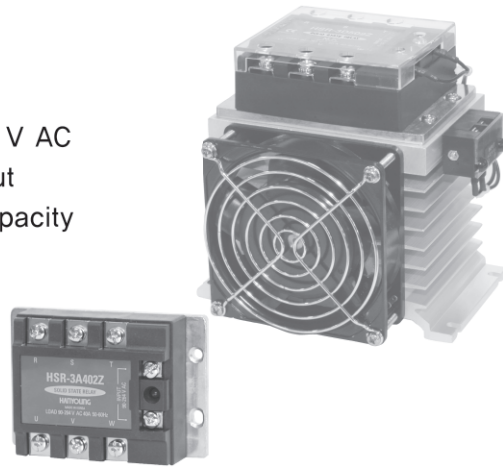


HSR-3 Series

3-phase solid state relay

- Load voltage 90 – 264 V AC / 90 – 480 V AC
- High insulation between input and output
- Compact size, light weight and large capacity
- Non-contact so high reliability
- C-R Snubber, Zero Cross function
- Radiator one body type that improved workability and safety (50 A, 70 A)



●● Suffix code

Model	Code				Description
HSR-3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3-phase solid state relay
Input voltage	D				4 – 32 V DC
	A				90 – 264 V AC
Rated load current	10				10 A
	20				20 A
	30				30 A
	40				40 A
	50				50 A
	70				70 A
Load voltage	2				90 – 264 V AC (low voltage)
	4				90 – 480 V AC (High voltage)
Operation method		Z			Zero cross switching (standard product)
		R			Random switching
Radiator attachment state		–			No indication (no radiator)
		T			Radiator one body type (only with 50 A and 70 A)

(Note) Operation method Z : zero cross switching, R : random switching

J

Solid State Relay

Low voltage specification

- DC input – AC load (low voltage : 90 – 264 V AC)

Model		HSR-3D102Z	HSR-3D202Z	HSR-3D302Z	HSR-3D402Z
Load	Rated load voltage	100 – 240 V AC			
	power supply voltage	90 – 264 V AC			
	Peak voltage (no repetition)	600 V			
	Rated load current	10 A	20 A	30 A	40 A
	Frequency	25 – 65 Hz			
	Input current	125 A	260 A	315 A	
	Leakage current	1.5 mA	max 1.8 mA		
	Output ON voltage dropping	1.5 V	1.8 V		
	Min operation current	1 A			
	Response speed	1/2 cycle + 1 ms max. Max 1 ms			
Input	Rated voltage	5 – 24 V DC			
	Usable voltage range	4 – 32 V DC			
	Impedance	Max 4 kΩ			
	Operation voltage	Min 3 V DC			
	Return voltage	Max 1.4 V DC			
	Input current	Constant current method : 14 mA (±3)			

Environment specification

Insulation resistance	500 V DC, 100 MΩ (between the input/output and case)
Dielectric strength	2500 V AC (for 1 min at 60 Hz)
Vibration resistance	10 – 55 Hz, double amplitude : 1.5 mm, each X, Y and X direction for 2 hour
Shock resistance	1000 m/s ² , each X, Y and X direction for 3 times
Storage temperature	-30 ~ 90 °C
Ambient temperature	-20 ~ 80 °C
Ambient humidity	45 ~ 85 % RH
Weight	Approx 400 g (included the weight of box)

- DC input – AC load (low voltage : 90 – 264 V AC)

Model		HSR-3D502Z	HSR-3D702Z
Load	Rated load voltage	100 – 240 V AC	
	power supply voltage	90 – 264 V AC	
	Peak voltage (no repetition)	800 V	
	Rated load current	50 A	70 A
	Frequency	25 – 65 Hz	
	Input current	580 A	
	Leakage current	15 mA	
	Output ON voltage dropping	1.8 V	
	Min operation current	1 A	
	Response speed	1/2 cycle + 1 ms max. Max 1 ms	
Input	Rated voltage	5 – 24 V DC	
	Usable voltage range	4 – 32 V DC	
	Impedance	Max 4 KΩ	
	Operation voltage	Min 3 V DC	
	Return voltage	Max 1.4 V DC	
	Input current	Constant current method : 14 mA (±3)	

