DRW161053AC

Autonics

3-Phase, Detachable Heatsink/Intergrated Heatsink Type SSR

SR2/SR3 SERIES

INSTRUCTION MANUAL

Detachable heatsink type

Integrated heatsink type

Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

▣ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.
※⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠ **Warning** Failure to follow these instructions may result in serious injury or death.
⚠ **Caution** Failure to follow these instructions may result in personal injury or product damage.

⚠ Warning

1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
   Failure to follow this instruction may result in fire, personal injury, or economic loss.
2. **Install on a device panel or DIN rail to use.**
   Failure to follow this instruction may result in electric shock or fire.
3. **Do not connect, repair, or inspect the unit while connected to a power source.**
   Failure to follow this instruction may result in electric shock or fire.
4. **Check 'Connections' before wiring.**
   Failure to follow this instruction may result in fire.
5. **Do not disassemble or modify the unit.**
   Failure to follow this instruction may result in electric shock or fire.

⚠ Caution

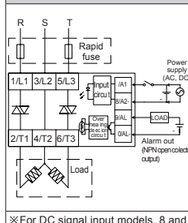
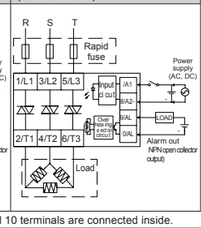
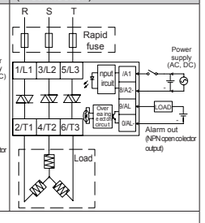
1. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
2. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in electric shock or fire.
3. **Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
   Failure to follow this instruction may result in fire or explosion.
4. **Keep metal chip, dust, and wire residue from flowing into the unit.**
   Failure to follow this instruction may result in fire or product damage.
5. **Since leakage current still flows right after turning off the power or in the output OFF status, do not touch the load terminal.**
   Failure to follow this instruction may result in electric shock.

▣ Ordering Information

SR H 3 – 1 4 15 R

Item					
SR	Solid State Relay				
H	Integrated heatsink type				
No mark	Detachable heatsink type				
Type					
3	3-phase (3-pole)				
2	3-phase (2-pole)				
Control phase					
4	48-480VAC				
2	24-240VAC				
Rated load voltage					
4	90-240VAC				
2	24VAC				
1	4-30VDC				
Rated input voltage					
40	40A				
30	30A	75	75A		
15	15A	50	50A		
Rated input current (resistive load)					
R	Random turn-on				
No mark	Zero cross turn-on				
Function					

▣ Connections

3-phase (2-pole)	3-phase (3-pole) delta connection (△-connection)	3-phase (3-pole) star connection (Y-connection)
		

※For DC signal input models, 8 and 10 terminals are connected inside.
※For AC signal input models, 8 and 10 terminals are insulated inside.

※Use terminals of size specified below.

Terminal type		Input	Output
 <Round>	a	Min. 3.5mm	Min. 5.0mm
	b	Max. 7 0mm	Max. 12 0mm

※The above specifications are subject to change and some models may be discontinued without notice.
※Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

▣ Specifications

◎ **Input**

Rated input voltage range		4-30VDC⎓	24VACrms~ (50/60Hz)	90-240VACrms~ (50/60Hz)
Allowable input voltage range		4-32VDC⎓	19-26.4VACrms~ (50/60Hz)	85-264VACrms~ (50/60Hz)
Max. input current		25mA	15mA	25mA
Pick-up voltage		Min. 4VDC⎓	Min. 19VACrms~	Min. 85VACrms~
Drop-out voltage		Max. 1VDC⎓	Max. 4VACrms~	Max. 10VACrms~
Turn-on time	Zero cross turn-on	Max. 0.5 cycle of load source + 1ms	Max. 1 5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms
	Random turn-on	Max. 1ms	—	—
Turn-off time		Max. 0.5 cycle of load source + 1ms	Max. 1 5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms

