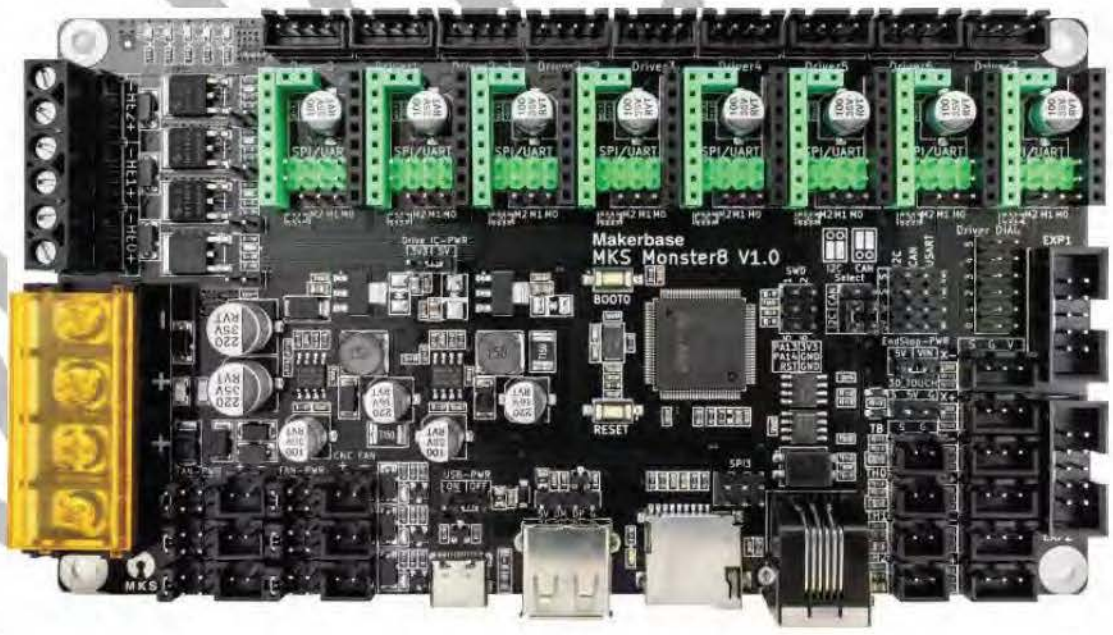
Makerbase

Guangzhou Qianhui Information Technology Co., Ltd.

MKS MONSTER8 V1.0 datasheet

(based on Klipper firmware to configure Voron 2.4 machine)



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Facebook：MAKERBASE

(Welcome to join our group to discuss issues together)

YouTub: Makerbase Team

（Welcome to subscribe to our account, we will continue to update the company's product video tutorials）

Github: makerbase-mks

AliExpress:

https://www.aliexpress.com/store/1047297

Amazon:

https://www.amazon.com/s?me=A25AM6LC3BZ7LE&fbclid=IwAR1q7Z7g0w6nS0xWC6Z6eyVqgR9hCTN_EF3YoYbcrIG5kX_gZ7KfDR-9fog&marketplaceID=ATVPDKIKX0DER

contents

1. Product Brief

MKS MONSTER8 V1.0 motherboard is a motherboard launched by the makerbase team to meet market needs. It can be used on Voron 2.4 machines, supports Marlin firmware and Klipper firmware, supports U disk printing (for the time being only supported by Marlin firmware), and supports TMC driver UART mode .

1.1 Features and advantages

1. TVS power spike processing to better protect the back-end circuit and load;

2. 3 channels of controllable fan output, the output voltage is adjustable, respectively adjustable to 5V, 12V, 24V;

3. Support U disk printing (currently only supported by Marlin firmware);

4. The user can replace the motor drive by himself, supporting A4988, DRV8825, LV8729, TMC2208, TMC2209, TMC2225, TMC2226;

5. Using high-quality MOSFET tubes, the heat dissipation effect is better, and the long-term work is stable;

6. Adopt dedicated power chip, support 12V-24V power input,

7. The stable and reliable filter circuit greatly reduces the possibility of interference, and avoids crashes and random running during the printing process to the greatest possible extent;

