# RANDOM CONDUCTION SOLID STATE RELAY PHASE-SHIFT TRIGGER MODULE

## SINGLE PHASE PHASE-SHIFT TRIGGER MODULE

● The phase-shift trigger series is developed to conveniently adjust the single phase AC voltage and has the common role: Under the action of the synchronous voltage (which also acts as the operation power of the module), through the synchronous phase-detection circuit, the phase-shift circuit, and the trigger circuit, a phase-shiftable trigger signal (whose phase can be shifted from 180° to 0°) will be generated by the automatic control method or manual control method (i.e. the external potentiometer) to trigger the corresponding components to achieve the purpose of phase-shift and voltage-regulation.

● The following is the specification model table

| E Type: CON 0-5V | F Type: CON 0-10V | G Type: CON 4-20mA | H Type: CON 1-5V |
|---|---|---|---|
| SSR-JKZKE | SSR-JKZKF | SSR-JKZKG | SSR-JKZKH |
| SSR-JKWKE | SSR-JKWKF | SSR-JKWKG | SSR-JKWKH |

Note:
Plug-in mounting type (SSR-JKZK)
Flange mounting type (SSR-JKWK)

● For convenience of explanation, the following introduces with the 0~5V control signal as a standard

## RANDOM CONDUCTION SOLID STATE RELAY PHASE-SHIFT TRIGGER MODULE (SSR-JKWK)

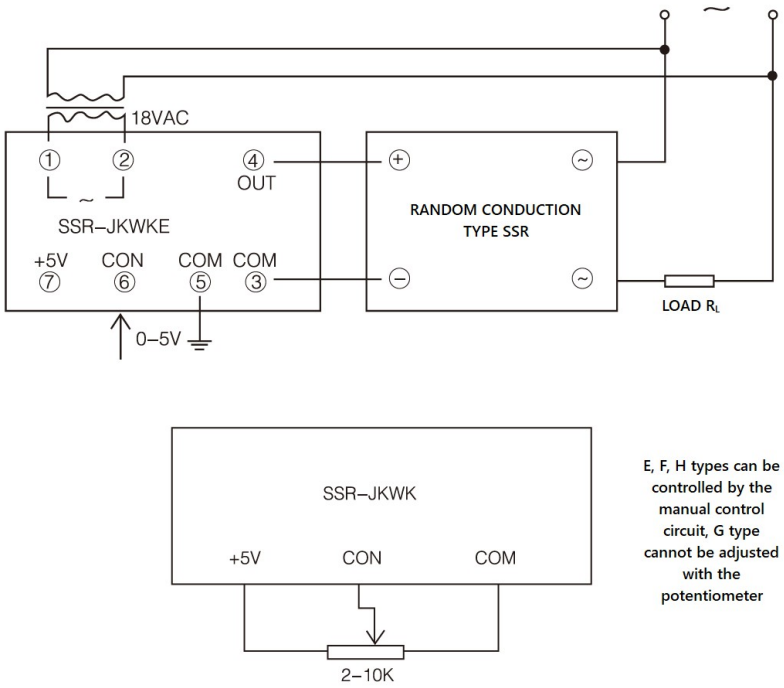
● The random conduction type single phase AC solid state relay has such a function that once a signal applied the DC control terminal, the AC output terminal will be turned on immediately. Therefore, if the control signal is a phase-shiftable pulse signal synchronized by the AC power grid, the voltage phase on the load terminal can be adjusted smoothly from 180° to 0°. The phase-shift trigger module of the random conduction type SSR (hereinafter referred to as the phase-shift trigger) is specially designed for the random conduction type SSR to conveniently adjust the AC load voltage. The function of the phase-shift trigger is to generate a wide pulse (with the synchronization with the power grid voltage, and the frequency twice of the power grid frequency, and the phase can be shifted from 180° to 0°) on the output terminal according to the magnitude of the control voltage, to drive the random conduction type SSR to achieve the purpose of phase-shift and voltage-regulation.

