

HSR-2 series

Single-Phase Solid State Relay

- Implementation of large capacity in small, lightweight form
- Bolt, DIN Rail attachment method
- High insulation between input / output
- C-R Snubber, Zero Cross function



Specification

■ DC input (10A / 20A / 30A)

Model		Low	HSR-2D10LZ□	HSR-2D20LZ□	HSR-2D30LZ□
			HSR-2D10LR□	HSR-2D20LR□	HSR-2D30LR□
		High	HSR-2D10HZ□	HSR-2D20HZ□	HSR-2D30HZ□
			HSR-2D10HR□	HSR-2D20HR□	HSR-2D30HR□
LOAD	Rated Load Voltage	Low	24 - 240 V a.c. 50/60 Hz		
		High	24 - 480 V a.c. 50/60 Hz		
	Peak Voltage (Non-repetition)	Low	1,200V		
		High			
	Rated load current		10A	20A	30A
	Surge current 60Hz (8.3ms No repetition)	Low	170A	260A	420A
		High	170A	250A	370A
	Surge current 50Hz (10ms No repetition)	Low	160A	250A	400A
		High	160A	240A	340A
	Leakage current		Less than 20 mA		
	Output ON voltage dropping		Less than 1.6 V (R.M.S)		
INPUT	Rated Voltage		5 - 24 V d.c.		
	Operating Voltage Range (ON Voltage)		4 - 32 V d.c.		
	return voltage (OFF Voltage)		Less than 3 V		
	Impedance		Less than 4 kΩ		
	Current Consumption		Constant current method : 14 mA or less		
Response Time		1/2 Cycle + 1 ms max. ("R" type below 1ms)			
Insulating Resistance		500 V d.c., 100 MΩ (Between input and output and case)			
Dielectric strength		2,500 V a.c. (For 1min at 60Hz)			
Rated impulse withstand voltage (Uimp)		2,500 V			
Vibration resistance		10 - 55 Hz, Double amplitude : 1.5 mm, X-Y-Z each axis direction for 2 hours			
Shock resistance		1,000 m/s ² , X-Y-Z each axis 3 time			
Storage Temperature		-30 ~ 90 °C			
Ambient Temperature & Humidity		-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH			
Pollution level grade		2 level pollution			
bolt tightening torque		Input terminal : 0.05 Nm / Output terminal : 0.25 Nm			
Usage		Resistive load			
Certification		CE (EN 60947-4-3) cULus RoHS2			
Weight		Approx 110 g			

■ DC input (40A / 50A / 70A)

Model		Low	HSR-2D40LZ□	HSR-2D50LZ□	HSR-2D70LZ□
			HSR-2D40LR□	HSR-2D50LR□	HSR-2D70LR□
		High	HSR-2D40HZ□	HSR-2D50HZ□	HSR-2D70HZ□
			HSR-2D40HR□	HSR-2D50HR□	HSR-2D70HR□
LOAD	Rated Load Voltage	Low	24 - 240 V a.c. 50/60 Hz		
		High	24 - 480 V a.c. 50/60 Hz		
	Peak Voltage (Non-repetition)	Low	1,200V		
		High			
	Rated load current		40A	50A	70A
	Surge current 60Hz (8.3ms No repetition)	Low	420A	525A	
		High	370A	525A	
	Surge current 50Hz (10ms No repetition)	Low	400A	500A	
		High	340A	500A	
	Leakage current		Less than 20 mA		
	Output ON voltage dropping		Less than 1.6 V (R.M.S)		
INPUT	Rated Voltage		5 - 24 V d.c.		
	Operating Voltage Range ON Voltage		4 - 32 V d.c.		
	return voltage (OFF Voltage)		Less than 3 V		
	Impedance		Less than 4 kΩ		
	Current Consumption		Constant current method : 14 mA or less		
Response Time		1/2 Cycle + 1 ms max. ("R"type below 1ms)			
Insulating Resistance		500 V d.c., 100 MΩ (Between input and output and case)			
Dielectric strength		2,500 V a.c. (For 1min at 60Hz)			
Rated impulse withstand voltage		2,500 V			
Vibration resistance		10 - 55 Hz, Double amplitude : 1.5 mm, X-Y-Z each axis direction for 2 hours			
Shock resistance		1,000 m/s², X-Y-Z each axis 3 time			
Storage Temperature		-30 ~ 90 °C			
Ambient Temperature & Humidity		-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH			
Pollution level grade		2 level pollution			
bolt tightening torque		Input terminal : 0.05 Nm / Output terminal : 0.25 Nm			
Usage		Resistive load			
Certification		CE (EN 60947-4-3) cULus RoHS2			
Weight		Approx 110 g	Approx 120 g		

