

# MKS DLC32 V2 Wiring Manual

Date: 2021-12-24

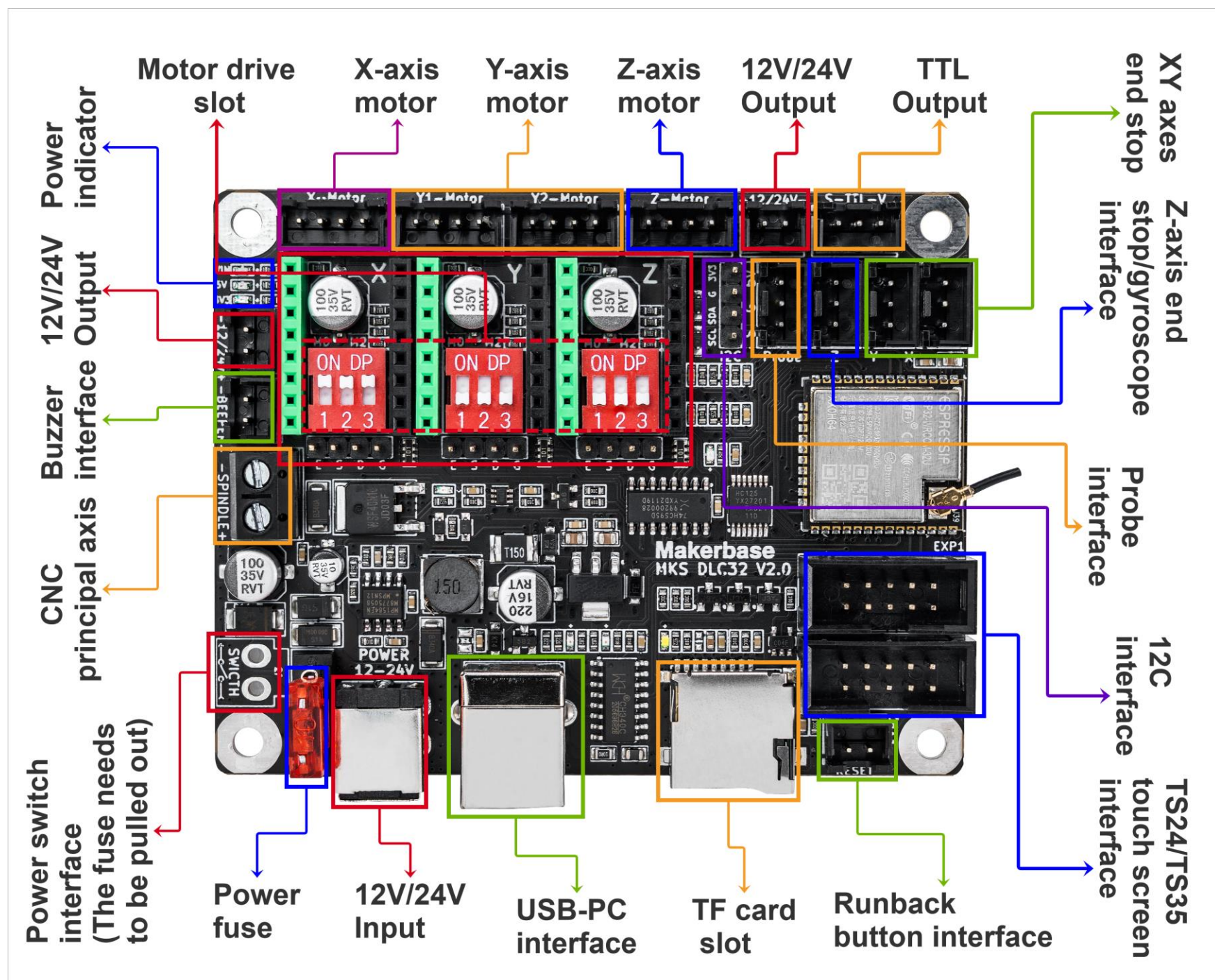
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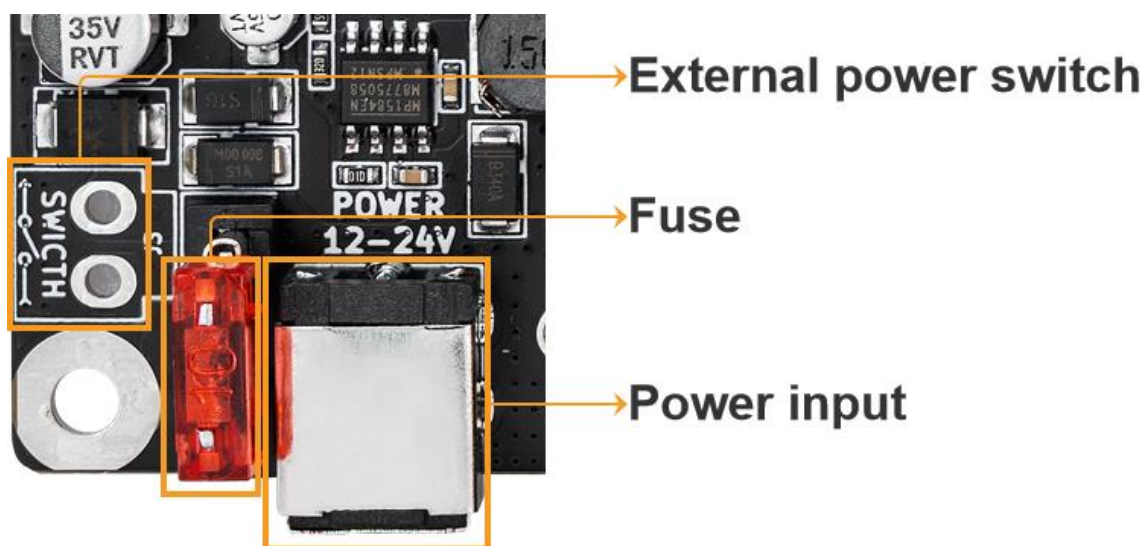
## I. Overview

MKS DLC32 is an offline engraving main control board specially developed for desktop engraving machines. Equipped with 32-bit ESP32 module, integrated WFI function, compatible with MKS TS2.4/3.5-inch touch screen. Supports fast engraving and web control, mobile APP control