◎ **Output**

Rated load voltage range		24-240VACrms~ (50/60Hz)				48-480VACrms~ (50/60Hz)			
Allowable load voltage range		24-264VACrms~ (50/60Hz)				48-528VACrms~ (50/60Hz)			
Rated load current	Resistive load (AC-51)※1	15Arms	30Arms	50Arms	75Arms	15Arms	30Arms	40Arms	50Arms	75Arms
Min. load current		0.15Arms	0 2Arms	0.5Arms		0.5Arms				
Max. 1 cycle surge current (60Hz)		250A	400A	1000A		300A	500A		1000A	
Max. non-repetitive surge current (I^2t, t=8 3ms)		340A^2s	1000A^2s	4000A^2s		350A^2s	1000A^2s		4000A^2s	
Peak voltage (non-repetitive)		600V				1200V (Zero cross turn-on), 1000V (Random turn-on)				
Leakage current (Ta=25℃)		Max. 10mArms (240VAC~/60Hz)				Max. 10mArms (480VAC~/60Hz)				
Output on voltage drop [Vpk] (max. load current)		Max. 1.6V								
Static off state dv/dt		500V/μs								

※1: AC-51 is utilization category at EC60947-4-3.

◎ **Alarm output (temperature overheat)**

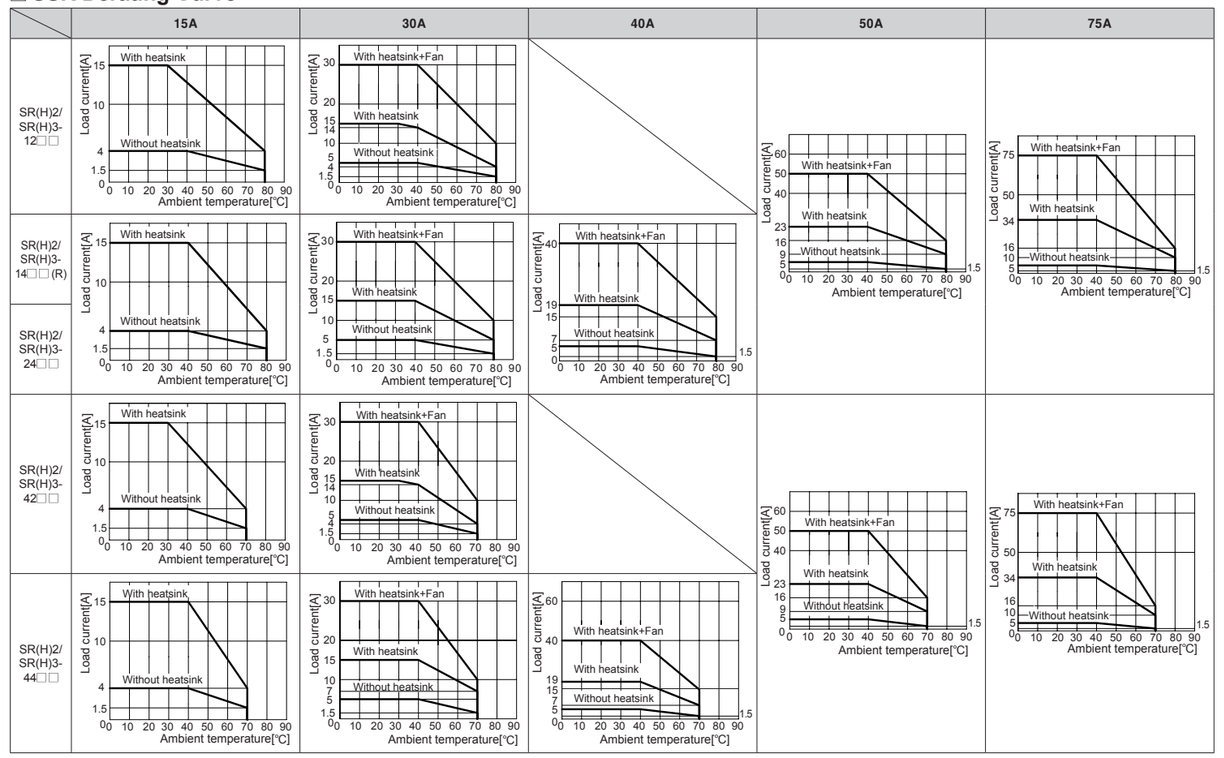
Rated input voltage range	4-30VDC⎓	24VACrms~ (50/60Hz)	90-240VACrms~ (50/60Hz)
Load voltage	Max. 30VDC⎓	Max. 30VDC⎓	Max. 30VDC⎓
Load current	Max. 100mA	Max. 50mA	Max. 50mA
Turn-off time	Max. 20ms	Max. 40ms	Max. 40ms

