

HSR-3 series

Three-phase contactless relay

Tài liệu được tổng hợp bởi đội ngũ kỹ thuật của **NPOWER**
Bản quyền nội dung thuộc về công ty **Hanyoung Nux**Powered by **NAVITECH** | www.navitech.co

- Implementation of large capacity in small, lightweight form
- Bolt attachment method
- Terminal block protection cover structure for safety
- Zero Cross/Random Switching function

**Specification****▪ DC input (10A/20A/30A)**

Model		Low	HSR-3D10LZ□	HSR-3D20LZ□	HSR-3D30LZ□
			HSR-3D10LR□	HSR-3D20LR□	HSR-3D30LR□
		High	HSR-3D10HZ□	HSR-3D20HZ□	HSR-3D30HZ□
			HSR-3D10HR□	HSR-3D20HR□	HSR-3D30HR□
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	1,200 V		
		High			
	Rated load current		10A	20A	30A
	Surge current 60Hz (8.3 ms No repetition)	Low	170A	260A	420A
		High	170A	250A	370A
	Surge current 50 Hz (10ms No repetition)	Low	160A	250A	400A
		High	160A	240A	350A
	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 : Less than 25mA		
Response Time		1/2 Cycle + 1 ms max. ("R" type below 1ms)			
Insulating Resistance		500 V d.c., 100 MΩ (Between the input / 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 times			
Storage Temperature		-30 ~ 90 °C			
Ambient Temperature & Humidity		-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH			
Pollution level grade		2 level			
bolt tightening torque		Input terminal : 0.05 Nm / Output terminal : 0.25 Nm			
Usage		Resistive load			
Certification		CE(EN 60947-4-3)C  RoHS2			
Weight		Approx 250g			

■ DC input (40A/50A/70A)

Model		Low	HSR-3D40LZ□	HSR-3D50LZ□	HSR-3D70LZ□
			HSR-3D40LR□	HSR-3D50LR□	HSR-3D70LR□
		High	HSR-3D40HZ□	HSR-3D50HZ□	HSR-3D70HZ□
			HSR-3D40HR□	HSR-3D50HR□	HSR-3D70HR□
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	1,200 V		
		High			
	Rated load current		40A	50A	70A
	Surge current 60Hz (8.3ms No repetition)	Low	420A	525A	
		High	370A	525A	
	Surge current 50 Hz (10ms No repetition)	Low	400A	500A	
		High	350A	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 : Less than 25mA		
Response Time		1/2 Cycle + 1 ms max. ("R" type below 1ms)			
Insulating Resistance		500 V d.c., 100 MΩ (Between the input / 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 times			
Storage Temperature		-30 ~ 90 °C			
Ambient Temperature & Humidity		-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH			
Pollution level grade		2 level			
bolt tightening torque		Input terminal : 0.05 Nm / Output terminal : 0.25 Nm			
Usage		Resistive load			
Certification		CE(EN 60947-4-3)CULusRoHS2			
Weight		Approx 250g		Approx 310g	

■ AC input (10A/20A/30A)

Model		Low	HSR-3A10LZ□	HSR-3A20LZ□	HSR-3A30LZ□
			HSR-3A10LR□	HSR-3A20LR□	HSR-3A30LR□
		High	HSR-3A10HZ□	HSR-3A20HZ□	HSR-3A30HZ□
			HSR-3A10HR□	HSR-3A20HR□	HSR-3A30HR□
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	1,200 V		
		High			
	Rated load current		10A	20A	30A
	Surge current 60Hz (8.3ms No repetition)	Low	170A	260A	420A
		High	170A	250A	370A
	Surge current 50 Hz (10ms No repetition)	Low	160A	250A	400A
		High	160A	240A	350A
	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. 50/60Hz		
	Operating Voltage Range (ON Voltage)		90 - 264 V a.c. 50/60Hz		
	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 the input / 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 times			
Storage Temperature		-30 ~ 90 °C			
Ambient Temperature & Humidity		-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH			
Pollution level grade		2 level			
bolt tightening torque		Input terminal : 0.05 Nm / Output terminal : 0.25 Nm			
Usage		Resistive load			
Certification		CE(EN 60947-4-3) cULusRoHS2			
Weight		Approx 250g			