Environment specification

Model	HSR-3D502Z	HSR-3D702Z
	HSR-3D502R	HSR-3D702R
Insulation resistance	500 V DC, 100 MΩ (between the input/output and case)	
Dielectric strength	2500 V AC (for 1 min at 60 Hz)	
Vibration resistance	10 – 55 Hz, double amplitude : 1.5 mm, each X, Y and X direction for 2 hour	
Shock resistance	1000 m/s ² , each X, Y and X direction for 3 times	
Storage temperature	-30 ~ 90 °C	
Ambient temperature	-20 ~ 80 °C	
Ambient humidity	45 ~ 85 % RH	
Weight	Approx 2000 g	Approx 2600 g

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 Solid State
Relay

• AC input – AC load (low voltage : 90 – 264 V AC)

Model		HSR-3A102Z	HSR-3A202Z	HSR-3A302Z	HSR-3A402Z	HSR-3A502Z	HSR-3A702Z
Load	Rated load voltage	100 – 240 V AC					
	Power supply voltage	90 – 264 V AC					
	Peak voltage (no repetition)	600 V				800 V	
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Frequency	25 – 65 Hz					
	Input current	125 A	260 A	315 A		580 A	
	Leakage current	20 mA				15 mA	
	Output ON voltage dropping	1.3 V	1.6 V	1.8 V			
	Min operation current	1 A				0.5 A	
	Response speed	1/2 cycle + 1 ms max. Max 1 ms					
Input	Rated voltage	100 – 240 V AC					
	Usable voltage range	90 – 264 V AC					
	Impedance	Max 40 KΩ					
	Operation voltage	Min 72 V AC					
	Return voltage	Max 50 V AC					
	Input current	240 V AC / 9 mA (±4)					

Environment specification

Insulation resistance	500 V DC, 100 MΩ (Between the input/output and case)	
Dielectric strength	2500 V AC (for 1 min at 60 Hz)	
Vibration resistance	10 – 55 Hz, double amplitude : 1.5 mm, each X, Y and X direction for 2 hour	
Shock resistance	1000 m/s ² , each X, Y and X direction for 3 times	
Storage temperature	-30 ~ 90 °C	
Ambient temperature	-20 ~ 80 °C	
Ambient humidity	45 ~ 85 % RH	
Weight (radiator attachment type)	Approx 150 g (included the weight of box)	
Weight (radiator one body type)	50 A : approx 1400 g (included the weight of box)	70 A : approx 2050 g (included the weight of box)



High voltage specification

- DC input – AC load (High voltage : 90 – 480 V AC)

Model		HSR-3D104Z	HSR-3D204Z	HSR-3D304Z	HSR-3D404Z
Load	Rated load voltage	100 – 440 V AC			
	power supply voltage	90 – 480 V AC			
	Peak voltage (no repetition)	800 V	1200 V		
	Rated load current	10 A	20 A	30 A	40 A
	Frequency	25 – 65 Hz			
	Input current	170 A	250 A	315 A	
	Leakage current	Max 20 mA			
	Output ON voltage dropping	1.95 V	1.8 V		
	Min operation current	1 A			
	Response speed	1/2 cycle + 1 ms max. Max 1 ms			
Input	Rated voltage	5 – 24 V DC			
	Usable voltage range	4 – 32 V DC			
	Impedance	Max 4 kΩ			
	Operation voltage	Min 3 V DC			
	Return voltage	Max 1.4 V DC			
	Input current	Constant current method : 14 mA (±3)			

Environment specification

Insulation resistance	500 V DC, 100 MΩ (between the input/output and case)
Dielectric strength	2500 V AC (for 1 min at 60 Hz)
Vibration resistance	10 – 55 Hz, double amplitude : 1.5 mm, each X, Y and X direction for 2 hour
Shock resistance	1000 m/s ² , each X, Y and X direction for 3 times
Storage temperature	-30 ~ 90 °C
Ambient temperature	-20 ~ 80 °C
Ambient humidity	45 ~ 85 % RH
Weight	Approx 400 g (included the weight of box)