8. Use open source firmware Marlin and Klipper;

9. Support LCD2004, LCD12864, MKS MINI12864 V1.0, MKS MINI12864 V3.0, support MKS series touch screen and H43 touch screen developed by maker;

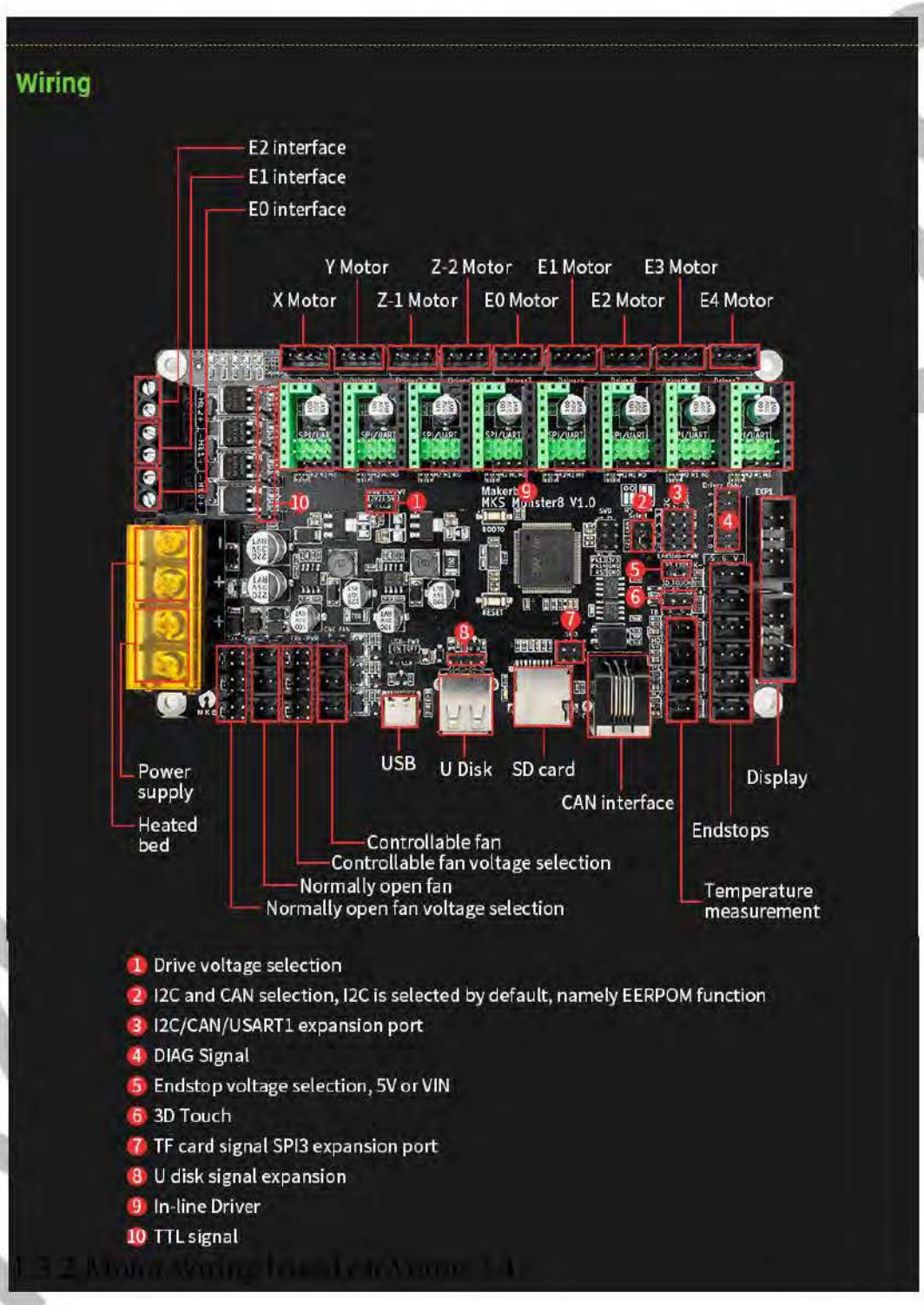
10. Support TMC2130 drive SPI mode, TMC2208, 2209, TMC2225, 2226 UART mode, support TMC2209, TMC222 unlimited bit reset.。