### MKS DLC32 Interface introduction



## II. Power Input



**Power input: Voltage range 12-24V; Maximum Current 5A; Power input terminal model: "DC-007B-2.1mm".**

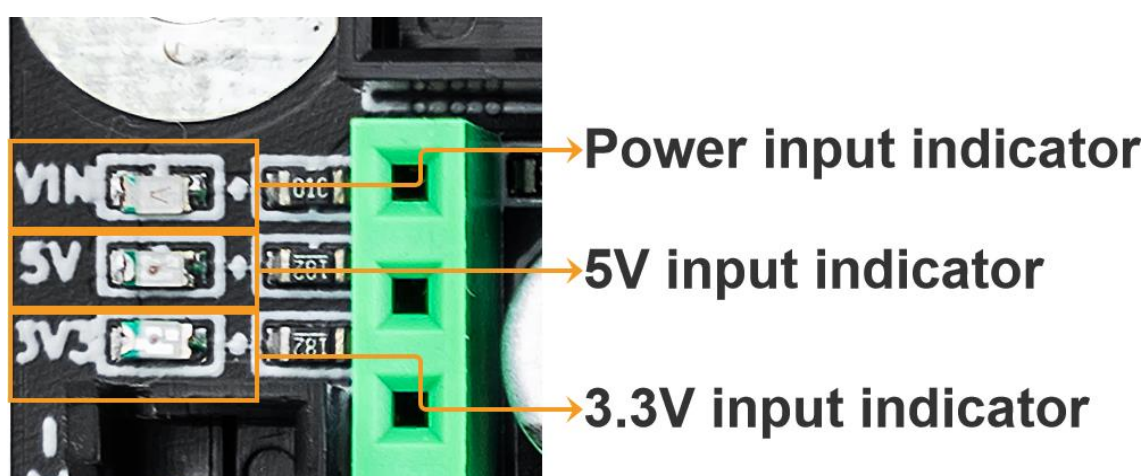
**Fuse: 10A Fuse.**

**External power switch: It can be used to control the power with an external switch**

**Note:**

**1. If you need an external switch to control the power ON/OFF, Need to unplug the fuse.**

**2. External power switch is not a power interface, do not connect any external power**



**VIN:12V or 24V input power LED indicator. If this LED is off, please unplug the power immediately. Check whether the 12V/24V interface on the motherboard is short-circuited, or whether the driver is plugged in**

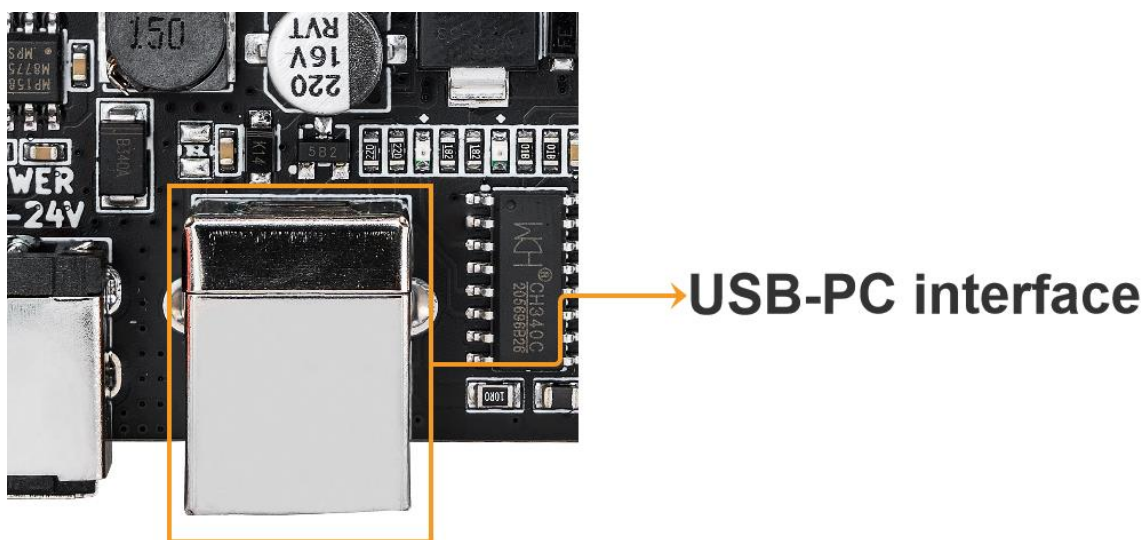


*reverse. The 12V/24V interface can be tested with a multimeter, and it can be powered on until it is not short-circuited to avoid burning the circuit board.*

*5V:5V LED indicator. When the LED light is off, please unplug the power immediately to check whether the endstops switch and other interfaces are short-circuited. You can check the 5V and gnd on the limit switch with a multimeter. You can only power on it after troubleshooting. Avoid burning the circuit board.*

*3.3V:3.3V LED indicator. When the LED light is off, please unplug the power immediately to check Whether the I2C interface is short-circuited. Power on after troubleshooting*

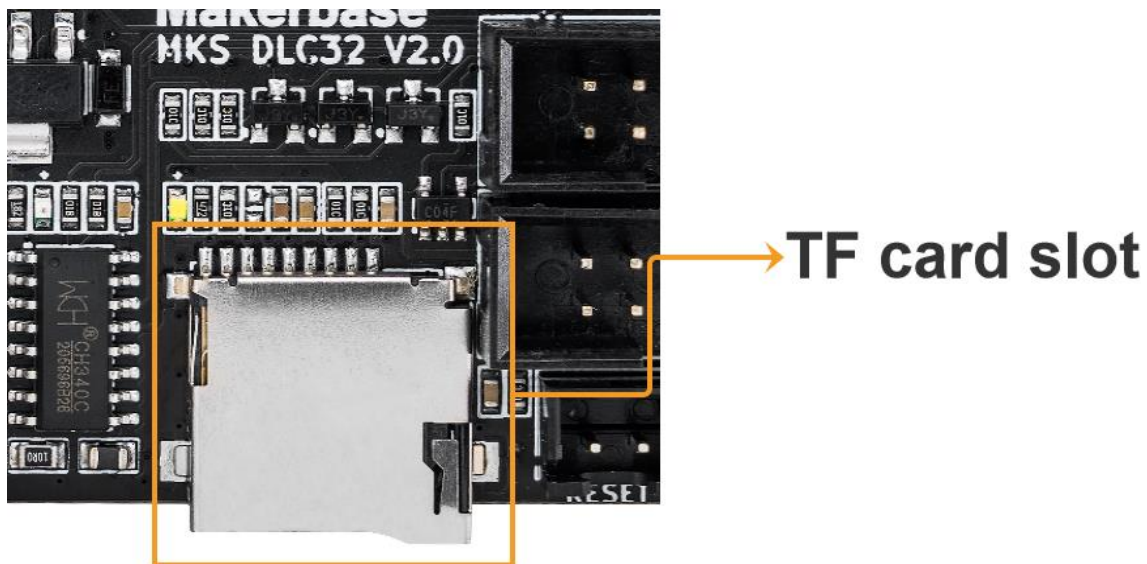
### *III. USB-PC interface*



**USB-PC interface:** Used for programming and online control

**NOTE:** If the USB interface does not provide power supply, if you want to program or online control, please connect to the DC power supply before you can use it. The USB serial port chip uses CH340, so please install the CH340 driver before using it.