■ AC input (10A / 20A / 30A)

Model		Low	HSR-2A10LZ□	HSR-2A20LZ□	HSR-2A30LZ□
			HSR-2A10LR□	HSR-2A20LR□	HSR-2A30LR□
		High	HSR-2A10HZ□	HSR-2A20HZ□	HSR-2A30HZ□
			HSR-2A10HR□	HSR-2A20HR□	HSR-2A30HR□
LOAD	Rated Load Voltage	Low	24 - 240 V a.c. 50/60 Hz		
		High	24 - 480 V a.c. 50/60 Hz		
	Peak Voltage	Low	1,200V		
		High			

	(Non-Rated load current repetition)		10A	20A	30A
	Surge current 60Hz (8.3ms No repetition)	Low	170A	260A	420A
		High	170A	250A	370A
	Surge current 50Hz (10ms No repetition)	Low	160A	250A	400A
		High	160A	240A	340A
	Leakage current		Less than 20 mA		
	Output ON voltage dropping		Less than 1.6 V (R.M.S)		
INPUT	Rated Voltage		100 - 240 V a.c. 50/60 Hz		
	Operating Voltage Range (ON Voltage)		90 - 264 V a.c. 50/60 Hz		
	return voltage (OFF Voltage)		Less than 50 V		
	Impedance		Less than 40 kΩ		
	Current Consumption		Less than 14 mA		
Response Time			1/2 Cycle + 1 ms max. ("R"type below 1ms)		
Insulating Resistance			500 V d.c., 100 MΩ (Between input and output and case)		
Dielectric strength			2,500 V a.c. (For 1min at 60Hz)		
Rated impulse withstand voltage (Uimp)			2,500 V		
Vibration resistance			10 - 55 Hz, Double amplitude : 1.5 mm, X-Y-Z each axis direction for 2 hours		
Shock resistance			1,000 m/s ² , X-Y-Z each axis 3 time		
Storage Temperature			-30 ~ 90 °C		
Ambient Temperature & Humidity			-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH		
Pollution level grade			2 level pollution		
bolt tightening torque			Input terminal : 0.05 Nm / Output terminal : 0.25 Nm		
Usage			Resistive load		
Certification			 (EN 60947-4-3)   		
Weight			Approx 110 g		

■ AC input (40A / 50A / 70A)

	Model	Low	HSR-2A40LZ□	HSR-2A50LZ□	HSR-2A70LZ□
			HSR-2A40LR□	HSR-2A50LR□	HSR-2A70LR□
		High	HSR-2A40HZ□	HSR-2A50HZ□	HSR-2A70HZ□
			HSR-2A40HR□	HSR-2A50HR□	HSR-2A70HR□
LOAD	Rated Load Voltage	Low	24 - 240 V a.c. 50/60 Hz		
		High	24 - 480 V a.c. 50/60 Hz		
	Peak Voltage (Non-repetition)	Low	1,200V		
		High			
	Rated load current		40A	50A	70A
	Surge current 60Hz (8.3ms No repetition)	Low	420A	525A	
		High	370A	525A	
	Surge current 50Hz (10ms No repetition)	Low	400A	500A	
		High	340A	500A	