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Solid State
Relay

- DC input – AC load (High voltage : 90 – 480 V AC)

Model		HSR-3D504Z	HSR-3D704Z
Load	Rated load voltage	100 – 440 V AC	
	power supply voltage	90 – 480 V AC	
	Peak voltage (no repetition)	1200 V	
	Rated load current	50 A	70 A
	Frequency	50 – 60 Hz	
	Input current	580 A	
	Leakage current	max 20 mA	
	Output ON voltage dropping	1.8 V	
	Min operation current	1 A	
	Response speed	1/2 cycle + 1 ms max. Max 1 ms	
Input	Rated voltage	5 – 24 V DC	
	Usable voltage range	4 – 32 V DC	
	Impedance	Max 4 kΩ	
	Operation voltage	Min 3 V DC	
	Return voltage	Max 1.4 V DC	
	Input current	Constant current method : 14 mA (±3)	

Environment specification

Model	HSR-3D504Z	HSR-3D704Z
	HSR-3D504R	HSR-3D704R
Insulation resistance	500 V DC, 100 MΩ (between the input/output and case)	
Dielectric strength	2500 V AC (for 1 min at 60 Hz)	
Vibration resistance	10 – 55 Hz, double amplitude : 1.5 mm, each X, Y and X direction for 2 hour	
Shock resistance	1000 m/s ² , each X, Y and X direction for 3 times	
Storage temperature	-30 ~ 90 °C	
Ambient temperature	-20 ~ 80 °C	
Ambient humidity	45 ~ 85 % RH	
Weight	Approx 2000 g	Approx 2600 g



- AC input – AC load (High voltage : 90 – 480 V AC)

Model		HSR-3A104Z	HSR-3A204Z	HSR-3A304Z	HSR-3A404Z	HSR-3A504Z	HSR-3A704Z
Load	Rated load voltage	100 – 440 V AC					
	power supply voltage	90 – 480 V AC					
	Peak voltage (no repetition)	800 V	1200 V				
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Frequency	25 – 65 Hz					
	Input current	170 A	250 A	350 A	370 A	580 A	
	Leakage current	Max 20 mA					
	Output ON voltage dropping	1.95 V	1.8 V				
	Min operation current	1 A				0.5 A	
	Response speed	1/2 cycle + 1 ms max. Max 1 ms					
Input	Rated voltage	100 – 240 V AC					
	Usable voltage range	90 – 264 V AC					
	Impedance	Max 72 K Ω					
	Operation voltage	Min 75 V AC					
	Return voltage	Max 40 V AC					
	Input current	240 V AC / 9 mA (± 4)					

Environment specification

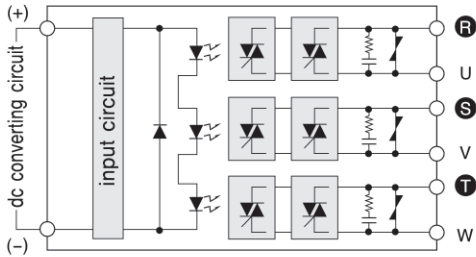
Insulation resistance	500 V DC, 100 M Ω (between the input/output and case)
Dielectric strength	2500 V AC (for 1 min at 60 Hz)
Vibration resistance	10 – 55 Hz, double amplitude : 1.5 mm, each X, Y and X direction for 2 hour
Shock resistance	1000 m/s ² , each X, Y and X direction for 3 times
Storage temperature	-30 ~ 90 °C
Ambient temperature	-20 ~ 80 °C
Ambient humidity	45 ~ 85 % RH
Weight (radiator attachment type)	Approx 400 g (included the weight of box)
Weight (radiator one body type)	50 A : approx 2000 g (included the weight of box) 70 A : approx 2600 g (included the weight of box)

