-1440R-N	90-240VAC	40A		Zero cross turn-on
SR1-4440-N				Random turn-on
SR1-1450-N	4-30VDC	50A		Zero cross turn-on
SR1-1450R-N				Random turn-on
SR1-4450-N	90-240VAC	50A		Zero cross turn-on
SR1-1475-N				Random turn-on
SR1-1475R-N	4-30VDC	75A	Zero cross turn-on	
SR1-4475-N			Random turn-on	
SR1-1475R-N	90-240VAC	75A	Zero cross turn-on	
SR1-4475-N			Random turn-on	

## ■ Specifications

### ○ Input

Rated input voltage range	4-30VDC≡	90-240VACrms ~ (50/60Hz)
Allowable input voltage range	4-32VDC≡	85-264VACrms ~ (50/60Hz)
Max. input current	18mA	18mArms (240VACrms ~)
Pick-up voltage	Min. 4VDC≡	Min. 85VACrms ~
Drop-out voltage	Max. 1VDC≡	Max. 10VACrms ~
Turn-on time	Zero cross turn-on	Max. 0.5 cycle of load source + 1ms
	Random turn-on	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

### ○ Output




Rated load voltage range	24-240VACrms ~ (50/60Hz)								
Allowable load voltage range	24-264VACrms ~ (50/60Hz)								
Rated load current	Resistive load (AC-51) <sup>※1</sup>	10Arms	15Arms	20Arms	25Arms	30Arms	40Arms	50Arms	75Arms
Min. load current	0.15Arms		0.2Arms		0.2Arms		0.5Arms		
Max. 1 cycle surge current (60Hz)	160A		250A		400A		1000A		
Max. non-repetitive surge current (I <sup>2</sup> t, t=8.3ms)	130A <sup>2</sup> s		300A <sup>2</sup> s		910A <sup>2</sup> s		4000A <sup>2</sup> s		
Peak voltage (non-repetitive)	600V								
Leakage current (Ta=25°C)	Max. 10mArms (240VAC~/60Hz)								
Output on voltage drop [Vpk] (max. load current)	Max. 1.6V								
Static off state dv/dt	500V/μs								
Rated load voltage range	48-480VACrms ~ (50/60Hz)								
Allowable load voltage range	48-528VACrms ~ (50/60Hz)								
Rated load current	Resistive load (AC-51) <sup>※1</sup>	10Arms	15Arms	20Arms	25Arms	30Arms	40Arms	50Arms	75Arms
Min. load current	0.5Arms		0.5Arms		0.5Arms		0.5Arms		
Max. 1 cycle surge current (60Hz)	300A		500A		500A		1000A		
Max. non-repetitive surge current (I <sup>2</sup> t, t=8.3ms)	350A <sup>2</sup> s		1000A <sup>2</sup> s		1000A <sup>2</sup> s		4000A <sup>2</sup> s		
Peak voltage (non-repetitive)	1200V (Zero cross turn-on), 1000V (Random turn-on)								
Leakage current (Ta=25°C)	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.

# SR1 Series

## Specifications

### General specifications

Dielectric strength (Vrms)	2500VAC 50/60Hz 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 'SR1 Derating Curve'.)
	Ambient humi.	45 to 85%RH, storage: 45 to 85%RH
Input terminal connection	Min. 1×0.5mm <sup>2</sup> (1×AWG20), max. 1×1.5mm <sup>2</sup> (1×AWG16) or 2×1.5mm <sup>2</sup> (2×AWG16)	
Output terminal connection	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) ※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	1.6 to 2.2N·m	
Approval	  	
Weight <sup>※1</sup>	Approx. 111g (approx. 73g)	

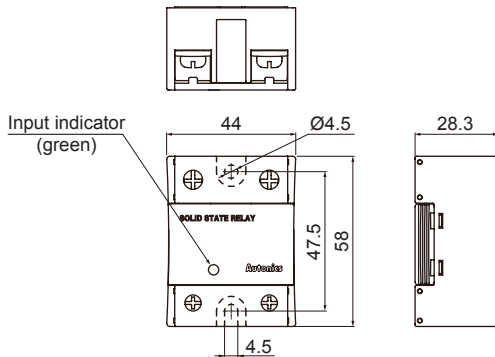
※1: The weight includes packaging. The weight in parenthesis is for unit only.

※Environment resistance is rated at no freezing or condensation.

※For wiring the terminal, round terminal must be used.