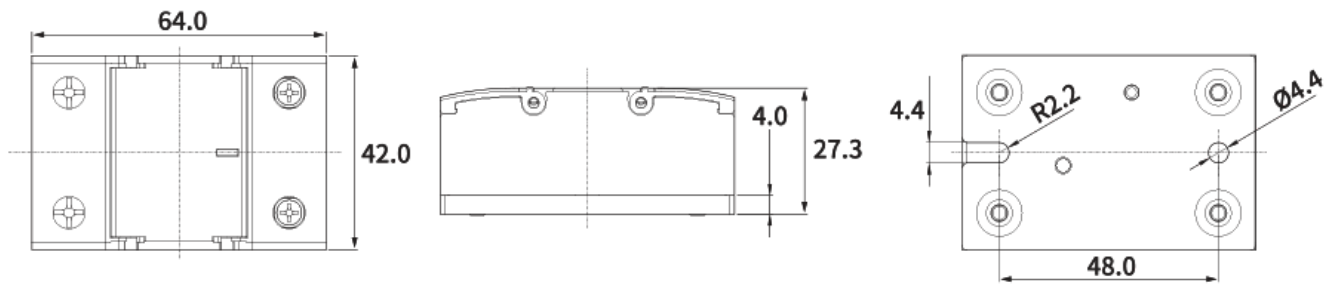
	Leakage current	Less than 20 mA
	Output ON voltage dropping	Less than 1.6 V (R.M.S)
INPUT	Rated Voltage	100 - 240 V a.c. 50/60 Hz
	Operating Voltage Range (ON Voltage)	90 - 264 V a.c. 50/60 Hz
	return voltage (OFF Voltage)	Less than 50 V
	Impedance	Less than 40 kΩ
	Current Consumption	Less than 14mA
Response Time		1/2 Cycle + 1 ms max. ("R" type below 1ms)
Insulating Resistance		500 V d.c., 100 MΩ (Between input and output and case)
Dielectric strength		2,500 V a.c. (For 1min at 60Hz)
Rated impulse withstand voltage (Uimp)		2,500 V
Vibration resistance		10 - 55 Hz, Double amplitude : 1.5 mm, X-Y-Z each axis direction for 2 hours
Shock resistance		1,000 m/s ² , X-Y-Z each axis 3 time
Storage Temperature		-30 ~ 90 °C
Ambient Temperature & Humidity		-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH
Pollution level grade		2 level pollution
bolt tightening torque		Input terminal : 0.05 Nm / Output terminal : 0.25 Nm
Usage		Resistive load
Certification		 (EN 60947-4-3)  <i>RoHS2</i>
Weight		Approx 110 g Approx 120 g

Suffix code

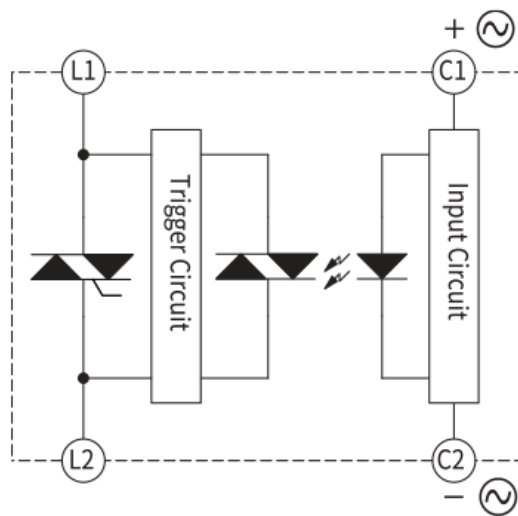
Model	Code					Information
HSR-2	☐	☐	☐	☐	☐	Single-Phase Solid State Relay
Control Input Voltage	D					4 - 32 V d.c.
	A					90 - 240 V a.c.
Rated load current	10					10A
	20					20A
	30					30A
	40					40A
	50					50A
	70					70A
Rated load voltage	L					24 - 240 V a.c. (Low voltage)
	H					24 - 480 V a.c. (High voltage)
Operation method (Switching Mode)	Z					Zero Cross Switching (Standard product)
	R					Random Switching
Heatsink option	T					Heat sink + bimetal mounting (50 A, 70 A only)
	N					No Heat sink ※CAUTION 1) When using a separate heat sink, you must use a heat sink that meets the thermal resistance table.