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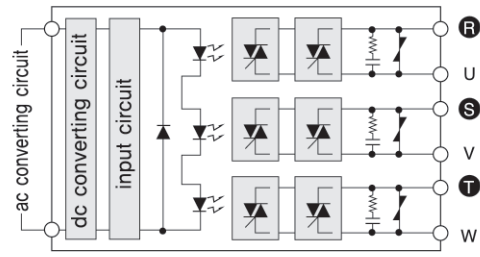
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Relay

●● Circuit

■ DC input type (10 A - 40 A)

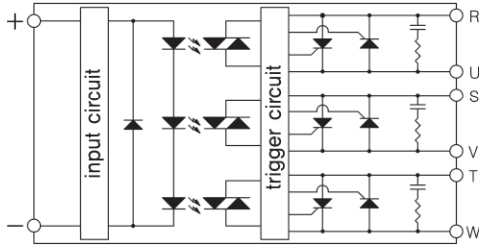


■ AC input type (10 A - 40 A)

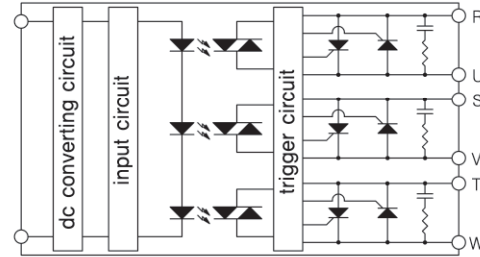


Input terminal : R, S, T
Output terminal : U, V, W

■ DC input type (50 A / 70 A)



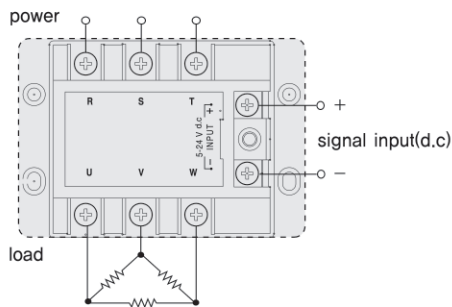
■ AC input type (50 A / 70 A)



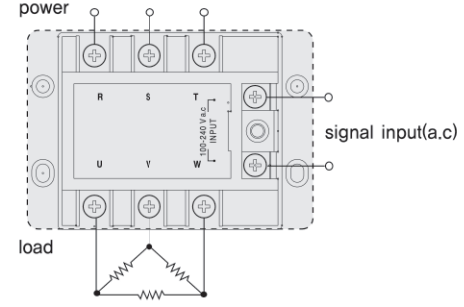
Input terminal : R, S, T
Output terminal : U, V, W

●● Connection diagram

■ DC input type



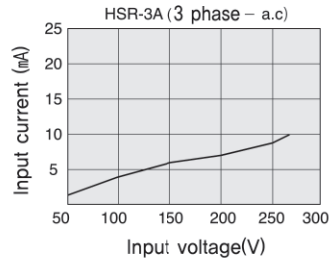
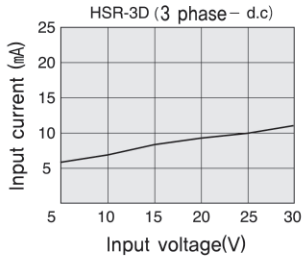
■ AC input type



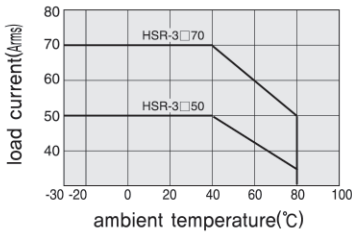
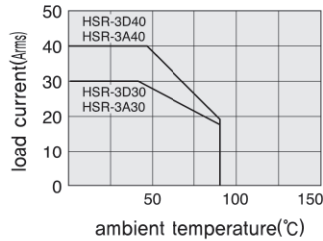
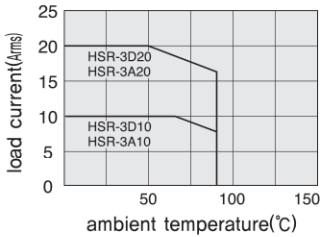
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○● Load current characteristic

