

## Preface


Thank you for purchasing our Solid State Relay SA-500 series. This manual contains instructions for the mounting, functions, operations and notes when operating the SA-500 series. To ensure safe and correct use, thoroughly read and understand this manual before using this unit. To prevent accidents arising from the misuse of this unit, please ensure the operator receives this manual.

### Notes

- This instrument should be used in accordance with the specifications described in the manual. If it is not used according to the specifications, it may malfunction or cause a fire.
- Be sure to follow the warnings, cautions and notices. If they are not observed, serious injury or malfunction may occur.
- Specifications and the contents of this instruction manual are subject to change without notice.
- Care has been taken to assure that the contents of this instruction manual are correct, but if there are any doubts, mistakes or questions, please inform our sales department.
- This instrument is designed to be installed within a control panel. If it is not, measures must be taken to ensure that the operator cannot touch power terminals or other high voltage sections.
- Any unauthorized transfer or copying of this document, in part or in whole, is prohibited.
- Shinko Technos Co., Ltd. is not liable for any damage or secondary damage(s) incurred as a result of using this product, including any indirect damage.

### SAFETY PRECAUTIONS (Be sure to read these precautions before using our products.)

The safety precautions are classified into 2 categories: "Warning" and "Caution".

Depending on the circumstances, procedures indicated by  Caution may cause serious results, so be sure to follow the directions for usage.

#### Warning

Procedures which may lead to dangerous conditions and cause death or serious injury, if not carried out properly.

#### Caution

Procedures which may lead to dangerous conditions and cause superficial to medium injury or physical damage or may degrade or damage the product, if not carried out properly.

#### Warning

- To prevent an electric shock or fire, only Shinko or other qualified service personnel may handle the inner assembly.
- To prevent an electric shock, fire or damage to the instrument, parts replacement may only be undertaken by Shinko or other qualified service personnel.

#### SAFETY PRECAUTIONS

- To ensure safe and correct use, thoroughly read and understand this manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after purpose-of-use consultation with our agency or main office. (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Also proper periodic maintenance is required.
- This instrument must be used under the conditions and environment described in this manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

#### Caution with respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument is not illegally exported.

## 1. Model

Model	Control System	Maximum Load Current
SA-515-Z	Zero voltage switching system	15 A
SA-525-Z		25 A
SA-540-Z		40 A

# 2. Mounting to the Control Panel

## 2.1 Site Selection



### Caution

Use within the following temperature and humidity ranges.

Temperature: -20 to 80°C (-4 to 176°F), Humidity: 85%RH or less (No icing, non-condensing)

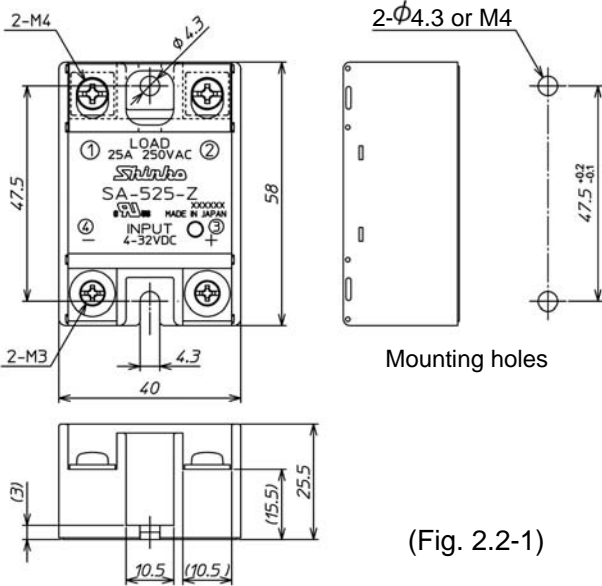
If the SA-500 is installed within the control panel, the ambient temperature of the SA-500 - not the ambient temperature of the control panel - must be kept to under 80°C. Otherwise the life of electronic parts of this unit will be shortened.