1.2 Motherboard parameters

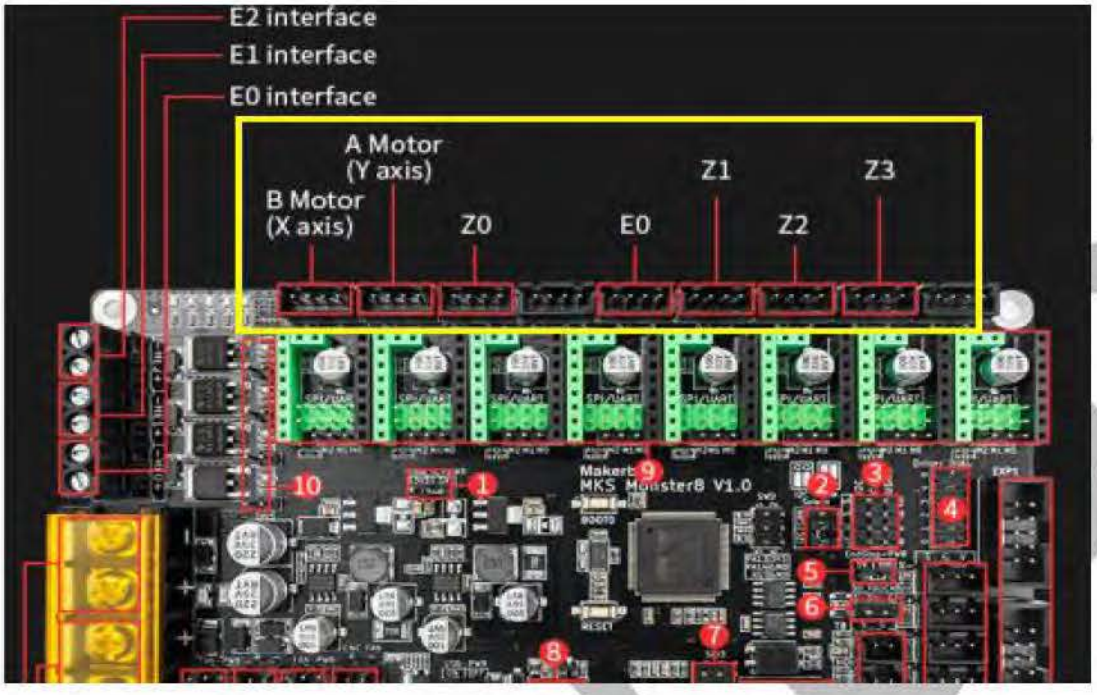
Motherboard model:	MKS MONSTER8 V1.0	MCU:	STM32F407VET6
physical dimension:	160mm*90mm	Mounting hole size:	152mm*82mm
Input voltage:	12V~24V 5A~20A	motor driver:	TMC2208,TMC2209,TMC2225,TMC2226,A4988,DRV8825,LV8729
Temperature sensor interface:	NTC 100K	Support LCD/touch screen	LCD2004、LCD12864、MKS MINI12864 V1.0、MKS MINI12864 V3.0、MKS TFT Series touch screen
Support print file format:	G-code	Support machine structure:	XYZ、delta、kossel、Ultimaker、corexy
Recommended software:	Cura、Simplify3d、Pronterface、Repetier-Host	Firmware update:	TF card

