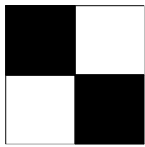


Single phase AC solid state voltage regulator series



OPERATION MANUAL

■ General

Single phase full isolation integrated voltage regulator module adopt high grade IC to design. The inner integrate phase shift trigger circuit, one-way or two-way SCR, RC absorbing circuit and power circuit, can automatically or manually adjust the output SCR trigger conduction angle to change the voltage across the load, so as to adjust the output power, stepless adjust load voltage from zero volts to the grid full voltage.

This product adopt high grade power management chip, the power supply voltage can work in an extremely wide range of 180V-430Vac, and has a very high reliability. At the same time, we can also customize specific low voltage products for special user.

Meanwhile, according to the majority of customers continue to demand, through the tireless efforts of our technical department, we have developed a good versatility and adaptability of voltage regulator module with closed loop negative feedback function, compared to conventional open loop, the module output can remains constant when the input voltage fluctuation or the output load changes.

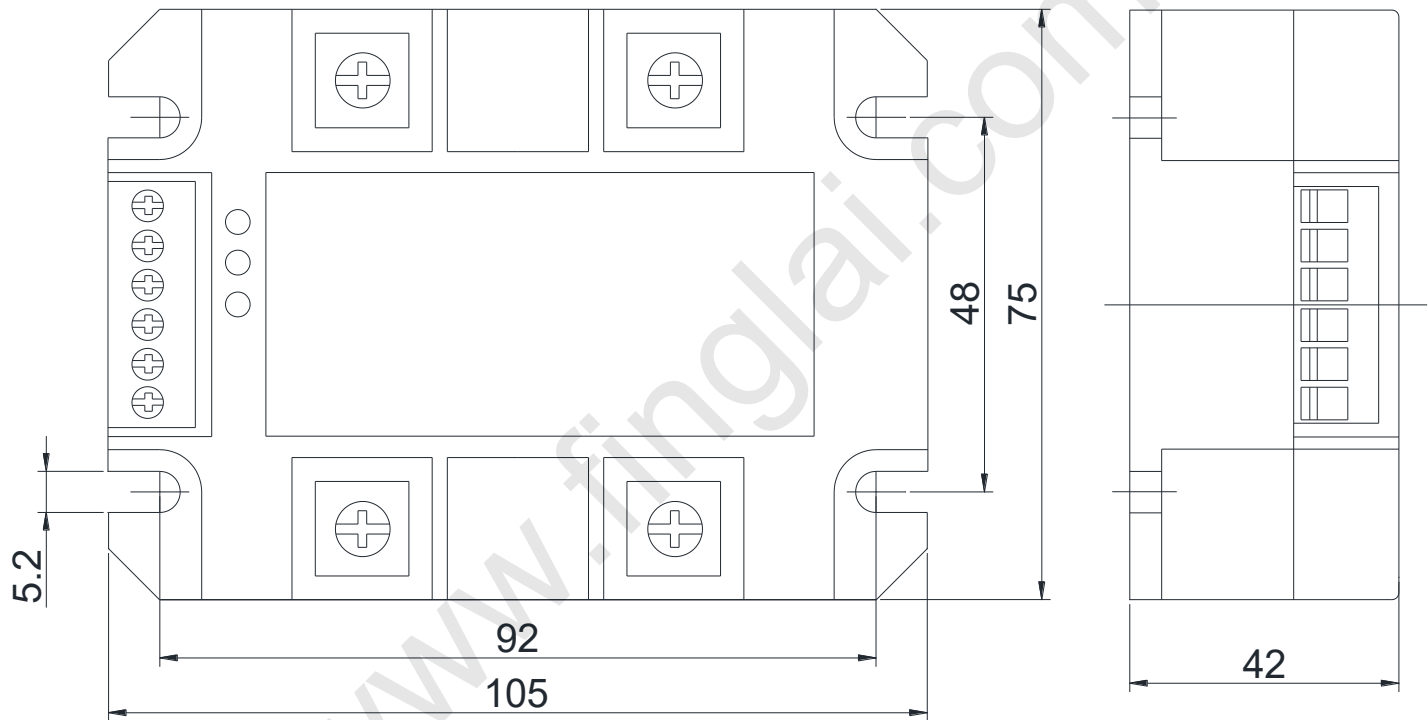
■ Feature

1. Not need connect to +12V DC power supply. Some products require you to provide + 12V power supply, and also has precision requirements, it is great inconvenience. This product does not require.
2. Not need connect synchronization transformer (or other trigger module). Because of rational design, saves space for you to use, and simplifies installation and wiring. At the same time, less wiring also reduces the possibility of poor contact.