Dimension

[Unit : mm]



■ Equivalent Circuit

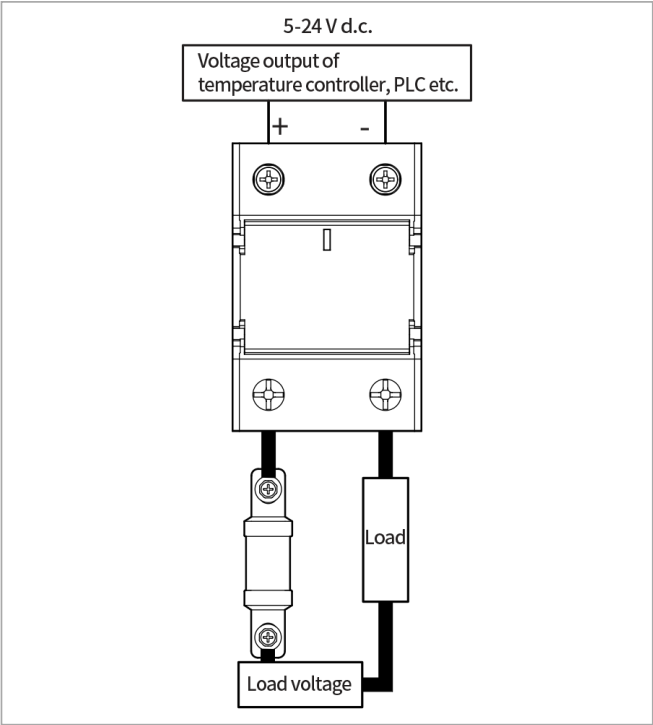
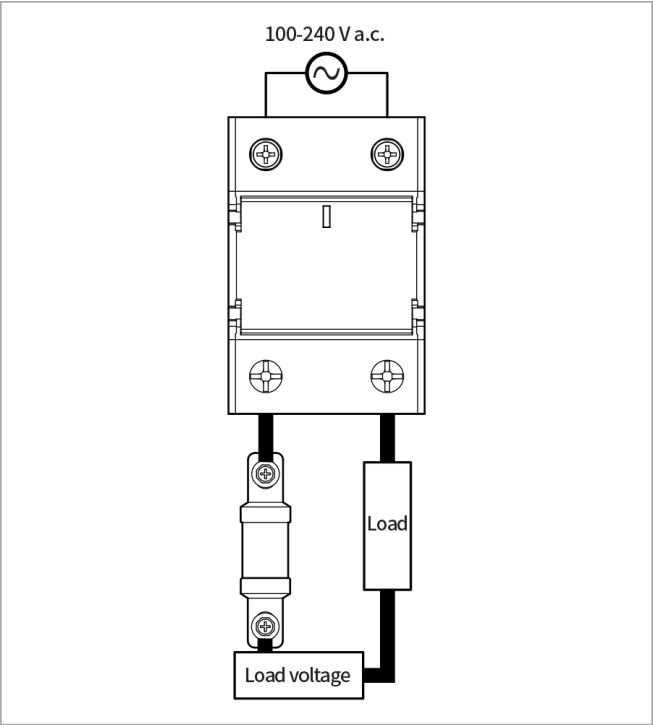


■ Connection

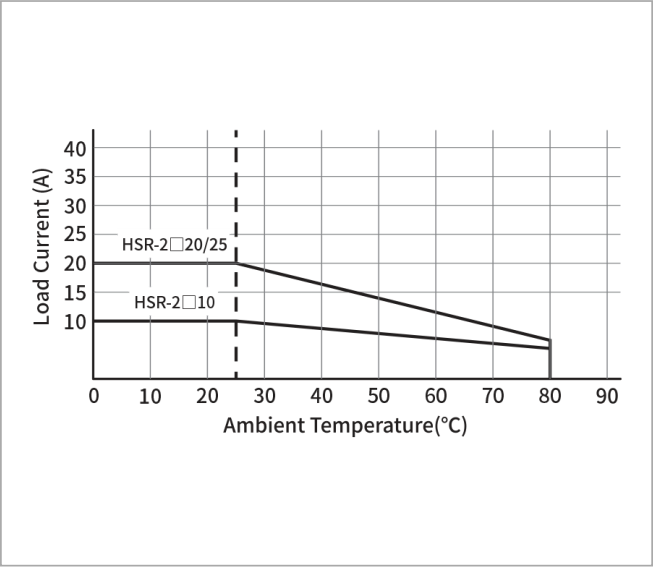
- This model does not have a fuse internally. So we suggest using fast-acting fuse separately on the outside as following picture ([using gG/gL type fuse according to IEC 60269 standard](#))

