

# **SSJ SERIES**

## **Installation Manual**

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**IMR01S01-E2**

Thank you for purchasing this RKC product. In order to achieve maximum performance and ensure proper operation of your new instrument, carefully read all the instructions in this manual. Please place this manual in a convenient location for easy reference.

### **SYMBOLS**

**WARNING**

: This mark indicates precautions that must be taken if there is danger of electric shock, fire, etc., which could result in loss of life or injury.

**CAUTION**

: This mark indicates that if these precautions and operating procedures are not taken, damage to the instrument may result.



: This mark indicates that all precautions should be taken for safe usage.



: This mark indicates important information on installation, handling and operating procedures.



: This mark indicates supplemental information on installation, handling and operating procedures.



: This mark indicates where additional information may be located.

**WARNING**

- An external protection device must be installed if failure of this instrument could result in damage to the instrument, equipment or injury to personnel.
- All wiring must be completed before power is turned on to prevent electric shock, fire or damage to instrument and equipment.

In addition, in order to prevent an electric shock, use the instrument with the cover closed while the power is turned on.

- Do not use this instrument which is not covered with the specifications described.  
If used, product combustion or failure may result.
- Do not use the instrument at places where afire may be caused or heat generated. If so, product combustion or smoke emission may result.
- Do not touch this instrument while the power is turned on or just after the power is turned off as it may be at high temperatures. If touched, burning may result.
- RKC is not responsible if this instrument is repaired, modified or disassembled by other than factory-approved personnel. Malfunction can occur and warranty is void under these conditions.

**CAUTION**

- Tighten each output terminal screw at an appropriate torque value. If the product is used with the screw loosened, product combustion may result due to heat generated in the terminal board.
- Do not block the circulation of air by convection around the product. If so, shorting or combustion of the output elements may result from abnormal heat generation.
- If ambient temperatures rise due to self-heating of this product, install forced ventilation fans so that the product can be fully ventilated.
- Do not apply overvoltage or overcurrent to this product. If so, its output elements may be damaged.

**NOTICE**

- This manual assumes that the reader has a fundamental knowledge of the principles of electricity, process control, computer technology and communications.
- RKC is not responsible for any damage or injury that is caused as a result of using this instrument, instrument failure or indirect damage.
- Every effort has been made to ensure accuracy of all information contained herein. RKC makes no warranty expressed or implied, with respect to the accuracy of the information. The information in this manual is subject to change without prior notice.
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## **1. OUTLINE**

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This instrument is a single-phase Solid State Relay (SSR). The 15 A, 25 A and 45 A types are available. This installation manual describes their great caution, mounting and wiring.

**■ Model code****SSR (order separately)**

- SSJ-15 (15 A AC)
- SSJ-25 (25 A AC)
- SSJ-45 (45 A AC)

**Heat radiation fin (order separately)**

- RF-060 (For 15 A AC)
- RF-120 (For 25 A AC, 45 A AC)<sup>1</sup>
- RF-200 (For 25 A AC, 45 A AC)<sup>2</sup>

<sup>1</sup> When the RF-120 is availed, use each SSR by decreasing its maximum load current.

For the ambient temperature characteristic, see **2.1 Mounting Environment**.

<sup>2</sup> The RF-200 is equivalent to the heat radiation fin JHA-200 manufactured by JEL SYSTEM CO., LTD.

**SSR integrated with heat radiation fin**

(order combination)

- SSJ-15F1 (SSJ-15 and RF-060)
- SSJ-25F2 (SSJ-25 and RF-120)
- SSJ-25F3 (SSJ-25 and RF-200)
- SSJ-45F2 (SSJ-45 and RF-120)
- SSJ-45F3 (SSJ-45 and RF-200)

## 2. MOUNTING

### WARNING

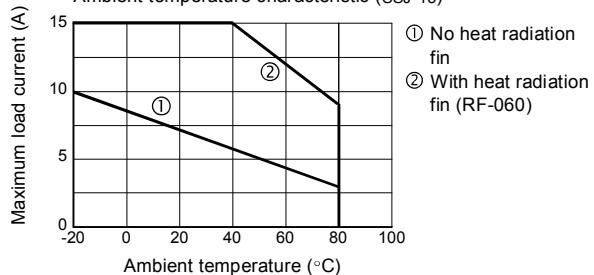
To prevent electric shock or instrument failure, always turn off the power before mounting or removing the instrument.

