

**ZK-KTD2**

**Multi-  
function**

**Multiple  
models**

**Multiple  
triggers**

## High precision time delay relay

Prevent  
overshoot

Surge pr-  
event

Industri-  
al grade

Freewheel  
diode



**Wide  
voltage**

**5-30V**

**Multiple  
triggers**

Switch/level/Serial port/PNP

## Product Size



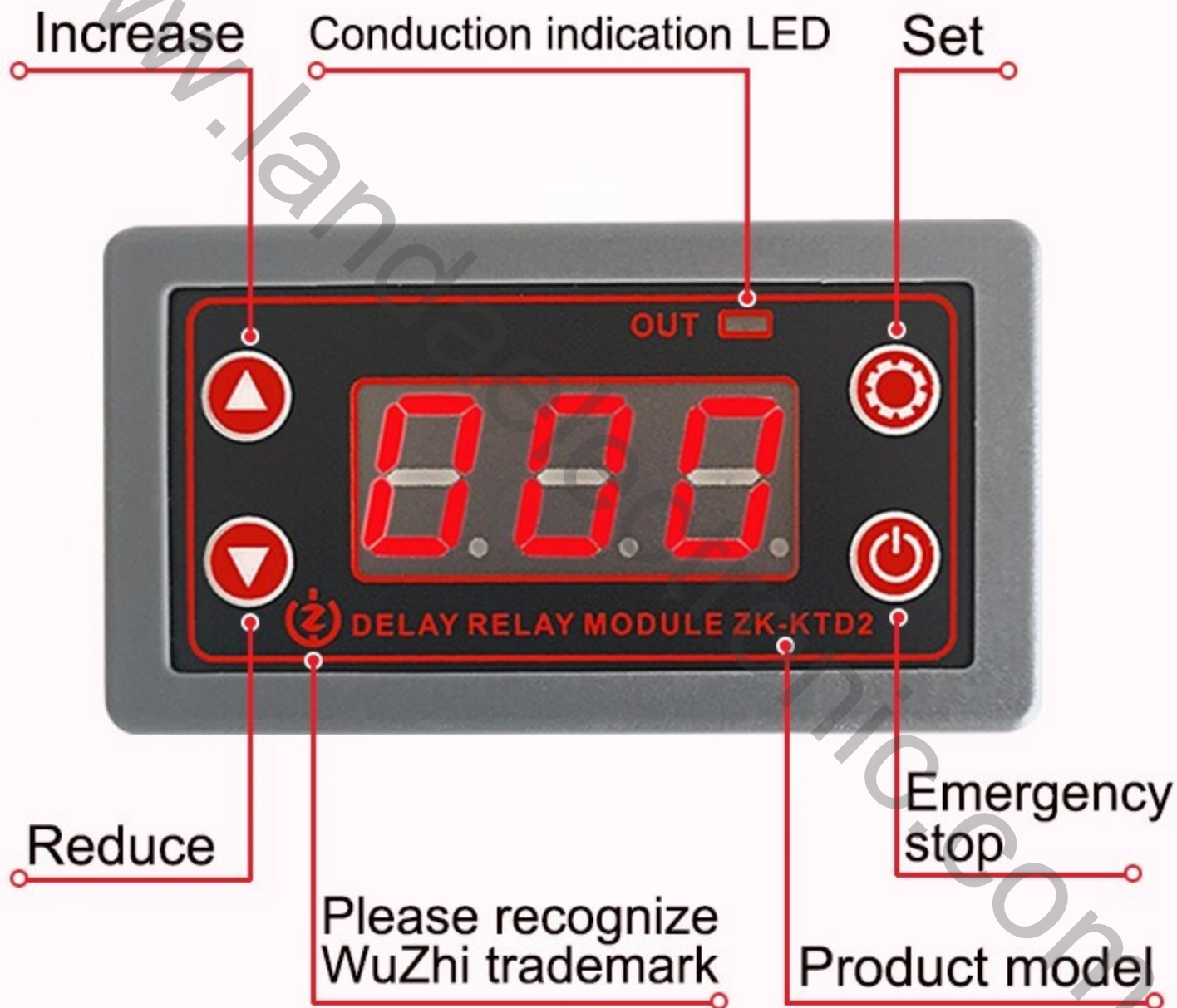
## Opening Size



Net weight:40g

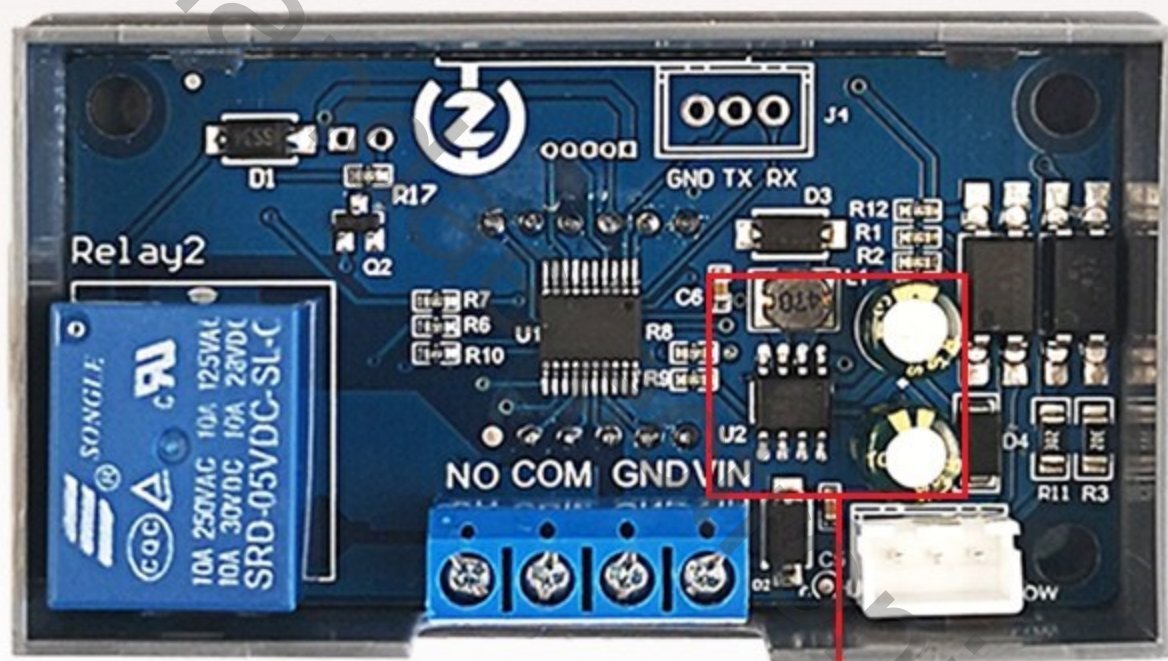


# Front of product



**24 V power on, No heating, No burning**

New DCDC upgrade circuit second kill LM317



DCDC buck circuit supports 24 V  
No heating, No burning,  
Upgrade the old LDO circuit



# Delay power-off trigger delay cycle timing relay module

0.1 seconds (min) to 999 minutes (max) continuously adjustable

This product is easy to use, many functions, but all buyers need to carefully read the instructions, very useful product.

