

KSR-N2 Series

Single-phase SSR

- Implementaion of compact, lightweight large capacity
- Bolt mounting method
- High insulation between input/output
- C-R Snubber, Zero Cross Function



Model Classification Chart

Model Name	Code					Detail
KSR-N2	☐	☐	☐	☐	☐	Single-phase General Type SSR
Control input voltage	D					3~32 VDC
	A					90 ~ 240 VAC
Rated load current	10					10A
	20					20A
	30					30A
	40					40A
	60					60A
	80					80A
Operating load voltage	L					24 ~ 240 VAC (for low voltage)
	H					24 ~ 480 VAC (for high voltage)
Operating Method	Z					Zero-Cross Switching (Standard Product)
	R					Random Switching (Custom-Made)
Heatsink Options	T					Heatsink + Bimetal equipped (for 60℃, 80℃ only)
	none					No heatsink (standard product)
						* When using a separate heatsink, a heatsink compliant with the "Thermal Resistance Table" must be used.

* Thermal Resistance Table

Load capacity	Heatsink thermal resistance (40℃ standard)
10A	2.00 ℃/W
20A	1.00 ℃/W
30A	0.50 ℃/W
40A	0.25 ℃/W
60A	0.30 ℃/W
80A	0.15 ℃/W

Performance and Specifications

DC Input							
Type	For low voltage	KSR-N2D10LZ	KSR-N2D20LZ	KSR-N2D30LZ	KSR-N2D40LZ	KSR-N2D60LZ	KSR-N2D80LZ
		KSR-N2D10LR	KSR-N2D20LR	KSR-N2D30LR	KSR-N2D40LR	KSR-N2D60LR	KSR-N2D80LR
	For high voltage	KSR-N2D10HZ	KSR-N2D20HZ	KSR-N2D30HZ	KSR-N2D40HZ	KSR-N2D60HZ	KSR-N2D80HZ
		KSR-N2D10HR	KSR-N2D20HR	KSR-N2D30HR	KSR-N2D40HR	KSR-N2D60HR	KSR-N2D80HR
Operating load voltage	For low voltage	24 ~ 250 VAC. 50/60 Hz					
	For high voltage	24 ~ 480 VAC. 50/60 Hz					
Peak Voltage (Non-repetitive)	For low voltage	1,200V					
	For high voltage						
Load	Rated load current	10A	20A	30A	40A	60A	80A
	Input current 60Hz (8.3 ms non-repetitive)	For low voltage	170A	260A	420A	525A	
		For high voltage	170A	250A	370A	525A	
	Input current 50Hz (10 ms non-repetitive)	For low voltage	160A	250A	400A	500A	
		For high voltage	160A	240A	340A	500A	
	Leakage current	20 mA max.					
Input	Output ON Voltage Drop	1.6V (R.M.S) max.					
	Rated voltage	5 ~ 24VDC					
	Operating voltage range (ON voltage)	3 ~ 32 VDC					
	Recovery voltage (OFF voltage)	3V max.					
	Impedance	4 kΩ max.					
	Current consumption	Constant current method: 14 mA max.					
Response speed		1/2 Cycle + 1ms max. ("R" type 1 ms max.)					
Insulation resistance		500VDC, 100 MΩ (between input, output, and case)					
Withstand voltage		2,500VAC (1 minute at 60 Hz)					
Rated impulse withstand voltage (Uimp)		2,500V					
Vibration resistance		10 ~ 55 Hz, double amplitude: 1.5 mm, 2 hours in each direction of XYZ axis					
Shock resistance		1,000 m/s ² , 3 times in each axis direction					
Storage temperature		-30 ~ 90°C					
Ambient operating temperature/humidity		-30 ~ 80°C (with no condensation), 45 ~ 85 % RH					
Pollution grade		Grade 2					
Bolt tightening torque		Input terminal: 0.05 Nm / Output terminal: 0.25 Nm					
Usage		Resistive load					
Applicable standards		CE 60947-4-3,  RoHS2					
Weight	Detachable heatsink (excluding box)	Approx. 95g		Approx. 100g			

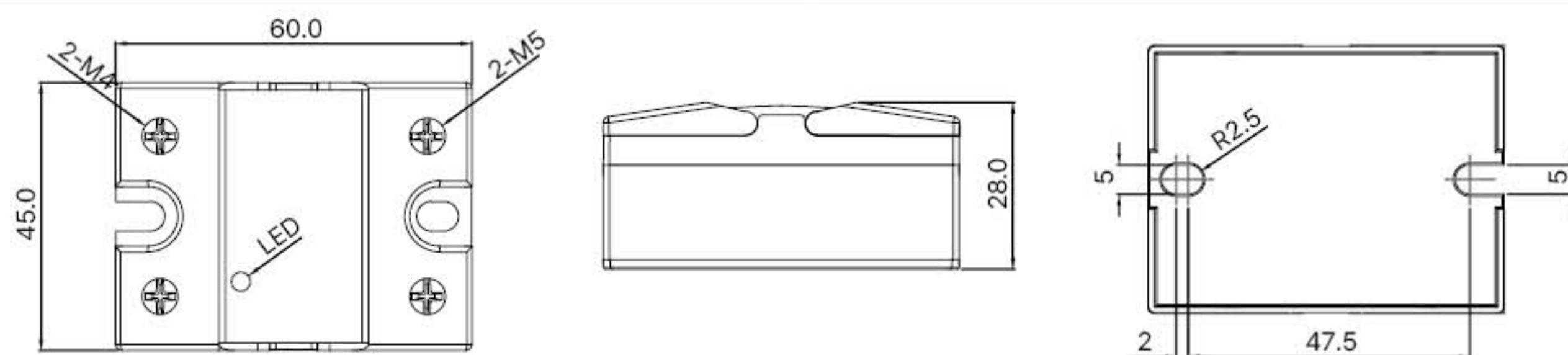
Performance and Specifications

AC Input							
Type	For low voltage	KSR-N2A10LZ	KSR-N2A20LZ	KSR-N2A30LZ	KSR-N2A40LZ	KSR-N2A60LZ	KSR-N2A80LZ
		KSR-N2A10LR	KSR-N2A20LR	KSR-N2A30LR	KSR-N2A40LR	KSR-N2A60LR	KSR-N2A80LR
	For high voltage	KSR-N2A10HZ	KSR-N2A20HZ	KSR-N2A30HZ	KSR-N2A40HZ	KSR-N2A60HZ	KSR-N2A80HZ
		KSR-N2A10HR	KSR-N2A20HR	KSR-N2A30HR	KSR-N2A40HR	KSR-N2A60HR	KSR-N2A80HR
Operating load voltage	For low voltage	24 ~ 250 VAC. 50/60 Hz					
	For high voltage	24 ~ 480 VAC. 50/60 Hz					
Peak Voltage (Non-repetitive)	For low voltage	1,200V					
	For high voltage						
Load	Rated load current	10A	20A	30A	40A	60A	80A
	Input current 60Hz (8.3 ms non-repetitive)	For low voltage	170A	260A	420A	525A	
		For high voltage	170A	250A	370A	525A	
	Input current 50Hz (10 ms non-repetitive)	For low voltage	160A	250A	400A	500A	
		For high voltage	160A	240A	340A	500A	
	Leakage current	20 mA max.					
Input	Output ON Voltage Drop	1.6V (R.M.S) max.					
	Rated voltage	100 ~ 240 VAC 50/60 Hz					
	Operating voltage range (ON voltage)	90 ~ 264 VAC 50/60 Hz					
	Recovery voltage (OFF voltage)	50V max.					
	Impedance	40 kΩ max.					
	Current consumption	14 mA max.					
Response speed		1/2 Cycle + 1ms max. ("R" type 1 ms max.)					
Insulation resistance		500VDC, 100 MΩ (between input, output, and case)					
Withstand voltage		2,500VAC (1 minute at 60 Hz)					
Rated impulse withstand voltage (Uimp)		2,500V					
Vibration resistance		10 ~ 55 Hz, double amplitude: 1.5 mm, 2 hours in each direction of XYZ axis					
Shock resistance		1,000 m/s ² , 3 times in each axis direction					
Storage temperature		-30 ~ 90°C					
Ambient operating temperature/humidity		-30 ~ 80°C (with no condensation), 45 ~ 85 % RH					
Pollution grade		Grade 2					
Bolt tightening torque		Input terminal: 0.05 Nm / Output terminal: 0.25 Nm					
Usage		Resistive load					
Applicable standards		CE 60947-4-3,  RoHS2					
Weight	Detachable heatsink (excluding box)	Approx. 95g			Approx. 100g		