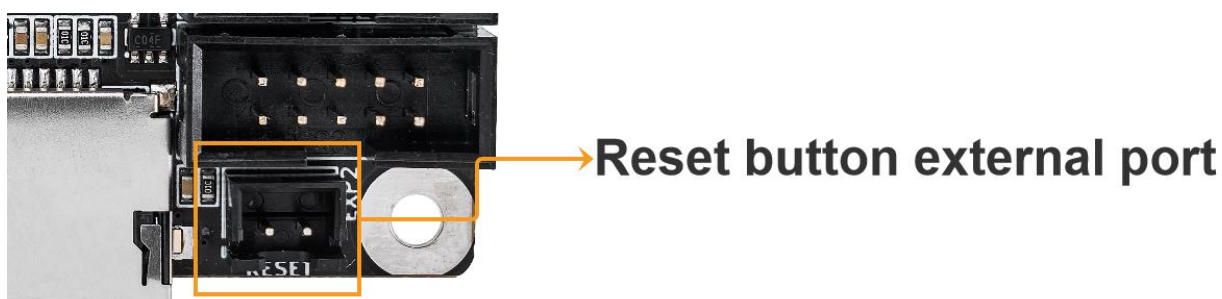
## IV. TF Card Slot



**TF card slot:** For offline engraving file storage.

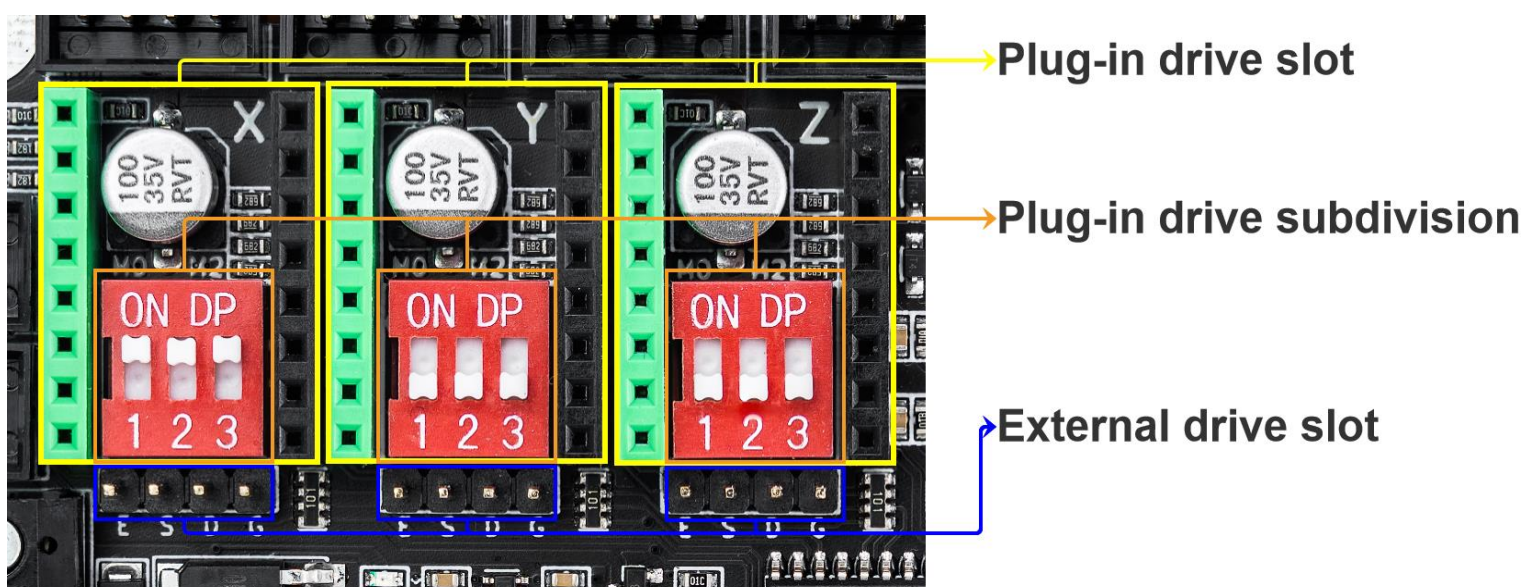
**Suggest SD card:** Class4 or Class10; 4~16G memory; Fat32 format. File format support: .NC; .GC; .GCODE

## V. Reset button external port (emergency stop button)



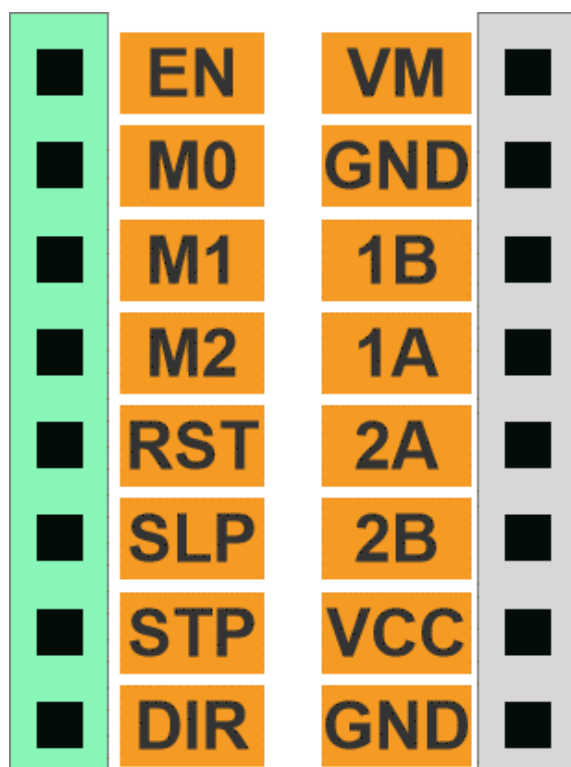
**Reset button external port:** used to reset MCU or as an emergency stop button.

## VI. Motor Drive Settings

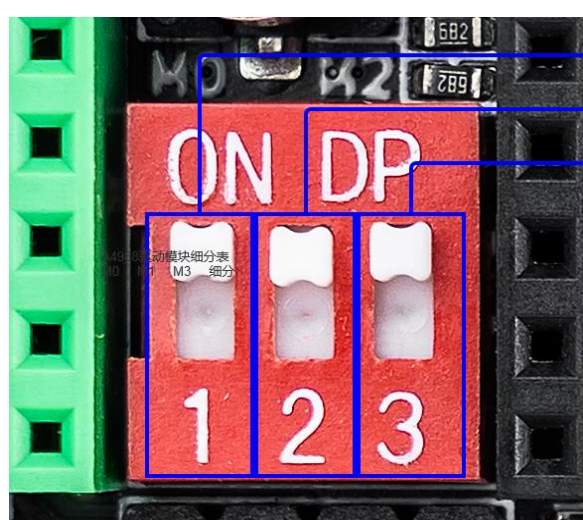


### 1. Plug-in drive and micro-step setting

**Drive socket PINOUT**



### Micro-step setting



M0  
M1  
M2

**Marked as High**

**Lay as Low**

### A4988

M0	M1	M2	Microsstep
Low	Low	Low	1/1 Step
High	Low	Low	1/2 Step
Low	High	Low	1/4 Step
High	High	Low	1/8 Step
High	High	High	1/16 Step

### TMC2208

M0	M1	Microsstep
High	Low	1/2 Step
Low	High	1/4 Step
Low	Low	1/8 Step
High	High	1/16 Step

### TMC2225

M0	M1	Microsstep
Low	Low	1/4 Step
High	Low	1/8 Step
Low	High	1/16 Step
High	High	1/32 Step