## Highlights

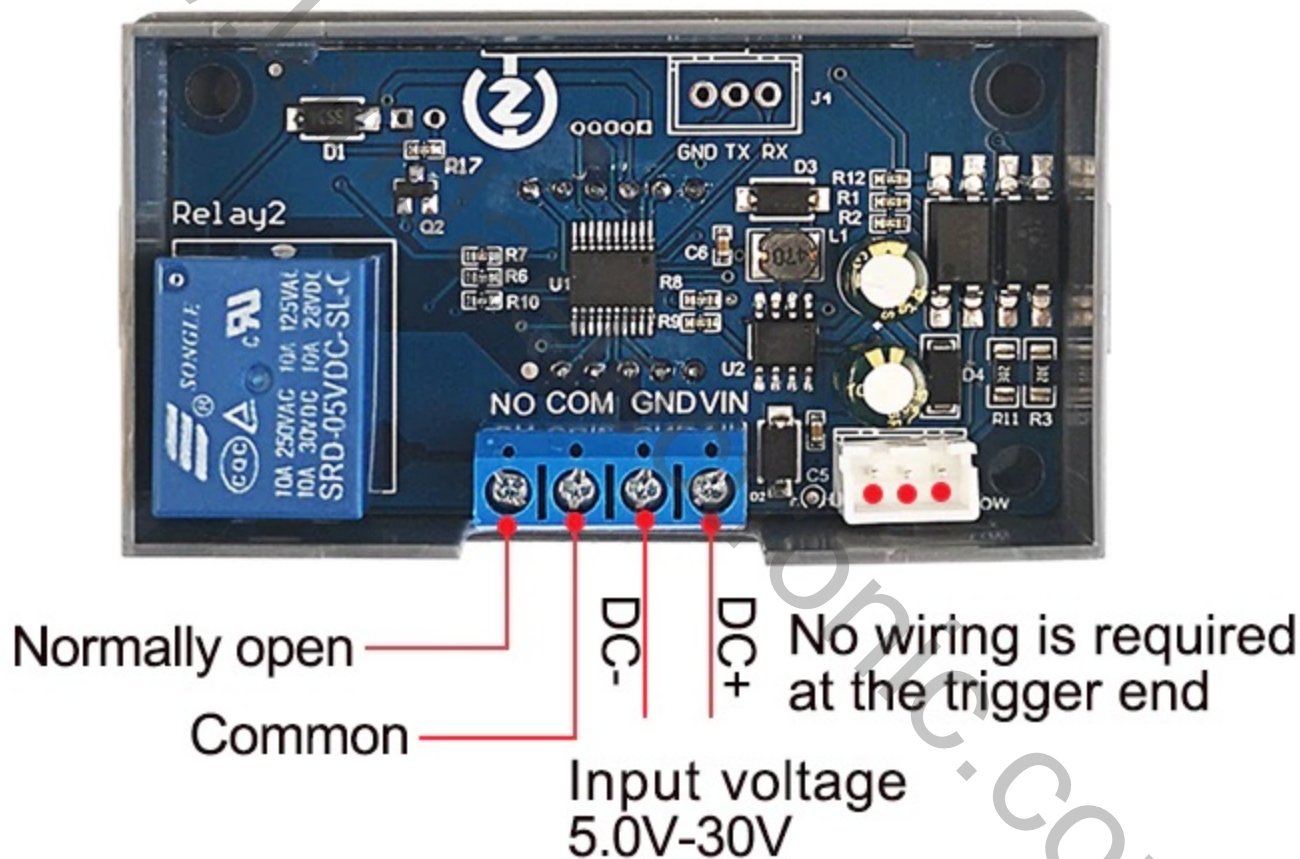
1. **Wide voltage input (5~30V)** , most devices can be used, very convenient;
2. The interface is clear and simple, powerful, easy to understand, meet almost all your needs;
3. **The emergency stop function ("STOP" key);With reverse polarity protection, reverse polarity will not burn the product.**
4. Increase the sleep mode, if this mode is enabled, without any operation within 3 minutes, then automatically turn off the monitor, any key wake-up;
5. You can set a different OP, CL, LOP、CLL、CLH parameters, which are independent of each other, and are automatically saved;
6. New serial communication function, easy to read and set parameters.
7. After the module is powered down, all parameter settings are not lost.