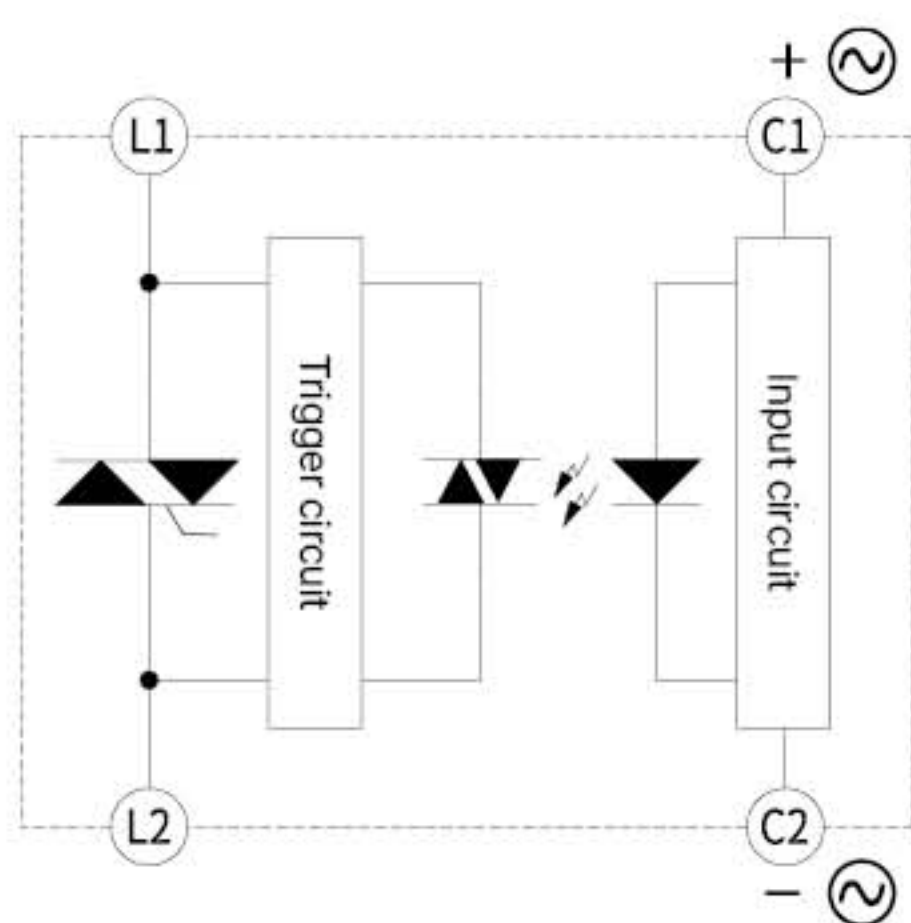
External dimensions diagram

단위 : mm

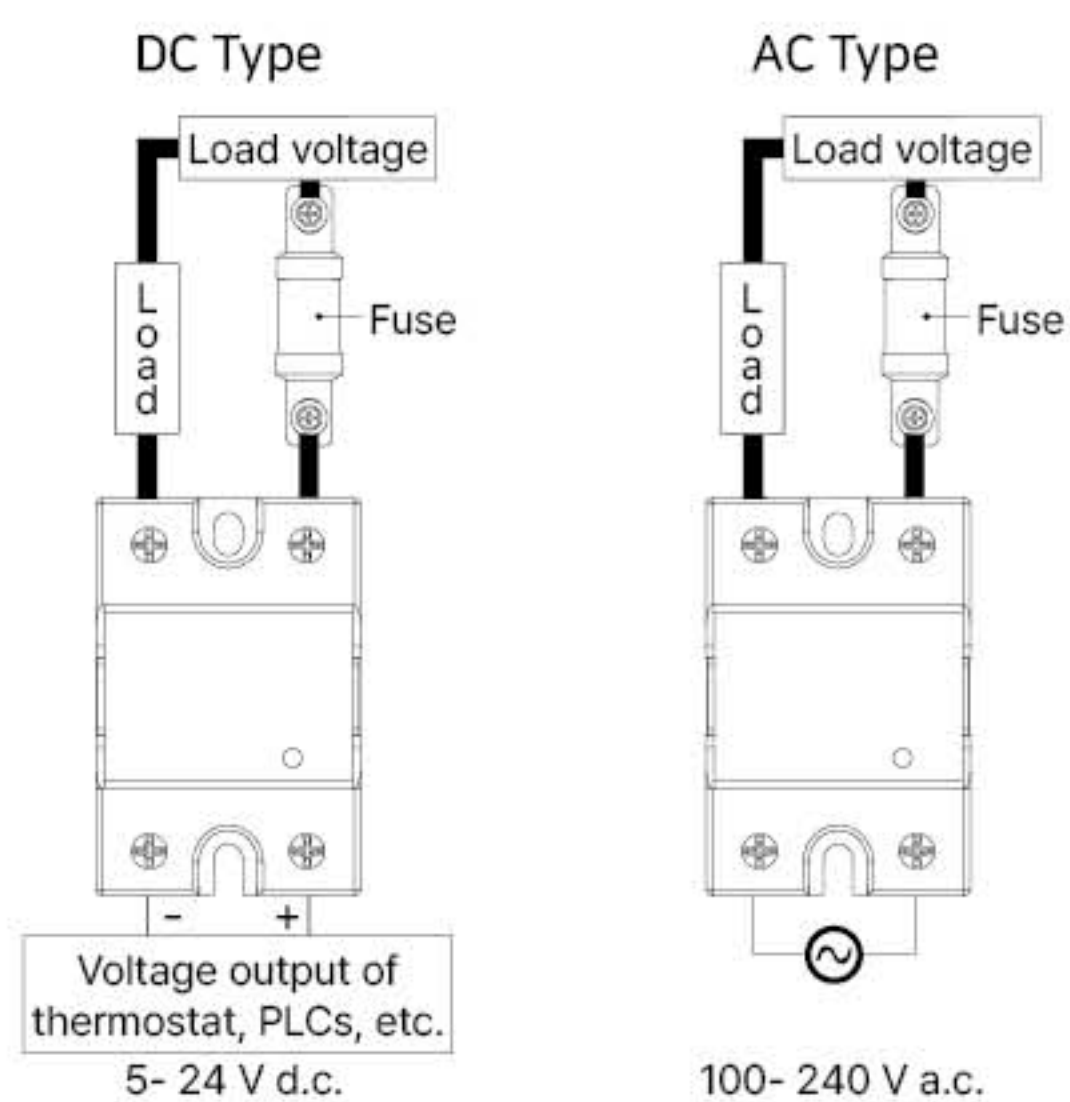
KSR-N2



Equivalent circuit



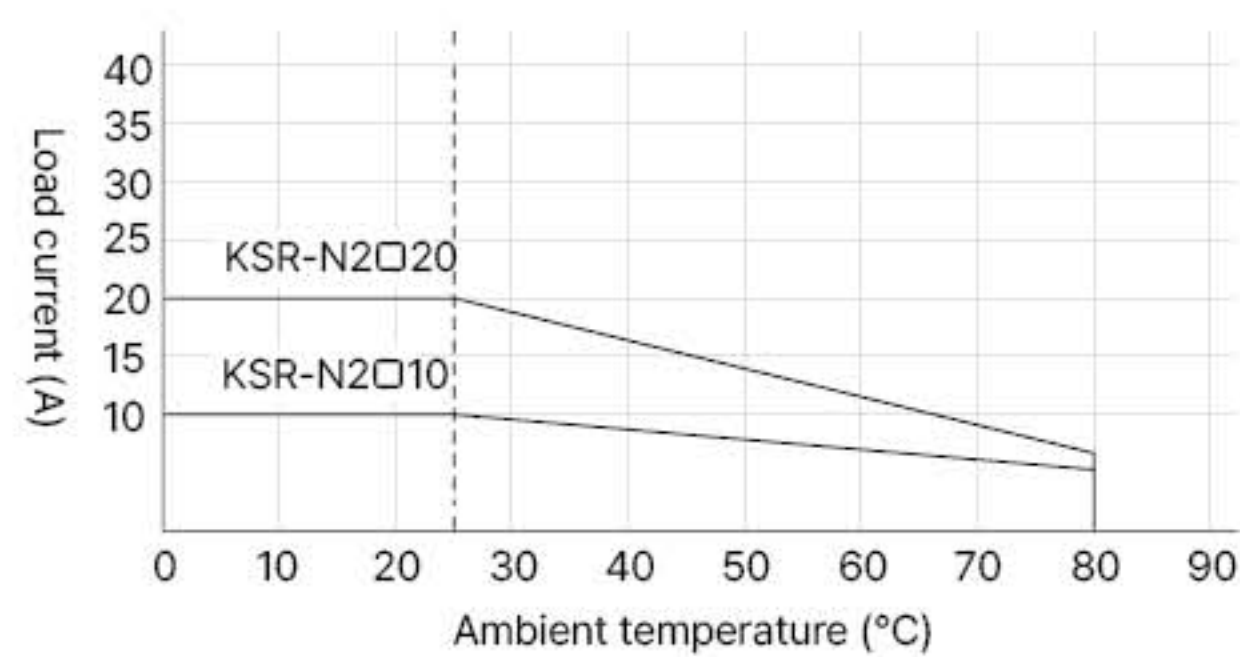
Connection diagram



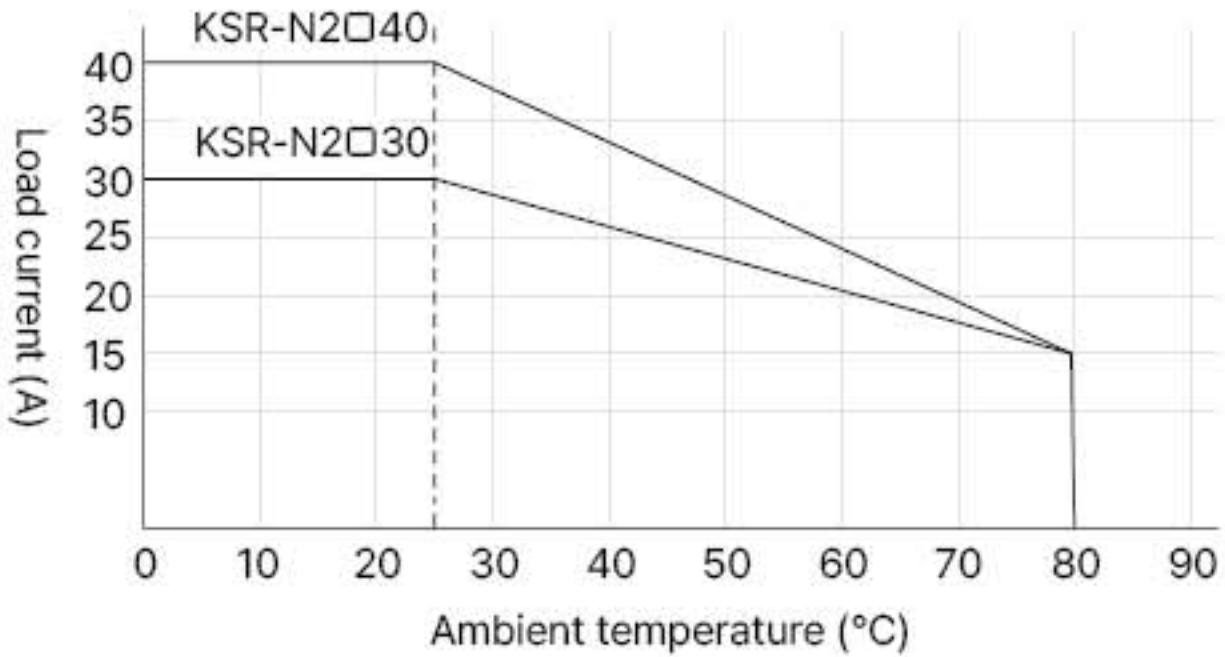
* This product is not equipped with an internal fuse. It is recommended to use a separate external fuse as shown in the image. (Use gG/gL type fuses according to IEC 60269 standard)

