

Autonics

Solid State Relay

SRS1-A SERIES



INSTRUCTION MANUAL

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

- 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.
- 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.
- Check 'Connections' before wiring.**
Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit.**
Failure to follow this instruction may result in electric shock or fire.

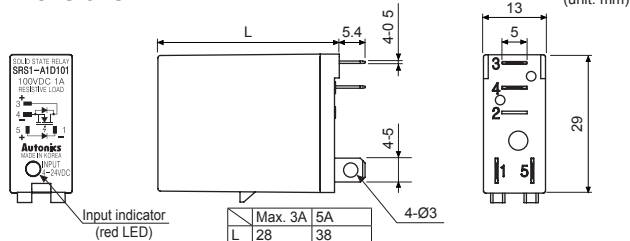
⚠ Caution

- Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
- 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.
- 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.
- Keep metal chip, dust, and wire residue from flowing into the unit.**
Failure to follow this instruction may result in fire or product damage.
- 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.

■ Model

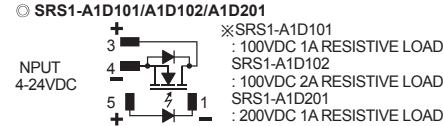
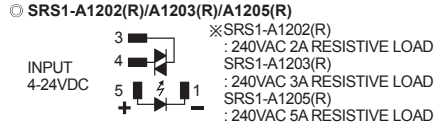
Model	Rated input voltage	Rated load current	Rated load voltage	Function	
SRS1-A1202	4-24VDC	2A	24-240VAC	Zero cross turn-on	
SRS1-A1202R				Random turn-on	
SRS1-A1203				Zero cross turn-on	
SRS1-A1203R		Random turn-on			
SRS1-A1205		5A		Zero cross turn-on	
SRS1-A1205R				Random turn-on	
SRS1-A1D101	5-100VDC	1A	5-100VDC	—	
SRS1-A1D102				2A	
SRS1-A1D201		1A		5-200VDC	—
SRS1-A1X201					1A

■ Dimensions



※When installing multiple SSRs, please keep space between SSRs for heat radiation.
※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).

■ Connections



■ Specifications

○ Input

Rated input voltage range	4-24VDC≒	Max. input current	15mA	Pick-up voltage	Min. 4VDC≒
Allowable input voltage range	4-26.4VDC≒		(Random turn-on)	Drop-out voltage	Max. 1VDC≒

○ Output (AC)

Model	SRS1-A1202(R)	SRS1-A1203(R)	SRS1-A1205(R)
Rated load voltage range	24-240VACrms~ (50/60Hz)		
Allowable load voltage range	24-264VACrms~ (50/60Hz)		
Rated load current (AC-51)*1	2Arms	3Arms	5Arms
Min. load current	0.15Arms	0.2Arms	
Max. 1 cycle surge current (60Hz)	126A	250A	
Max. non-repetitive surge current (I ² t, t=8.3ms)	65A ² s	400A ² s	
Peak voltage (non-repetitive)	600V		
Leakage current (Ta=25°C)	Max. 2mArms		
Output ON voltage drop [Vpk] (max. load current)	Max. 1.6V		
Static off-state dv/dt	500V/μs		
Turn-on time	Zero cross turn-on	Max. 0.5 cycle of load source + 1ms	
	Random turn-on	Max. 1ms	
Turn-off time	Max. 0.5 cycle of load source + 1ms		

○ Output (DC, AC/DC)