## parameters

- 1: Working voltage: DC 5V -- 30V, support **micro USB 5.0V** power supply;
- 2: Trigger signal source: ① High level trigger (DC 3.0v-24v)  
② Switch trigger      ③ serial communication trigger
- 3: Output capacity: the equipment can be controlled within 30V 5A DC or 220V 5A AC
- 4: Static current: 20mA, Working current: 50mA
- 5: Service life: more than 100000 times; Working temperature: -40 ~ 85 °C; Size: 69\*38\*17mm
- 6: With optocoupler isolation, enhance the anti-interference ability, industrial level circuit board, set parameters, power off after permanent memory.

**Special attention:** relay output is a passive contact, not charged output, control a line on-off function.

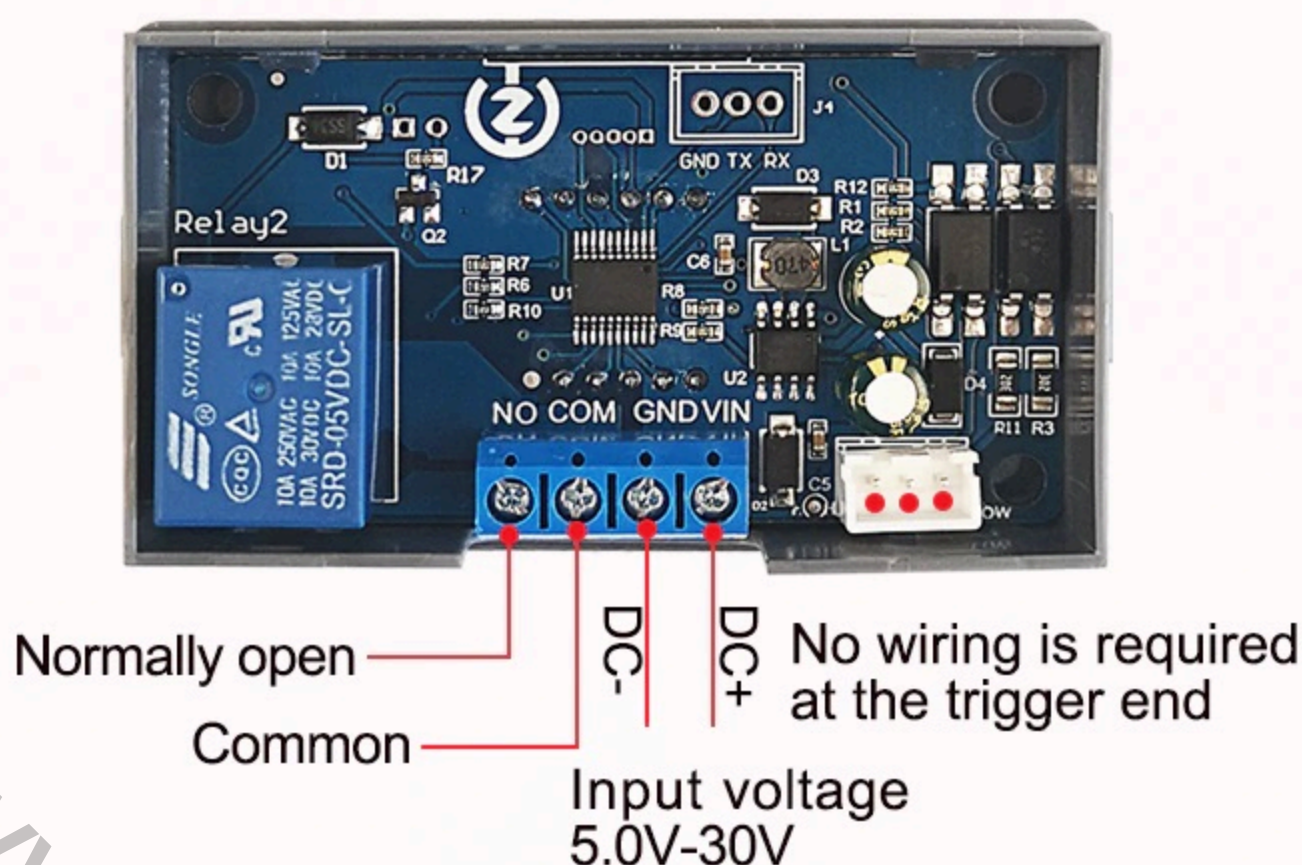
## 1.No trigger signal mode — mode of connection:



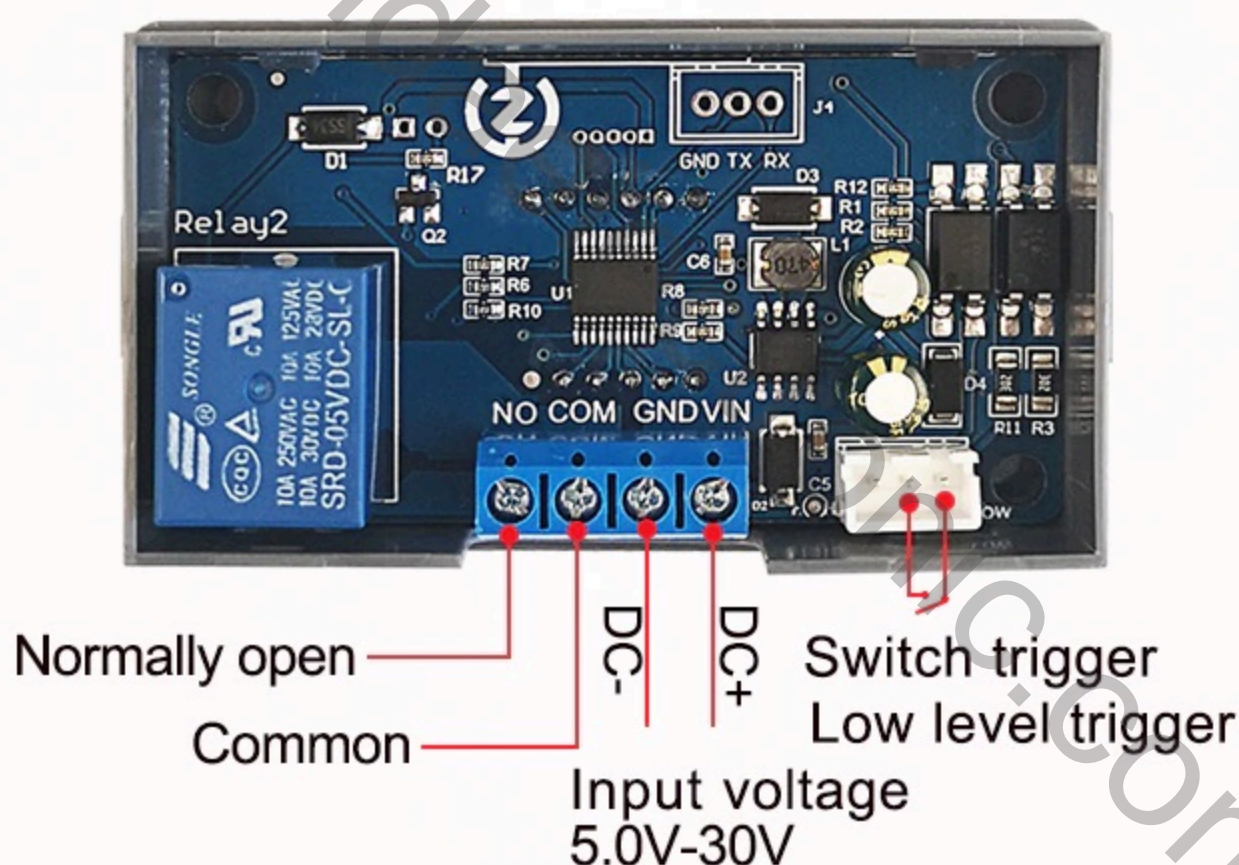


## Product wiring mode

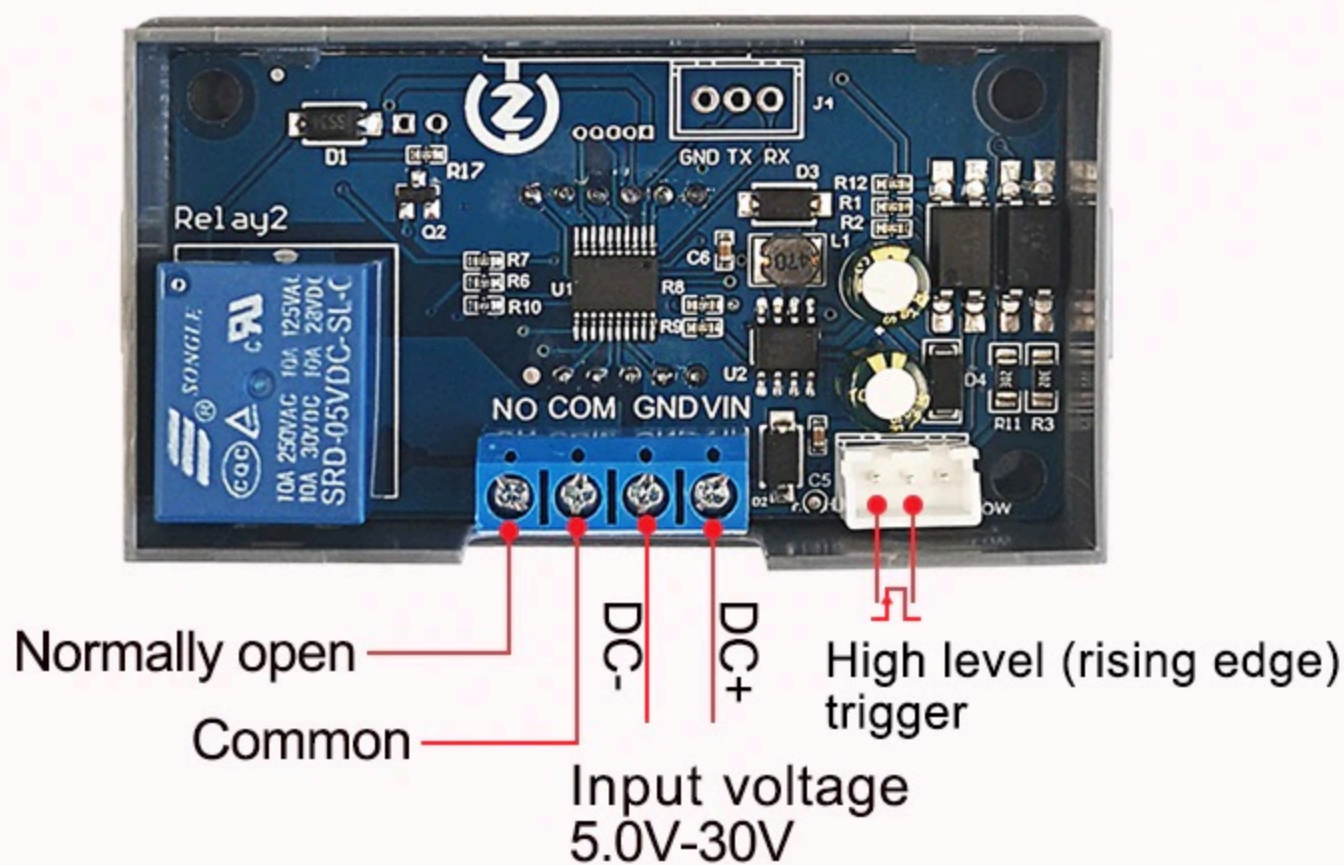
### 1.No trigger signal mode — mode of connection:



### 2.Passive switch signal trigger — mode of connection:

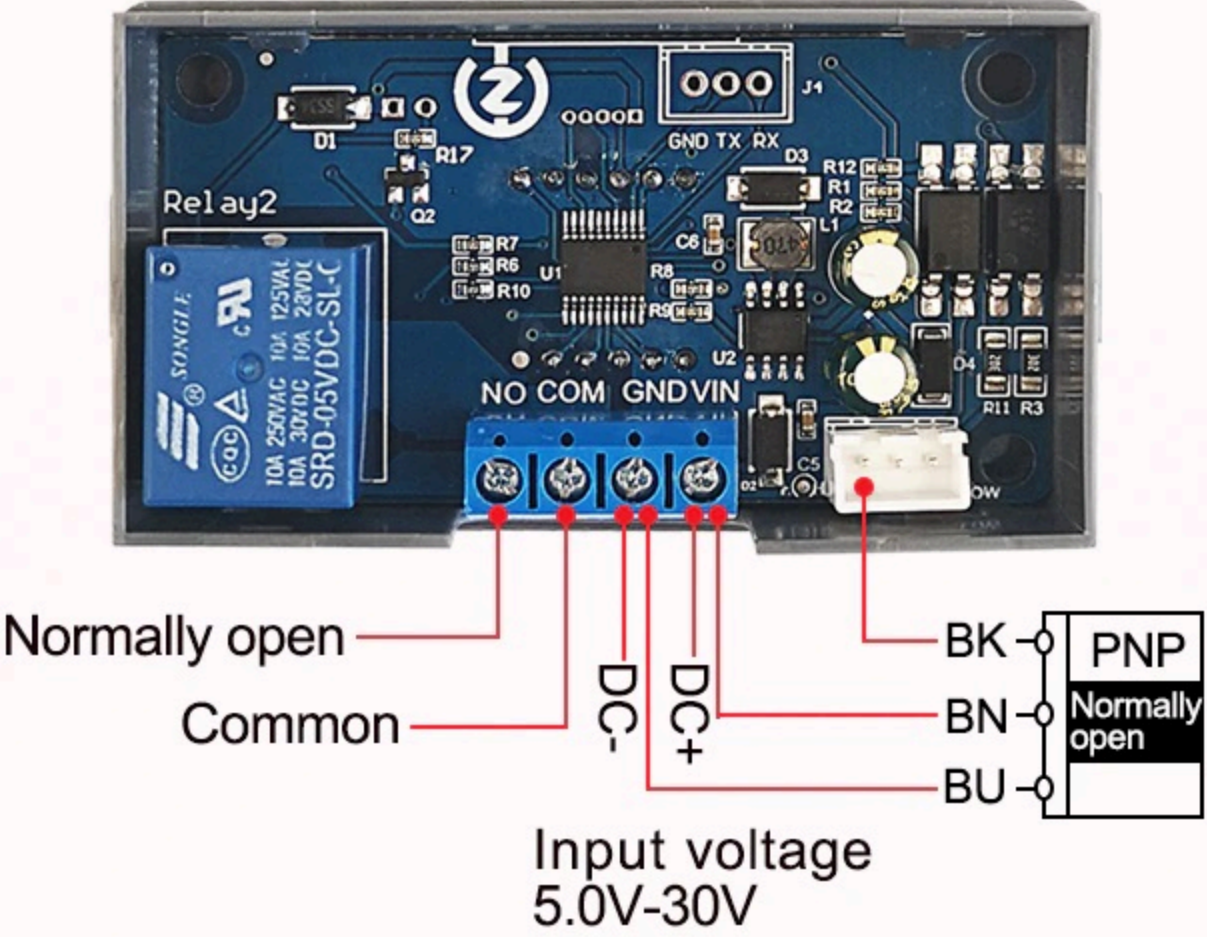


### 3.High level (rising edge) signal triggering — mode of connection:

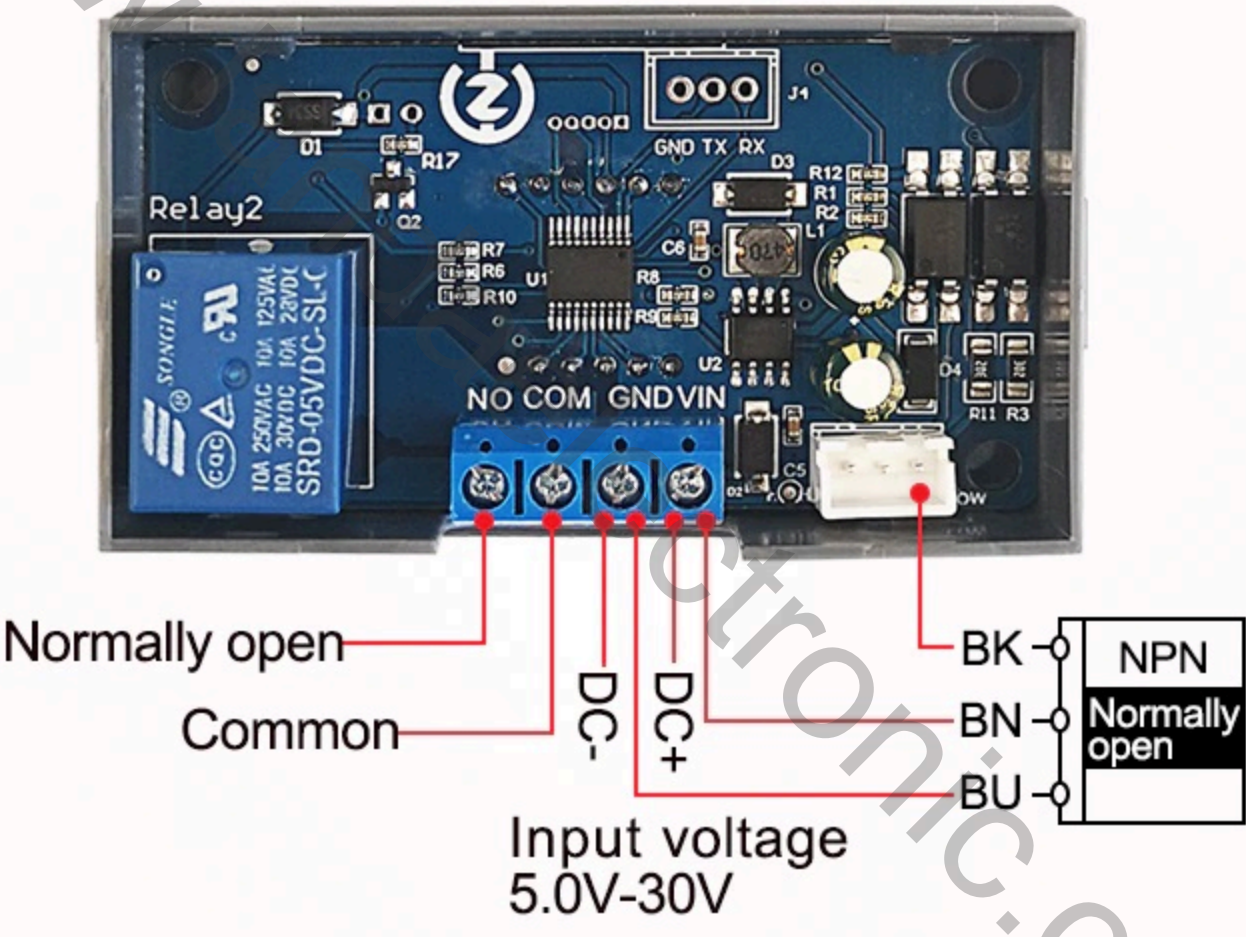




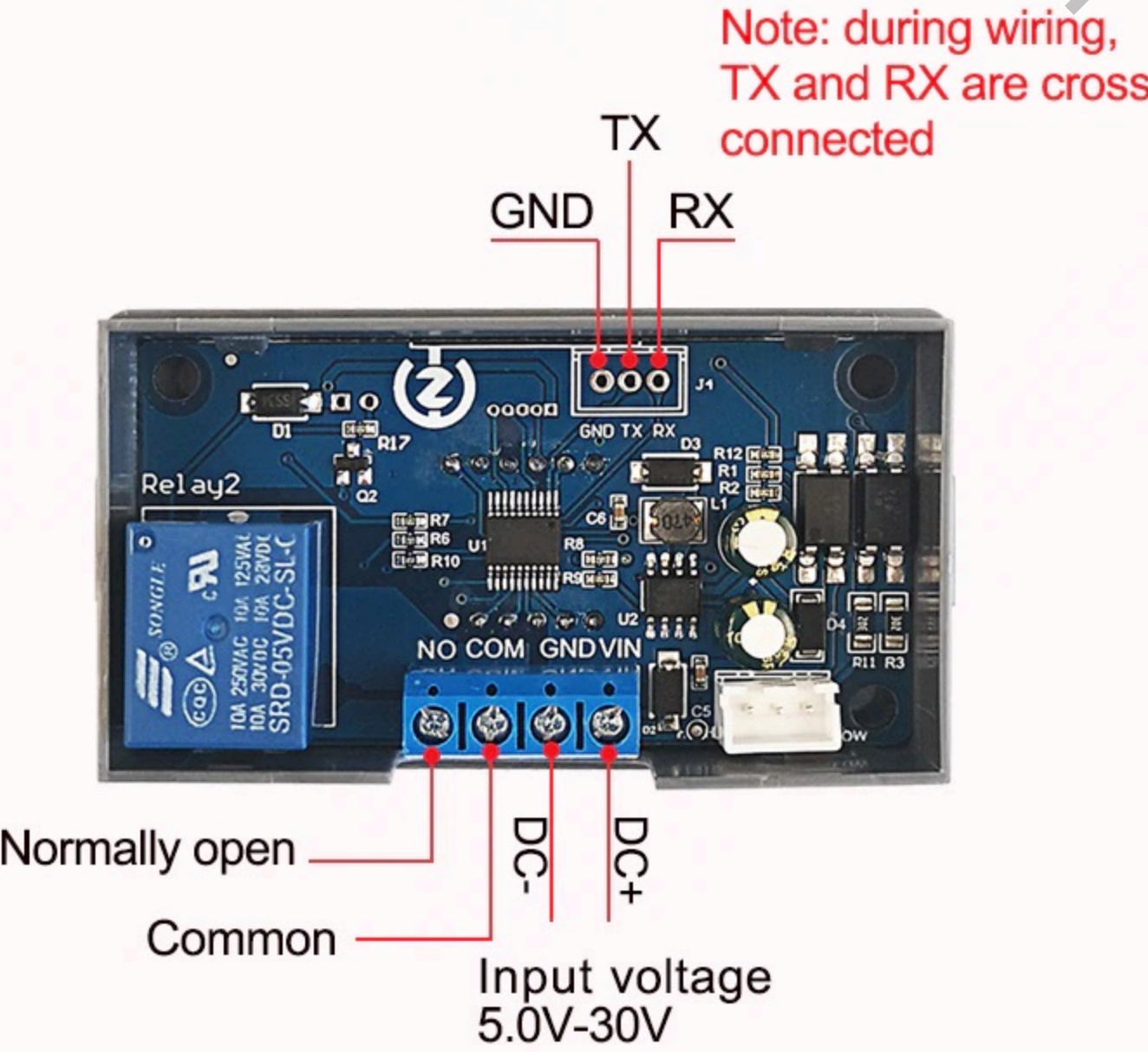
4.PNP sensor signal trigger—mode of connection:



5.NPN sensor signal trigger—mode of connection:



6.Trigger of serial port signal—mode of connection:





# Operating mode

## 1.Mode without triggering:

- P00:** After the module is powered on, the relay is powered off for CL time, and the relay is started
- P01:** After the module is powered on, the relay is on OP time and the relay is disconnected
- P02:** After power on, there is no need to trigger the signal, the OP time of the relay on, the CL time of the relay off, and the above actions can be cycled; the number of cycles (LOP) can be set; after the cycle, the relay is kept disconnected;
- P03:** After power on, there is no need to trigger the signal, the CL time of the relay is disconnected, the OP time of the relay is on, and the above actions are cycled; the number of cycles (LOP) can be set; after the cycle, the relay is kept on;

## 2.Patterns that need to be triggered:

- P04:** After the signal is triggered, the relay turns on the OP time and then turns off; within the OP time, the signal is triggered again and is invalid
- P05:** After the signal is triggered, the relay conducts OP time and then disconnects. Within the OP time, the signal is triggered again to restart the timing
- P06:** After the signal is triggered, the relay conducts OP time and then disconnects. Within OP time, the signal triggers the reset again, the relay disconnects, and the timing stops