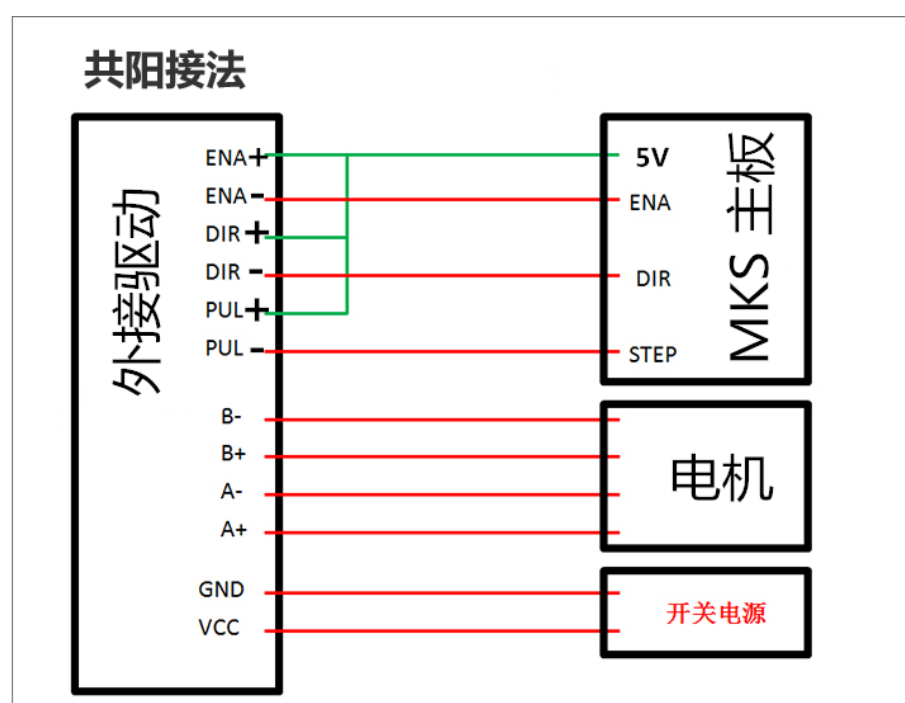
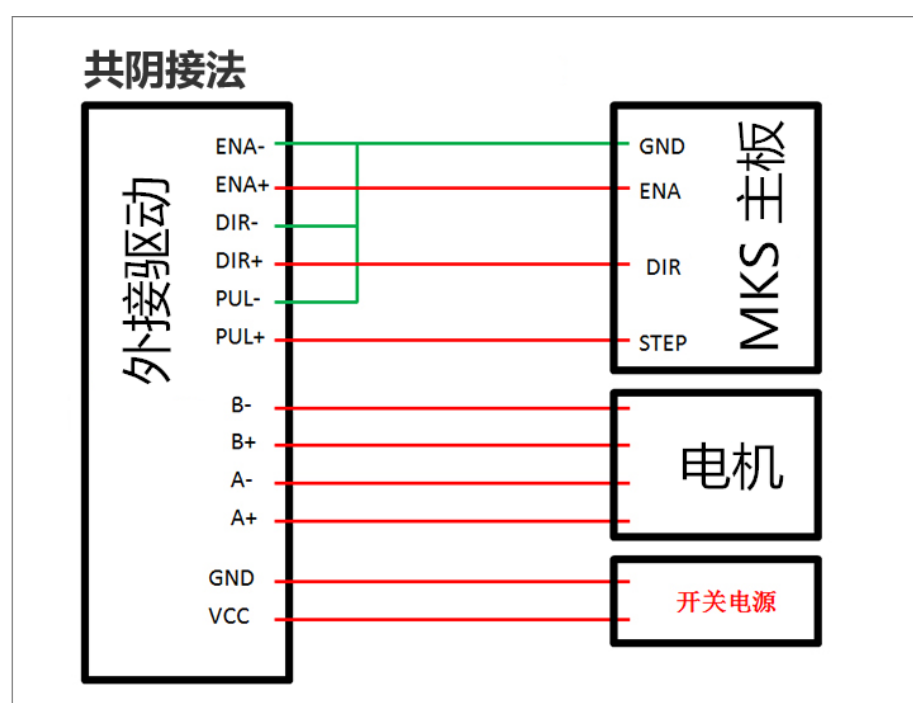
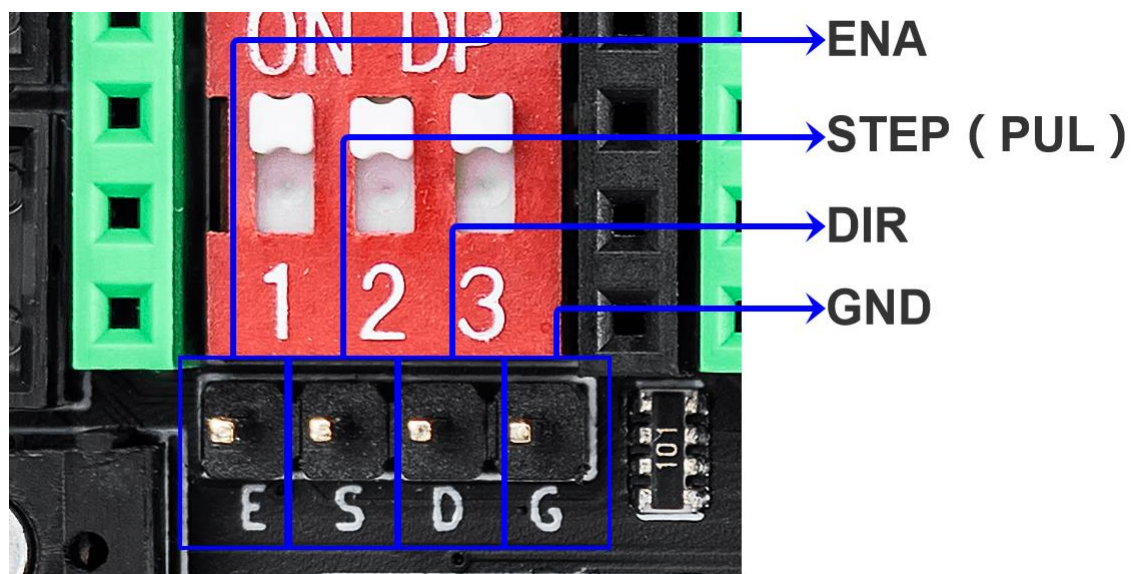
### TMC2209

M0	M1	Microsstep
Low	Low	1/8 Step
High	High	1/16 Step
High	Low	1/32 Step
Low	High	1/64 Step