Ensure the mounting location corresponds to the following conditions:

- A minimum of dust, and an absence of corrosive gases
- No flammable, explosive gases
- Few mechanical vibrations or shocks
- No exposure to direct sunlight, an ambient temperature of -20 to 80°C (-4 to 176°F) that does not change rapidly, and no icing
- An ambient non-condensing humidity less than 85%RH
- No large capacity electromagnetic switches or cables through which large current is flowing
- No water, oil or chemicals or where the vapors of these substances can come into direct contact with the unit

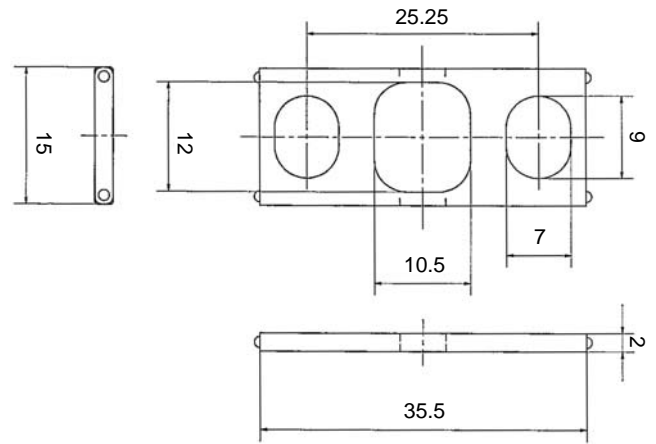
## 2.2 External Dimensions (Scale: mm)

- SA-515-Z, SA-525-Z, SA-540-Z



(Fig. 2.2-1)

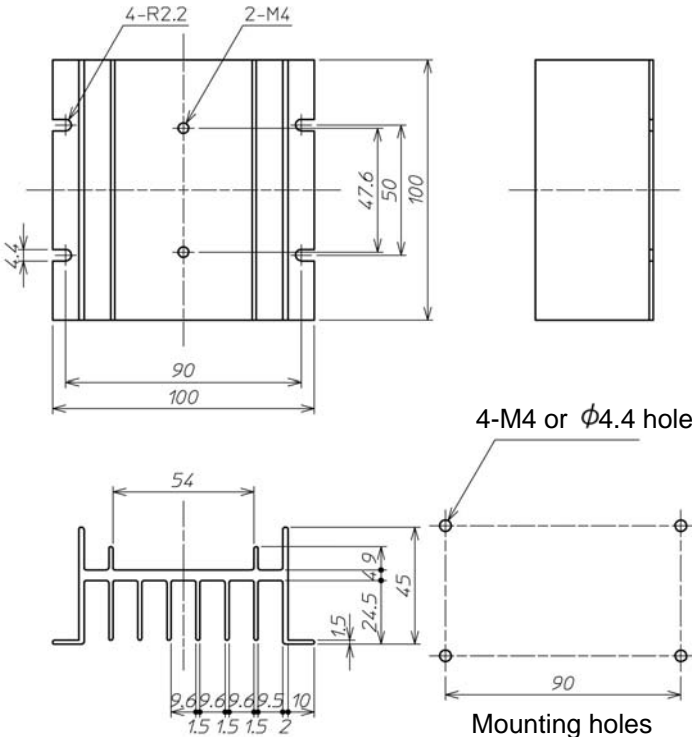
### Terminal Cover (TC-SA5) (Sold separately)