- P07:** After the signal is triggered, the relay opens CL time, and then the relay is on
- P08:** After the signal is triggered, the CL time of the relay is disconnected, and the OP time of the relay is on. After the timing is completed, the relay is disconnected; in the cycle, the signal trigger is invalid
- P09:** After the signal is triggered, the CL time of the relay is disconnected, and the OP time of the relay is on. After the timing is completed, the relay is disconnected; in the cycle, the signal is triggered again, and the timing is repeated
- P10:** After the signal is triggered, the CL time of the relay is disconnected, and the OP time of the relay is on, and then the above actions are cycled. In the cycle, the signal is given again to restore the initial state and stop timing; the number of cycles (LOP) can be set; at the end of the cycle, the relay is kept on
- P11:** After the signal is triggered, the OP time of the relay is on, the CL time of the relay is disconnected, and then the above actions are cycled. In the cycle, the signal is given again to restore the initial state and stop timing; the number of cycles (LOP) can be set; at the end of the cycle, the relay is kept disconnected
- P12:** After the signal is triggered, relay conducts OP time, relay disconnects CL time, and then circulates the above action. The signal is given again in the loop, which is invalid. Looping times (LOP) can be set; Loop ends and the holding relay is disconnected
- P13:** Signal holding function: if there is a trigger signal, the timing is cleared to zero, and the relay remains on; when the signal disappears, the relay is disconnected after timing OP; during timing, if there is another signal, the timing is cleared
- P14:** Signal holding function: if there is a trigger signal, the timing will be cleared and the relay will remain disconnected; when the signal disappears, the relay will be turned on after timing CL; during the timing period, if there is another signal, the timing will be cleared
- P15:** After the signal is triggered, the relay is disconnected for L ~ h time (for example, L= 10, H = 15, then the relay disconnection time is a random number between 10-15 seconds, L and H are set at 0.0-99.9 seconds, and H is greater than or equal to L). After the relay disconnection time is over, the motor can be driven to rotate at the speed sp (frequency 600 Hz, gear 0-16 corresponding to duty cycle 20, 25, 30,... 100 respectively)



## Timing range and how to choose

Timing range:

0.1 seconds (min) to 999 minutes (max) continuously adjustable

How to choose the time range:

After setting the mode selection screen parameter value by a short press "STOP" button to select the time range;

**XXX.** decimal point in the unit place, time range: 1 second to 999 seconds.

**XX.X** decimal point in decade place, Timing range: 0.1 seconds to 99.9 seconds

**X.X.X** decimal full brightness, Timing range: 1 minute to 999 minutes.

For example, you want to set "OP" is 3.2 seconds, then move the decimal point to decade place, the digital display 03.2

**Parameter description:** "OP" - conduction time, "CL" - off time, "LOP" - the number of cycles (1-999 times, "---" represents infinite loop).