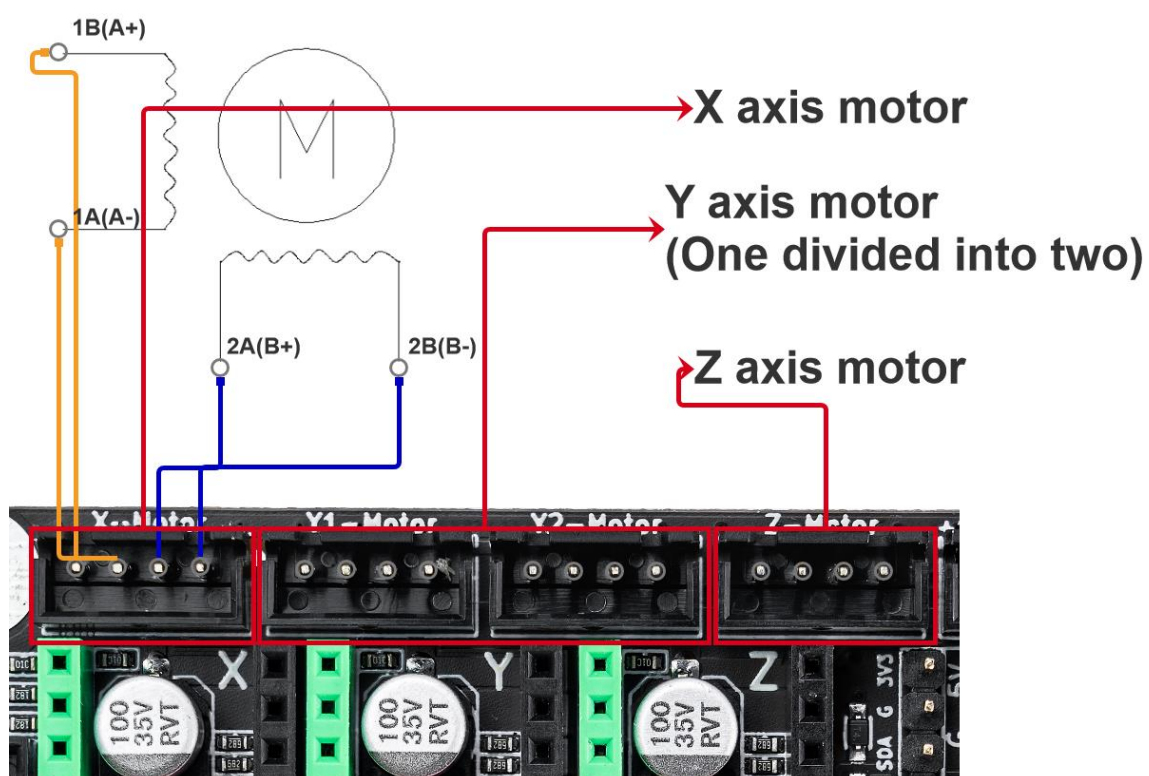
## 2. External high current drive connection

External drive interface:





### 3. Motor interface line sequence

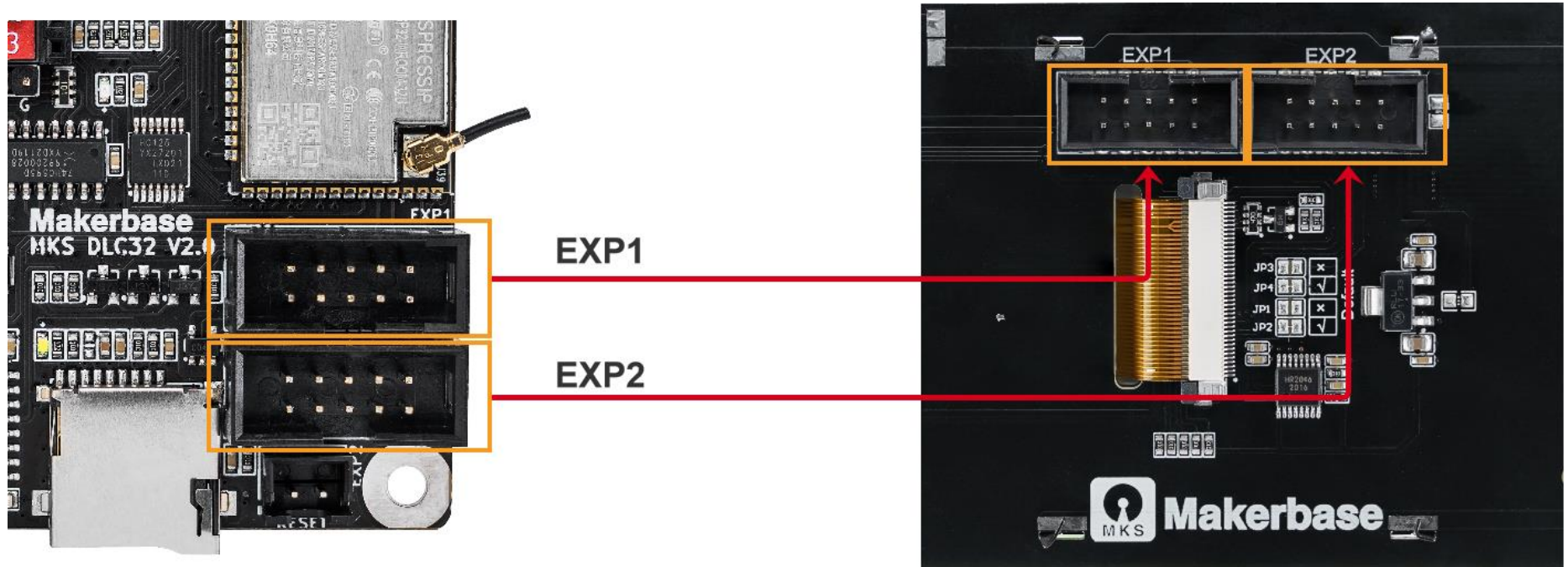


**Motor interface description:** 1A and 1B are one phase, 2A and 2B are one phase. You can use a multimeter to test the motor connection line, and the one that is connected is one phase.

**Note:** When the power is on, it is forbidden to plug and unplug the motor and drive to avoid malfunction.



## VII. Screen interface (EXP1 and EXP2)



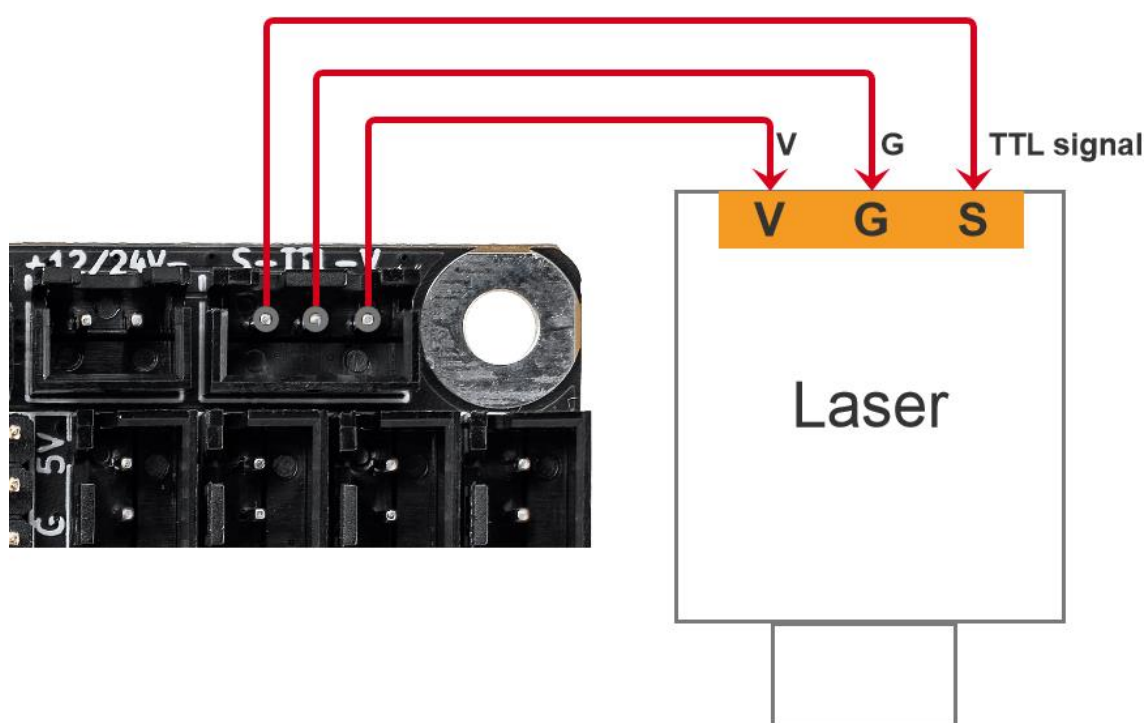
At present, the motherboard only supports TS35 and TS24 screens. The wiring method is as shown in the figure. The EXP1 and EXP2 of the screen correspond to the motherboard interfaces.