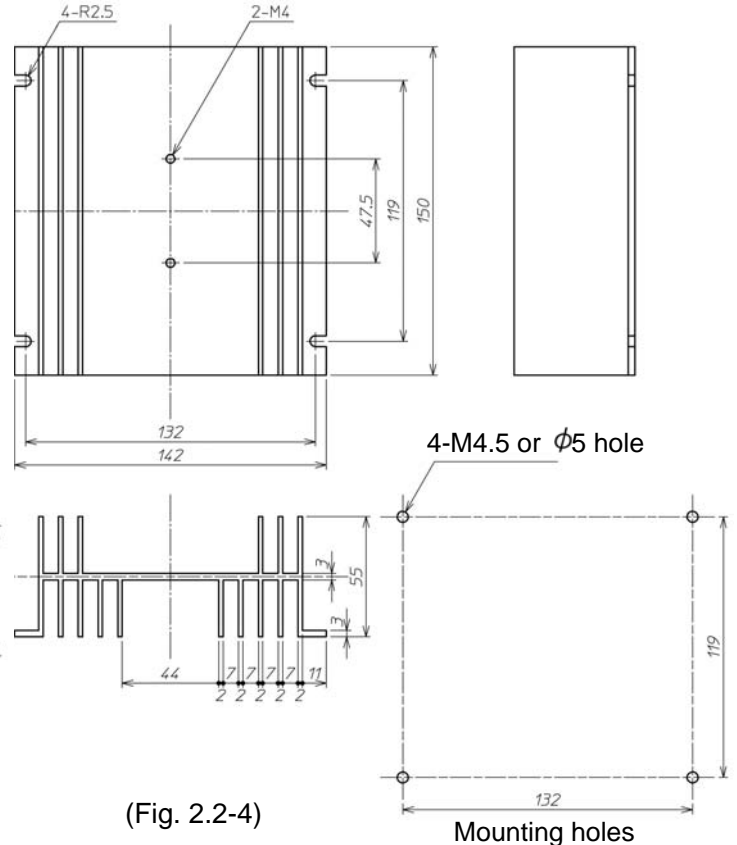
(Fig. 2.2-2)

- Heat Sink HS-320 (for SA-515-Z, SA-525-Z)(Sold separately)

- Heat Sink HS-340 (for SA-540-Z)(Sold separately)



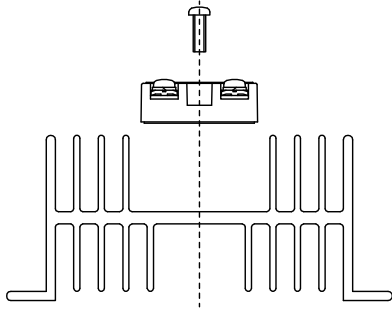
(Fig. 2.2-3)



(Fig. 2.2-4)

### 2.3 Mounting to the Heat Sink

To mount the SA-500 to the heat sink (HS-320, HS-340: Sold separately), use the specified screws.



(Fig. 2.3-1)

## 3. Wiring

### Warning

Turn the power supply to the unit OFF before wiring. Working on or touching the terminal with the power switched ON may result in severe injury or death due to electric shock.

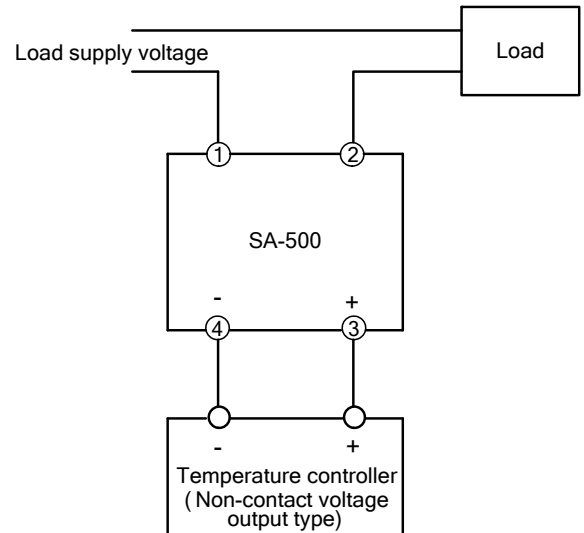
- Do not touch this unit and heat sink during power-on or immediately after power-off. Burns may be caused as the unit and heat sink will be very hot.
- Do not touch output terminals during power-on or immediately after power-off. Electric shock may result.
- Do not block air circulation around the unit and heat sink. Interference may result in a short circuit fault or burnout of output terminals due to abnormal heat generation from the unit.
- Be sure to wire the unit securely and use wires with sufficient thickness.
- For the input wiring, use wire with 0.5 mm<sup>2</sup> to 1.25 mm<sup>2</sup> of thickness, and avoid wiring in parallel with output circuit.
- To protect the circuit, it is recommended to install a circuit breaker or a fuse to the load supply voltage

### 3.1 Tightening Torque

(Table 3.1-1)

Terminal	Screw	Specified Torque
Input side (③, ④)	M3 screw	0.5N•m
Output side (①, ②)	M4 screw	1.0N•m

### 3.2 Wiring Example

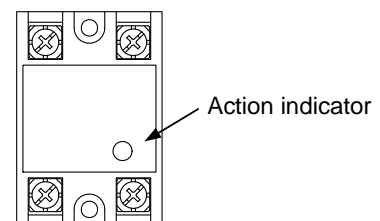


(Fig. 3.2-1)

## 4. Operation

After the wiring is complete, turn ON the power supply to the SA-500 and the controller.

