

**Autonics**

# Solid State Relay SRH1 SERIES

**M A N U A L**



Thank you very much for selecting Autonics products.  
**For your safety, please read the following before using.**

## Caution for your safety

- \*Please keep these instructions and review them before using this unit.
- \*Please observe the cautions that follow;
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- \*The following is an explanation of the symbols used in the operation manual.
- Caution:** Injury or danger may occur under special conditions.

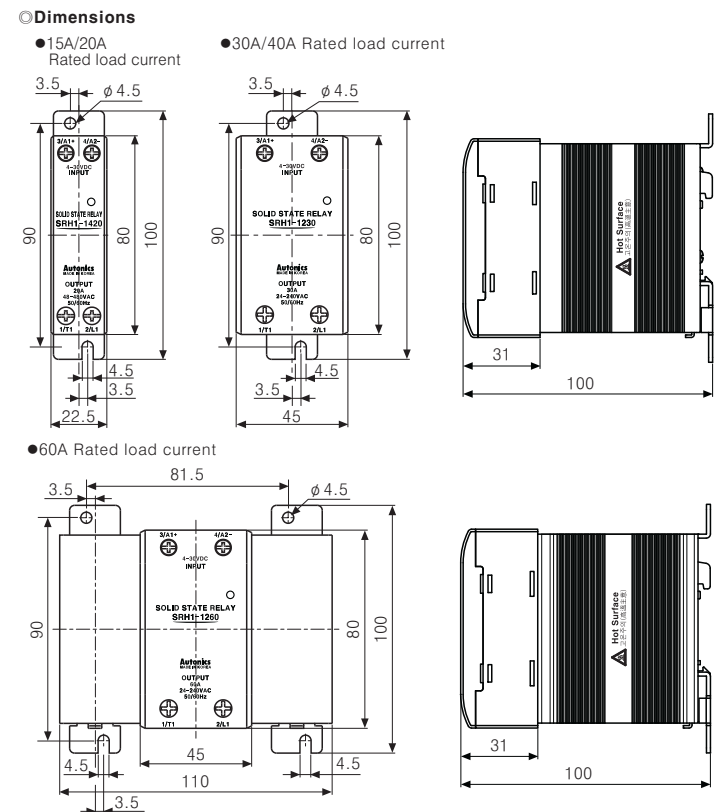
### Warning

- In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it is required to install fail-safe device, or contact us.**  
It may cause a fire, human injury or property loss.
- Install the unit on a panel.**  
It may give an electric shock.
- Do not connect, inspect or repair when power is on.**  
It may give an electric shock.
- Do not disassemble the case. Please contact us if it is required.**  
It may cause an electric shock or a fire.

### Caution

- This unit shall not be used outdoors.**  
It might shorten the life cycle of the product or give an electric shock.
- Please observe the rated specifications.**  
It might shorten the life cycle of the product and cause a fire.
- In cleaning unit, do not use water or an oil-based detergent and use dry towels.**  
It may cause an electric shock or a fire.
- Do not use this unit in place where there are flammable or explosive gas, humidity, direct ray of the light, radiant heat, vibration and impact etc.**  
It may cause a fire or an explosion.
- Do not inflow dust or wire dregs into the unit.**  
It may cause a fire or a malfunction.
- Do not touch SSR output terminals right after power switch OFF.**  
It may cause an electric shock due to an electric charge in snubber circuit.