■ AC input (40A/50A/70A)

	Model	Low	HSR-3A40LZ□	HSR-3A50LZ□	HSR-3A70LZ□
			HSR-3A40LR□	HSR-3A50LR□	HSR-3A70LR□
		High	HSR-3A10HZ□	HSR-3A20HZ□	HSR-3A30HZ□
			HSR-3A10HR□	HSR-3A20HR□	HSR-3A30HR□
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	1,200 V		
		High			
	Rated load current		40A	50A	70A
	urge current 60Hz (8.3ms No repetition)	Low	420A	525A	
		High	370A	525A	

	Surge current 50 Hz (10ms No repetition)	Low	400A	500A
		High	350A	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. 50/60Hz		
	Operating Voltage Range (ON Voltage)	90 - 264 V a.c. 50/60Hz		
	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 the input / output and case)		
Dielectric strength		2,500 V a.c. (For 1min at 60Hz)		
ated 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 times		
Storage Temperature		-30 ~ 90 °C		
Ambient Temperature & Humidity		-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH		
Pollution level grade		2 level		
bolt tightening torque		Input terminal : 0.05 Nm / Output terminal : 0.25 Nm		
Usage		Resistive load		
Certification		 (EN 60947-4-3)  		
Weight		Approx 250g	Approx 310g	

Suffix code

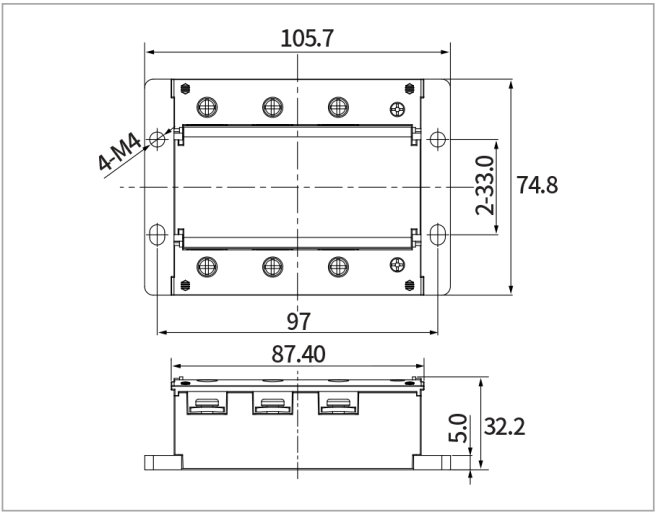
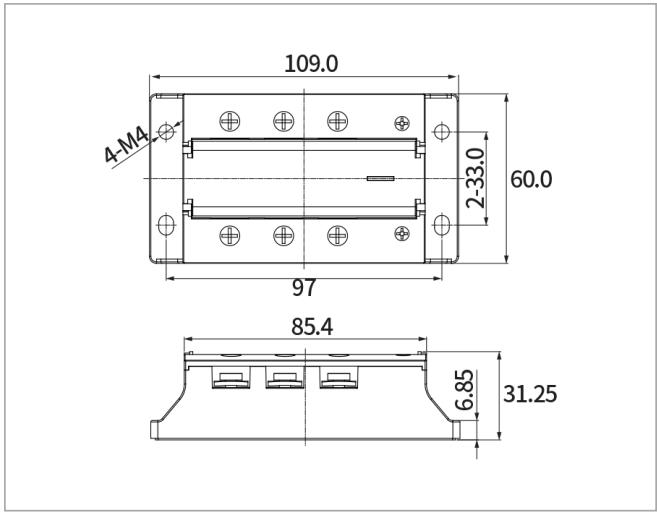
Model	Code					Information
HSR-3	☐	☐	☐	☐	☐	Three-phase contactless relay
Input Voltage	D					4 - 32 V d.c.
	A					90 - 240 V a.c.
Rated load current	10					10A
	20					20A
	30					30A
	40					40A
	50					50A
	70					70A
Rated load voltage	L					24 - 240 V a.c. (Low voltage)
	H					24 - 480 V a.c. (High voltage)
Operation method (Switching Mode)	Z					Zero Cross Switching (standard product)
	R					Random Switching
Heatsink option	T					Heat sink + bimetal installation (50A, 70A only)
	N					No heatsink * CAUTION 1) When using a separate heat sink, you must use a heat sink that meets the thermal resistance table.