## Dimensions

(unit: mm)



### Panel cut-out

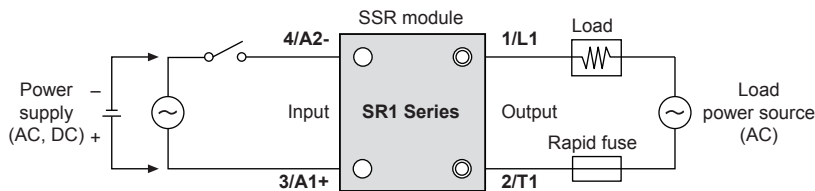


※Screw tightening torque for mounting: 1.8 to 2.5N·m

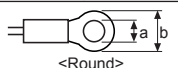
※When installing multiple SSRs, please keep space between SSRs for heat radiation.

When installing SSRs horizontally (input part and output part on the same height), please supply less than 50% of the rated load current.

## Connections



※Use terminals of size specified below.

Terminal type	Input	Output
 <Round>	a	Min. 3.5mm
	b	Max. 7.0mm
		Max. 12.0mm

# Single-Phase, Detachable Heatsink Type SSR

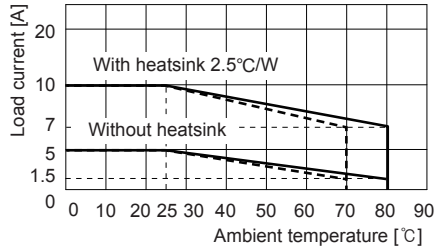
## SSR Derating Curve

※ Be sure that the ambient temperature and the derating curve is different by the rated input voltage.

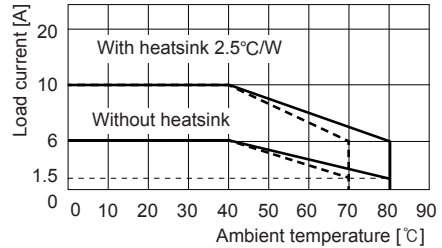
— : Rated input voltage 4-30VDC (SR1-1□□□-N)

- - - : Rated input voltage 90-240VAC (SR1-4□□□-N)