◎ **General specifications**

Dielectric strength (Vrms)		• 24-240VAC~ rated load current 15A/30A : 2500VAC 50/60Hz 1 min (input-output, input/output-case) • 24-240VAC~ rated load current 50A/75A, 48-480VAC~ rated load current 15A/30A/40A/50A/75A : 4000VAC 50/60Hz 1 min (input-output, input/output-case)
Insulation resistance		Over 100MΩ (at 500VDC megger) (input-output, input/output-case)
Indicator		Input indicator: green LED, alarm indicator: red LED
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour
	Malfunction	0 5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 min
Shock	Mechanical	300m/s² (approx. 30G) in each X, Y, Z direction for 3 times
	Malfunction	100m/s² (approx. 30G) in each X, Y, Z direction for 3 times
Environment	Ambient temp.	-30 to 80℃ (in case of the rated input voltage 90-240VAC~: -30 to 70℃), storage: -30 to 100℃ (The rated load current capacity is different depending on ambient temperature. Refer to ▣ SSR Derating Curve'.)
	Ambient humi.	45 to 85%RH, storage: 45 to 85%RH
Input terminal connection, alarm output terminal connection		Min. 1×0.5mm² (1×AWG20), max. 1×1.5mm² (1×AWG16) or 2×1.5mm² (2×AWG16)
Output terminal connection		Min. 1×1.5mm² (1×AWG16), max. 1×16mm² (1×AWG6) or 2×6mm² (2×AWG10) ※Use wires compliant with load current capacity to connect to the terminal.
Input terminal fixed torque		0.75 to 0.95N m
Output terminal fixed torque		1 6 to 2.2N m
Approval		CE c UL us
Weight※1		• Detachable heatsink type: Approx. 365g (approx. 275g) • Integrated heatsink type - Rated load current 15A/30A/40A: Approx. 896g (approx. 686g) - Rated load current 50A: Approx. 1508g (approx. 1268g) - Rated load current 75A: Approx. 2354g (approx. 2064g)

※1: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.
※For wiring the terminal, round terminal must be used.

▣ SSR Derating Curve



◎ **Specifications of cooling fan**

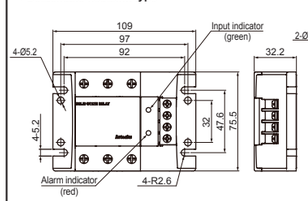
Load capacity	Cooling fan type	Size (mm)	Rated air flow※1	
			m³/min	CFM
30A/40A	AC Fan	80×80	0 68	24.0
	DC Fan		1 25	44.0
50A/75A	AC Fan	92×92	1.13	40.0
	DC Fan		1 80	63.5

※The heatsink of the curves is dedicated for the SRH2/SRH3.
※Install SR2/SR3 Series on the metal plate (min. 130mm×120mm).
⚠ Since effectiveness of the heat rediation is decreased when multiple SSRs are installed closely, please supply less than 50% of the rated load current.
※Above SSR derating curves obtained approval from the UL certification authority.
※1: The cooling fan should be over the rated air flow value.
※Autonics does not provide or sell a cooling fan. (Please buy a cooling fan separately.)

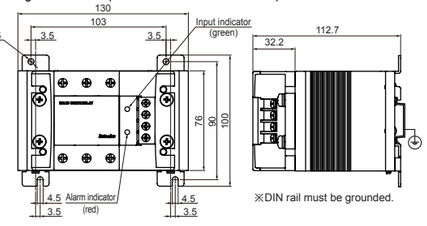
▣ Dimensions

(unit: mm)