## The ports function of the random conduction type SSR phase-shift trigger module

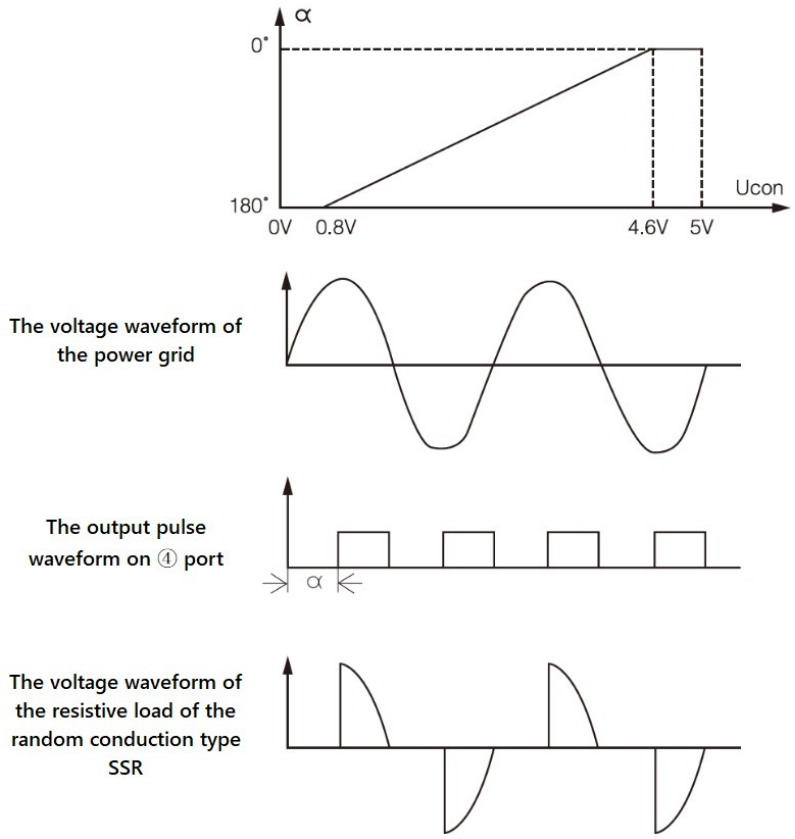
● The ① and ② ports are connected to the 18VAC secondary winding of the synchronous transformer to offer the power supply and the synchronous reference for the phase-shift trigger;
● The ③ port is the internal common ground terminal
● The ④ port is the output terminal
● The ⑤ port is the internal common ground terminal. If the phase-shift trigger is controlled by the external automatic control circuit, the ⑤ port will be connected to the ground of the external control circuit;

● The ⑥ port is the control terminal. When there is a 0.5V voltage signal inputted to the ⑥ port, a wide pulse (whose phase can be shifted from 180° to 0°) will be produced on the output terminal ④ port (for resistive loads);
● The ⑦ port is the +5V voltage terminal generated inside the module. If the ⑤, ⑥, ⑦ ports are connected to the external potentiometer to apply the manual control method, the ⑦ port acts as the power supply for it; if the control signal is provided by external control circuit to apply the automatic control method, the ⑦ port should be left floating.

## The application circuit diagram of the random conduction type SSR phase-shift trigger module



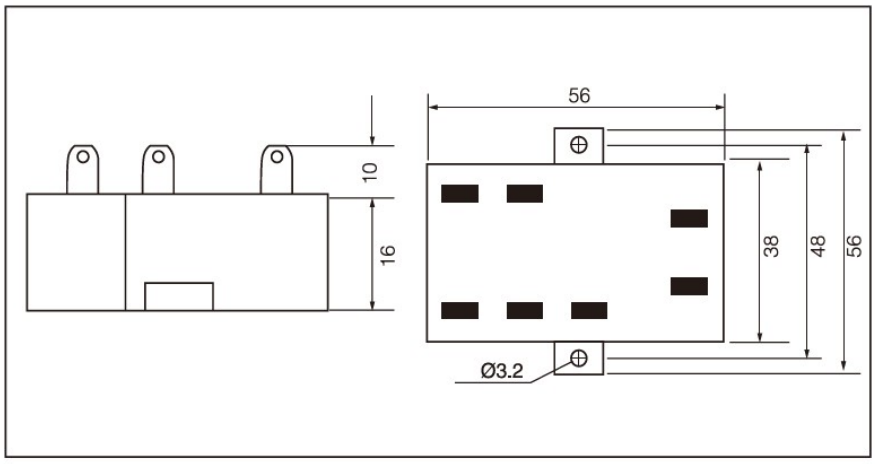

## The relationship and waveform of the control voltage UCON and the conduction angle α of the thyristor (when resistive load)




## Related technical specifications and precautions

- CON must be positive relative to COM, and if the polarity is opposite, the output terminal will be out of control (fully open or fully closed). When the control terminal CON changes from 0V to 5V, the voltage on the AC load can be adjusted from 0V to the maximum value (for resistive loads). When the control voltage on CON is around 0V~0.8V (Fully-closed Region), the control signal can reliably shut down the output of the module. When the control voltage on CON is around 0.8V~4.6V (Adjustable Region), the conduction angle α decreases linearly from 180° to 0° as the control voltage increases, and the voltage on the AC load increases from 0V to the maximum value. When the control voltage on CON is around 4.6V~5V (Full-open Region), the voltage on the AC load is the maximum value (close to the power grid voltage).
- The input impedance between CON and COM is divided into E, F and H type (the impedance of these three types are greater than or equal to 30KΩ), and G type (the impedance is 250Ω).
- ① and ② ports are connected to the secondary winding of the synchronous transformer, which allows a voltage of 18VAC ± 5VAC and a power of 2W.
- The +5V voltage signal on 7 port is only provided for the manual potentiometer (the selected resistance is between 2~10KΩ), not for other uses. Note: The G type (4~20mA as control signal) cannot be manually adjusted by the potentiometer, so the +5V port is useless for the G type.
- The pulse level of the ④ port is around 10V, and the maximum output current is 12mA. The phase-shift trigger module can directly match the random conduction type solid state relay produced by our company.
- The AC power grid frequency of the phase-shift trigger module must be 50 Hz.
- The phase-shift trigger itself generates very little heat and does not require additional heat dissipation.

## The overall dimensions of the phase-shift trigger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