Load / Input Current Characteristics

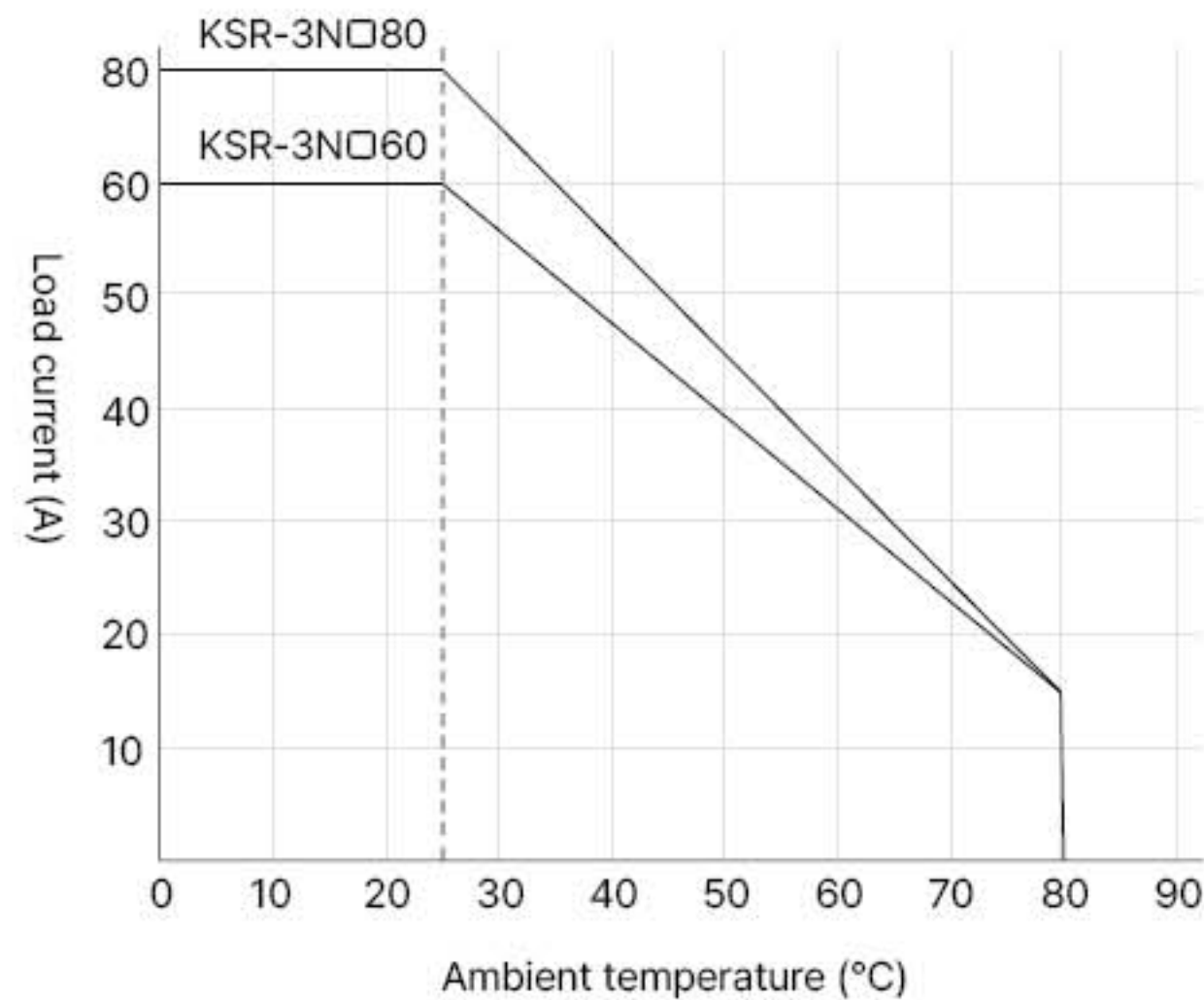
Heatsink attachment



25℃	10A	20A
80℃	6A	8A

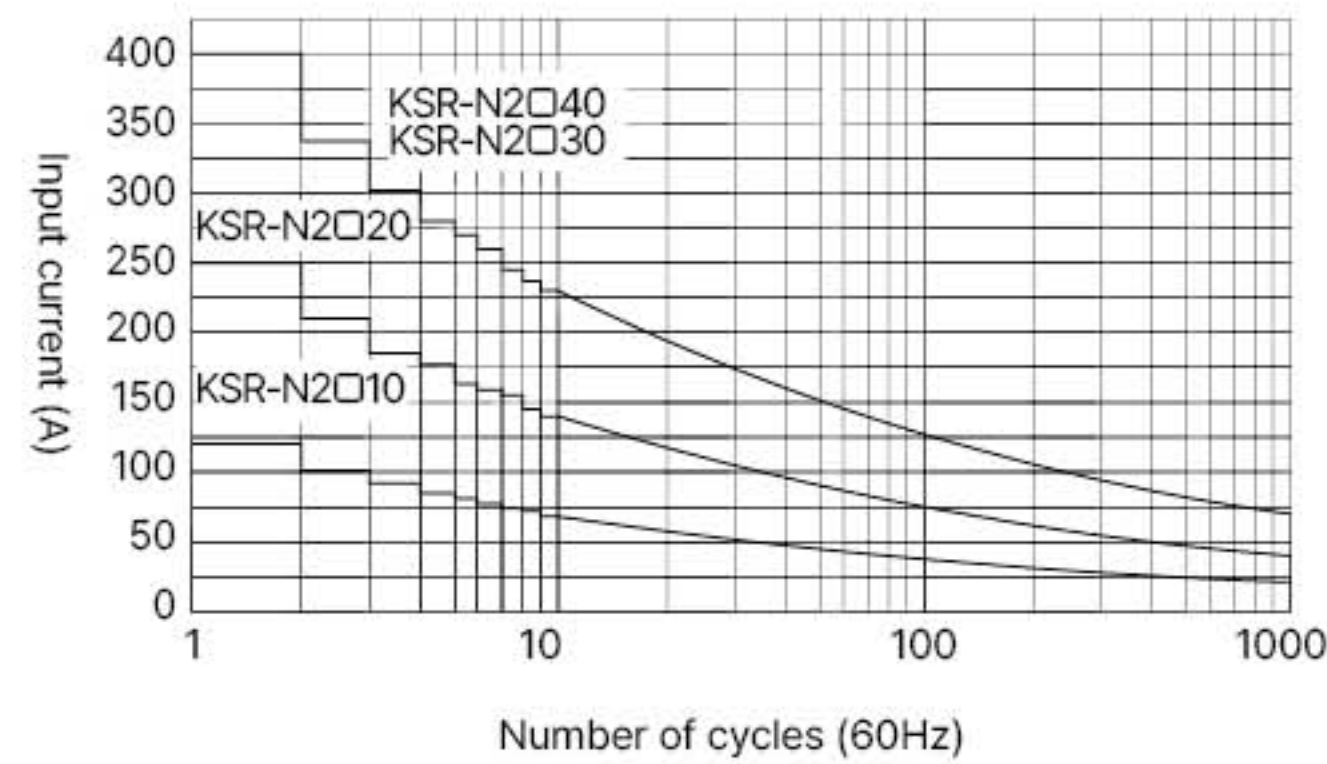


25℃	30A	40A
80℃	15A	15A

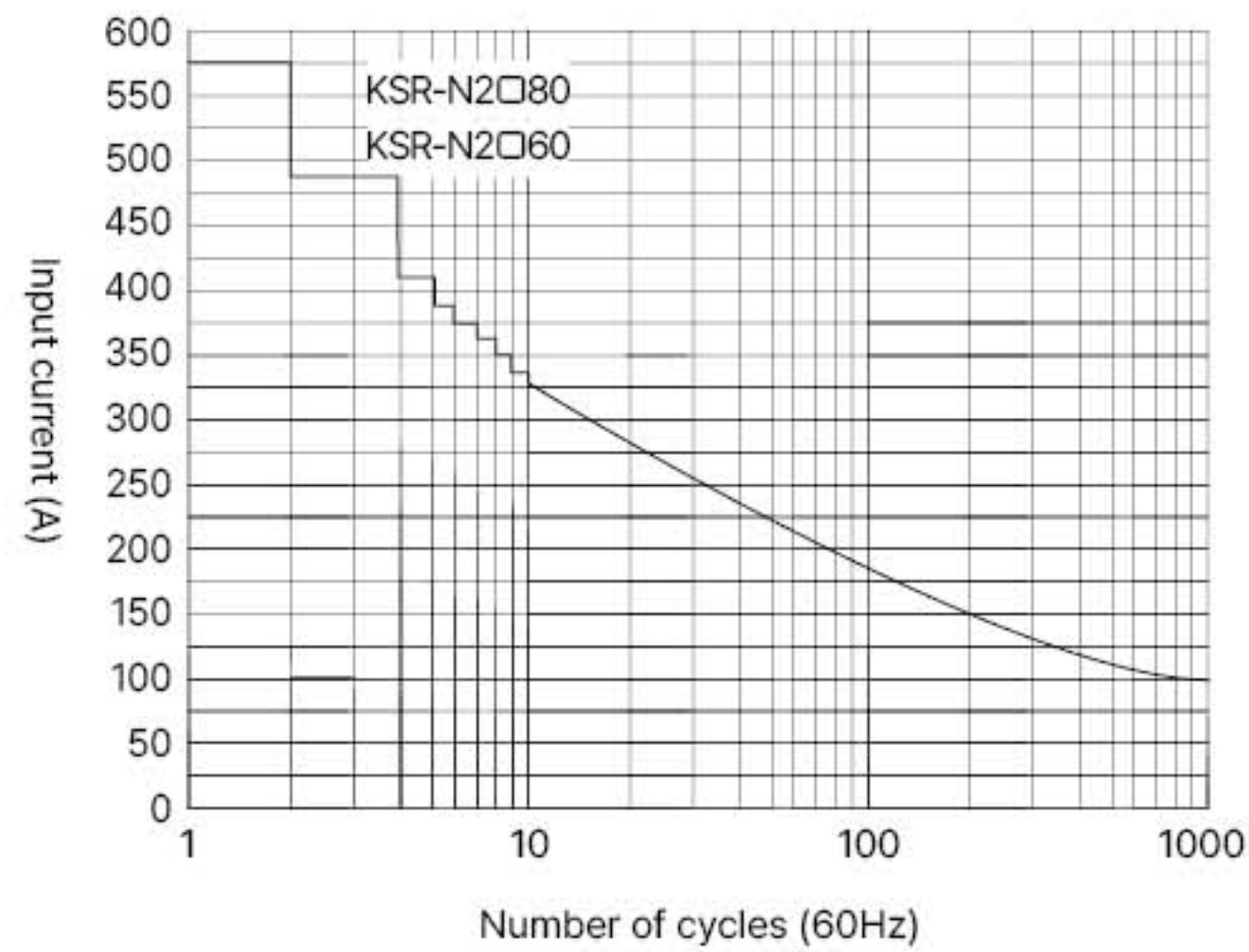


25℃	60A	80A
80℃	15A	16A

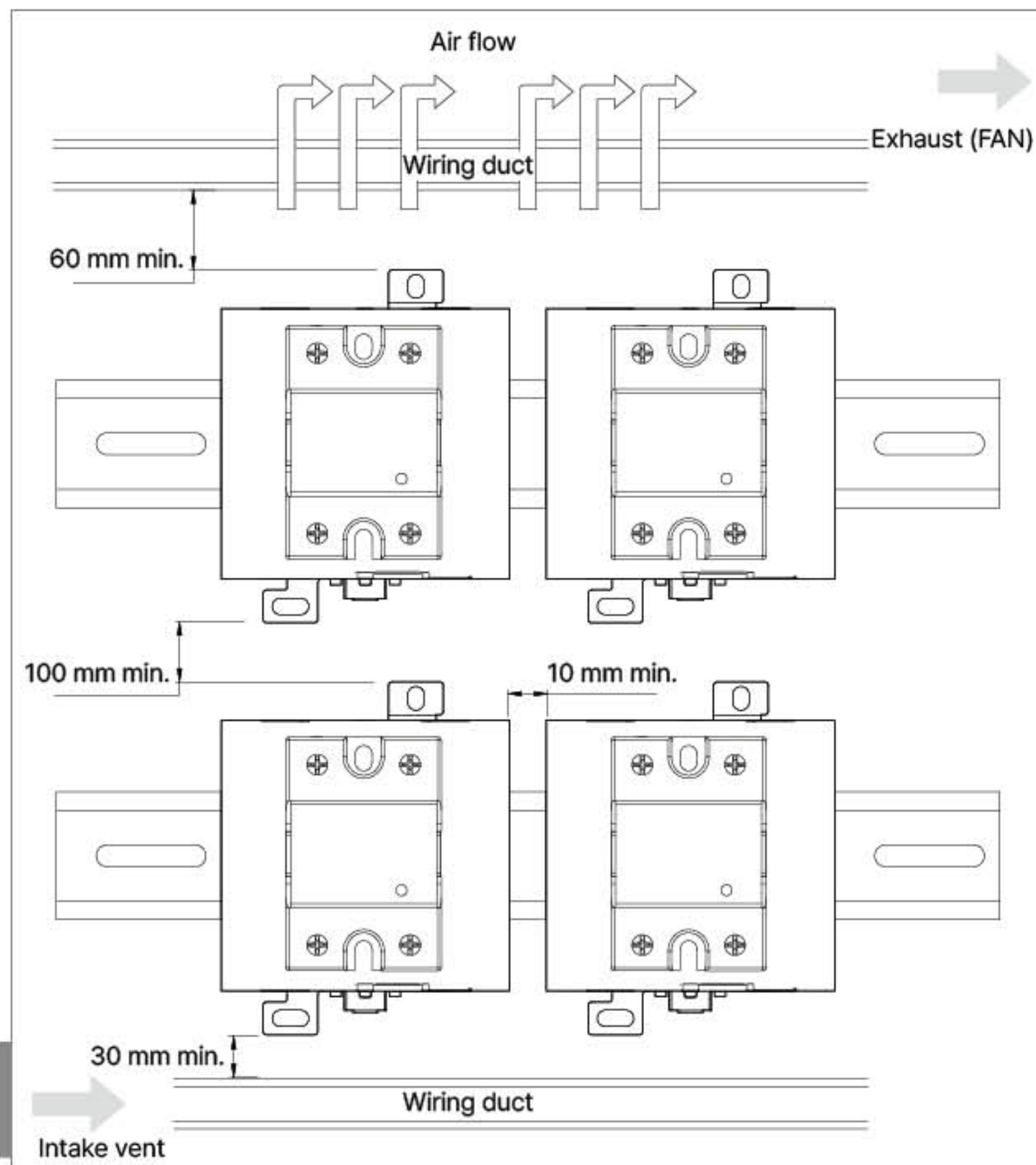
Input current characteristics 10A ~ 40A



Input current characteristics 60A ~ 80A



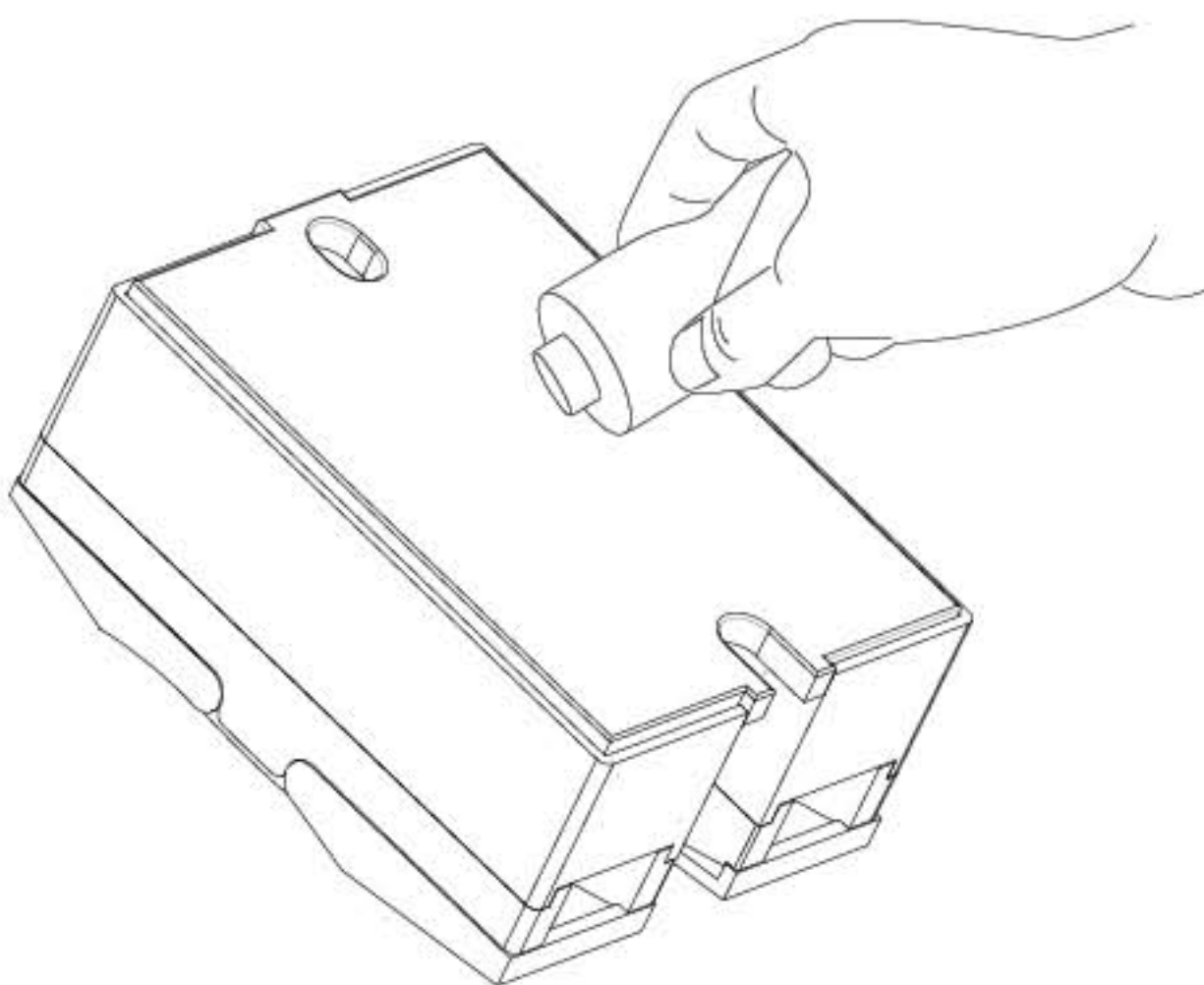
Installation Spacing



- As shown in the figure, please separate the installation spacing by a distance greater than the dimension of the corresponding part.
- Please install the wiring duct so that it is less than half the height of the heatsink to avoid obstructing the airflow.
- When installing our KSR, please ensure the heatsink is installed in a vertical direction.
- If horizontal installation is unavoidable, the product's performance will drop to 50% or less.
- **Input terminal wiring**
 $1 \times 0.5\text{mm}^2$ (1 x AWG20) min.
 $1 \times 1.5\text{mm}^2$ (1 x AWG16) or
 $2 \times 1.5\text{mm}^2$ (2 x AWG10) max.
- **Output terminal wiring**
 $1 \times 1.5\text{mm}^2$ (1 x AWG16) min.
 $1 \times 16\text{mm}^2$ (1 x AWG16) or
 $2 \times 6\text{mm}^2$ (2 x AWG6) max.

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

Precautions for Using Heatsinks



- This product must be used with a standard heatsink and heatsink grease.
- Even when using a standard heatsink, please be cautious as an increase in ambient temperature or lack of ventilation can lead to KSR damage. (Ambient temperature: 40° or higher)