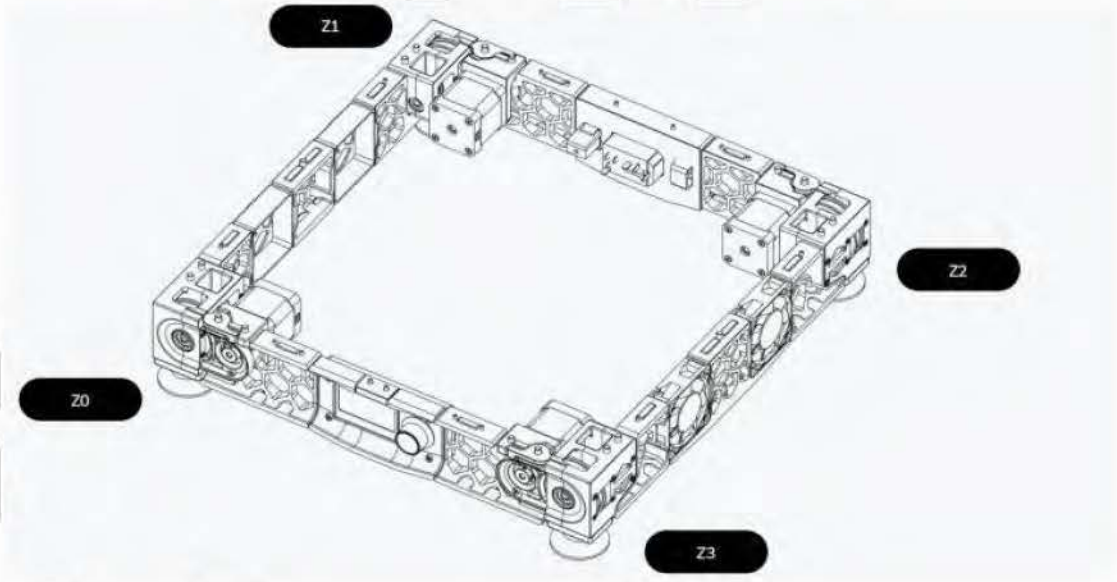
1.3 Wiring diagram

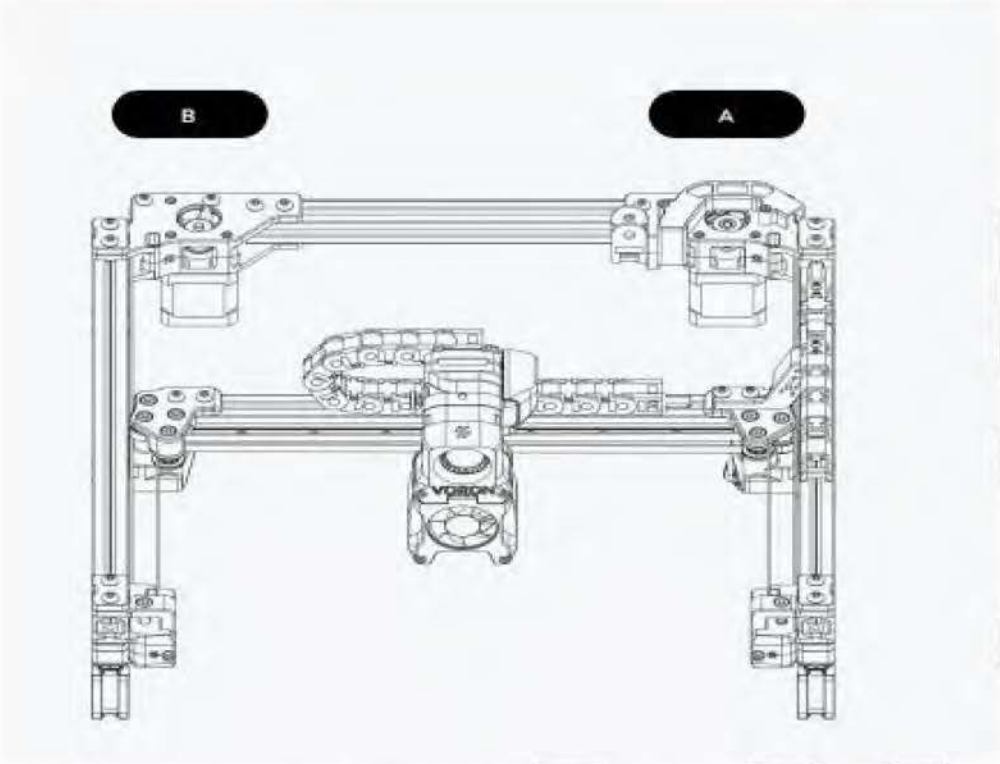
1.3.1 Wiring diagram of each port on the motherboard