## Dimensions & Mounting



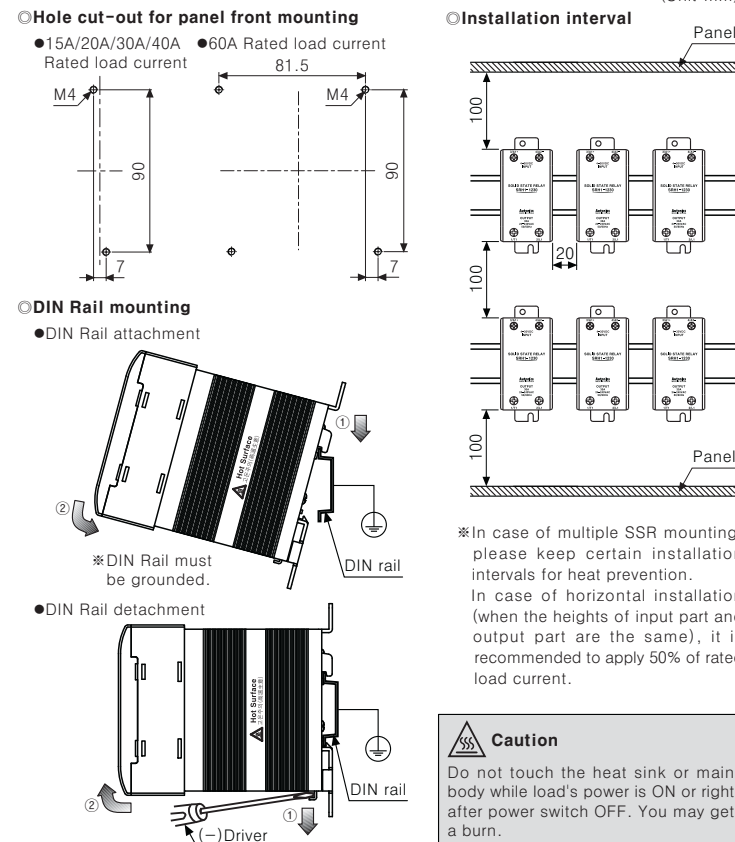
\*The above specifications are subject to change without notice.

## Ordering information

**SRH 1 - 1 4 60 R**

① Item	SRH	Solid State Relay (Heat sink integrated type)
② Control phase	1	Single phase
③ Input voltage (Rated)	1	4-30VDC
	2	24VAC
	4	90-240VAC
④ Load voltage (Rated)	2	24-240VAC
	4	48-480VAC
	15	15A
⑤ Rated load current (Resistive load)	20	20A
	30	30A
	40	40A
	60	60A
⑥ Function		Zero cross
	R	Random turn-on

Model	Input voltage	Rated load current	Load voltage	Zero cross/Random turn-on		
SRH1-1215	4-30VDC	15A	24-240VAC	Zero cross		
SRH1-2215	24VAC					
SRH1-4215	90-240VAC	20A				
SRH1-2220	24VAC					
SRH1-4220	90-240VAC	30A				
SRH1-1230	4-30VDC					
SRH1-2230	24VAC	40A				
SRH1-4230	90-240VAC					
SRH1-1240	4-30VDC	60A				
SRH1-2240	24VAC					
SRH1-4240	90-240VAC	20A			48-480VAC	Zero cross
SRH1-1260	4-30VDC					
SRH1-2260	24VAC	30A				
SRH1-4260	90-240VAC					
SRH1-1420	4-30VDC	20A	48-480VAC	Zero cross		
SRH1-1420R	4-30VDC			Random turn-on		
SRH1-2420	24VAC	Zero cross				
SRH1-1430	4-30VDC	30A		Random turn-on		
SRH1-1430R	4-30VDC			Random turn-on		
SRH1-2430	24VAC	60A		Zero cross		
SRH1-1460	4-30VDC			Random turn-on		
SRH1-1460R	4-30VDC	Random turn-on				
SRH1-2460	24VAC			Zero cross		