- Typically, KSR elements are damaged when their maximum temperature is 125° or higher. Since the element's temperature becomes close to 125° when the heatsink temperature is 85° or higher, please be sure to measure the heatsink temperature during operation.
- When mounting KSR to a standard heatsink, please use thermal conductive grease or similar to ensure proper thermal contact.
- Please ensure the bolts are fully tightened to prevent loosening due to vibration.
- Do not use on insulating panels (wood, plastic, rubber); instead, be sure to use a standard heat sink and apply thermal grease to the contact surface as shown in the diagram before attaching.

* As shown in the image, evenly apply the thermal silicone grease to the heat sink and the bottom of the KSR, then secure it so that the grooves of the heatsink are oriented vertically when fixed to the device.

KSR-N3 Series

Three-phase SSR

- Implementation of compact, lightweight large capacity
- Bolt mounting method
- Terminal block protective cover structure for safety
- Zero Cross / Random Switching Function



Model Classification Chart

Model Name	Code					Detail
KSR-N3	☐	☐	☐	☐	☐	Three-phase General Type SSR
Control input voltage	D					3~32 VDC
	A					90 ~ 240 VAC
		10				10A
		20				20A
		30				30A
		40				40A
		60				60A
		80				80A
Operating load voltage		L				24 ~ 240 VAC (for low voltage)
		H				24 ~ 480 VAC (for high voltage)
Operating Method		Z				Zero-Cross Switching (Standard Product)
		R				Random Switching (Custom-Made)
Heatsink Options		T				Heatsink + Bimetal + Fan equipped (for 60℃, 80℃ only)
		none				No heatsink (standard product) * When using a separate heatsink, a heatsink compliant with the "Thermal Resistance Table" must be used.