**Parameters only used in P15 mode:** lower limit of random number of "CLL" closing time (0-99.9) (unit s), upper limit of random number of "CLH" closing time (0-99.9) (unit s)

**These parameters are independent of each other, but is shared by each mode.** For example, in P1 mode, set the on-time "OP" is 5 seconds, if you switch to P02 mode, it's "OP" will be 5 seconds too.

In the main interface (display 000), short press "SET" button will display "OP" ( "CL", "LOP") and the corresponding time XXX;

Some parameters only mode "OP" (such as the mode P1), short press the "SET" key to display only the "OP" and the corresponding time;

Some models have parameters "OP", "CL", "LOP" (such as the mode P02, P03), short press "SET" button will display "OP" and the corresponding time, "CL" and the corresponding time, "LOP" and the corresponding number of times;

In the main interface by short press "SET" key to see information about the parameters of the current mode, very convenient!



## Parameter setting method

1. Firstly, the working mode of the module is determined;
2. According to the working mode of the module, in the main interface (when the module is powered on, it will flash the current working mode (the default P01 mode), and then enter the main interface), "long press the set key for 2 seconds and release" to enter the mode selection interface, and select the mode to be set by short pressing the UP and DOWN buttons (P00~ P15);
3. Good choice to set up the model (e.g., P03) after short press SET button to set the corresponding parameter, then to set up the parameter will be flashing ("OP" conduction time, "CL" break time, "LOP" cycles (" ---"represents an infinite loop)), through UP and DOWN to adjust parameter values, support for long press (rapid increase or decrease) and short press 1 (increase or decrease);After setting the parameter value, select the decimal point position by pressing the STOP key and select the timing range (corresponding time: 0.1sec ~999 minutes);Short press SET key to SET the next parameter of the current mode, the procedure is the same as above;
4. P15 mode, after selecting the mode to be set, Press the set key to set the corresponding parameters. At this time, the parameters to be set will flash (the lower limit of CLL disconnection time and the upper limit of CLH disconnection time). The parameter values can be adjusted by up and down, supporting long press (rapid increase or decrease) and short press (increase or decrease by 1 unit), timing range (corresponding time 0.1 s ~ 99.9 s); short press set key to set the next parameter of current mode, The process is the same as above;
- 5.After setting the parameters of the selected mode, press and hold the SET key for 2 seconds and then release it. The currently set mode will flash, and then return to the main interface. Setting the parameters is successful. It is very simple!

**Main interface:** display "000" when the module is not working (no decimal point), and it is very clear when the module is working!

**Mode selection screen:** Long press the "SET" key to enter, after setting is completed, long press the "SET" key to exit back to the main screen.



## Introduction of protocol register

The protocol adopts TTL serial port transmission interface, and the communication protocol is MODBUS-RTU protocol. This product only supports function codes of 0x03, 0x06 and 0x10. Baud rate 9600, communication format n, 8, 1. The address ranges from 1 to 255 (the initial default is 1, 0 is the broadcast address).

The data in a single register address is double byte data.

Name	Explain	Bytes	Read-Write	Register address
Addr	Module address 1-255	2	R/W	0000H
Run	Running state 0 normal operation 1 Stop running	2	R/W	0001H
SLEEP	Sleep state 0 No sleep 1 sleep	2	R/W	0002H
MODE	Operation mode 0-15	2	R/W	0003H
OP	Opening time (0-999)	2	R/W	0004H
OP UNIT	Unit of opening time (0- second, 1- 0.1second, 2- minute)	2	R/W	0005H
CL	turn-off time (0-999)	2	R/W	0006H
CL UNIT	Unit of turn-off time (0- second, 1- 0.1second, 2- minute)	2	R/W	0007H
LP	Number of cycles 1-999 0 display (---) Represents infinite cycles	2	R/W	0008H
CLL	Lower limit of random number of closing time (0-999)(Unit 0.1S)	2	R/W	0009H
CLH	Upper limit of random number of closing time (0-999)(Unit 0.1S)	2	R/W	000AH
SP	motor speed(20-100)%	2	R/W	000BH
TRIGGER	Signal trigger(P04-P15)	2	W	000CH

## "STOP" button extensions

### Module enable mode:

- 1.ON**:The module is allowed to turn on during the OP conduction time;
- 2.OFF**:The module is forbidden to turn on, and it is always closed;

In the main interface, short press the "STOP" button to switch between ON and OFF, the current in which the state will flash, and then return to the main screen. (This feature is an emergency stop function, click off the relay)

### Sleep mode:

- 1. "C-L"** Sleep mode: three minutes without any operation, the digital display automatically turns off, the program running as usual;
- 2. "O-d"** normal mode: digital display always open;

Press the "STOP" button for two seconds and then release to switch "C-L" and "O-d" state, in which the current state of flashes and then return to the main screen.