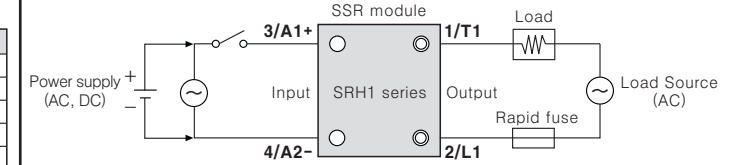


## Specifications

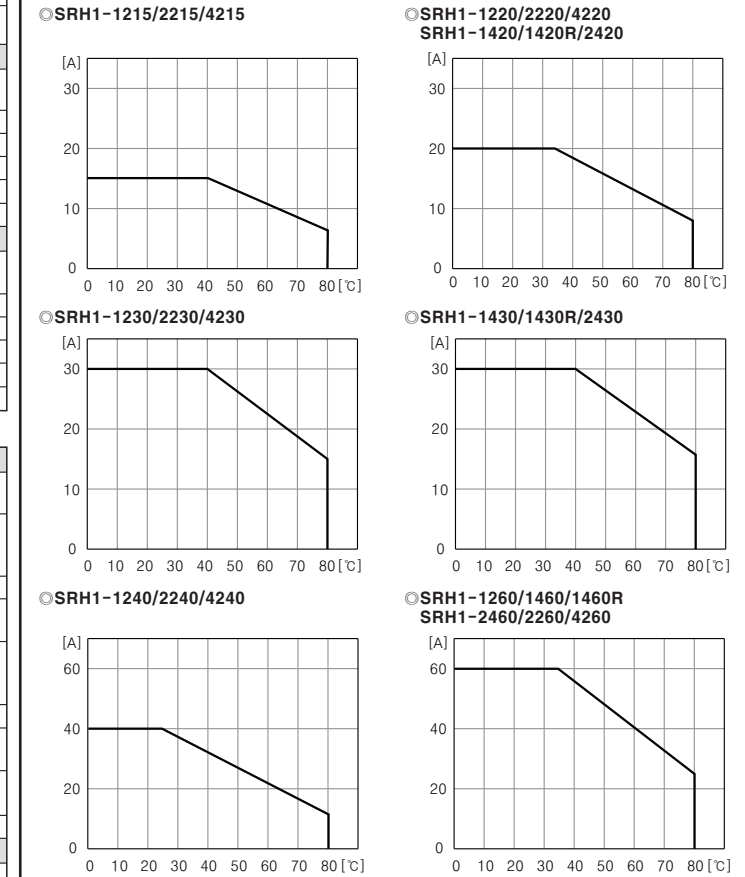
Input						
<b>4-30VDC input voltage</b>						
Input voltage range	4-32VDC					
Max. input current	8mA (Zero cross), 12mA (Random turn-on)					
Pick-up voltage	4VDC					
Drop-out voltage	1VDC					
Turn-on time	Zero cross	0.5 cycle of load source + 1ms				
	Random turn-on	Max. 1ms				
Turn-off time	0.5 cycle of load source + 1ms					
<b>24VAC input voltage</b>						
Input voltage range (50/60Hz)	19-30VACrms					
Max. input current	12mArms (24VACrms)					
Pick-up voltage	19VACrms					
Drop-out voltage	4VACrms					
Turn-on time	1.5 cycle of load source + 1ms					
Turn-off time	1.5 cycle of load source + 1ms					
<b>90-240VAC input voltage</b>						
Input voltage range (50/60Hz)	85-264VACrms					
Max. input current	6mArms (240VACrms)					
Pick-up voltage	85VACrms					
Drop-out voltage	10VACrms					
Turn-on time	1.5 cycle of load source + 1ms					
Turn-off time	1.5 cycle of load source + 1ms					
Output						
<b>24-240VAC Min. load voltage</b>						
Load voltage range (50/60Hz)	24-264VACrms					
Rated load current Ta=25°C	Resistive load (AC-51)	15Arms	20Arms	30Arms	40Arms	60Arms
	Motor load (AC-53a)	5Arms	8Arms	15Arms		
Min. load current	0.15Arms	0.2Arms	0.2Arms	0.5Arms	0.5Arms	
Max. 1 cycle surge current (60Hz)	170A	260A	330A	500A	1000A	
Max. non-repetitive surge current (I <sup>2</sup> t, t=8.3ms)	150A <sup>2</sup> s	300A <sup>2</sup> s	500A <sup>2</sup> s	1000A <sup>2</sup> s	4000A <sup>2</sup> s	
Peak voltage (Non-repetitive)	600V					
Leakage current (240VAC/60Hz, Ta=25°C)	Max. 10mArms					
Output ON voltage drop (Max. load current)	Max. 1.6Vrms					
Static off state dv/dt	500V/μs					
<b>48-480VAC Min. load voltage</b>						
Load voltage range (50/60Hz)	48-528VACrms					
Rated load current Ta=25°C	Resistive load (AC-51)	20Arms	30Arms	60Arms		
	Motor load (AC-53a)	5Arms	8Arms	15Arms		
Min. load current	0.5Arms	0.5Arms	0.5Arms			
Max. 1 cycle surge current (60Hz)	300A	500A	1000A			
Max. non-repetitive surge current (I <sup>2</sup> t, t=8.3ms)	350A <sup>2</sup> s	1000A <sup>2</sup> s	4000A <sup>2</sup> s			
Peak voltage (Non-repetitive)	1200V (Zero cross), 1000V (Random turn-on)					
Leakage current (480VAC/60Hz, Ta=25°C)	Max. 10mArms					
Output ON voltage drop (Max. load current)	Max. 1.6Vrms					
Static off state dv/dt	500V/μs					
<b>General Specifications</b>						
Dielectric strength (Vrms)	4000VAC 50/60Hz for 1 min. (Input-Output, I/O-Case)					
Insulation resistance	Min. 100MΩ (500VDC megger)					
Vibration	10-55Hz double amplitude 0.75 mm in each X, Y, Z direction for 1 hour					
Protection	IP20 (IEC standards)					
Input LED	Green					
Environment	Ambient temperature	-20 ~ 80°C / -20 ~ 70°C (In case of 90-240VAC is input voltage) Storage: -30 ~ 100°C				
	Ambient humidity	45 ~ 85%RH, Storage: 45 ~ 85%RH				
Input terminal connection	Min. 1 × 0.5mm <sup>2</sup> (1 × AWG20) Max. 2 × 1.5mm <sup>2</sup> (2 × AWG16)					
Output terminal connection	• Case width 22.5mm (M4 terminal bolt): Min. 1 × 0.75mm <sup>2</sup> (1 × AWG18) Max. 2 × 2.5mm <sup>2</sup> (2 × AWG14) • Case width 45mm (M5 terminal bolt): Min. 1 × 1.5mm <sup>2</sup> (1 × AWG16) Max. 2 × 6mm <sup>2</sup> (2 × AWG10) *Use wires compliant with load current capacity to connect to the terminal.					
Input terminal fixed torque	0.75N · m ~ 0.95N · m					
Output terminal fixed torque	• Case width 22.5mm (M4 terminal bolt): 1N · m ~ 1.35N · m • Case width 45mm (M5 terminal bolt): 1.6N · m ~ 2.2N · m					
Unit weight	• Rated load current (Resistive load) 15A/20A: Approx. 225g • Rated load current (Resistive load) 30A/40A: Approx. 410g • Rated load current (Resistive load) 60A: Approx. 680g					

\*Condition for use in Environment is no freezing or condensation.

## Connections



## SSR Characteristic curve



## Caution for using

- Keep the heat transfer between the main body and heat sink as uncongested as possible. Congested heat transfer may cause product failure or malfunction.
- Do not touch the heat sink or main body while load's power is ON or right after power switch OFF. You may get a burn.
- Use rapid fuse of which I<sup>2</sup>t is under 1/2 of SSR I<sup>2</sup>t in order to protect the unit from load's short-circuit current.
- In case that load's current is lower than SSR min. load current, connect dummy resistance to the load in parallel so as to make load's current higher than SSR min. load current.
- When selecting phase control with random turn-on model, install the noise filter between load and load's source.
- Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
- Do not touch the load's terminal even if output is OFF. It may cause an electric shock.
- Proper application environment (Avoid following environments to install)
  - Where temperature / humidity is beyond the specification
  - Where dew condensation occurs due to temperature change
  - Where inflammable or corrosive gas exists
  - Where direct rays of light exist
  - Where severe shock, vibration or dust exists
  - Where near facilities generating strong magnetic forces or electric noise
- Installation environment
  - It shall be used indoor
  - Altitude Max. 2,000m
  - Pollution Degree 2
  - Installation Category III

\*It may cause malfunction if above instructions are not followed.

## Major products

- Proximity sensors
- Area sensors
- Door/Door side sensors
- Counters
- Rotary encoders
- Power controllers
- Sensor controllers
- Panel meters
- Graphic/Logic panels
- Temperature controllers
- Tachometer/Pulse(Rate) meters
- Temperature/Humidity transducers
- Switching power supplies
- Stepping motors/drivers/motion controllers
- Field network devices
- Laser marking system (CO<sub>2</sub>, Nd:YAG)
- Laser welding/soldering system
- Photoelectric sensors
- Fiber optic sensors
- Pressure sensors
- Timers
- Display units

**Autonics Corporation**  
http://www.autonics.com

**Satisfiable Partner For Factory Automation**

**HEAD QUARTERS**  
41-5, Yongdang-dong, Yangsan-si, Gyeongsang, 626-847, Korea

**OVERSEAS SALES:**  
Bldg. 402 3rd Fl., Bucheon Techno Park, 193, Yaldae-ro-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do, 420-734, Korea  
TEL: 82-32-610-2730 / FAX: 82-32-329-0728  
E-mail: sales@autonics.com

**The proposal of a product improvement and development: product@autonics.com**