* Thermal Resistance Table	
Load capacity	Heatsink thermal resistance (40℃ standard)
10A	0.60 ℃/W
20A	0.30 ℃/W
30A	0.15 ℃/W
40A	0.05 ℃/W
60A	0.10 ℃/W
80A	0.05 ℃/W

Performance and Specifications

DC Input							
Type	For low voltage	KSR-N3D10LZ	KSR-N3D20LZ	KSR-N3D30LZ	KSR-N3D40LZ	KSR-N3D60LZ	KSR-N3D80LZ
		KSR-N3D10LR	KSR-N3D20LR	KSR-N3D30LR	KSR-N3D40LR	KSR-N3D60LR	KSR-N3D80LR
	For high voltage	KSR-N3D10HZ	KSR-N3D20HZ	KSR-N3D30HZ	KSR-N3D40HZ	KSR-N3D60HZ	KSR-N3D80HZ
		KSR-N3D10HR	KSR-N3D20HR	KSR-N3D30HR	KSR-N3D40HR	KSR-N3D60HR	KSR-N3D80HR
Operating load voltage	For low voltage	24 ~ 250 VAC. 50/60 Hz					
	For high voltage	24 ~ 480 VAC. 50/60 Hz					
Peak Voltage (Non-repetitive)	For low voltage	1,200V					
	For high voltage						
Load	Rated load current	10A	20A	30A	40A	60A	80A
	Input current 60Hz (8.3 ms non-repetitive)	For low voltage	170A	260A	420A	525A	
		For high voltage	170A	250A	370A	525A	
	Input current 50Hz (10 ms non-repetitive)	For low voltage	160A	250A	400A	500A	
		For high voltage	160A	240A	350A	500A	
	Leakage current	20 mA max.					
Input	Output ON Voltage Drop	1.6V (R.M.S) max.					
	Rated voltage	5 ~ 24VDC					
	Operating voltage range (ON voltage)	3 ~ 32 VDC					
	Recovery voltage (OFF voltage)	3V max.					
	Impedance	4 kΩ max.					
	Current consumption	Constant current method: 25 mA max.					
	Response speed	1/2 Cycle + 1ms max. ("R" type 1 ms max.)					
	Insulation resistance	500VDC, 100 MΩ (between input, output, and case)					
	Withstand voltage	2,500VAC (1 minute at 60 Hz)					
	Rated impulse withstand voltage (Uimp)	2,500V					
	Vibration resistance	10 ~ 55 Hz, double amplitude: 1.5 mm, 2 hours in each direction of XYZ axis					
	Shock resistance	1,000 m/s ² , 3 times in each axis direction					
	Storage temperature	-30 ~ 90°C					
	Ambient operating temperature/humidity	-30 ~ 80°C (with no condensation), 45 ~ 85 % RH					
	Pollution grade	Grade 2					
	Bolt tightening torque	Input terminal: 0.05 Nm / Output terminal: 0.25 Nm					
	Usage	Resistive load					
	Applicable standards	CE 60947-4-3,  RoHS2					
Weight	Detachable heatsink (excluding box)	Approx. 360g				Approx.390g	

Performance and Specifications

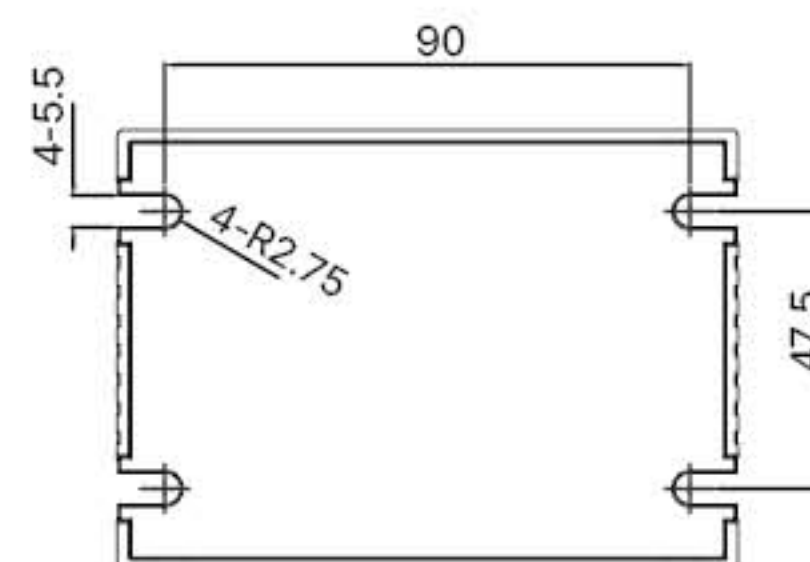
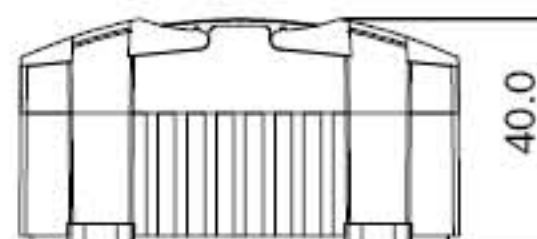
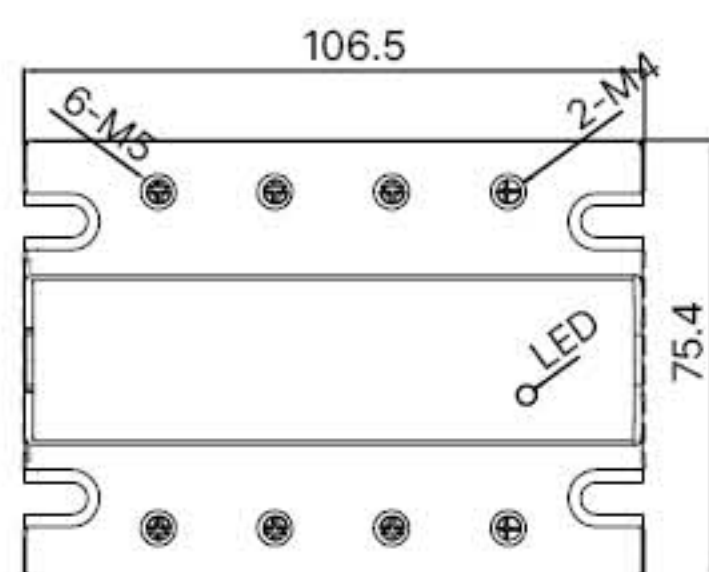
AC Input							
Type	For low voltage	KSR-N3A10LZ	KSR-N3A20LZ	KSR-N3A30LZ	KSR-N3A40LZ	KSR-N3A60LZ	KSR-N3A80LZ
		KSR-N3A10LR	KSR-N3A20LR	KSR-N3A30LR	KSR-N3A40LR	KSR-N3A60LR	KSR-N3A80LR
	For high voltage	KSR-N3A10HZ	KSR-N3A20HZ	KSR-N3A30HZ	KSR-N3A40HZ	KSR-N3A60HZ	KSR-N3A80HZ
		KSR-N3A10HR	KSR-N3A20HR	KSR-N3A30HR	KSR-N3A40HR	KSR-N3A60HR	KSR-N3A80HR
Operating load voltage	For low voltage	24 ~ 250 VAC. 50/60 Hz					
	For high voltage	24 ~ 480 VAC. 50/60 Hz					
Peak Voltage (Non-repetitive)	For low voltage	1,200V					
	For high voltage						
Load	Rated load current	10A	20A	30A	40A	60A	80A
	Input current 60Hz (8.3 ms non-repetitive)	For low voltage	170A	260A	420A	525A	
		For high voltage	170A	250A	370A	525A	
	Input current 50Hz (10 ms non-repetitive)	For low voltage	160A	250A	400A	500A	
		For high voltage	160A	240A	350A	500A	
	Leakage current	20 mA max					
Input	Output ON Voltage Drop	1.6V (R.M.S) max					
	Rated voltage	100 ~ 240 VAC 50/60 Hz					
	Operating voltage range (ON voltage)	90 ~ 264 VAC 50/60 Hz					
	Recovery voltage (OFF voltage)	50V max					
	Impedance	40 kΩ max					
	Current consumption	14 mA max					
	Response speed	1/2 Cycle + 1ms max. ("R" type 1 ms max)					
	Insulation resistance	500VDC, 100 MΩ (between input, output, and case)					
	Withstand voltage	2,500VAC (1 minute at 60 Hz)					
	Rated impulse withstand voltage (Uimp)	2,500V					
	Vibration resistance	10 ~ 55 Hz, double amplitude: 1.5 mm, 2 hours in each direction of XYZ axis					
	Shock resistance	1,000 m/s ² , 3 times in each axis direction					
	Storage temperature	-30 ~ 90°C					
	Ambient operating temperature/humidity	-30 ~ 80°C (with no condensation), 45 ~ 85 % RH					
	Pollution grade	Grade 2					
	Bolt tightening torque	Input terminal: 0.05 Nm / Output terminal: 0.25 Nm					
	Usage	Resistive load					
	Applicable standards	CE 60947-4-3,  RoHS2					
Weight	Detachable heatsink (excluding box)	Approx. 360g			Approx.390g		