1.3.2Motor wiring based on Voron 2.4







Note: Please be sure to follow the above wiring. Wrong wiring of A and B motors will cause movement errors, printing mirror images, etc., wrong 4Z sequence connection will cause incorrect leveling.

1.3.3 Wiring of the leveling sensor PL08N on the board

The three wires of PL08N are brown to the positive pole of the power supply, blue to the negative pole of the power supply, and black to the leveling interface signal pin; when PL08N is only used for leveling, the signal line (black) of PL08N is connected to the Z_MAX limit S terminal; when PL08N Used as zero return Z limit (when z_safe_homing function,

the signal line (black) of PL08N is connected to Z_MIN limit.

1.3.4 Limit wiring based on Voron 2.4

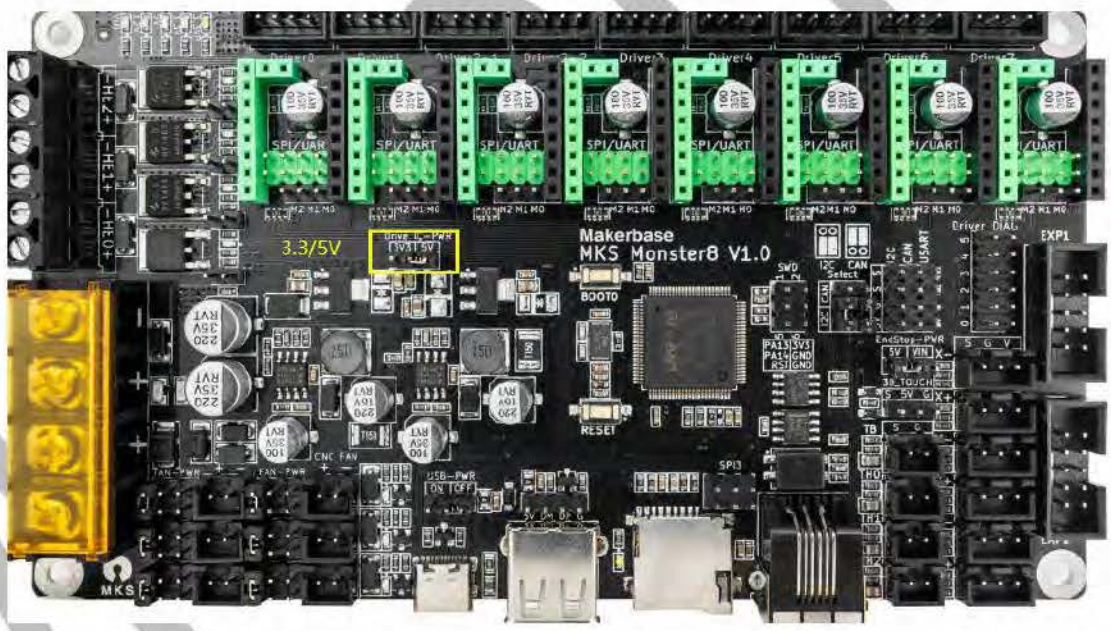
Based on Voron 2.4, the home position of X axis and Y axis is the upper right corner, that is, the home direction of X axis and Y axis is to the maximum direction, then X axis and Y axis limit are connected to X_MAX and Y_MAX limit.