## VIII. Laser module connection

The following shows two types of laser:

1. TTL-PWM type (3PIN).
2. 12-24V-PWM(2PIN)

TTL-PWM type (3PIN), The wiring is as follows

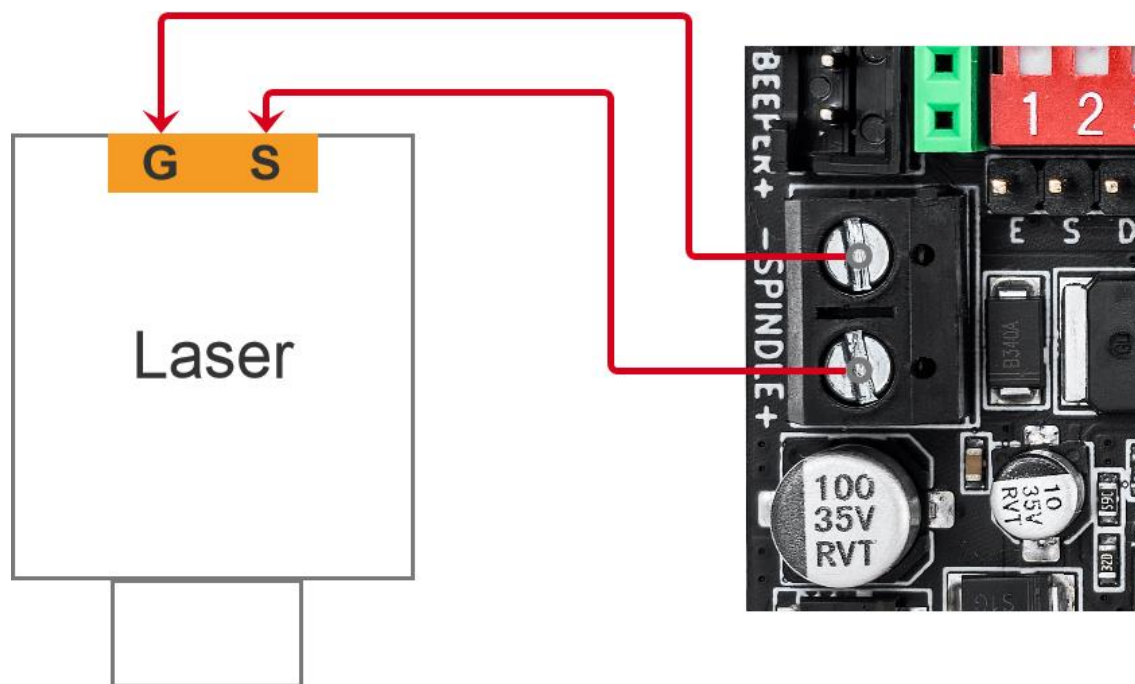


(V): V is the same as the power input, if the power input is 24V, then the output here is 24V. At present, the maximum power supported by the laser head is: 25W at 12V, and 50W at 24V.

(G): gnd

(TTL): TTL input is PWM, the default main frequency is 1K Hz, 1K Hz~10K Hz can be set, and the voltage is between 0V~5V.

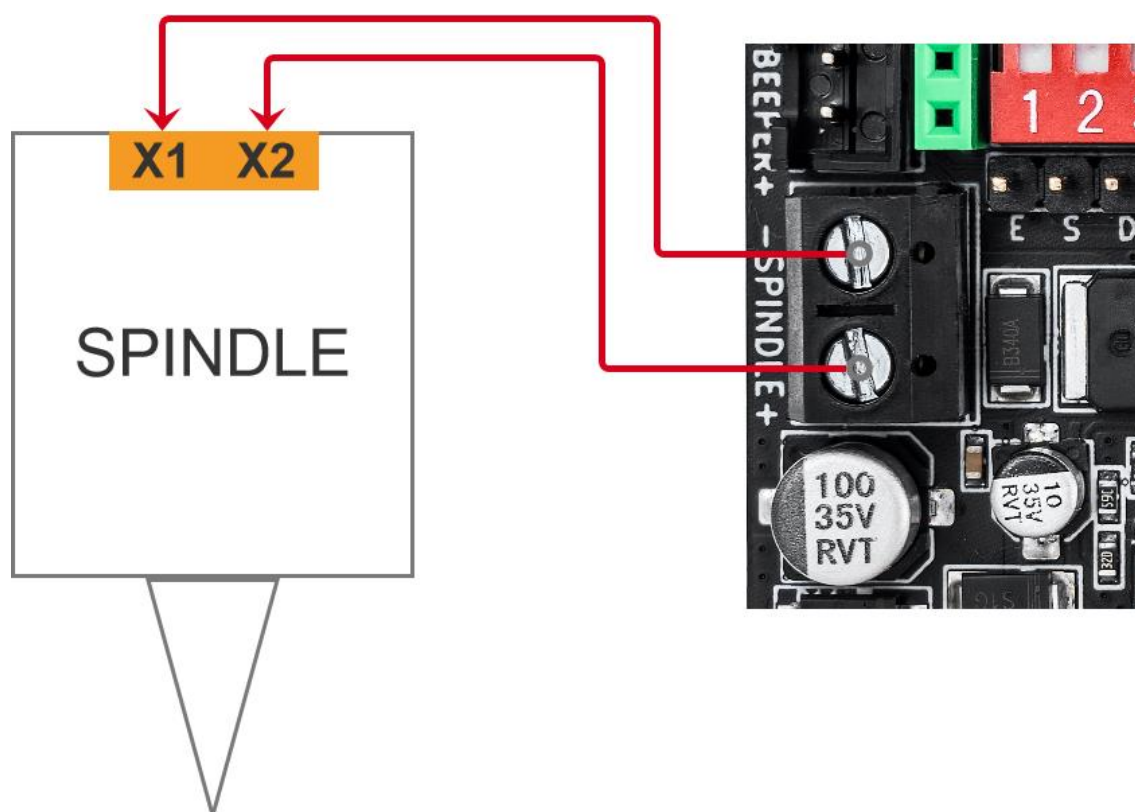
12-24V-PWM type (2PIN), The wiring is as follows:



**(S):** PWM output, the signal voltage is 0V~12V or 0V~24V, the maximum voltage depends on the power input voltage. If the power supply voltage input is 24V, then the maximum output voltage of this interface is 24V. At present, the maximum power supported by the laser head is: 25W at 12V, and 50W at 24V.