Dimension

[Unit : mm]

■ 10/20/30/40A

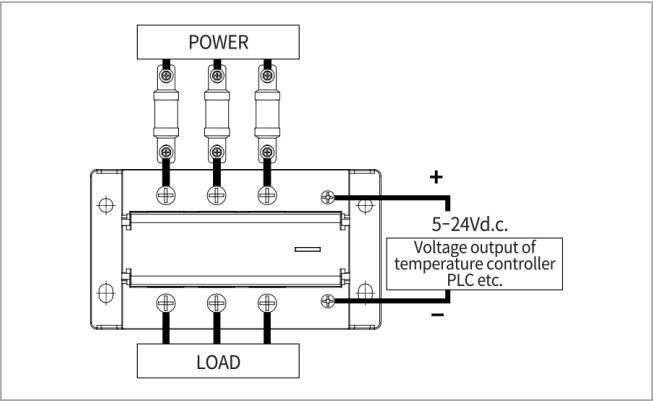
■ 50/70A



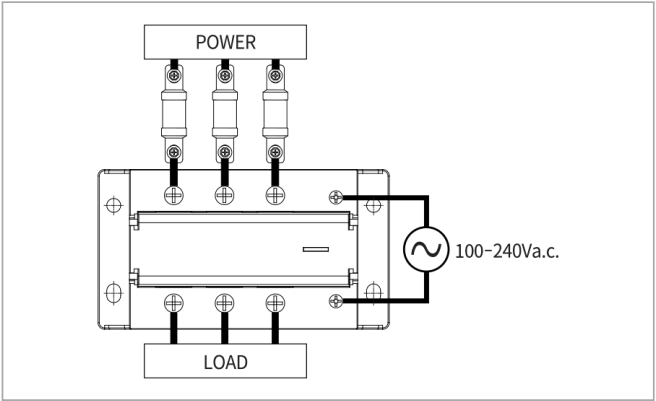
Connection

※ 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-3D

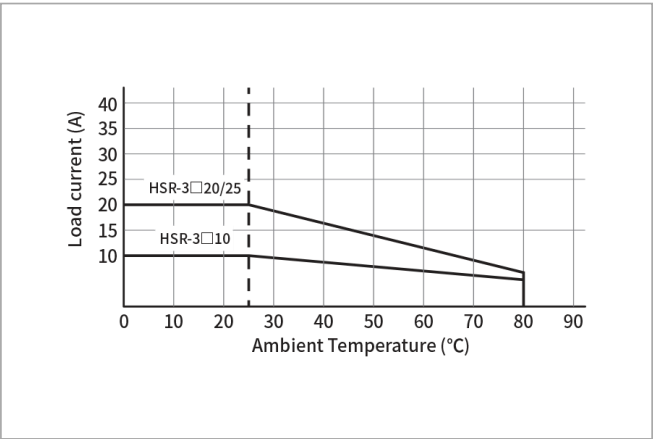


+ HSR-3A

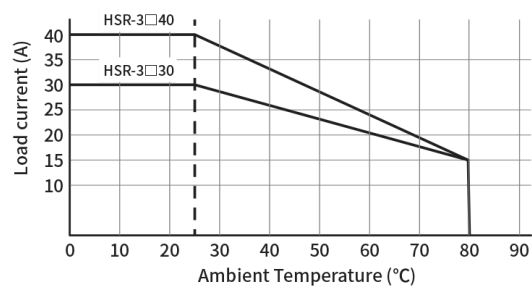


Load/Surge current Characteristics

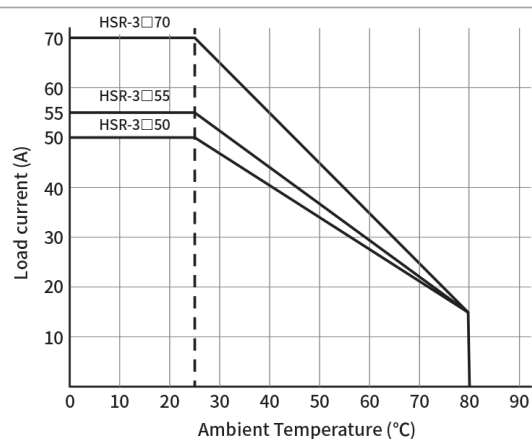
+ Integrated heat sink



25 °C	10A	20A
80 °C	6A	8A

