

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"/> <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

● 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
	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 Z direction for 2 hour
Shock resistance	1000 m/s², each X, Y and Z 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
	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 Z direction for 2 hour	
Shock resistance	1000 m/s ² , each X, Y and Z 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 (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 nA				15 nA			
	Output ON voltage dropping	1.3 V	1.6 V	1.8 V					
	Min operation current	1 A				0.5 A			
Input	Response speed	1/2 cycle + 1 ms max. Max 1 ms							
	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							
		240 V AC / 9 nA (±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 Z direction for 2 hour
Shock resistance	1000 m/s ² , each X, Y and Z 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
	Frequency		25 – 65 Hz	
	Input current	170 A	250 A	315 A
	Leakage current		Max 20 nA	
	Output ON voltage dropping	1.95 V	1.8 V	
	Min operation current		1 A	
	Response speed		1/2 cycle + 1 ns max, Max 1 ns	
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 Z direction for 2 hour
Shock resistance	1000 m/s², each X, Y and Z 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 (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
	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 ns
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 Z direction for 2 hour	
Shock resistance	1000 m/s ² , each X, Y and Z 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 nA							
	Output ON voltage dropping	1.95 V	1.8 V						
	Min operation current	1 A				0.5 A			
Input	Response speed	1/2 cycle + 1 ns max. Max 1 ns							
	Rated voltage	100 – 240 V AC							
	Usable voltage range	90 – 264 V AC							
	Impedance	Max 72 kΩ							
	Operation voltage	Min 75 V AC							
	Return voltage	Max 40 V AC							
	Input current	240 V AC / 9 mA (±4)							

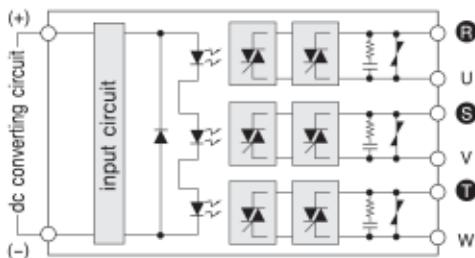
Environment specification

Insulation resistance	500 V DC, 100 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 Z direction for 2 hour
Shock resistance	1000 m/s², each X, Y and Z 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)

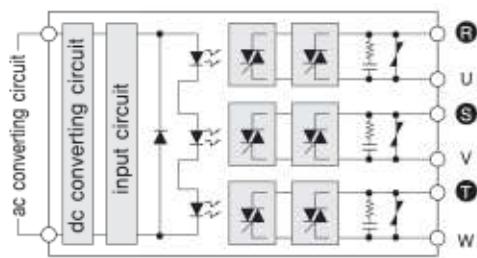
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● Circuit

■ DC input type (10 A - 40 A)

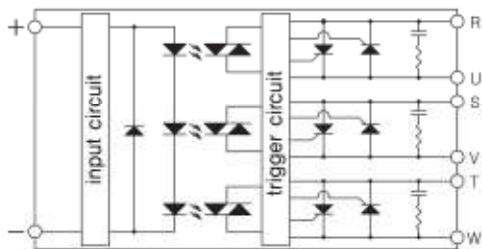


■ AC input type (10 A - 40 A)

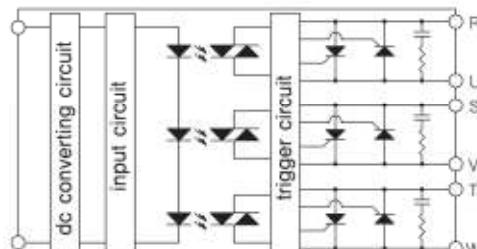


Input terminal : R, S, T
Output terminal : U, V, W

■ DC input type (50 A / 70 A)



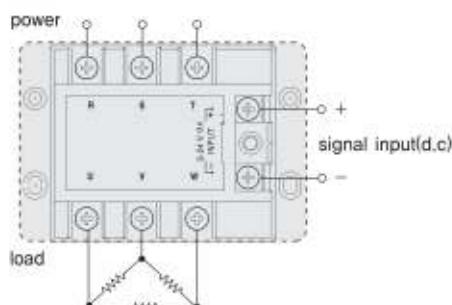
■ AC input type (50 A / 70 A)



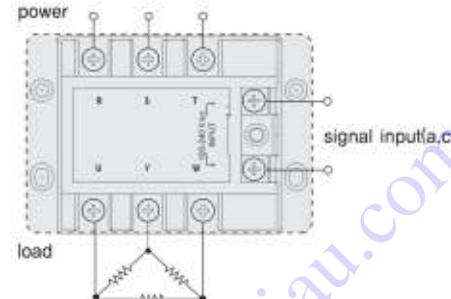
Input terminal : R, S, T
Output terminal : U, V, W