### 2.1 Mounting Environment

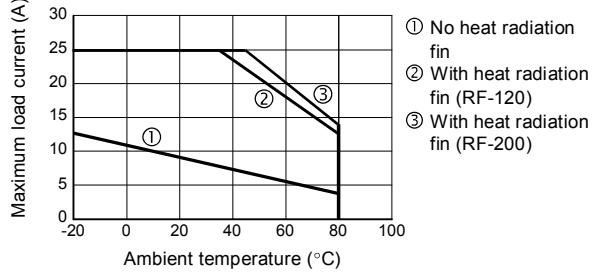
Avoid the following conditions when selecting the mounting location:

- Ambient temperature of less than  $-20^{\circ}\text{C}$  or more than  $+80^{\circ}\text{C}$ .

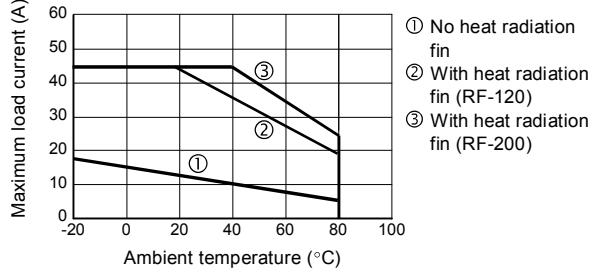
Ambient temperature characteristic (SSJ-15)



Ambient temperature characteristic (SSJ-25)



Ambient temperature characteristic (SSJ-45)

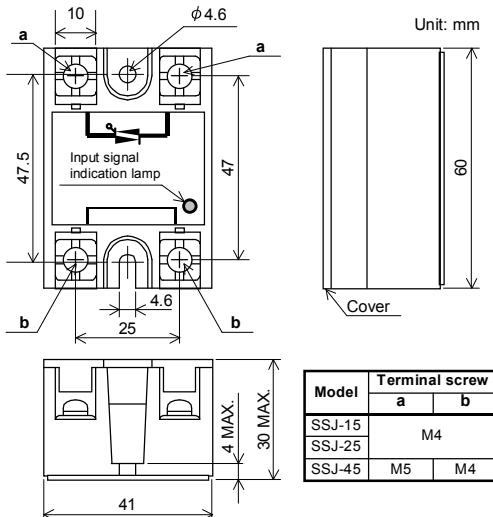


- Rapid changes in ambient temperature which may cause condensation.
- Corrosive or inflammable gases.
- Direct vibration or shock to the mainframe.
- Water, oil, chemicals, vapor or steam splashes.
- Excessive dust, salt or iron particles.
- Excessive induction noise, static electricity, magnetic fields or noise.
- Exposure to direct sunlight.
- Excessive heat accumulation.

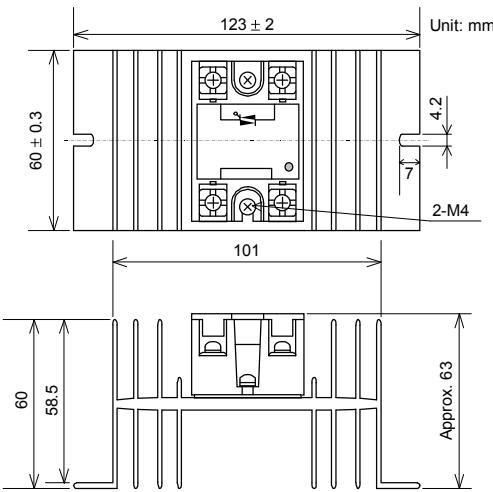
### 2.2 Dimensions

#### ■ SSJ-15, 25 and 45

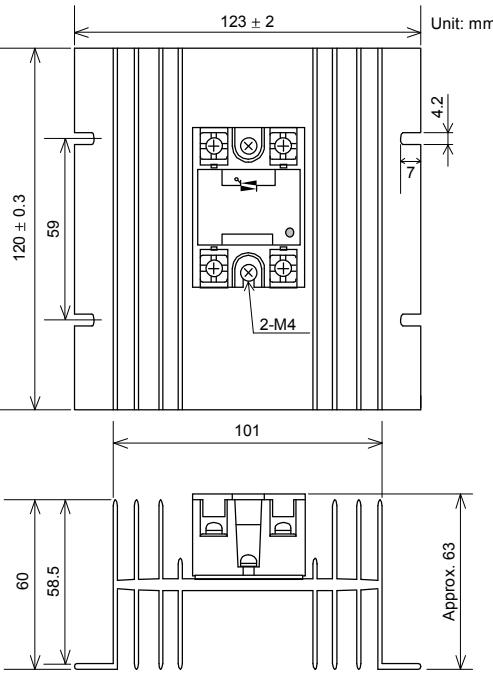
All the dimensions of SSJ-15, SSJ-25 and SSJ-45 is the same.