3. Many control types. You can use potentiometer to control, also can use a variety of automatic control signal (e.g. 4-20mA, 0-5VDC, 0-10VDC, etc.), a module has variety of control types, it is convenience. This makes your selection simple, easy stocking, avoid selection errors result in losses.
4. Has high control precision linear. Users typically ignore the parameter of observed tunable accuracy. Some products have very narrow adjustment range, for example 4-20mA control, the actual range is only 6-13mA; some even can't output 0 or maximum voltage. Such immature product is worthy of thought-provoking.
5. Adopt high quality ST big power thyristor module as the core component. High-quality products are not only user sought, and it is our credibility and life.
6. The model with "-F" is with closed loop negative feedback function. When the input voltage fluctuation or the output load changes, the module output remains constant. If customer require high stability output voltage, can use this. Related parameters: constant voltage range: 5% to 90% (input>output) / constant volatility $\leq 1\%$ / constant voltage hysteresis time $\leq 10\text{ms}$. In actual use, even if the three-phase electrical input voltage is in rapidly and significant fluctuations, the output voltage will always be able to stay steady.

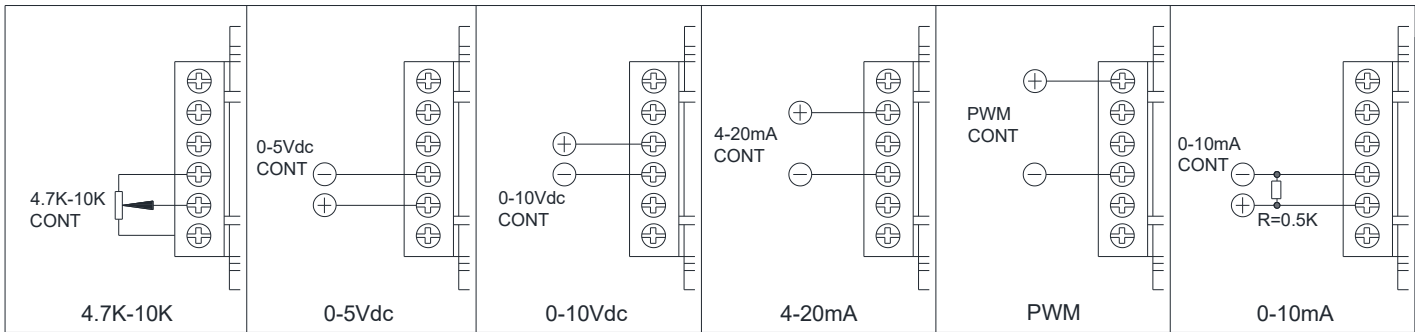
Model and load output current

Model number 220V/380V universal	Closed loop 220V	Closed loop 380V	Current
LSA-H3P15YB	LSA-H2P15YB-F	LSA-H3P15YB-F	15A
LSA-H3P25YB	LSA-H2P25YB-F	LSA-H3P25YB-F	25A
LSA-H3P40YB	LSA-H2P40YB-F	LSA-H3P40YB-F	40A
LSA-H3P50YB	LSA-H2P50YB-F	LSA-H3P50YB-F	50A
LSA-H3P70YB	LSA-H2P70YB-F	LSA-H3P70YB-F	70A
LSA-H3P90YB	LSA-H2P90YB-F	LSA-H3P90YB-F	90A
LSA-H3P120YB	LSA-H2P120YB-F	LSA-H3P120YB-F	120A
LSA-H3P150YB	LSA-H2P150YB-F	LSA-H3P150YB-F	150A
LSA-H3P200YB	LSA-H2P200YB-F	LSA-H3P200YB-F	200A
LSA-H3P300YB	LSA-H2P300YB-F	LSA-H3P300YB-F	300A