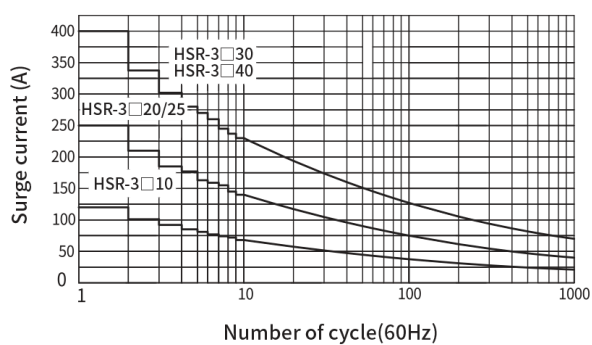


25 °C	30A	40A
80 °C	15A	15A

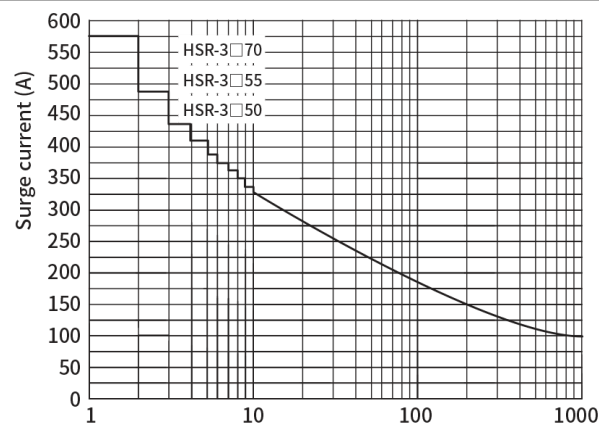


25 °C	50A	55A	70A
80 °C	15A	15A	16A

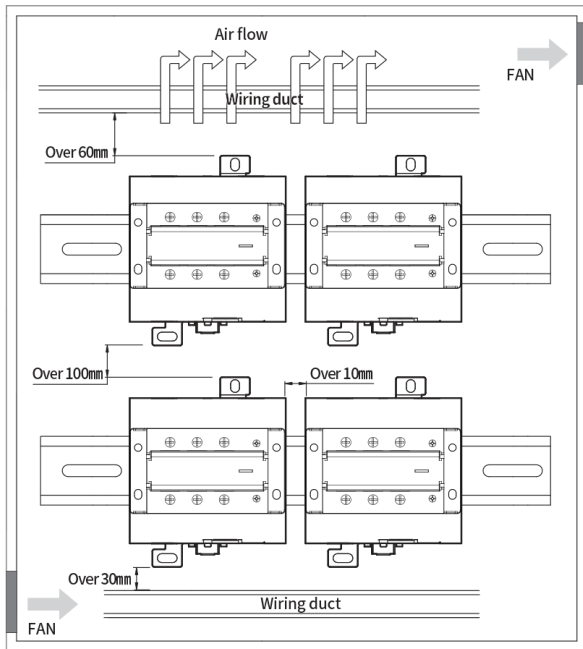
+ Surge current Characteristics 10A ~ 40A



+ 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 %

※ Precautions

- 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

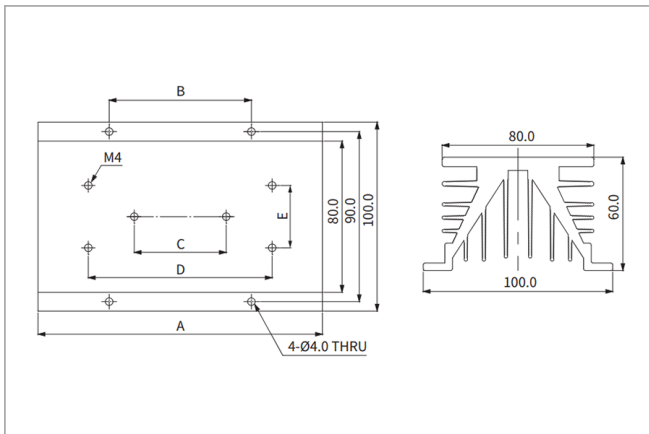
1 X 16 mm² (1 X AWG6) or less than 2 X 6 mm² (2 X AWG10)