1.4 Dimensions

Motherboard size chart:

2. Driver jumper setting

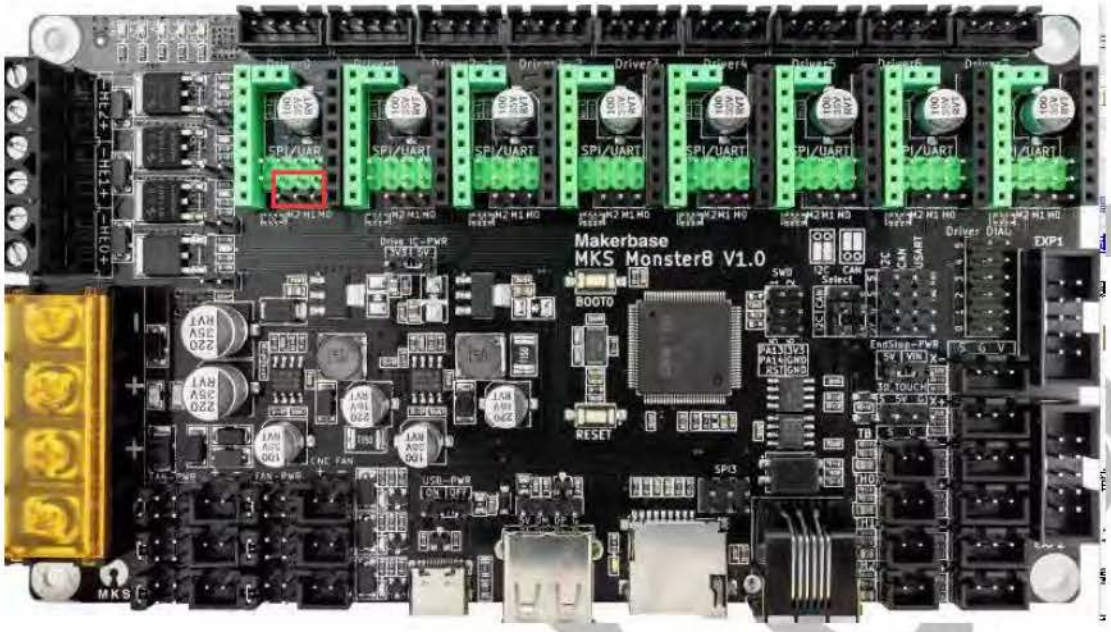
Note: The voltage supplied to the driver on the motherboard can be set by jumpers. It can be set to 3.3 or 5V. It must be set to one of them. If the driver is not set, it will not work. It is recommended to set it to 5V. (The sensorless function of the old marlin firmware is required. Set to 3.3V) When set to 3.3V, the voltage driven by the A4988 will be halved and the current will also be halved.



2.1 A4988 driver jumper setting

A4988 drives the subdivision jumper mode, the 3 jumper caps below the

driver are plugged into 16 subdivisions, as shown in the figure below (X-axis as an example):