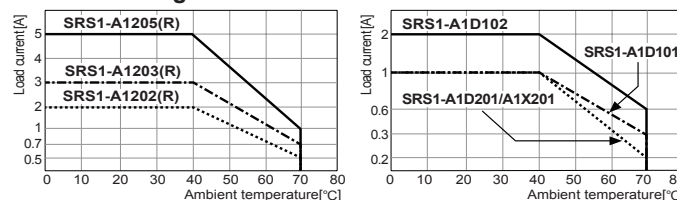
Model	SRS1-A1D101	SRS1-A1D102	SRS1-A1D201	SRS1-A1X201
Rated load voltage range	5-100VDC≒		5-200VDC≒	5-240VAC~ (50/60Hz), 5-200VDC≒
Allowable load voltage range	3-120VDC≒		3-220VDC≒	3-264VAC~ (50/60Hz), 3-220VDC≒
Rated load current (AC-51)*1	1A _{dc}	2A _{dc}	1A _{dc}	1Arms/1A _{dc}
Min. load current	10mA			
Max. surge current (t=10ms)	5A	10A	4A	
Leakage current (Ta=25°C)	Max. 100uA			Max. 2mArms
Output ON voltage drop [Vpk] (max. load current)	Max. 1.1V			Max. 2.2V
Static off-state dv/dt	500V/μs			
Turn-on time	Max. 1ms	Max. 2ms	Max. 1ms	Max. 2ms
Turn-off time	Max. 1ms			

○ General specifications

Dielectric strength (Vrms)	2,500VAC 50/60Hz for 1 min (input-output, input/output-case)			
Insulation resistance	Over 100MΩ (at 500VDC megger)			
Indicator	Input indicator: red LED			
Environment	Ambient temp. -20 to 70°C, storage: -30 to 100°C (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			
Protection	IP10 (Protection structure of socket, SK-G05)			
Approval	CE, UL			
Weight*2	Max. 3A: Approx. 270g (approx. 17g), 5A: Approx. 380g (approx. 28g)			

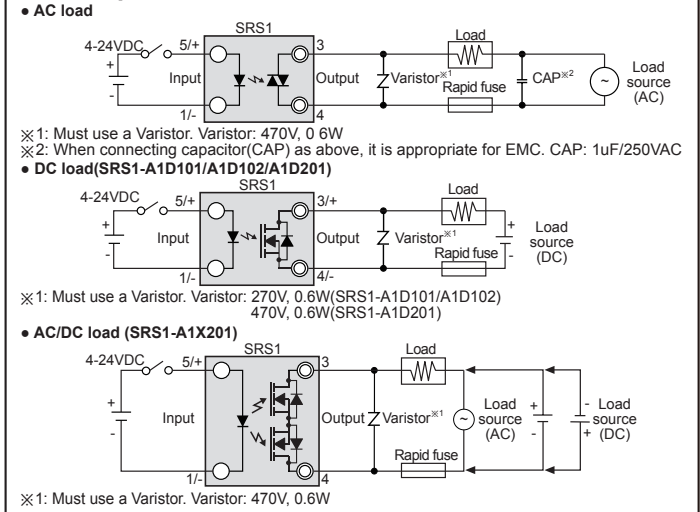
※1: AC-51 is utilization category at EC60947-4-3.
※2: The weight is per 10 units with packing and the weight of parenthesis is per 1 unit.
※Environment resistance is rated at no freezing or condensation.

■ SSR Derating curve



⚠ Since effectiveness of the heat radiation 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.

■ Example of Connection



■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 4-24VDC signal input should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Install the unit in the well ventilated place.
- While supplying power to the load or right after turning off the power of the load, do not touch the body.
Failure to follow this instruction may result in a burn due to the high temperature.
- In order to protect the product from the short-circuit current of the load, use rapid fuse of which I²t is under the 1/2 of SSR I²t. When short-circuited, replace the fuse to those of same specification with the used rapid fuse.
- 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.
- When using random turn-on model for phase control, install noise filter between the load and the power of the load.
- Do not use near the equipment which generates strong magnetic force or high frequency noise.
- This unit may be used in the following environments.
 - ①Indoors (in the environment condition rated in 'Specifications')
 - ②Altitude max. 2,000m
 - ③Pollution degree 2
 - ④Installation category II

■ Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connector/sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, CO₂, Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers