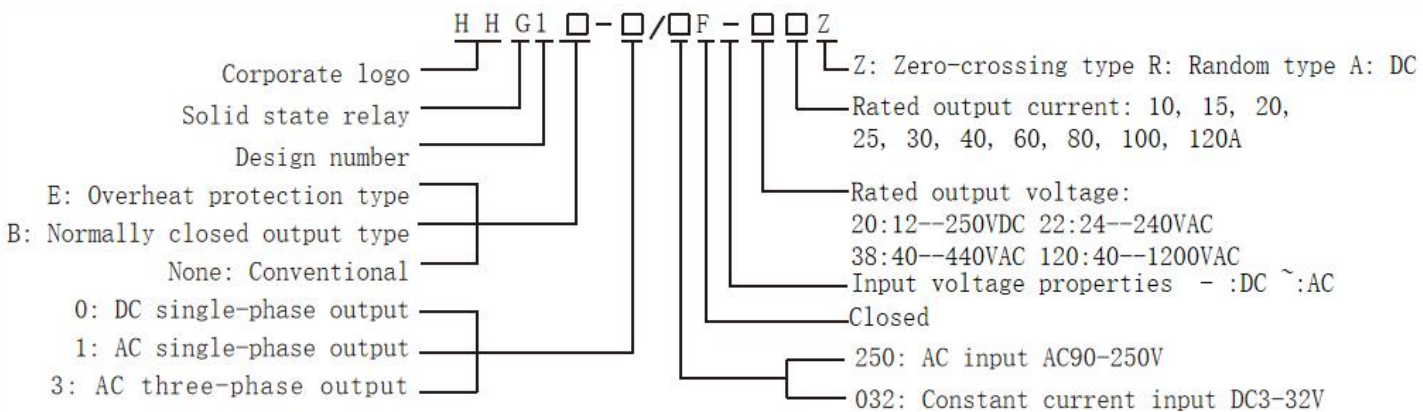


■ Overview:

The English name of solid-state relay is Solid State Relay, or SSR for short. It is a switching device that uses semiconductor devices to replace contact contacts. The input and output terminals are optically isolated. When a control signal is added to the input terminal, the output terminal can change from the off state to the on state, or from the on state to the off state (normally closed type). However, on and off cannot be equated with the on and off of the contacts of a relay or an energy converter. Generally, it is difficult to judge the quality of a solid-state relay by measuring the output terminal with a multimeter. It must be tested with a load (bulb) according to the application wiring diagram. There is an RC loop inside the output end of the solid-state relay, and there will be a leakage current of $\leq 10\text{ mA}$. It is normal for a general small load to be turned on or output voltage. Because the output thyristor has a voltage drop of $< 1.5\text{ V}$ when it is turned on, the solid-state relay will heat up. A heat sink must be added, and space must be left in the cabinet when it is installed. The selection of the heat sink can refer to Appendix 1. The output voltage and current marked on the solid-state relay are the rated voltage and rated current, and they must be used at a reduced rating when selecting. The derating factors for different loads are different, please refer to Appendix 2. Especially for inductive loads, a varistor should be connected in parallel at the output end for protection.

■ Solid state relay models and meanings



■ HHG1-3/032F-38 (SSR-DA) Picture



■ Main technical parameters

| Model | Input parameters | | | | | | | Output parameters | | | | | | | Working current safety series | |
|-------------|---------------------|--------------------|----------------------|---------------------|----------------------|-------------------|--------------------|-------------------|----------------------------------|---------------------------|--------------------|------------------------|--------------------------|--|-------------------------------|----------------|
| | Control Voltage VDC | Control Current mA | Starting voltage VDC | Starting current mA | Shutdown Voltage VDC | Work Instructions | Output voltage VAC | Output current A | Dielectric withstand voltage VAC | On-state voltage drop VAC | Frequency range HZ | Voltage rise rate V/μs | Operating temperature °C | Cooling method | Resistive load | Inductive load |
| Simplex | G1-0 | 5 - 32 | <25 | 5 | <7 | 3. 0 | LED | 12-250 VDC | 10-40 | >1500 | <1. 5 VDC | / | 100 | 10 - 80 A with heat sink; add fan for forced cooling when temperature exceeds 60°C | 60 % | 40 % |
| | G5-1 | 3 - 32 | <25 | 3 | <7 | <1. 5 | LED | 40-1200 | 60-120 | >2500 | <1. 5 | 47 - 63 | 500 | - 30 + 80 | | |
| | G1-1 G2-1 | 3 - 32 | <25 | 3 | <7 | <1. 5 | LED | 24-240 40-440 | 10-80 | >2500 | <1. 5 | 47 - 63 | 500 | - 30 + 80 | | |
| | | 90-250 VAC | <30 | 90VAC | <7 | 10VAC | LED | | >2500 | <1. 5 | 47 - 63 | 500 | - 30 + 80 | Thermal grease must be added between the product and the heat sink | | |
| Three-phase | 3 - 32 | <25 | 3 | <7 | <1. 5 | LED | 24-240 40-440 | 10-120 | >2500 | <1. 5 | 47 - 63 | 500 | - 30 + 80 | Thermal grease must be added between the product and the heat sink | | |
| | 90-250 VAC | <30 | 90VAC | <7 | 10VAC | LED | | >2500 | <1. 5 | 47 - 63 | 500 | - 30 + 80 | | | | |