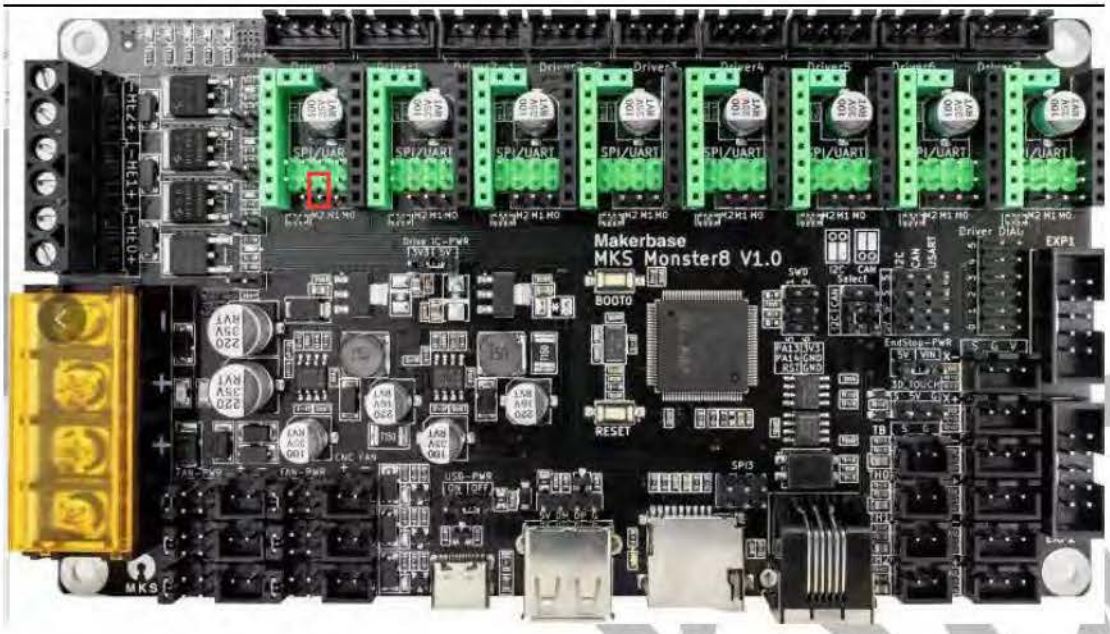


2.2 TMC2208, TMC2209, TMC2226 common jumper setting mode

TMC2208, TMC2209, TMC2226 drive the subdivision jumper mode, the 2 jumper caps (M0, M1) below the drive are plugged into 16 subdivisions, as shown in the following figure (X-axis as an example):

2.3 TMC2225 common mode jumper setting

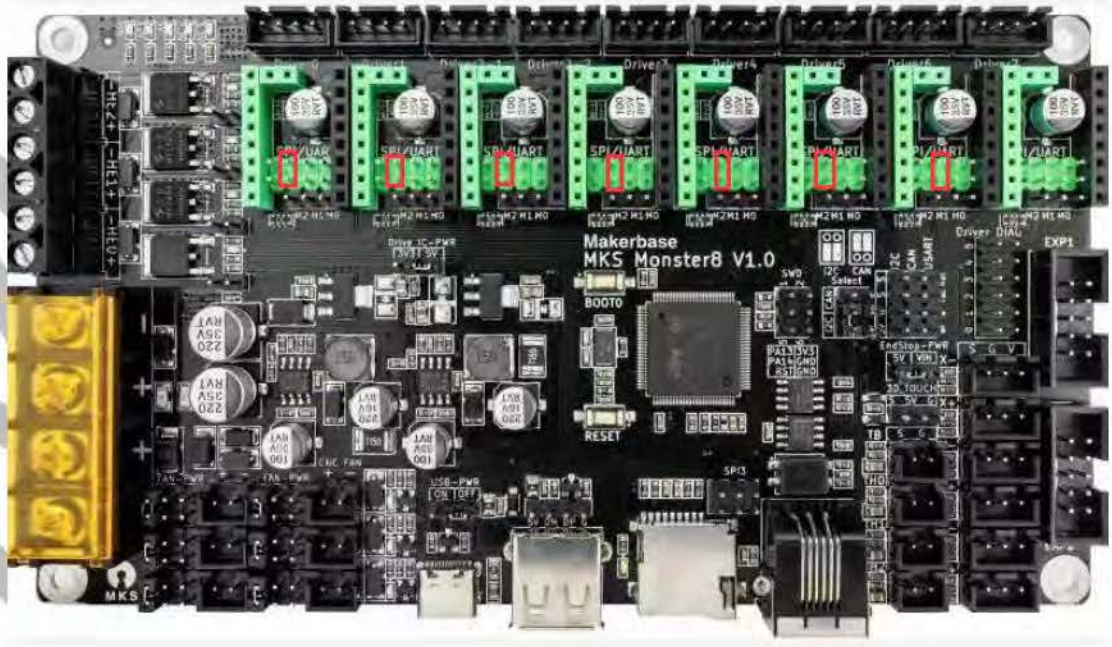
TMC2225 drives the subdivision jumper mode, and the second jumper cap (M1) on the right under the drive is inserted into 16 subdivisions, as shown in the following figure (X-axis as an example):



2.4 TMC2208, TMC2209, TMC2225, TMC2226 UART mode jumper settings

TMC2208, TMC2209, TMC2225, TMC2226 UART mode jumper settings are the same, the third jumper on the left under the driver is plugged into uart mode, as shown in the figure below (X-axis as an example):

Note: Based on Voron V2.4, in order to facilitate the drive current adjustment, the default configuration of the mks monter8 V1.0 motherboard (the configuration obtained on the mks qq group or mks github) is to enable 7 TMC2209 UART modes, so use it directly The default configuration requires 7 drivers to be set to uart mode.