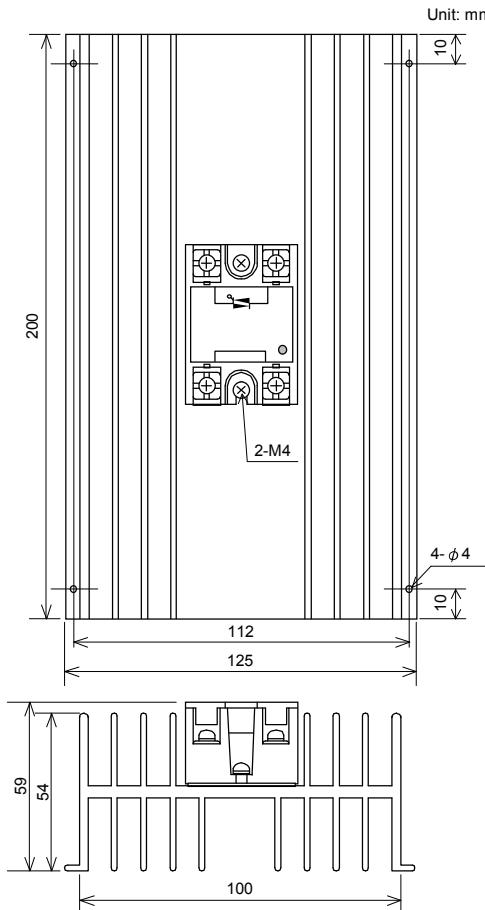
#### ■ With heat radiation fin RF-060



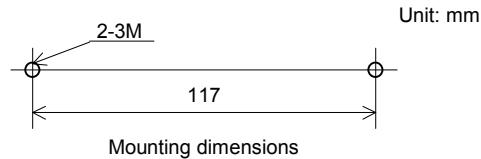
#### ■ With heat radiation fin RF-120



### ■ With heat radiation fin RF-200



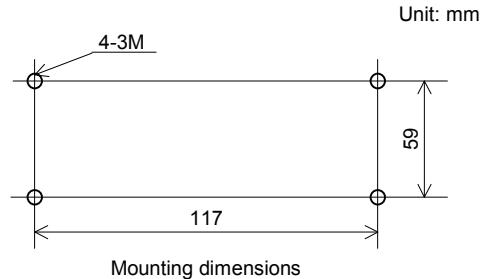
### ■ With heat radiation fin RF-060



Recommended tighten torque:

1.18 to 1.37 N·m (12 to 14 kgf·cm)

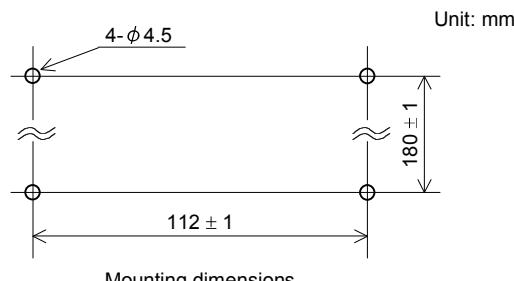
### ■ With heat radiation fin RF-120



Recommended tighten torque:

1.18 to 1.37 N·m (12 to 14 kgf·cm)

### ■ With heat radiation fin RF-200



Recommended tighten torque:

1.18 to 1.37 N·m (12 to 14 kgf·cm)

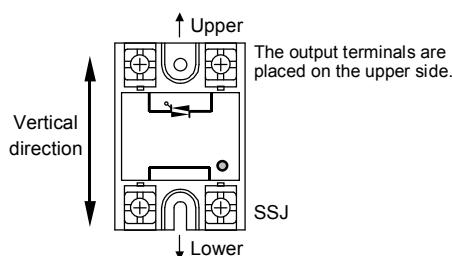
### ■ When the instrument is mounted to the heat radiation fin

When fixing the radiating fin to this instrument, tighten it with the recommended tightening torque as shown in the following table. Also in this case, apply silicone grease (G-746 manufactured by Shin-Etsu Silicones or equal) to the radiating portion of this instrument.

 Firmly fix the radiating fin to the instrument with the specified torque. Insufficient tightening may cause insufficient radiation.

## 2.3 Mounting Direction

Mount this instrument in the direction shown below.

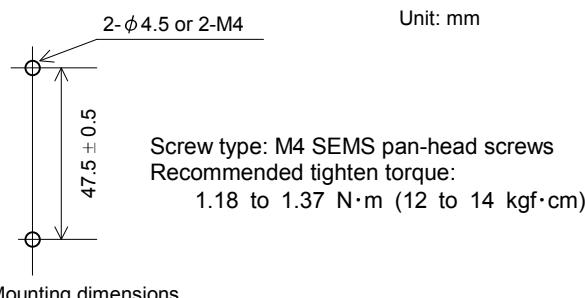


 Do not mount SSJs on a horizontally positioned mounting panel.

