# Single-Phase, Slim Detachable Heatsink Type SSR

Line-up

## ▣ Features

- Slim, compact size (22.5 mm width)
- 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

**SRC** | **1** | **–** | **1** | **2** | **15** | | **–** | **N**

| | | |
|---|---|---|
| Version | N | Renewal |
| 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 voltage | Rated input current | Function |
|---|---|---|---|---|
| SRC1-1215-N | 4-30VDC | 15A | 24-240VAC | Zero cross turn-on |
| SRC1-4215-N | 90-240VAC | | | |
| SRC1-1220-N | 4-30VDC | 20A | | |
| SRC1-4220-N | 90-240VAC | | | |
| SRC1-1230-N | 4-30VDC | 30A | | |
| SRC1-4230-N | 90-240VAC | | | |
| SRC1-1420-N | 4-30VDC | 20A | 48-480VAC | Zero cross turn-on |
| SRC1-1420R-N | | | | Random turn-on |
| SRC1-4420-N | 90-240VAC | | | Zero cross 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 | | | Max. 2 cycle of load source + 1ms |
| | Random turn-on | Max. 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)** | | | **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 | 20Arms |
| Min. load current | | 0.15Arms | 0.2Arms | 0.5Arms | 0.5Arms |
| Max. 1 cycle surge current (60Hz) | | 160A | 250A | 400A | 300A |
| Max. non-repetitive surge current ($I^2t$, t=8.3ms) | | $130A^2s$ | $300A^2s$ | $910A^2s$ | $350A^2s$ |
| 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 | | | |

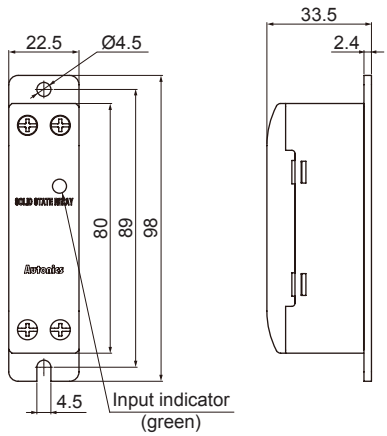
※1: AC-51 is utilization category at IEC60947-4-3.

### ◎ General specifications

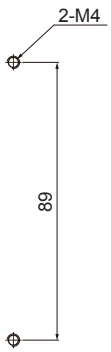
| | | |
|---|---|---|
| Dielectric strength (Vrms) | | 2500VAC 50/60Hz 1 min (input-output, input/output-case) |
| Insulation resistance | | Over 100MΩ (at 500VDC megger) (input-output, input/output-case) |
| Indicator | | Input indicator: green LED |
| Vibration | Mechanical | 0.75mm amplitude at frequency 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/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℃<br>(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×AWG20), max. 1×1.5mm² (1×AWG16) or 2×1.5mm² (2×AWG16) |
| Output terminal connection | | Min.1×0.75mm² (1×AWG18), max. 1×4mm² (1×AWG12) or 2×2.5mm² (2×AWG14)<br>※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 | | 1.0 to 1.35N·m |
| Approval | | CE cULus |
| Weight※1 | | 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, round terminal must be used.

## ▣ Dimensions

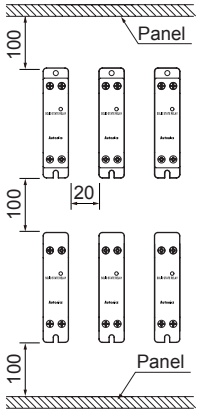



### ◎ Panel cut-out



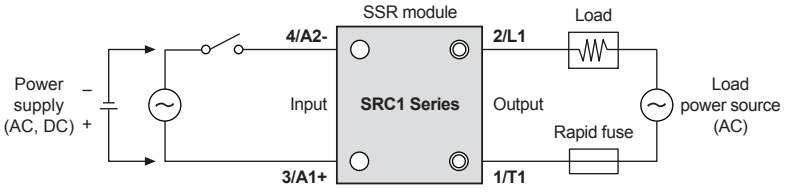

※Screw tightening torque for mounting: 1.8 to 2.5N·m

### ◎ Spacing

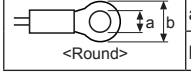



※When installing multiple SSRs, please keep space between SSRs for heat radiation.
When installing SSRs horizontally (input part and output part on the same height), please supply less than 50% of the rated load current.