When the input is ON, the LED Action indicator of the SA-500 is lit.

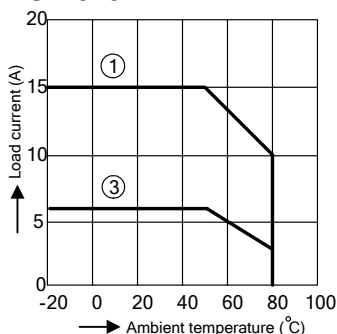


(Fig. 4-1)

# 5. Characteristics

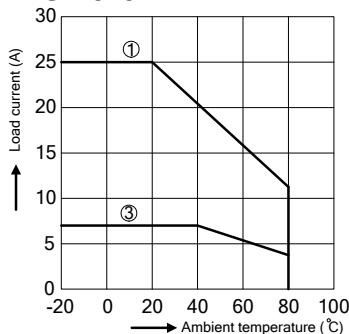
## 5.1 Ambient Temperature and Load Current

### • SA-515-Z



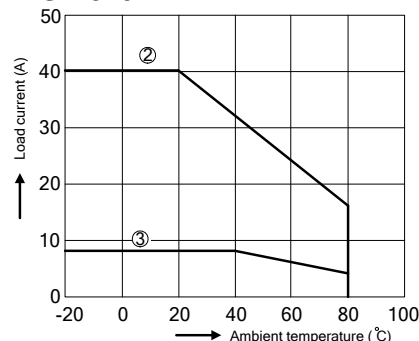
(Fig. 5.1-1)

### • SA-525-Z



(Fig. 5.1-2)

### • SA-540-Z



(Fig. 5.1-3)

①: When mounted to the HS-320 type heat sink.

②: When mounted to the HS-340 type heat sink.

③: When used without heat sink.

• The SA-500 can be used at an ambient temperature within the curved line indicated in Figs. 5.1-1, -2 and -3.

# 6. Specifications

Rating (At 20°C of ambient temperature)	Model				SA-515-Z	SA-525-Z	SA-540-Z
	Input side	Control voltage		4 to 32 V DC			
		Input current		20 mA or less			
		Recovery voltage		1 V or more			
	Output side	Maximum load current		15 A	25 A	40 A	
		Load voltage		75 to 250 V AC		45 to 65 Hz	
		Surge-on current (*1)		150 A	250 A	400 A	
		"OFF-state" leakage current		10 mA or less (60 Hz)			
"ON-state" voltage drop		1.6 V or less (When applying maximum load)					
Minimum load current (*2)		100 mA					
(*1) 60 Hz 1 cycle							
(*2) When load current is lower than (and including) the rated load current, use a dummy resistor so that the load current can become 100 mA or more.							
Dielectric Strength	Between input terminal and output terminal: 4000 V AC for 1 minute Between input terminal and case: 2500 V AC for 1 minute						
Ambient Temperature	-20 to 80°C (No icing, non-condensing)						
Storage Temperature	-25 to 85°C (No icing, non-condensing)						
Control System	Zero voltage switching system						
External Dimensions	40 x 58 x 25.5 mm (W x H x D) Applies to all models.						
Weight	Approx. 70g						
Accessories Included	Instruction manual 1 copy						
Accessories Sold Separately	Terminal cover (TC-SA5), Heat sink: HS-320 (for SA-515-Z, SA-525-Z) HS-340 (for SA-540-Z)						

## SHINKO TECHNOS CO., LTD. OVERSEAS DIVISION

Head Office : 2-5-1, Senbahigashi, Minoo, Osaka, Japan

URL: <http://www.shinko-technos.co.jp>

E-mail: [overseas@shinko-technos.co.jp](mailto:overseas@shinko-technos.co.jp)

Tel : 81-72-727-6100

Fax: 81-72-727-7006