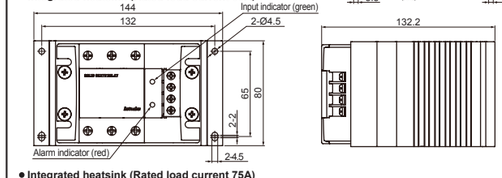
● **Detachable heatsink type**



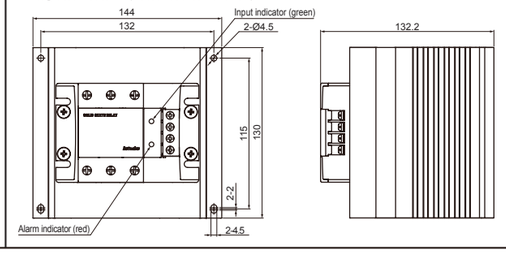
● **Integrated heatsink (Rated load current 15A/30A/40A)**

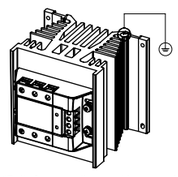


● **Integrated heatsink (Rated load current 50A)**



● **Integrated heatsink (Rated load current 75A)**

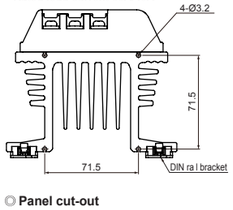




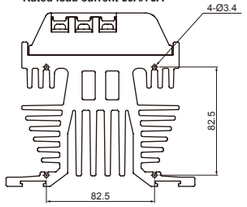
High Temperature Caution
While supplying power to the load or right after turning off the power of the load, do not touch the body and heat sink.
Failure to follow this instruction may result in a burn due to the high temperature.

◎ **Cooling fan mounting hole**

● **Rated load current 30A/40A**

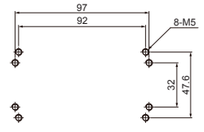


● **Rated load current 50A/75A**



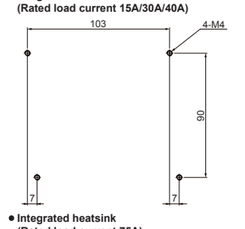
◎ **Panel cut-out**

● **Detachable heatsink type**

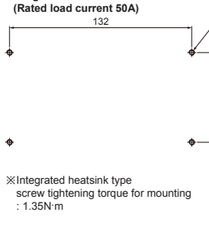


※Detachable heatsink type screw tightening torque for mounting : 2.5N·m to 3N·m

● **Integrated heatsink (Rated load current 15A/30A/40A)**

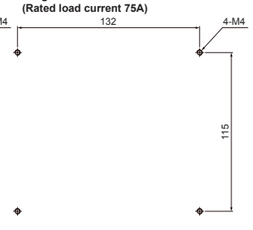


● **Integrated heatsink (Rated load current 50A)**



※Integrated heatsink type screw tightening torque for mounting : 1.35N·m

● **Integrated heatsink (Rated load current 75A)**



※When installing multiple SSRs, please keep space between SSRs for heat radiation. When installing SSRs horizontally (input part and output part on the same height), please supply less than 50% of the rated load current.

▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 4-30VDC, 24VAC signal input should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Attach a heat sink or install the unit in the well ventilated place.
   To attach the heat sink, use Thermal Grease as below or that of equal specification.
   ※Thermal Grease: GE TOSH BA (YG6111), KANTO-KASEI (FLO L G-600), SH NETSU (G746)
4. Ground to the heat sink, panel, or D N rail.
   Failure to follow this instruction may result in electric shock.
5. While supplying power to the load or right after turning off the power of the load, do not touch the body and heat sink.
   Failure to follow this instruction may result in a burn due to the high temperature.
6. In order to protect the product from the short-circuit current of the load, use rapid fuse of which I^2t is under the 1/2 of SSR I^2t. When short-circuited, replace the fuse to those of same specification with the used rapid fuse.
7. Install dummy resistance in parallel with the load, to keep the sum of current flowing in the load and dummy resistance being over SSR minimum load current.
8. When using random turn-on model for phase control, install noise filter between the load and the power of the load.
9. Do not use near the equipment which generates strong magnetic force or high frequency noise.
10. This unit may be used in the following environments.
    ① Indoors (in the environment condition rated in 'Specifications')
    ② Altitude max. 2,000m
    ③ Pollution degree 2
    ④ Installation category III

▣ Major Products

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