■ HSR-2A

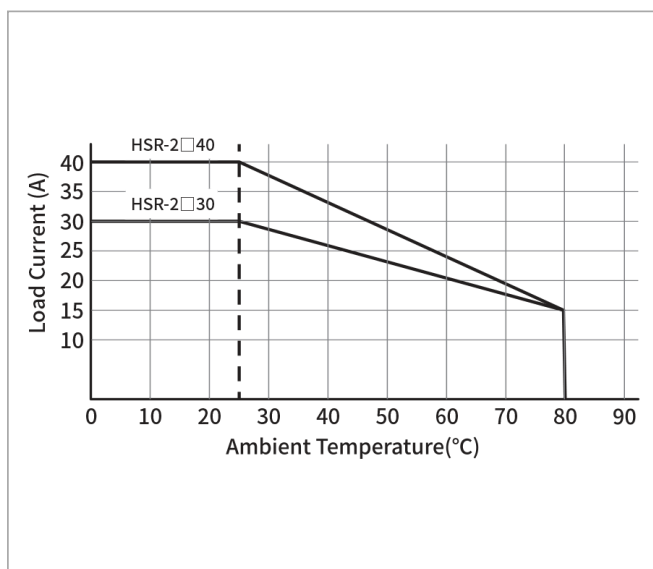
■ HSR-2D



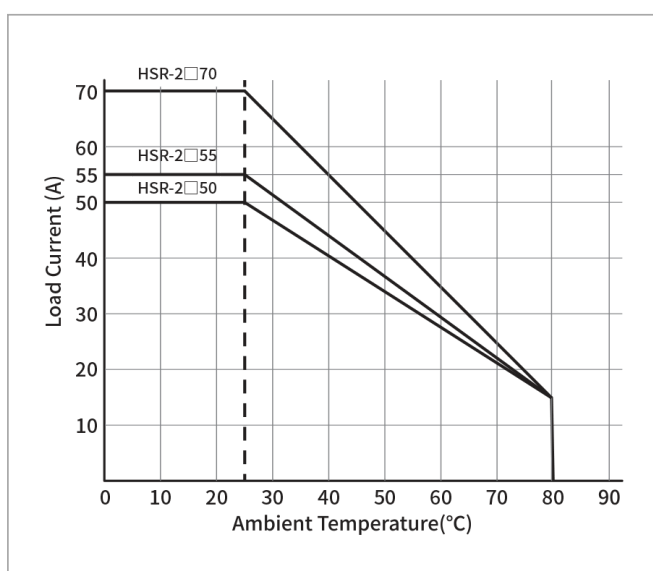
- Input/Loder
- Mounting heat sink



25 °C	10A	20A
80 °C	6A	8A

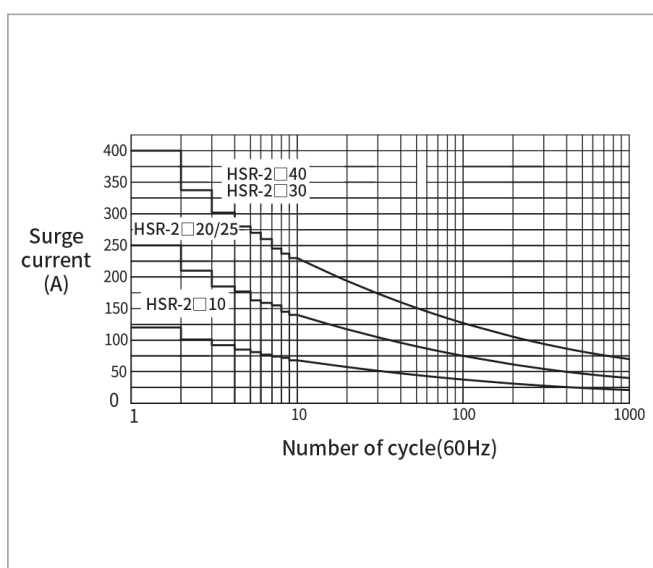


25 °C	30A	40A
80 °C	15A	15A

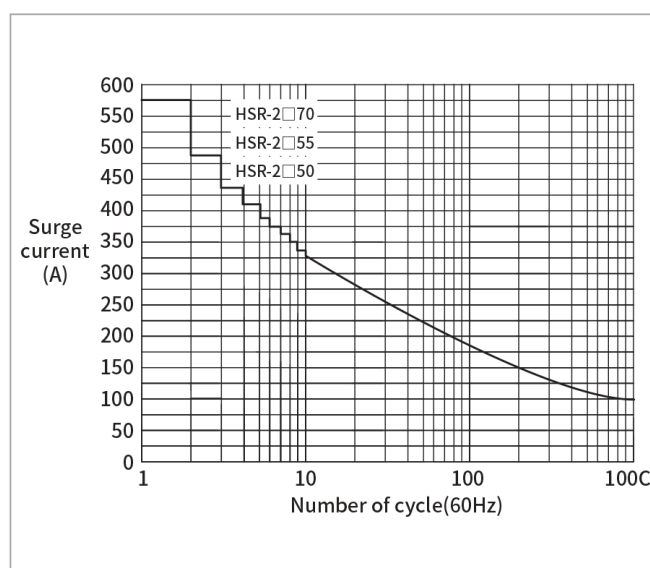


25 °C	50A	55A	70A
80 °C	15A	15A	16A

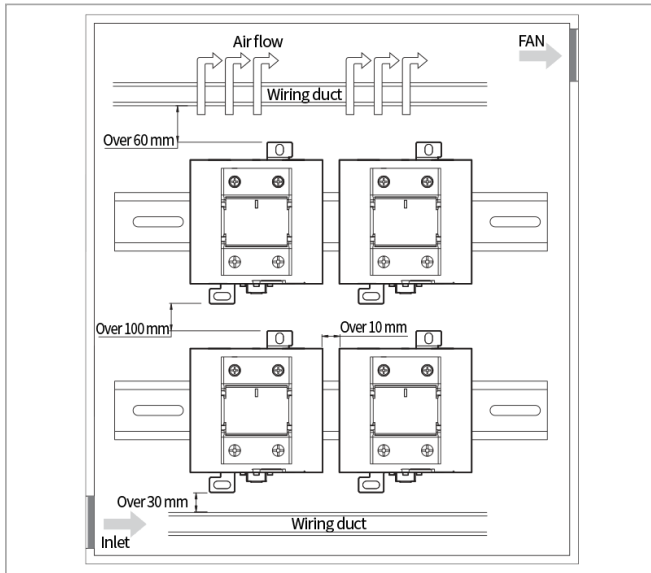
■ Surge current Characteristics 10A ~ 40A



■ Surge current Characteristics 50A ~ 70A



■ Installation



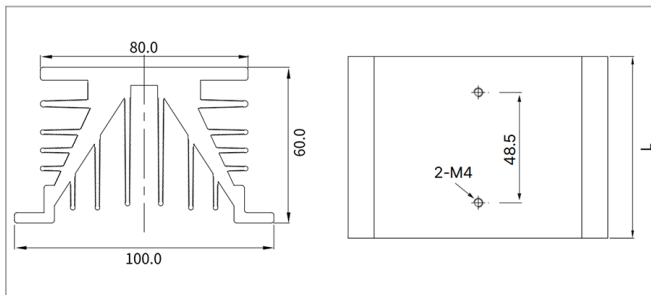
- Please make intervals more than the sizes in the following picture.
- Please install wiring duct less than half the height of the heat sink to prevent the flow of air.
- It is good to use Hanyoung Nux's HSR in lower than ambient temperature 40°C so, please use it lower than standard temperature.
- When installing the HSR, be sure to install the heat sink in the vertical direction.
- Unavoidably, if installed horizontally, the performance of the product will drop below 50 %
- **Input terminal wiring**
1 X 0.5 mm² (1 X AWG20) or larger
1 X 1.5 mm² (1 X AWG16) or less than 2 X 1.5 mm² (2 X AWG16)
- **Output terminal wiring**
1 X 1.5mm² (1 X AWG16) or larger
1 X 16 mm² (1 X AWG6) or less than 2 X 6 mm² (2 X AWG10)

※ Connect the wiring suitable for the load current capacity to the output terminal.