External dimensions



Wiring diagram



■ Operation instruction

Special multiple input control mode, with 0-5Vdc、0-10Vdc、4-20mA、PMW、0-10mA etc automatic control type, don't need special custom-made, also may use potentiometer manual control.

1). Potentiometer manual control type: refer to the 2k-10k figure, the middle potentiometer end connect to CONT terminal, the other two ends of potentiometer connect to COM and +5V separately. When control terminal signal (CONT) change from 0 to 5Vdc, the AC load voltage will change from 0 to max, the voltage CONT voltage is more, the output voltage will be more. +5V is made by the module itself, not been provided by external power, just match the potentiometer control type, don't have other effect, the potentiometer's resistance value is between 2k Ω to 10k Ω . When the control terminal CONT is changed from 0-5Vdc, the AC load voltage can be adjusted from 0 to the maximum linearly, the CONT terminal voltage is bigger, the module output is bigger.

2). 0-5Vdc control type: please refer to the 0-5Vdc figure, may accept the 0-5Vdc signal of single chip etc, The input positive pole connect to CONT, negative pole connect to COM, the internal input resistance of module between CONT and COM is more than 30K Ω . When the control terminal CONT is changed from 0-5Vdc, the AC load voltage can be adjusted from 0 to the maximum linearly, when the CONT is 0-0.7Vdc, it is fully closed area, close entire electricity output reliably; when the CONT is 0.7Vdc-4.3Vdc, it is adjusted area, when the control voltage increase, the phase shift angle α will be reduced from 180° to 0° linearly, conduction angle increase, the AC load voltage is increased from 0 to the maximum; when the CONT is 4.3-5Vdc, it is fully open area, the AC load's voltage is maximum (close to grid voltage).

3). 0-10Vdc control type: refer to 0-10Vdc figure, may accept 0-10Vdc analog signal of PLC etc, the internal input resistance of module between 0-10Vdc and COM is more than 15K Ω . When the control terminal CONT is changed from 0-10Vdc, the AC load voltage can be adjusted from 0 to the maximum linearly, when the CONT is 0-2.5Vdc, it is fully closed area, close entire electricity output reliably; when the CONT is 2.5Vdc-10Vdc, it is adjusted area, when the control voltage increase, the phase shift angle α will be reduced from 180° to 0° linearly, conduction angle increase, the AC load voltage is increased from 0 to the maximum.

4). 4-20mA control type: refer to 4-20mA figure, may accept 4-20mA analog signal of temperature controller etc. The internal input resistance of module between 4-20mA and COM is 250 Ω . When input 4-20mA, around 4-5mA is fully closed area, can close entire electricity output; around 5-19mA is adjusted area, that is to say when the control current increase, the phase shift angle α will be reduced from 180° to 0° linearly, the AC load voltage can be adjusted from 0 to the maximum linearly; around 19-20mA is fully open area, the AC load's voltage is maximum.

5). PWM control type: Refer to the PWM figure, may accept pulse signals, such as PLCs with variable duty ratio, don't need AD conversion, it is easy to use. The acceptable signal frequency range is 1KHZ-3KHZ. The signal input peak level is 4-24VDC. This product can be compatible with the 5V CPU interface of conventional industrial control card and conventional PLC interface.

6). 0-10mA control type: refer to 0-10mA figure. When adopt this type, should connect a 500 Ω , 1/2W resistance between CONT and COM, when input 0mA, the corresponding CONT is 0Vdc, when input 10mA, the corresponding CONT is 5Vdc.