External dimensions diagram

단위 : mm

10 / 20 / 30 / 40A

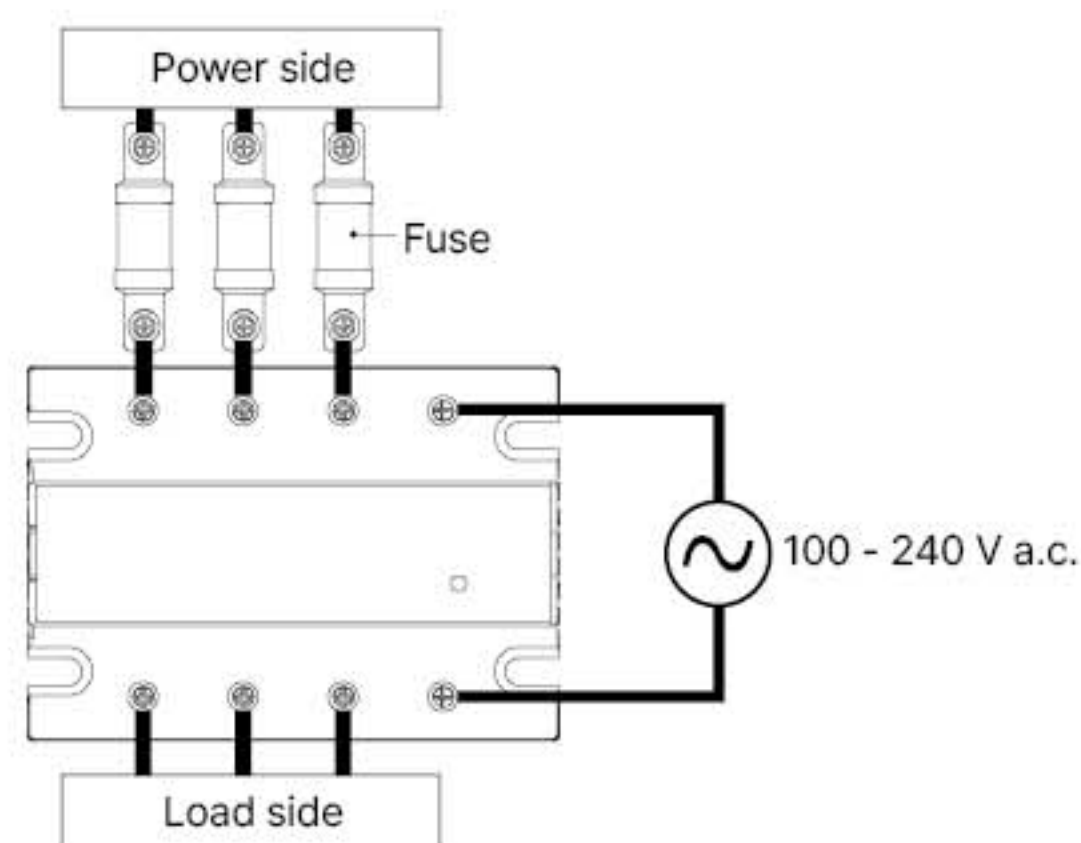
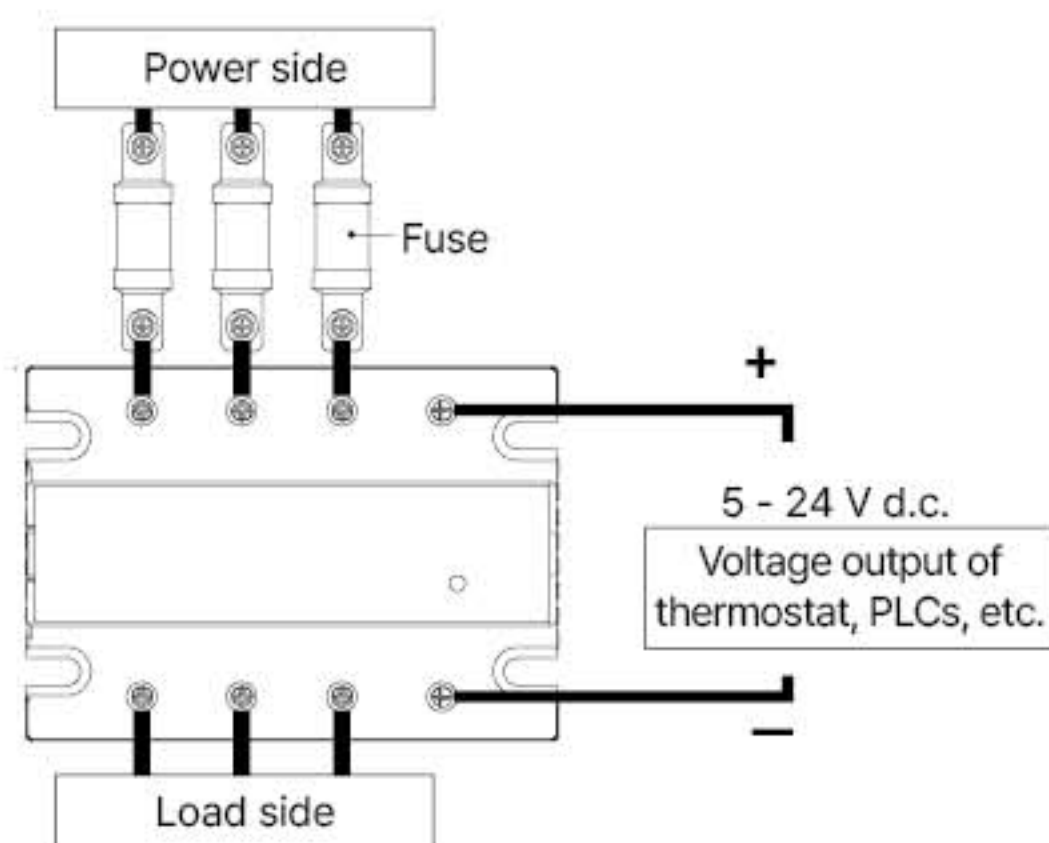
60 / 80A



Connection diagram

DC Input

AC Input

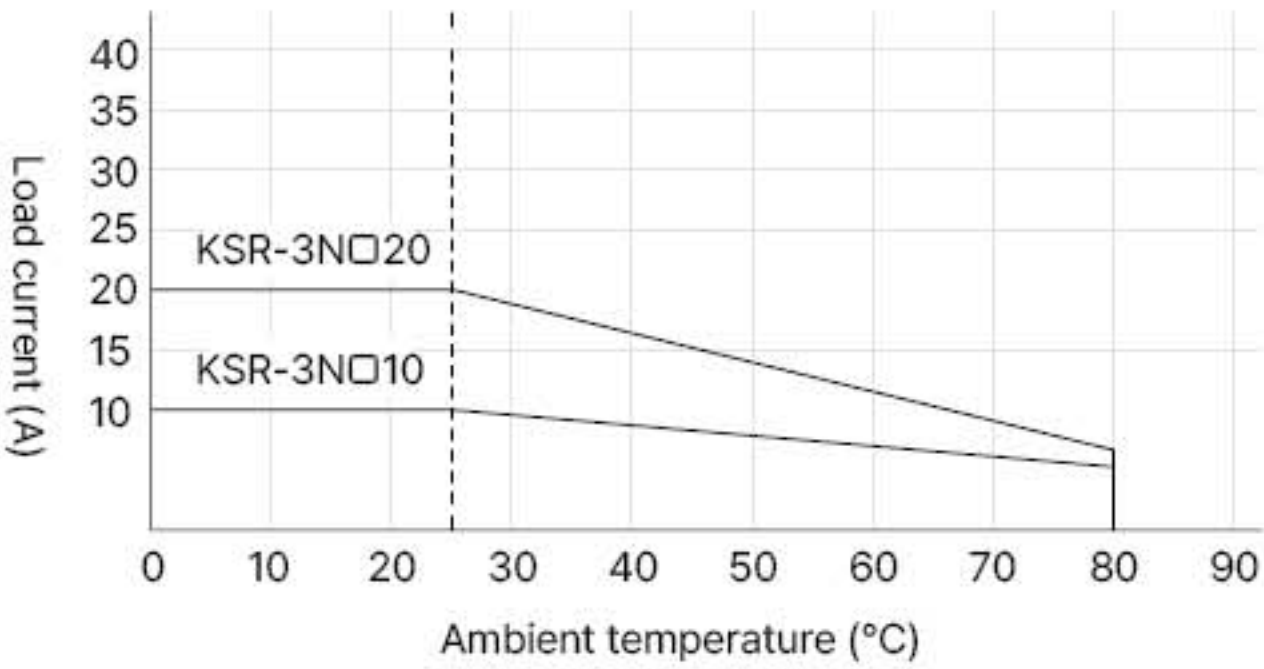


* This product is not equipped with an internal fuse.

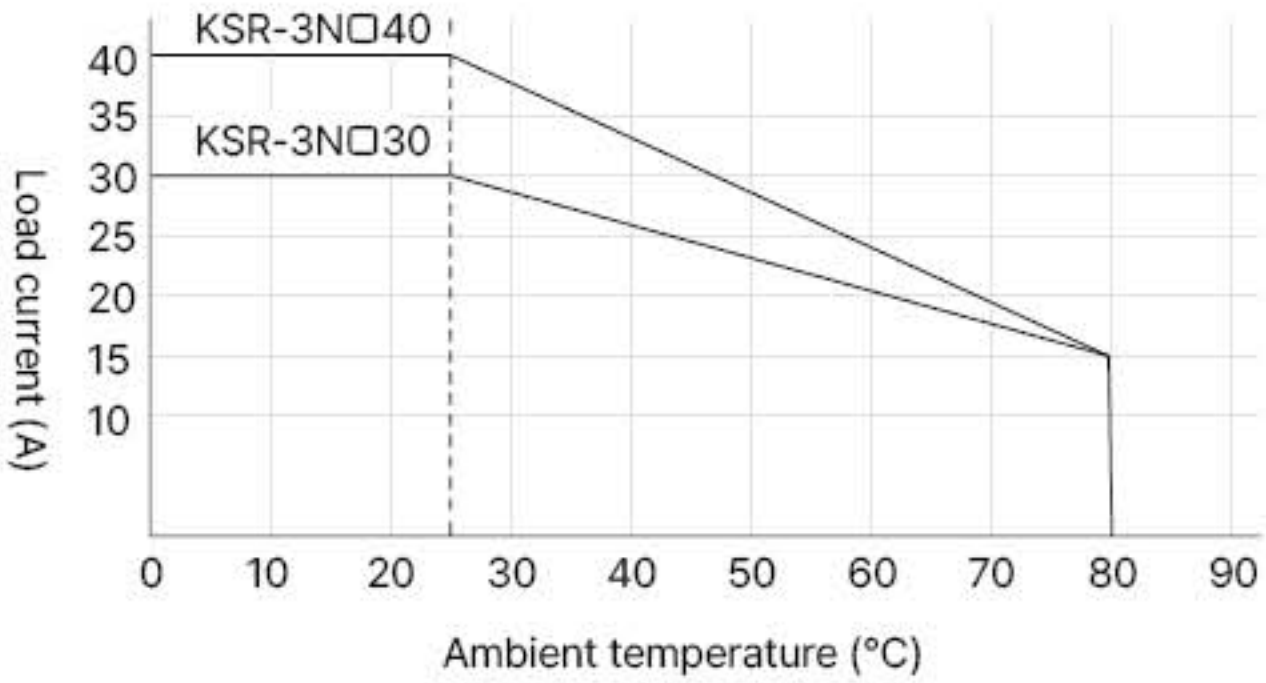
It is recommended to use a separate external fuse as shown in the image. (Use gG/gL type fuses according to IEC 60269 standard)