**(G):** gnd

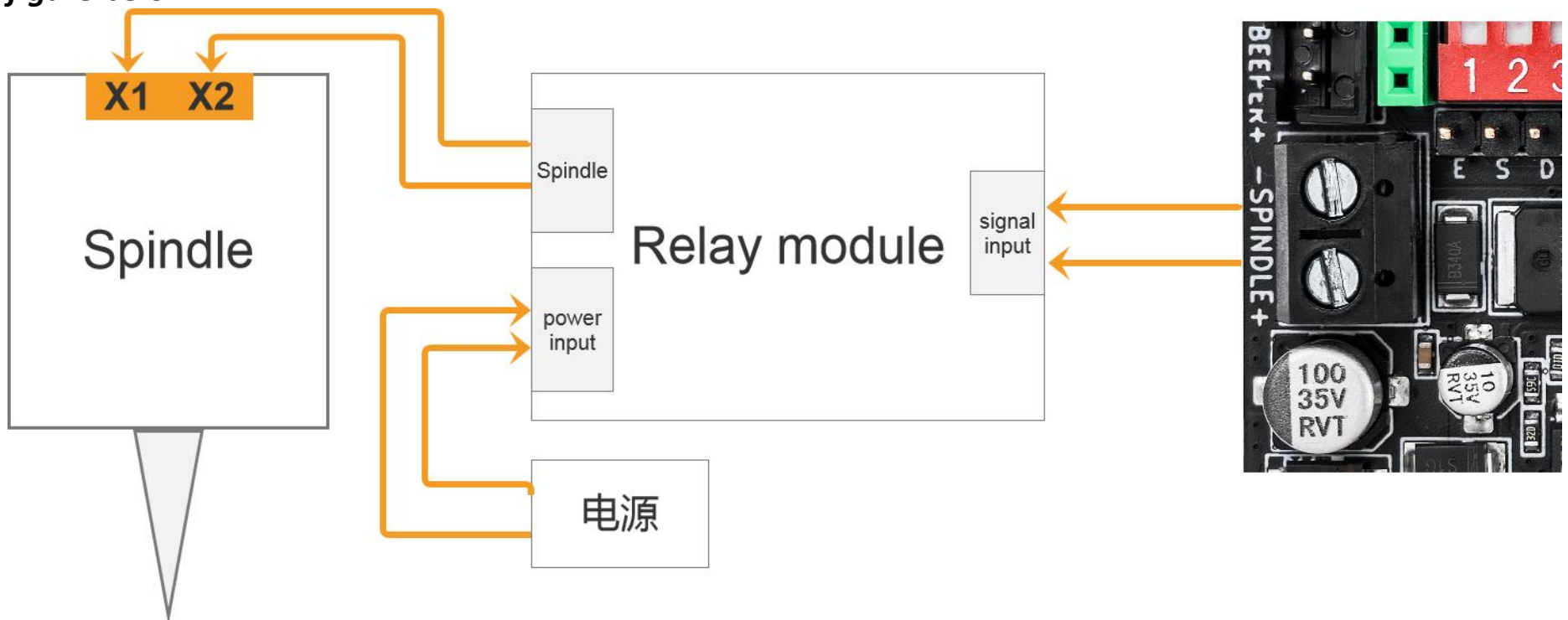
## VIII. CNC spindle connection



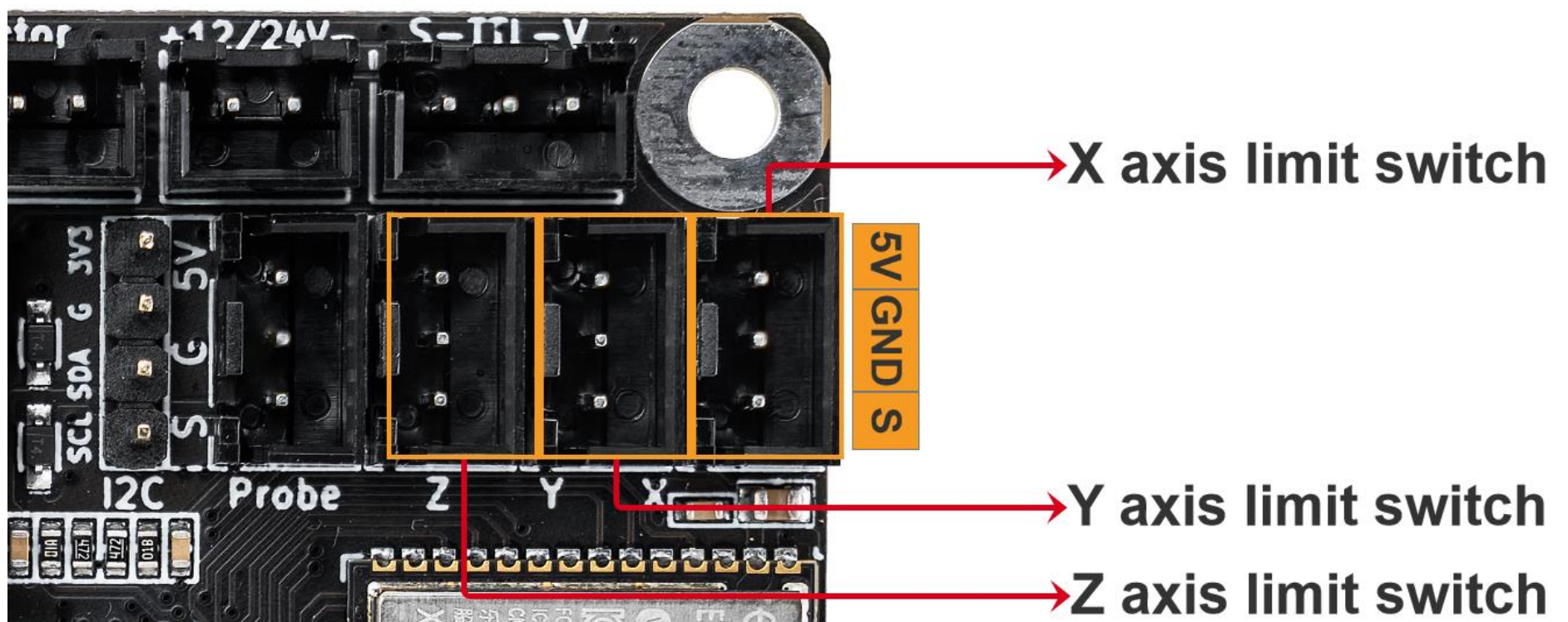
**CNC spindle:** The output voltage is 0-12V or 0-24V, and the maximum voltage depends on the voltage of the input power supply. If the input voltage of the power supply is 24V, the maximum output voltage of the SPINDLE interface is 24V. At present, the maximum power supported by the spindle motor is: 10W at 12V, and 20W at 24V.



