

# SRC1 Series Single-Phase, Slim Detachable Heatsink Type SSR

## Single-Phase, Slim Detachable Heatsink Type SSR

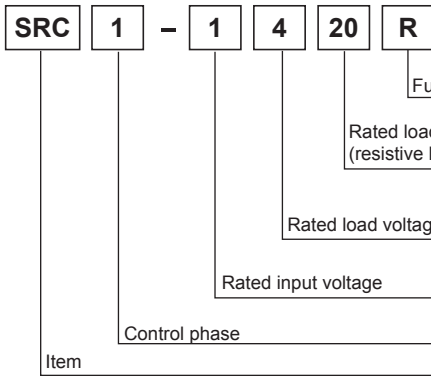
### ■ Features

- Slim, compact size (22.5 mm width)
- Dielectric strength: 4000 VAC
- 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



|                                     |         |                               |
|-------------------------------------|---------|-------------------------------|
| Function                            | No Mark | Zero cross turn-on            |
|                                     | R       | Random turn-on                |
| Rated load current (resistive load) | 15      | 15A                           |
|                                     | 20      | 20A                           |
|                                     | 30      | 30A                           |
| Rated load voltage                  | 2       | 24-240VAC                     |
|                                     | 4       | 48-480VAC                     |
| Rated input voltage                 | 1       | 4-30VDC                       |
|                                     | 4       | 90-240VAC                     |
| Control phase                       | 1       | Single-phase                  |
| Item                                | SRC     | Solid State Relay (slim type) |

| Model      | Rated input voltage | Rated load current | Rated load voltage | Function           |
|------------|---------------------|--------------------|--------------------|--------------------|
| SRC1-1215  | 4-30VDC             | 15A                | 24-240VAC          | Zero cross turn-on |
| SRC1-4215  | 90-240VAC           |                    |                    |                    |
| SRC1-1220  | 4-30VDC             | 20A                |                    |                    |
| SRC1-4220  | 90-240VAC           |                    |                    |                    |
| SRC1-1230  | 4-30VDC             | 30A                |                    |                    |
| SRC1-4230  | 90-240VAC           |                    |                    |                    |
| SRC1-1420  | 4-30VDC             | 20A                | 48-480VAC          | Zero cross turn-on |
| SRC1-4420  | 90-240VAC           |                    |                    | Random turn-on     |
| SRC1-1420R | 4-30VDC             |                    |                    |                    |

- (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

# SRC1 Series

## ■ Specifications

### ◎ Input


|                               |   |                                     |                                     |                                     |
|-------------------------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| Rated input voltage range     | <b>4-30VDC</b> ≡                                |                                     | <b>90-240VACrms</b> ~ (50/60Hz)     |                                     |
| Allowable input voltage range | 4-32VDC≡  |                                     | 85-264VACrms~ (50/60Hz)             |                                     |
| Max. input current            | 9mA (Zero cross turn-on), 13mA (Random turn-on) |                                     | 7mA <sub>Arms</sub> (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 |                                     | 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 |                                     |

### ◎ Output

|   |                                      |  |                      |                                 |  |
|---|--------------------------------------|--|----------------------|---------------------------------|--|
| Rated load voltage range                                      | <b>24-240VACrms</b> ~ (50/60Hz)      |  |                      | <b>48-480VACrms</b> ~ (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>Arms</sub>                      | 20A <sub>Arms</sub>  | 30A <sub>Arms</sub>             | 20A <sub>Arms</sub>                                |
| Min. load current   |                                      | 0.15A <sub>Arms</sub>                    | 0.2A <sub>Arms</sub> | 0.2A <sub>Arms</sub>            | 0.5A <sub>Arms</sub>                               |
| Max. 1 cycle surge current (60Hz)                             |                                      | 190A                                     | 270A                 | 330A                            | 300A   |
| 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             | 350A <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>Arms</sub> (240VAC~/60Hz) |                      |                                 | Max. 10mA <sub>Arms</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)   | 4000VAC~ 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 ■ 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×AWG20), Max. 1×1.5mm <sup>2</sup> (1×AWG16) or 2×1.5mm <sup>2</sup> (2×AWG16) |  |  |  |  |
| Output terminal connection   | 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)  |  |  |  |  |
| Input terminal fixed torque  | 0.75 to 0.95N·m  |  |  |  |  |
| Output terminal fixed torque | 1.0 to 1.35N·m   |  |  |  |  |
| Approval                     |                         |  |  |  |  |
| Weight <sup>※1</sup>         | Approx. 119g (approx. 85g)   |  |  |  |  |

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

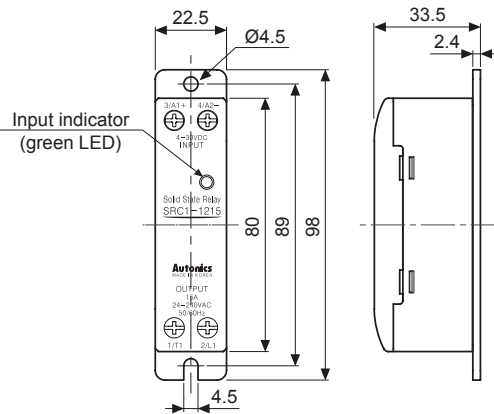
※Environment resistance is rated at no freezing or condensation.