● Connection diagram

■ DC input type



■ AC input type

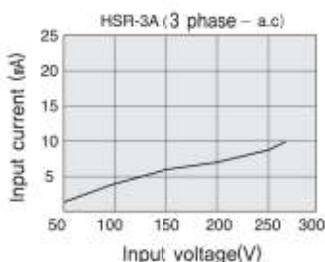
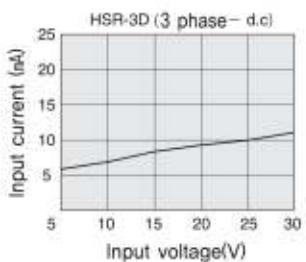


Solid State Relay

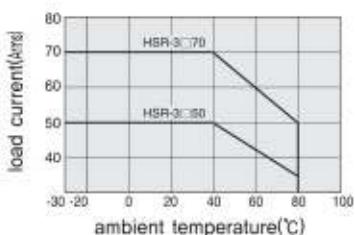
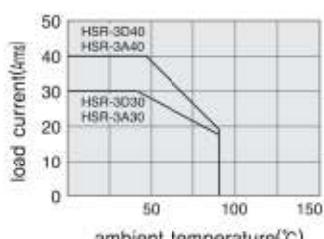
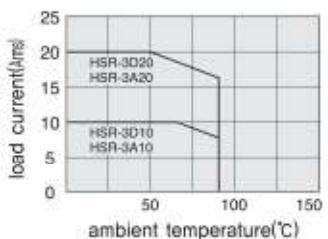
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● Load current characteristic

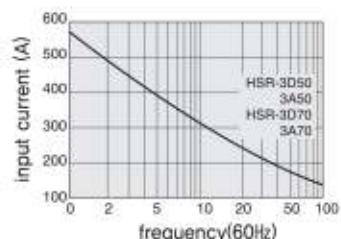
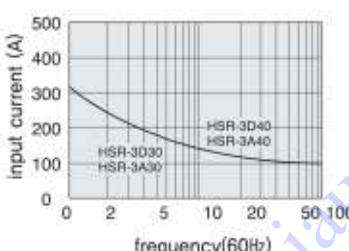
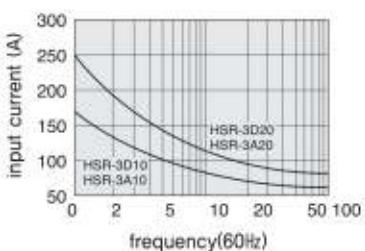
■ Input voltage-current characteristic



■ Load current characteristic

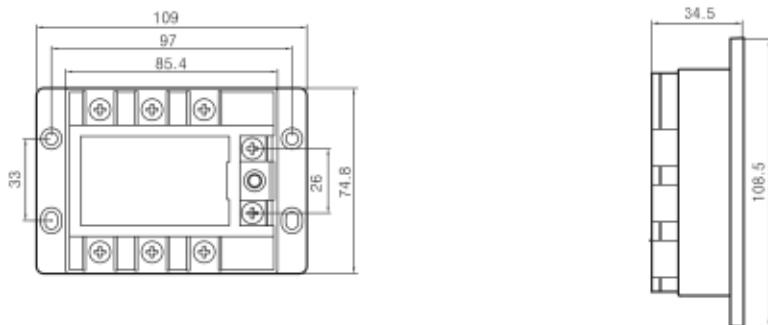


■ Surge Current characteristic

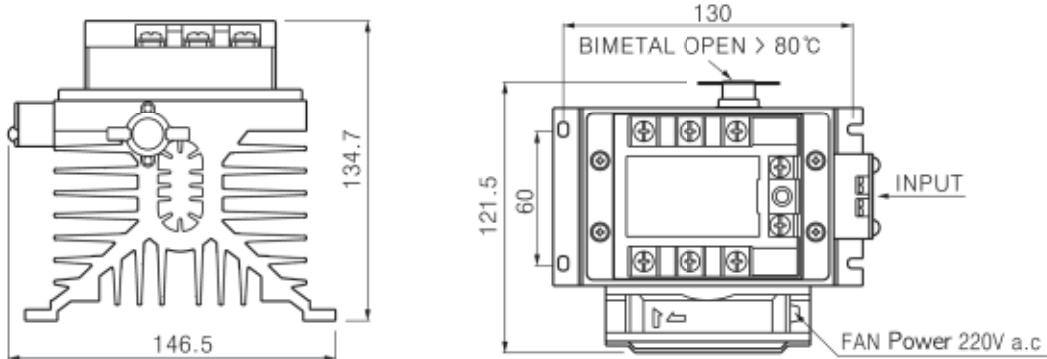


● Dimension (Unit : mm)

■ 10 A - 70 A



■ Radiator one body type (50 A)



■ Radiator one body type (70 A)