If a higher power spindle motor requires an external module, the connection method is as shown in the figure below:



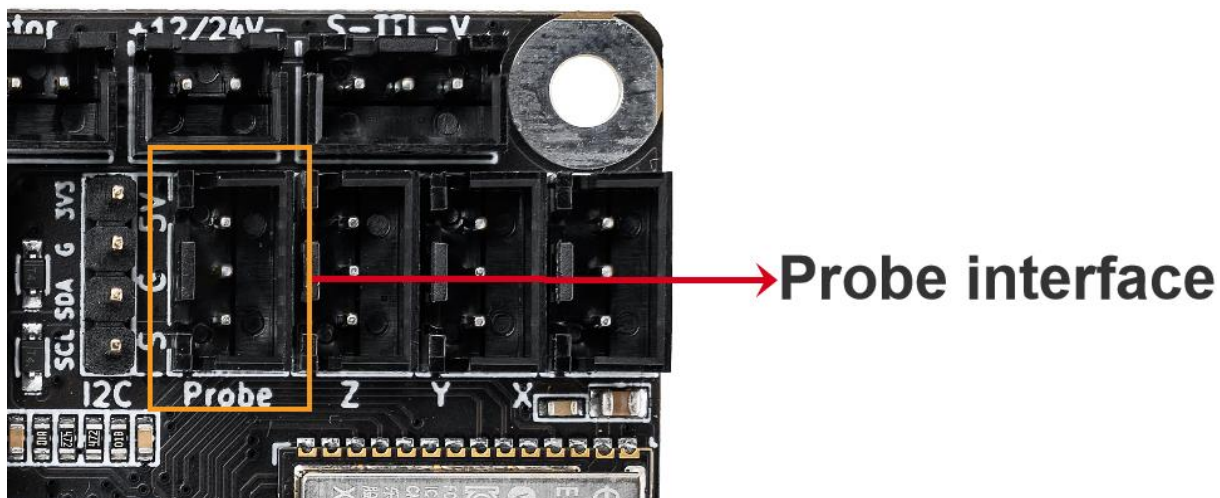
## IX. Endstop interface



Interrupteur de fin de course des axes X/Y/Z : l'interface de fin de course de la carte mère est X/Y/Z, la tension d'entrée est de 5 V et le signal est -S. L'interrupteur mécanique n'a besoin que de GND et S, tandis que l'interrupteur photoélectrique nécessite une alimentation. Cette interface est alimentée en 5 V. Veuillez vérifier la tension d'alimentation de votre interrupteur.

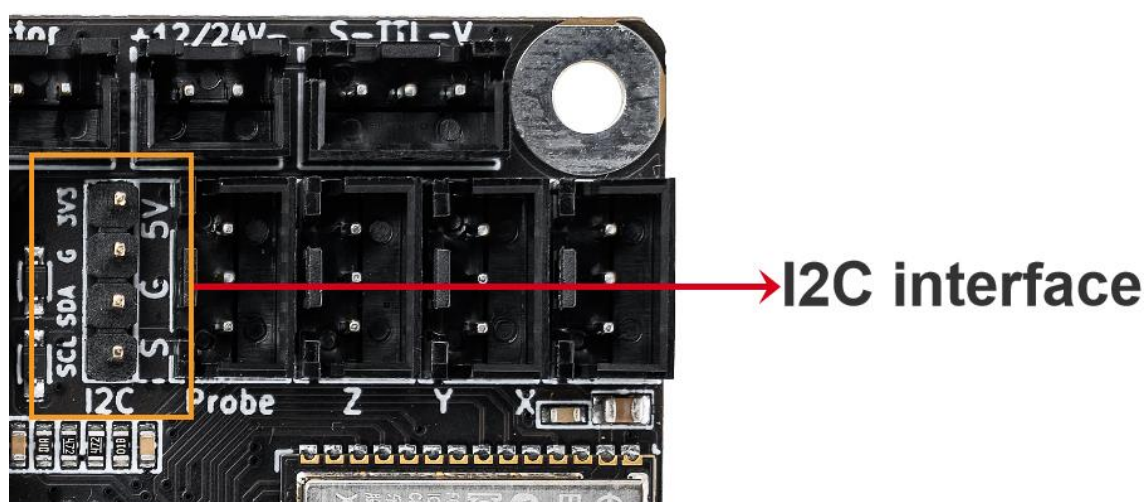


## X. Probe interface



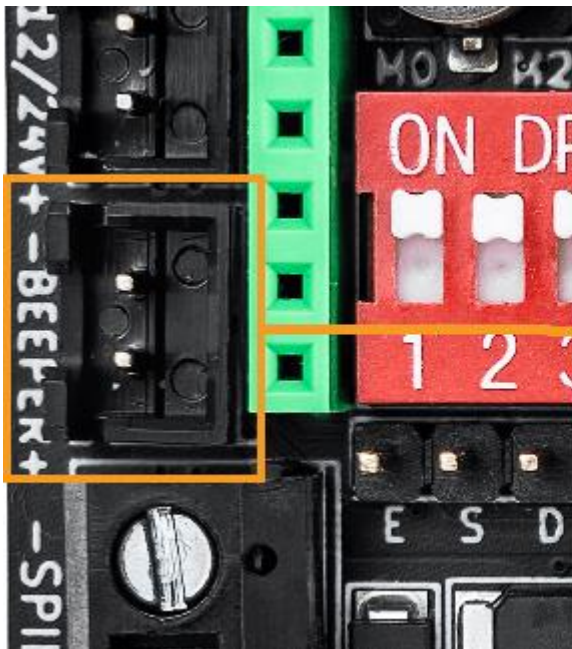
**Probe interface:** When using CNC firmware, this interface can be used as a Probe probe. When using the laser engraving machine firmware, this interface can be used as a flame detection function. The input signal voltage is 5V, the signal interface is S, and a 5V power supply interface is provided to supply power to the modules that need power supply.

## XI. I2C interface



**I2C interface:** SCL pin can be used as a cooler function output IO port. The SDA pin can be used as firmware programming, and individual computers cannot let the motherboard enter the download mode. You can short-circuit SDA with GND and then power on to force it to enter the download mode. After downloading, please remove the short circuit and power on again to work normally.

## ***XII. Buzzer interface***



**Buzzer interface**

***Buzzer interface:** This interface is shared with the buzzer on the screen. The current main function is to act as a reminder when an alarm is triggered (such as after the flame detection is triggered).*

## ***i . Technical Support and Guarantee***

*1. Power test will be done prior to shipment to ensure normal use of the product*

2. Welcome to join the discussion group in github or facebook
3. Welcome to the blog exchange: GITHUB:<https://github.com/makerbase-mks/MKS-DLC32>
4. 3D printer motherboard : AliExpress:<https://www.aliexpress.com/store/1047297>
5. If you have any questions you can contact our customer service or find technical support staff in the group, we will be happy to serve you.

**FACEBOOK:**<https://www.facebook.com/Makerbase.mks/>  
**GITHUB:**<https://github.com/makerbase-mks/MKS-DLC32>  
**AliExpress:**<https://www.aliexpress.com/store/1047297>