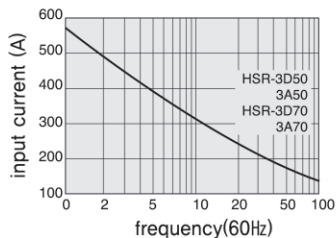
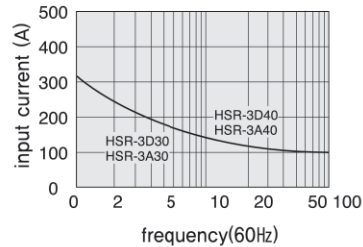
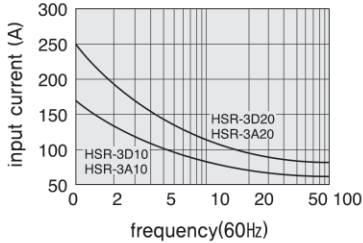
■ Input voltage-current characteristic



■ Load current characteristic

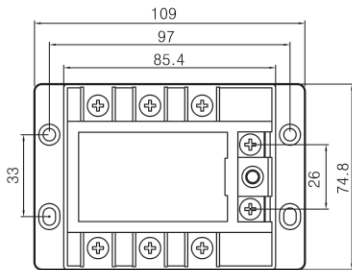


■ Surge Current characteristic

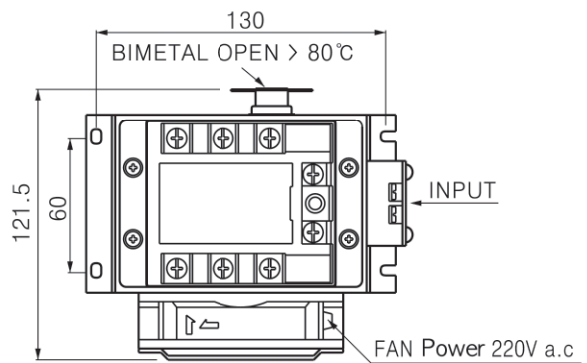
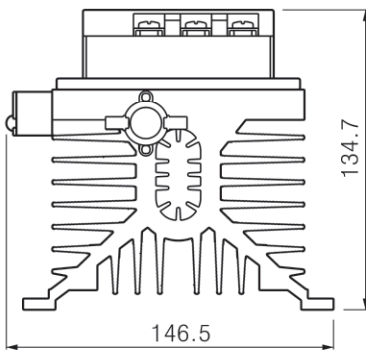


Dimension (Unit : mm)

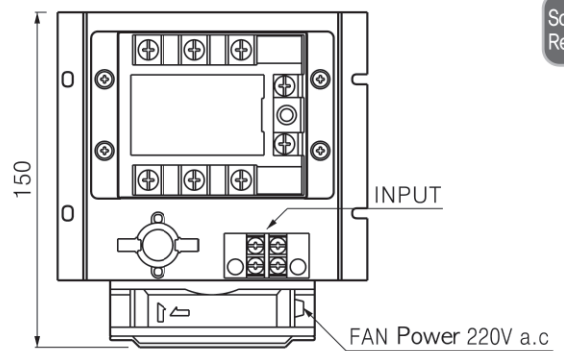
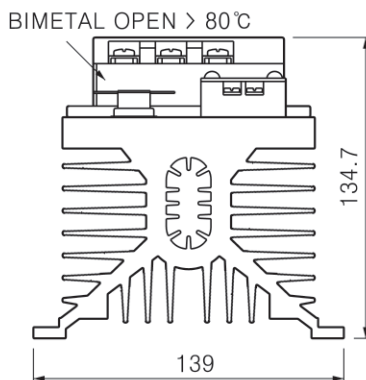
■ 10 A - 70 A



■ Radiator one body type (50 A)



■ Radiator one body type (70 A)



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Relay