## 2.4 Mounting

Make screw holes in the mounting panel by referring to the mounting dimensions.

### ■ No heat radiation fin (SSJ-15, 25 and 45)



Combination	Screw type	Recommended tighten torque
SSJ-15 and RF-60	2-M4	1.47 N·m (15 kgf·cm)
SSJ-25 and RF-120		
SSJ-25 and RF-200		
SSJ-45 and RF-120		
SSJ-45 and RF-200		

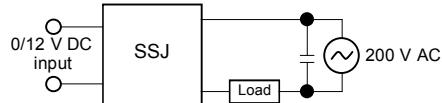
### 3. WIRING

#### ! WARNING

To prevent electric shock or instrument failure, do not turn on the power until all the wiring is completed.

#### 3.1 Wiring Cautions

- Separate wiring on the input side of this instrument from that on the output side.
- This instrument may malfunction if its input side is affected by noise. In that case, take the following measures.
  - Keep input wiring as short as possible.
  - Use twisted pair or shielding wires.
- Use wires satisfying the rated current capacity.
- If current exceeding the rated surge current flows through the output side, the internal element of this product may be damaged. In order to protect the internal element, install a fuse in series with the load on the output side.
- This instrument conforms to "EN55011 Noise Terminal Voltage" with a capacitor connected as shown in the following.



Recommended capacitor: ECQU2A225KL (2.2  $\mu$ F)  
(Manufactured by Matsushita Electronic Components Co., Ltd.)

- Use the solderless terminal appropriate to the screw size. In addition, imperfect terminal screw tightening may result in product combustion due to heat generation while the power is being turned on. Therefore, tighten each terminal screw at an appropriate torque value.

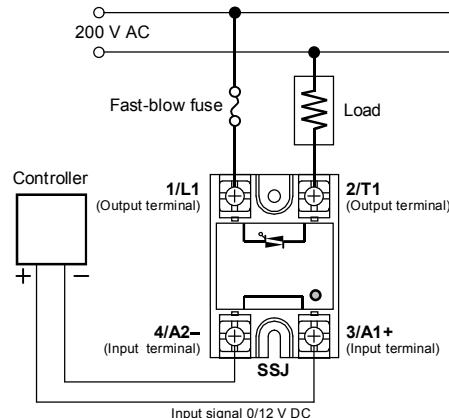
Model	Terminal screw type	Recommended tighten torque
SSJ-15	Input terminal <sup>1</sup> : M4	1.47 N·m (15 kgf·cm)
SSJ-25	Output terminal <sup>2</sup> : M4	
SSJ-45	Input terminal <sup>1</sup> : M4	1.47 N·m (15 kgf·cm)
	Output terminal <sup>2</sup> : M5	1.96 N·m (20 kgf·cm)

"3/A1+" and "4/A2-": Input terminals

"1/L1" and "2/T1": Output terminals

#### 3.2 Wiring Example

Conduct wiring by referring to the following figure.



### 4. SPECIFICATIONS

<b>Maximum load current</b>	15 A AC (SSJ-15) 25 A AC (SSJ-25) 45 A AC (SSJ-45)
<b>Making current (Maximum moment inrush current)</b>	150 A (SSJ-15) 225 A (SSJ-25) 440 A (SSJ-45)
<b>Input signal</b>	Voltage pulse input (DC): LOW (OFF): 0 V HIGH (ON): 3.5 to 30 V
<b>Maximum input current</b>	10 mA (Built-in constant current circuit)
<b>Response speed</b>	1/2 cycle+1 ms or less
<b>Input protection</b>	Protection of reverse polarity connection
<b>Output protection</b>	CR protection circuit and varistor
<b>Output ON voltage drop</b>	1.5 V or less
<b>Load voltage</b>	35 to 264 V AC
<b>Insulation resistance</b>	100 M $\Omega$ or more at 500 V DC
<b>Withstand voltage</b>	1 minute at 3000 V AC
<b>Leakage current</b>	12 mA or less (200 V AC)
<b>Insulation method</b>	Phototriac
<b>Safety standards</b>	UL cUL VDE (VDE-Reg.-Nr. 40005190) [CE conformed]
<b>Dimensions</b>	See 2.2 Dimensions.
<b>Weight</b>	SSJ-15, 25 and 45: Approx. 60 g RF-60: Approx. 165 g RF-120: Approx. 330 g RF-200: Approx. 760 g

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