7). RS485 communication control mode, the model number with "M" has this function: 485A and 485B are connected to the AB ends of the RS485 interface respectively. The communication adopts Modbus-RTU protocol, the default device address is 1, the baud rate is 9600, no check, and the stop bit is 1. The above parameters can be reconfigured by rewriting the register.

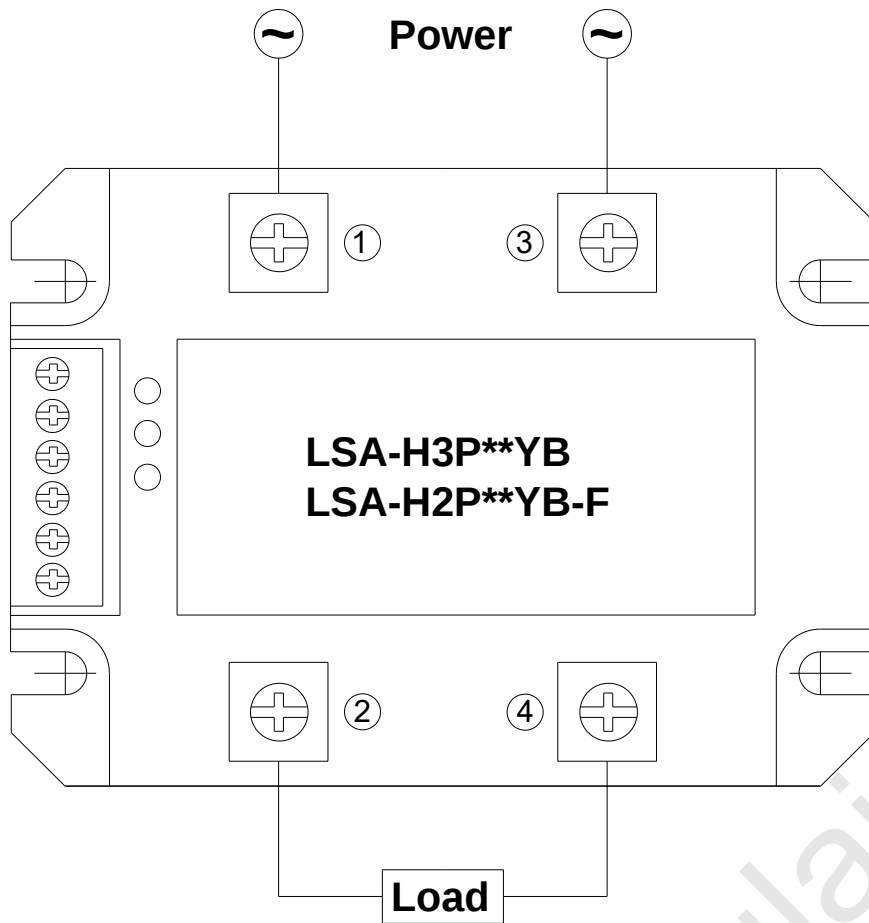
Note:

1. Each function is positive pole from COM, the COM is negative pole, if the polarity is contrary, the main circuit output of module maybe run away.

2. Every function terminal of module is positive pole, that is to say the higher control voltage, the higher output voltage of module main circuit.

3. At the same time should use one input control type, if there are two, the stronger signal will be valid. If use manual type and automatic type, such as connect to 4-20mA for automatic control, and connect to 0-5V for manual control, may transpose the function by double throw switch.

■ The wiring of force electricity main circuit output



■ Mounting type

1. Wall hanging vertical mounting. Screw down each screw, the power is input above and output under.
2. Over current protection: if has this phenomenon in the operation, at fire, should inspect the load whether has the short circuit etc. may install a fuse in front of input wire, the size may be 1.5 times reality load current.
3. If the moudle's rated current is bigger than 5A, need install a metal plate to dissipate heat, if more than 10A, need speical heat sink, more bigger current more bigger heat sink.