Heat Sink

■ HSM series

[Unit : mm]

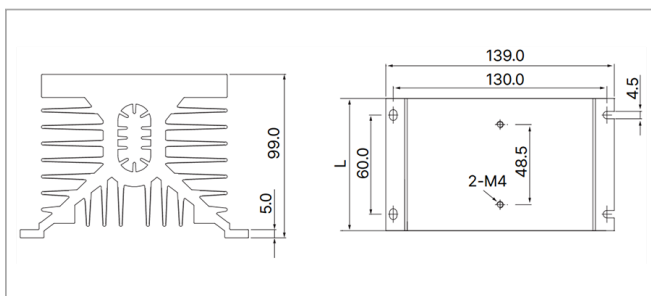


Model	Applicable Model	Capacity (A)	Length (L)	Weight
HSM-70	HSR-2□10□□	10A	70 (mm)	352 (g)
HSM-110	HSR-2□20□□	20A	110 (mm)	558 (g)
HSM-150	HSR-2□30□□	30A	150 (mm)	758 (g)
	HSR-2□40□□	40A		

CAUTION 1 (thermal resistance table)

load capacity	Heatsink thermal resistance (40°C standard)
10A	2.00 °C/W
20A	1.00 °C/W
30A	0.50 °C/W
40A	0.25 °C/W

■ HSN series

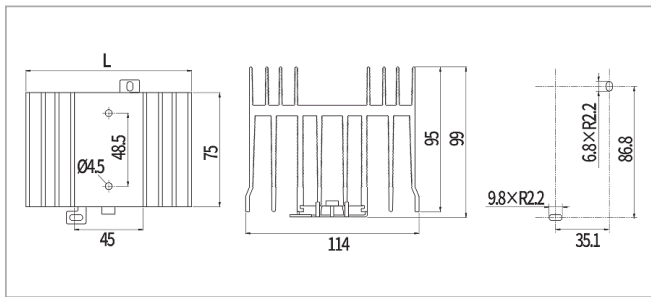


Model	Applicable Model	Capacity (A)	Length (L)	Weight
HSN-80	HSR-2□50□□	50A	80 (mm)	1,146 (g)
HSN-120	HSR-2□70□□	70A	120 (mm)	1,712 (g)

※ CAUTION 1 (thermal resistance table)

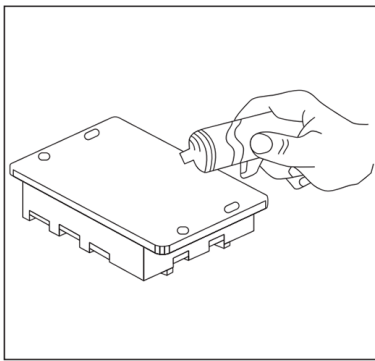
load capacity	Heatsink thermal resistance (40°C standard)
50A	0.30 °C/W
70A	0.15 °C/W

■ HSP series



Model	Applicable Model	Length (L)
HSP-10	HSR-2□10□□	48 mm
HSP-20	HSR-2□20□□	80 mm
HSP-40	HSR-2□30□□	109 mm
	HSR-2□40□□	

■ Precautions during the use of Heat Sink



- Using standard heat sink is mandatory for this product.
- Even if a standard heat sink is used, HSR may be damaged if the surrounding temperature rises or ventilation is poor, so please be careful. (Ambient temperature: 40° or higher)
- Usually, the HSR is damaged when the max temperature of the element exceeds 125°, and when the heat sink temperature is above 85°, the temperature of the element becomes close to 125°, so be sure to measure the heat sink temperature during operation.
- When you connect HSR onto the heat sink, heat-transmitting grease is needed for smooth heat transmission.
- To prevent separation by vibration, tighten up with bolts.
- Do not use any insulating materials such as wood, plastic or rubber. The standard heat sink must be greased on the bottom side as shown and connected.

* The heatproof silicon grease must be applied thoroughly on the heat sink as well as the bottom of HSR. The case side of heat sink needs to be installed on up and down directions.