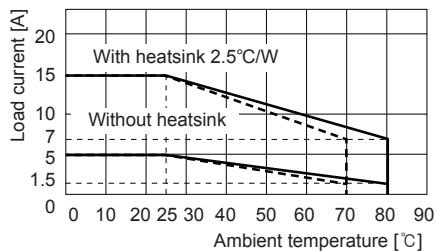
◎ SR1-1210/4210-N



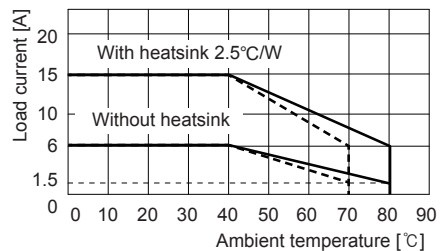
◎ SR1-1410/1410R/4410-N



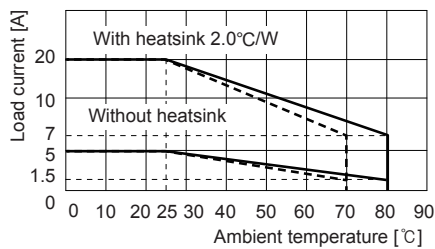
◎ SR1-1215/4215-N



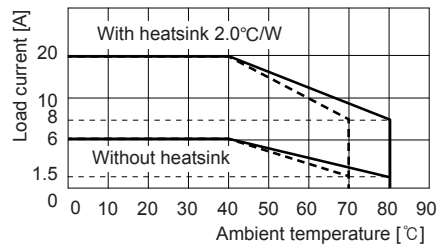
◎ SR1-1415/1415R/4415-N



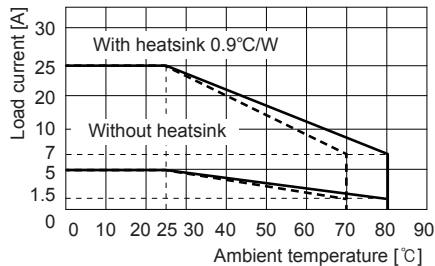
◎ SR1-1220/4220-N



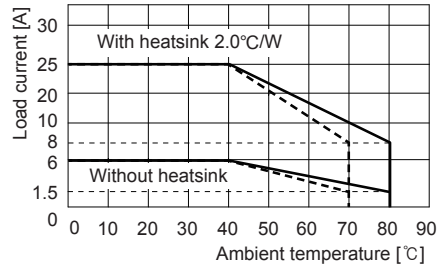
◎ SR1-1420/1420R/4420-N



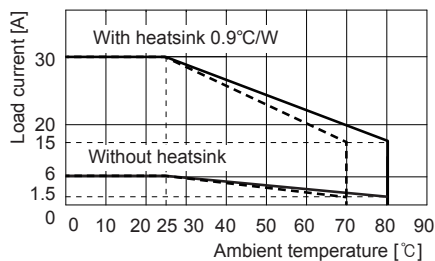
◎ SR1-1225/4225-N



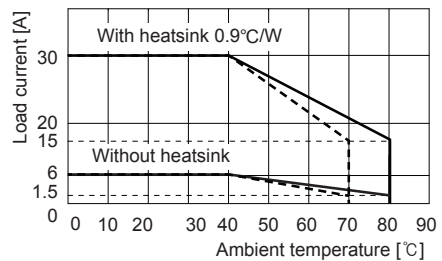
◎ SR1-1425/1425R/4425-N



◎ SR1-1230/4230-N



◎ SR1-1430/1430R/4430-N



(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

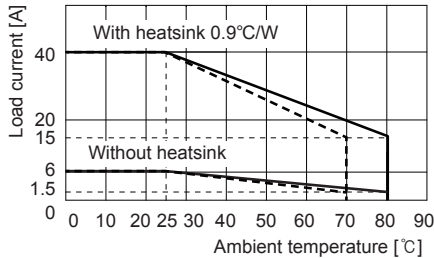
# SR1 Series

## ■ SSR Derating Curve

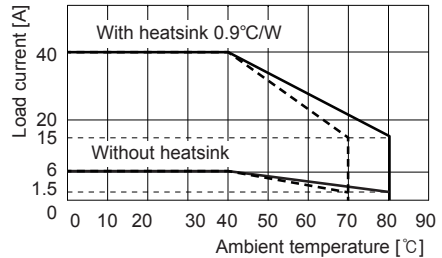
※Be sure that the ambient temperature and the derating curve is different by the rated input voltage.

- : Rated input voltage 4-30VDC (SR1-1□□□-N)
- - - : Rated input voltage 90-240VAC (SR1-4□□□-N)

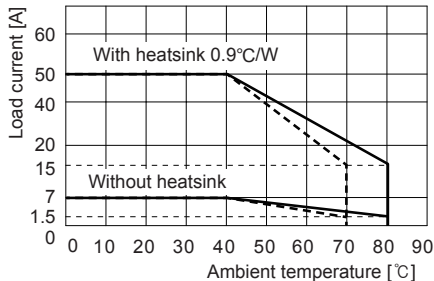
### ◎ SR1-1240/4240-N



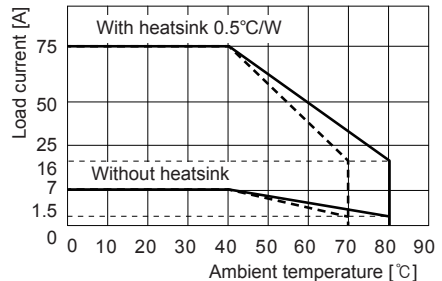
### ◎ SR1-1440/1440R/4440-N



### ◎ SR1-1250/1450/1450R-N SR1-4250/4450-N



### ◎ SR1-1275/1475/1475R-N SR1-4275/4475-N



△ Since effectiveness of the heat radiation is decreased when multiple SSRs are installed closely, please supply less than 50% of the rated load current.

※Above SSR derating curves obtained approval from the UL certification authority.

## ■ Proper Usage

### ⚠ Cautions during use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 4-30VDC signal input should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Attach a heat sink or install the unit in the well ventilated place.  
To attach the heat sink, use Thermal Grease as below or that of equal specification.  
※Thermal Grease: GE TOSHIBA (YG6111), KANTO-KASEI (FLOIL G-600), SHINETSU (G746)
4. Ground to the heat sink, panel, or DIN rail. Failure to follow this instruction may result in electric shock.
5. While supplying power to the load or right after turning off the power of the load, do not touch the body and heat sink. Failure to follow this instruction may result in a burn due to the high temperature.
6. In order to protect the product from the short-circuit current of the load, use rapid fuse of which  $I^2t$  is under the 1/2 of SSR  $I^2t$ . When short-circuited, replace the fuse to those of same specification with the used rapid fuse.
7. Install dummy resistance in parallel with the load, to keep the sum of current flowing in the load and dummy resistance being over SSR minimum load current.
8. When using random turn-on model for phase control, install noise filter between the load and the power of the load.
9. Do not use near the equipment which generates strong magnetic force or high frequency noise.
10. This unit may be used in the following environments.
  - ① Indoors (in the environment condition rated in 'Specifications')
  - ② Altitude max. 2,000m
  - ③ Pollution degree 2
  - ④ Installation category III