Load / Input Current Characteristics

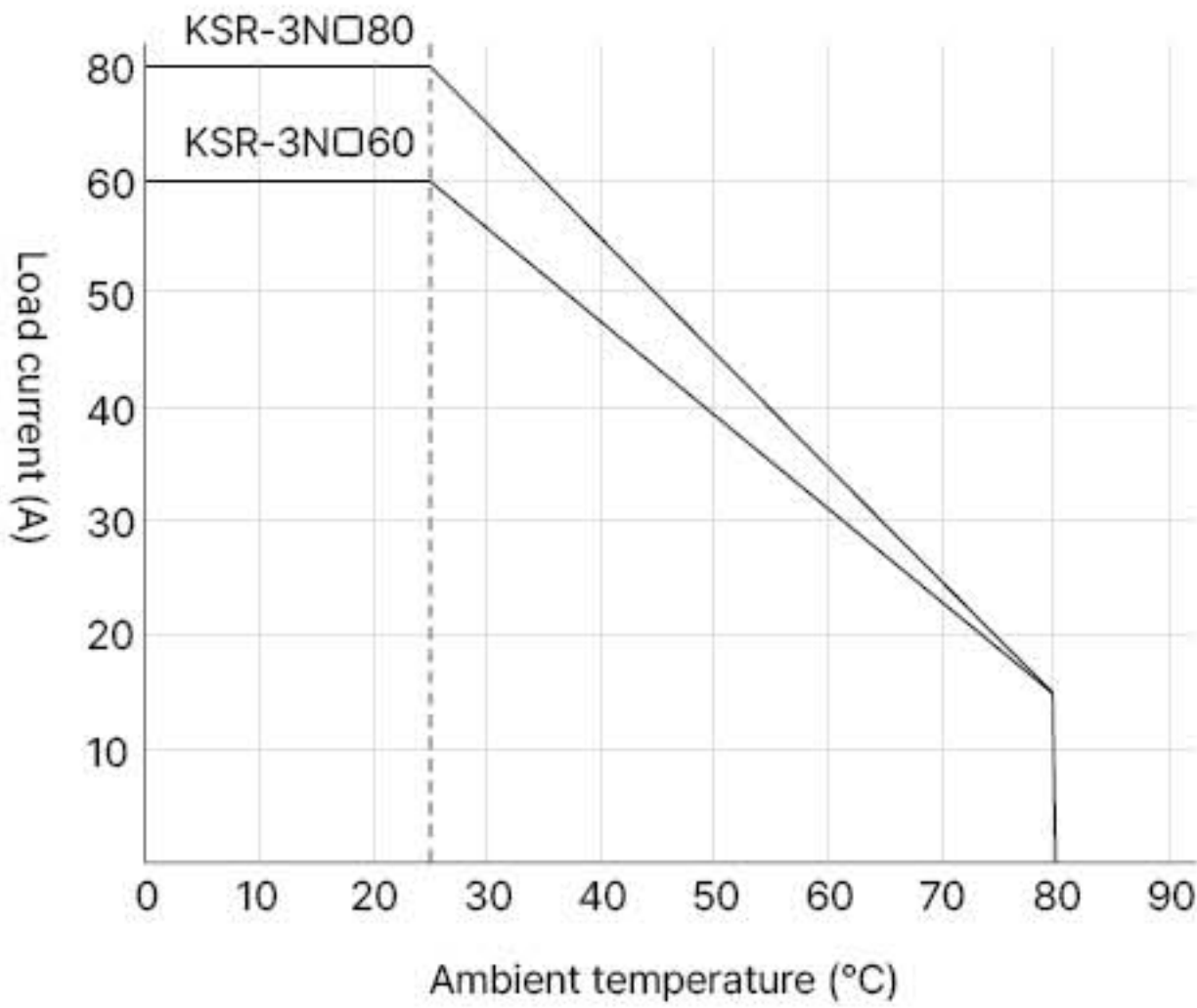
Heatsink attachment



25℃	10A	20A
80℃	6A	8A

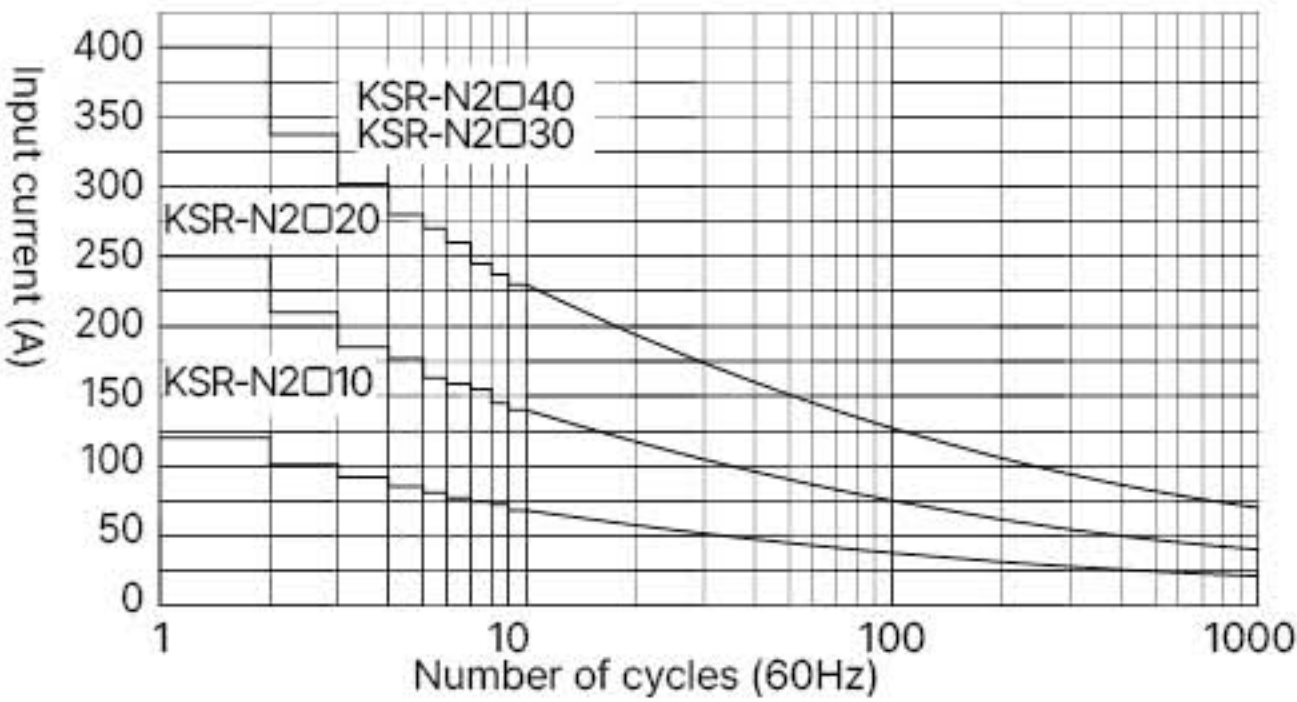


25℃	30A	40A
80℃	15A	15A

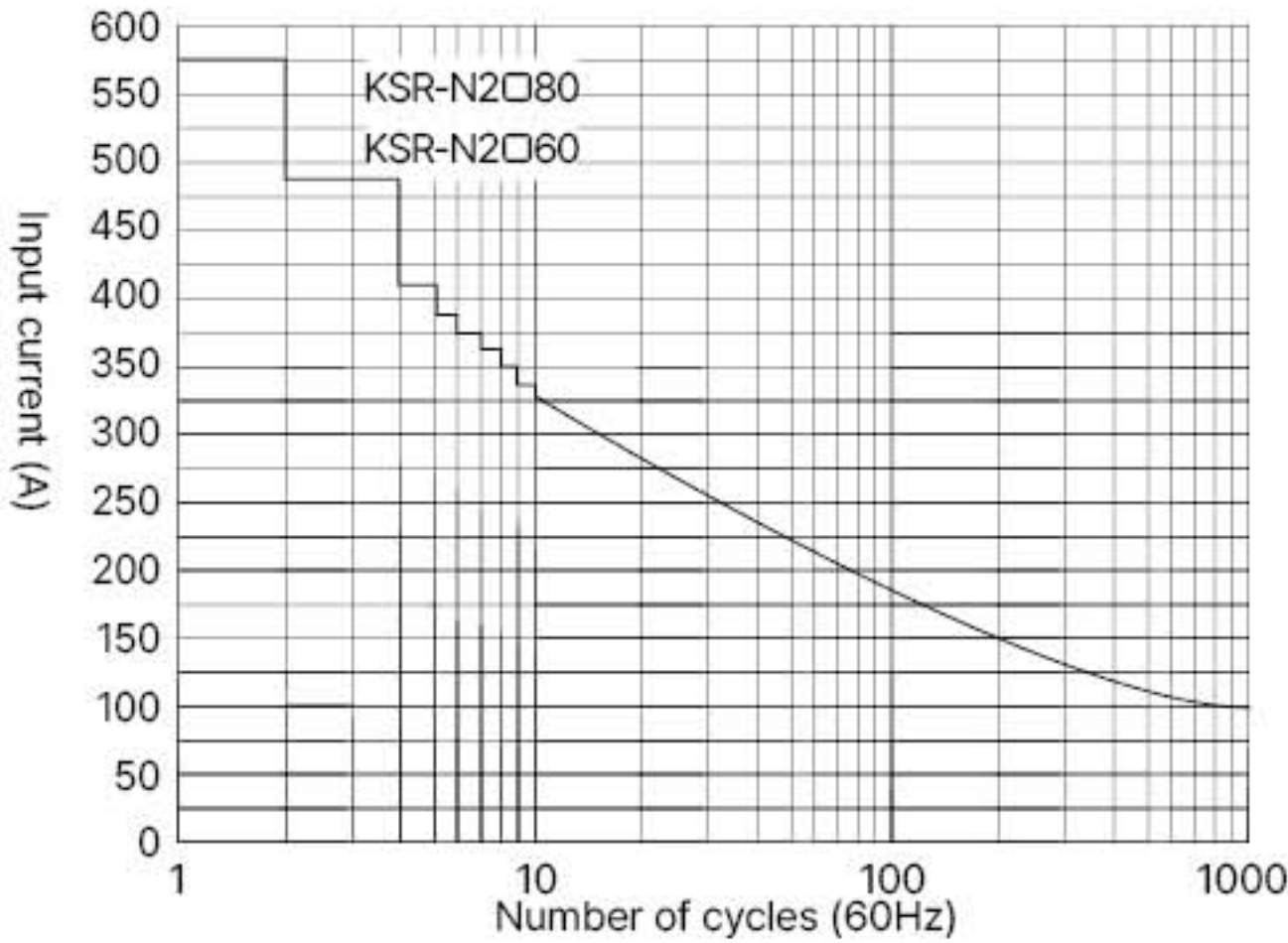


25℃	60A	80A
80℃	15A	16A

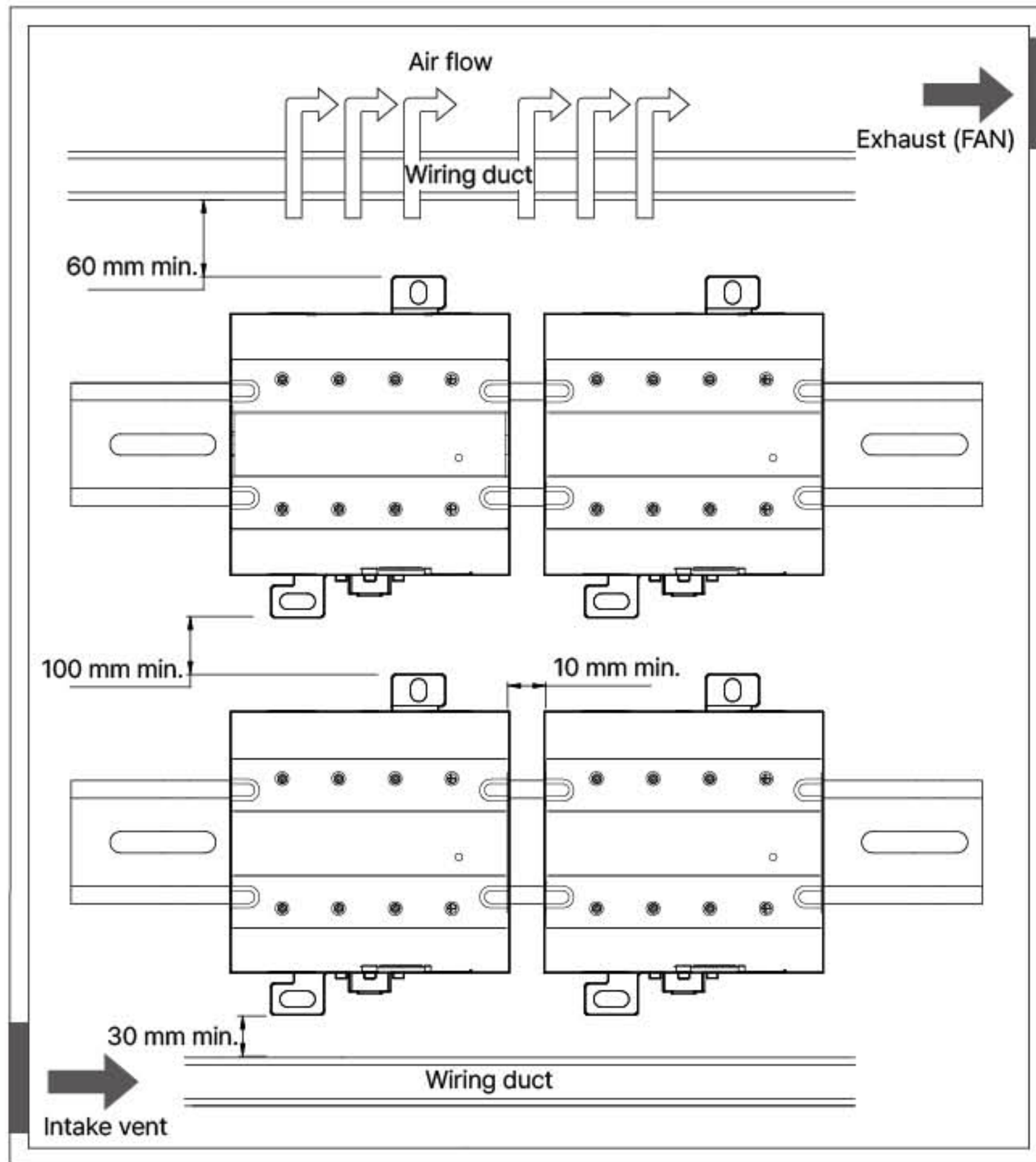
Input current characteristics 10A ~ 40A



Input current characteristics 60A ~ 80A



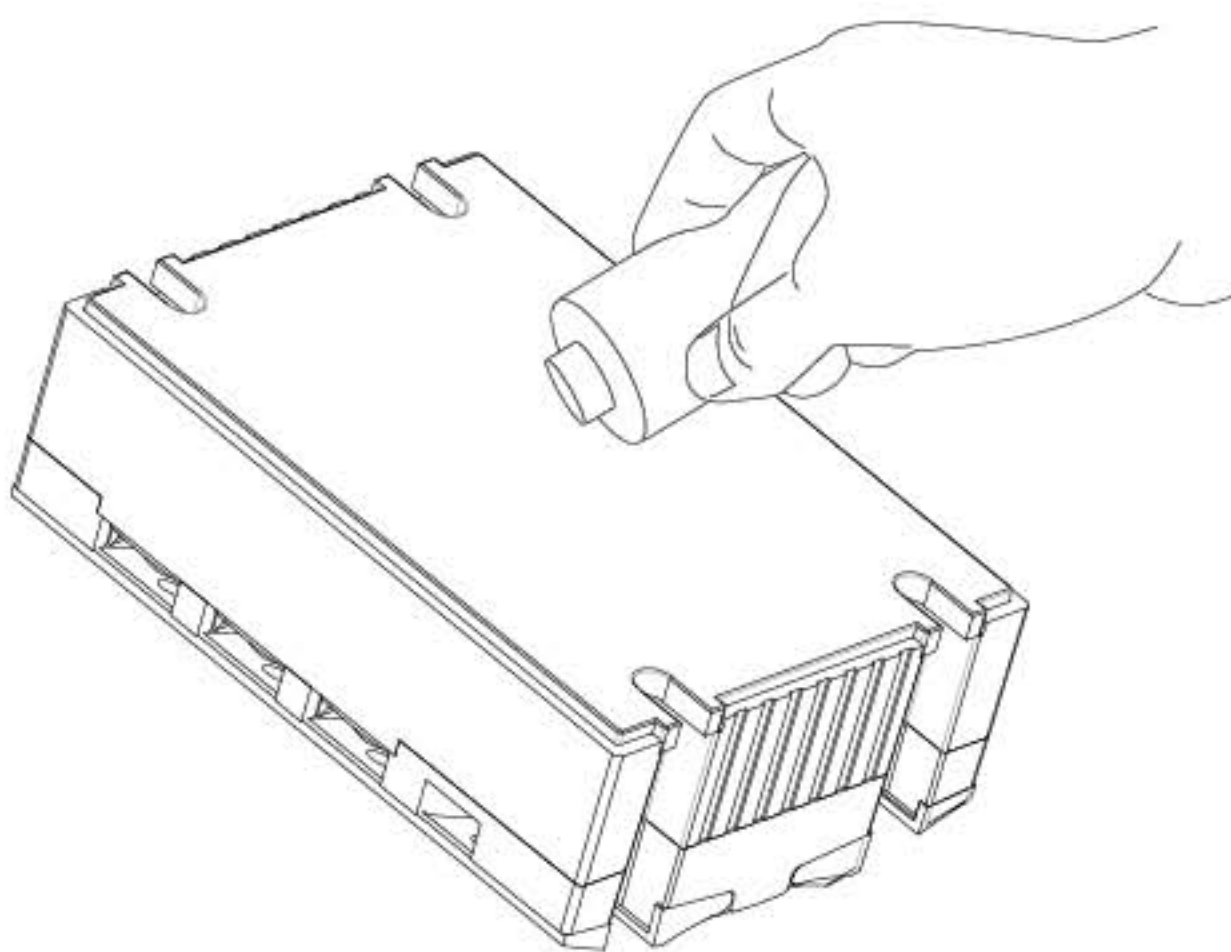
Installation Spacing



- As shown in the figure, please separate the installation spacing by a distance greater than the dimension of the corresponding part.
- Please install the wiring duct so that it is less than half the height of the heatsink to avoid obstructing the airflow.
- Our KSR satisfies the conditions at an ambient temperature of 40°C or below, so please always use it under conditions where the ambient temperature is lower than the standard temperature.
- When installing the KSR, please ensure the heatsink is installed in a vertical direction.
- If horizontal installation is unavoidable, the product's performance will drop to 50% or less.
- **Input terminal wiring**
 $1 \times 0.5\text{mm}^2$ (1 x AWG20) min.
 $1 \times 1.5\text{mm}^2$ (1 x AWG16) or
 $2 \times 1.5\text{mm}^2$ (2 x AWG10) max.
- **출력단자 배선**
 $1 \times 1.5\text{mm}^2$ (1 x AWG16) min.
 $1 \times 16\text{mm}^2$ (1 x AWG16) or
 $2 \times 6\text{mm}^2$ (2 x AWG6) max.

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

Precautions for Using Heatsinks



- This product must be used with a standard heatsink and heatsink grease.
- Even when using a standard heatsink, please be cautious as an increase in ambient temperature or lack of ventilation can lead to KSR damage. (Ambient temperature: 40° or higher)
- Typically, KSR elements are damaged when their maximum temperature is 125° or higher. Since the element's temperature becomes close to 125° when the heatsink temperature is 85° or higher, please be sure to measure the heatsink temperature during operation.
- When mounting KSR to a standard heatsink, please use thermal conductive grease or similar to ensure proper thermal contact.
- Please ensure the bolts are fully tightened to prevent loosening due to vibration.
- Do not use on insulating panels (wood, plastic, rubber); instead, be sure to use a standard heat sink and apply thermal grease to the contact surface as shown in the diagram before attaching.

※ As shown in the image, evenly apply the thermal silicone grease to the heat sink and the bottom of the KSR, then secure it so that the grooves of the heatsink are oriented vertically when fixed to the device.