Radiator Selection Appendix 1

| Solid state model current | Single phase 20A or less | Single phase 40A or less | Single phase 60A or less | Single phase 80A or less | Three phase 20A or less | Three phase 30A or less | Three phase 40A or less | Three phase 80A or less | Three phase 100A or less | Three phase 200A or less |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|
| Radiator model | HH-060 | HH-061 | HH-062 | HH-063 | HH-035 | HH-034 | HH-036 | HH-037 | HH-038 | HH-039 |

For load derating, refer to Appendix 2

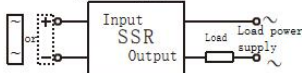
| Load type | Pure resistance | Heating wire | Incandescent lamp | Transformer | Electromagnet | Single-phase motor | Three-phase motor | Capacitor switching |
|---------------|-----------------|--------------|-------------------|-------------|---------------|--------------------|-------------------|---------------------|
| Power factor | 1. 0 | 0. 7 | 0. 5 | 0. 4 | 0. 5 | 0. 2 | 0. 3 | Surge |
| Amplify times | 1. 5 times | 2 times | 2. 5 times | 4 times | 4 times | 7 times | 6 times | 10 times |

■ Application Circuit Wiring Diagram

1. AC SSR wiring diagram

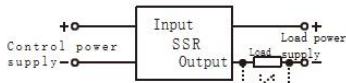
DC controls AC (D/A)
AC controls AC (A/A)

Control power supply



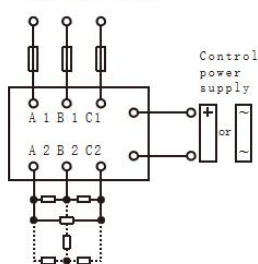
2. DC SSR wiring diagram

DC controlled DC (D/D)

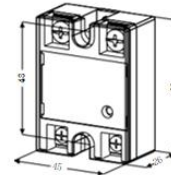
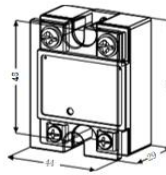
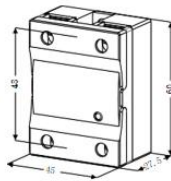


1. Three-phase SSR wiring diagram

Control power supply



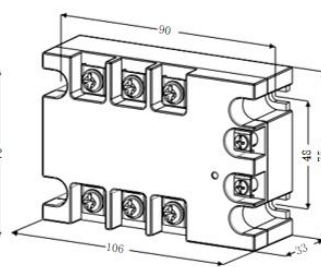
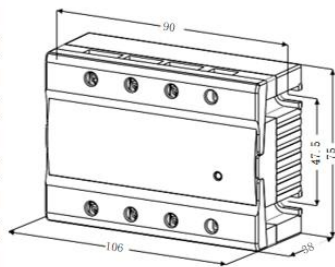
■ Appearance and installation dimensions



HHG1-0/032F-20 (Improved)
HHG1-1/032F-22, 38 (Improved)
HHG1-1/250F-22, 38 (Improved)

HHG1-0/032F-20
HHG1-1/032F-22, 38
HHG1-1/250F-22, 38
HHG5-1/032F-38, 120

HHG2-1/032F-22, 38
HHG2-1/250F-22, 38



HHG1-3/032F-38 (Improved)
HHG1-3/250F-38 (Improved)

HHG1-3/032F-38
HHG1-3/250F-38

■ Precautions for use

- ▶ Input the working conditions:
 - Pay attention to the range and positive and negative polarity of the working voltage.
 - To ensure the normal operation of the solid relay, the input current should be increased when the ambient temperature is low, and the input current should be reduced when the temperature is high.
 - When using an integrated circuit to directly drive the SSR, it should have sufficient load capacity and the lowest possible "0" level output.
- ▶ Output working conditions: To ensure the reliable operation of SSR, the limit parameters of SSR must be used correctly and necessary protective measures must be taken.
 - Peak voltage selection: Inductive load: 2-3 times the line voltage (effective value), pure resistance load: 1-2 times the line voltage (effective value).
Selection of varistor: The nominal working voltage value of the varistor is selected according to 1.8-2 times the effective value of the SSR working voltage.
 - Products with a working current below 5A should be installed next to a heat dissipation window with good ventilation, or where the cooling wind blows.
 - Products with a working current of more than 10A must be installed with a radiator. Thermal conductive silicone grease must be added between the relay and the radiator to dissipate heat well. When the surface temperature of the radiator is close to 60℃, forced air cooling should be used.
 - In order to avoid the temperature rise of the solid relay exceeding the allowable value, the heat dissipation effect and installation position should be fully considered during the design and application. When two or more solid relays are installed side by side, a suitable large spacing should be left.



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