## ▣ Connections

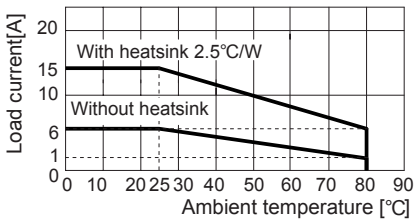



※Use terminals of size specified below.

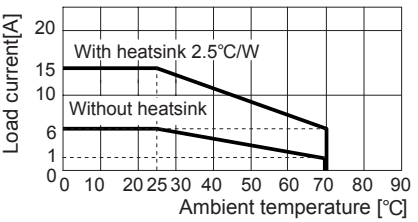
| Terminal type | | Input | Output |
|---|---|---|---|
|   <Round> | a | Min. 3.5mm | Min. 4.0mm |
| | b | Max. 7.0mm | Max. 9.0mm |

## ▣ SSR Derating Curve

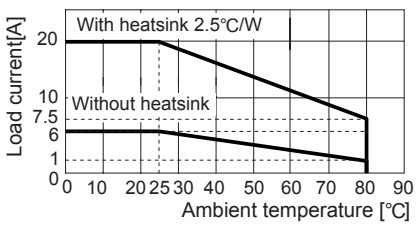
◎ **SRC1-1215-N**



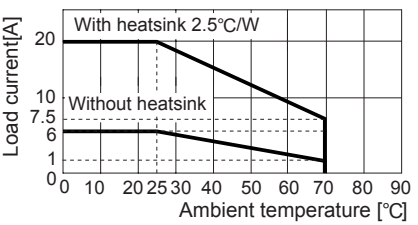

◎ **SRC1-4215-N**



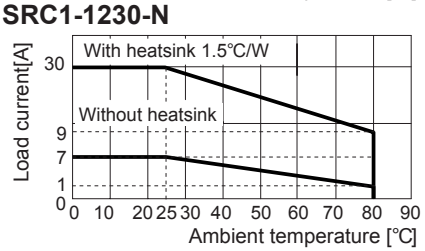

◎ **SRC1-1220-N**



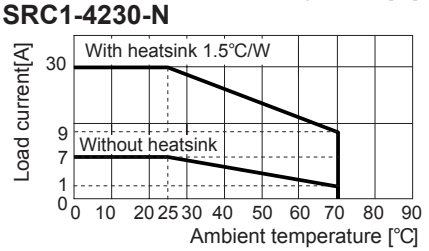

◎ **SRC1-4220-N**



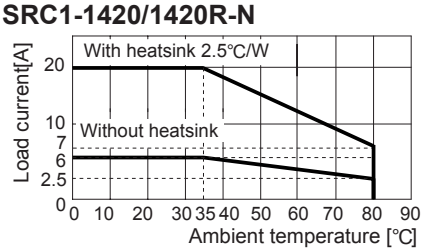

◎ **SRC1-1230-N**



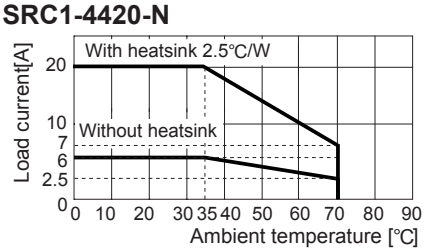

◎ **SRC1-4230-N**




◎ **SRC1-1420/1420R-N**




◎ **SRC1-4420-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)
3. Ground to the heat sink, panel, or DIN rail. Failure to follow this instruction may result in electric shock.
4. Ground to the panel. 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