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

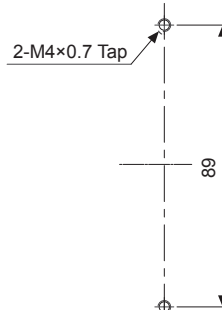
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## Dimensions & Mounting

### Dimensions

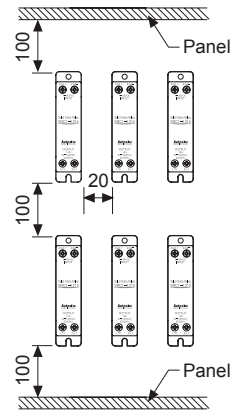


### Hole cut-out for panel front mounting



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

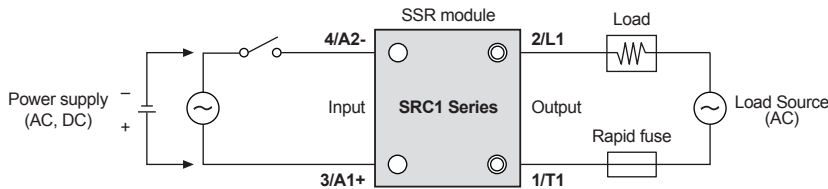
### Installation interval



**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.

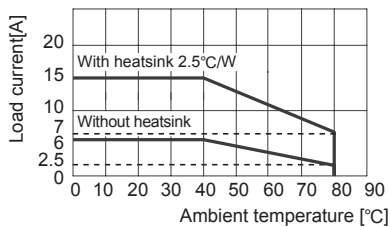
※For mounting multiple SSR, please keep certain installation intervals for heat prevention.  
For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply 50% of rated load current.

## Connections

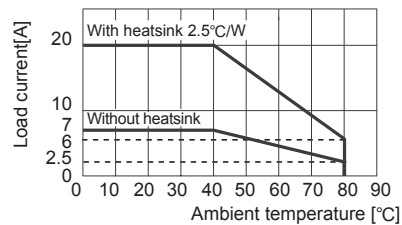


## SSR Derating Curve

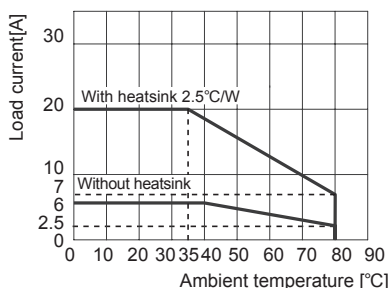
### SRC1-1215/4215



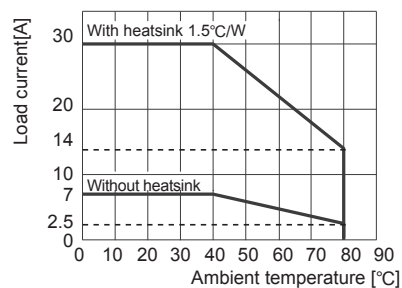
### SRC1-1220/4220



### SRC1-1420/4420/1420R



### SRC1-1230/4230



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

|     |   |
|-----|---|
| (A) | Photoelectric Sensors   |
| (B) | Fiber Optic Sensors   |
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| (T) | Software  |

## ■ 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. Attach a heatsink and ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
2. 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.
3. 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.
4. Connect the proper cable for the rated load current with output terminal.
5. Use rapid fuse of which  $I^2t$  is under 1/2 of SSR  $I^2t$  in order to protect the unit from load's short-circuit current. In case of a short-circuit please replace the fuse which has same specification.
6. 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.
7. When selecting phase control with random turn-on model, install the noise filter between load and load's source
8. Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
9. Do not touch the load's terminal even if output is OFF. It may cause electric shock.
10. The signal input of the 4-30VDC model should be supplied by the insulated and limited voltage/current or by Class 2 power supply.
11. To attach the heatsink, use Thermal Grease as below or that of equal specification.  
※Thermal Grease: GE TOSHIBA (YG6111), KANTO-KASEI (FLOIL G-600), SHINETSU (G746)
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