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

HEAT SINK

+ HSM series

[Unit : mm]

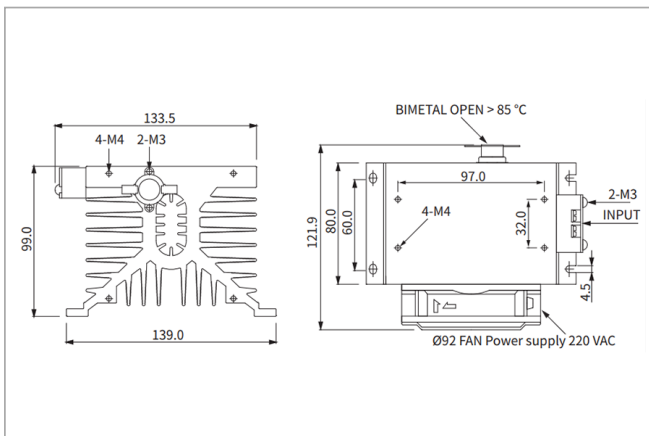


Model	Applicable Model	A	B	C	D	E	Weight
HSM-150	HSR-3□10□□	150	75	49	97	32	768g
HSM-200	HSR-3□20□□	200	100	-	97	32	1,030g
HSM-250	HSR-3□30□□	250	250	-	97	32	1,284g
	HSR-3□40□□						

※ CAUTION 1 (thermal resistance table)

load capacity	Heatsink thermal resistance (40°C standard)	load capacity	Heatsink thermal resistance (40°C standard)
10A	0.60 °C/W	20A	0.30 °C/W
30A	0.15 °C/W	40A	0.05 °C/W

+ HSN80-F series

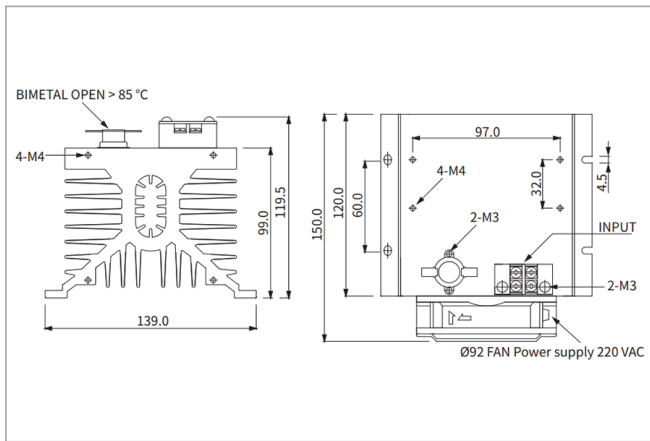


Model	Applicable Model	Weight
HSN - 80F	HSR-3□50□□	1,474g

※ CAUTION 1 (thermal resistance table)

load capacity	Heatsink thermal resistance (40°C standard)
50A	0.10 °C/W

+ HSN120-F series

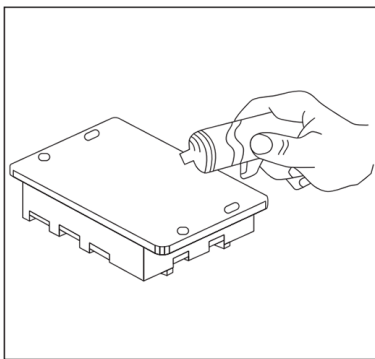


Model	Applicable Model	Weight
HSN - 120F	HSR-3□70□□	2,052g

※ CAUTION 1 (thermal resistance table)

load capacity	Heatsink thermal resistance (40°C standard)
70A	0.05 °C/W

Precautions during the use of Heat Sink



- Using standard heat sink is mandatory for this product.
 - Even the standard heat sink is used, HSR damage may occur if the environment temperature rises or if the ventilation does not work well. (Environment temperature : over 40°C)
 - The normal HSR element is damaged at the maximum temperature of 125 °C . When the temperature of heat sink is 85° C, the temperature of the element reaches around 125 °C . Therefore, during operation, measure the temperature of heat sink.
 - 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 below 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.