3. Install Fluidd system image on Raspberry Pi

3.1 Hardware preparation

*Raspberry Pi 3B, 3B+ or 4B

*One TF memory card not less than 16G

*TF card reader

*PC with windows operating system installed

*Wireless network card

3.2 Software preparation

*FluiddPI latest mirror download link:

https://docs.fluidd.xyz/installation/fluiddpi

*balenaEtcher v1.5 and above download link:

https://www.balena.io/etcher/

*Notepad++ latest version download link:

https://notepad-plus.en.softonic.com/

3.3 Flash image

3.3.1 Format TF card

Format the TF card before flash the image

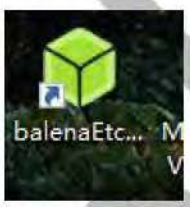
3.3.2 Flash image

1)Insert the formatted TF card into the card reader, and insert the card reader into the computer

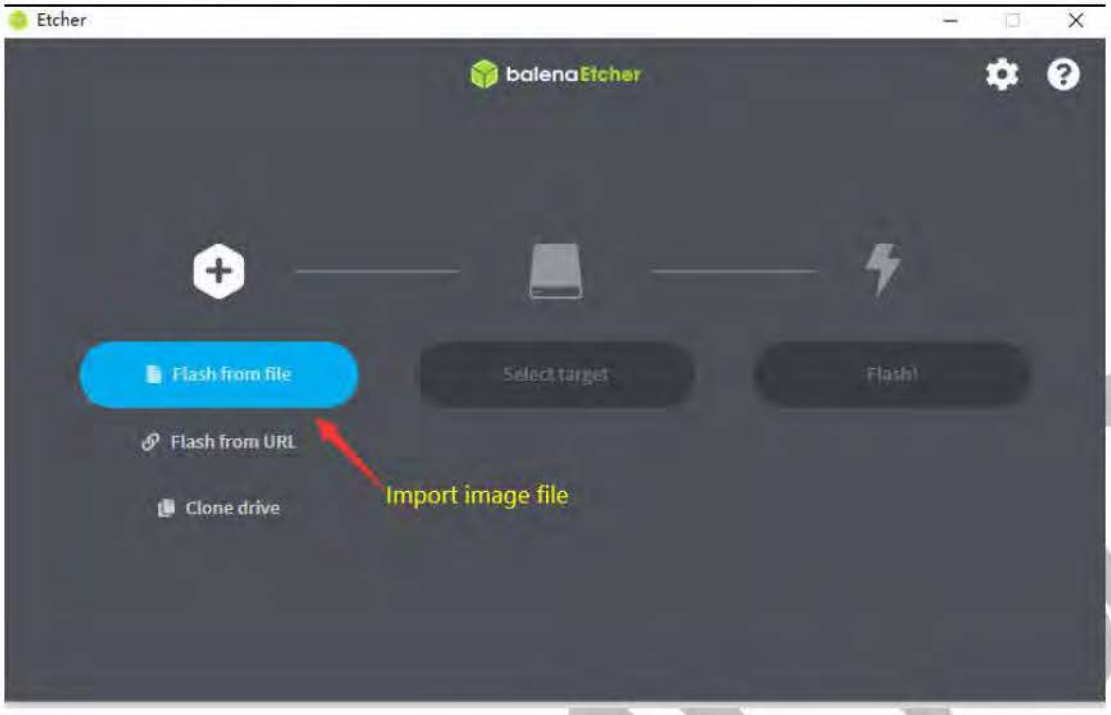
2)Unzip the downloaded fluiddpi image file

3)Install the downloaded balenaEtcher-Setup-1.5.122.exe

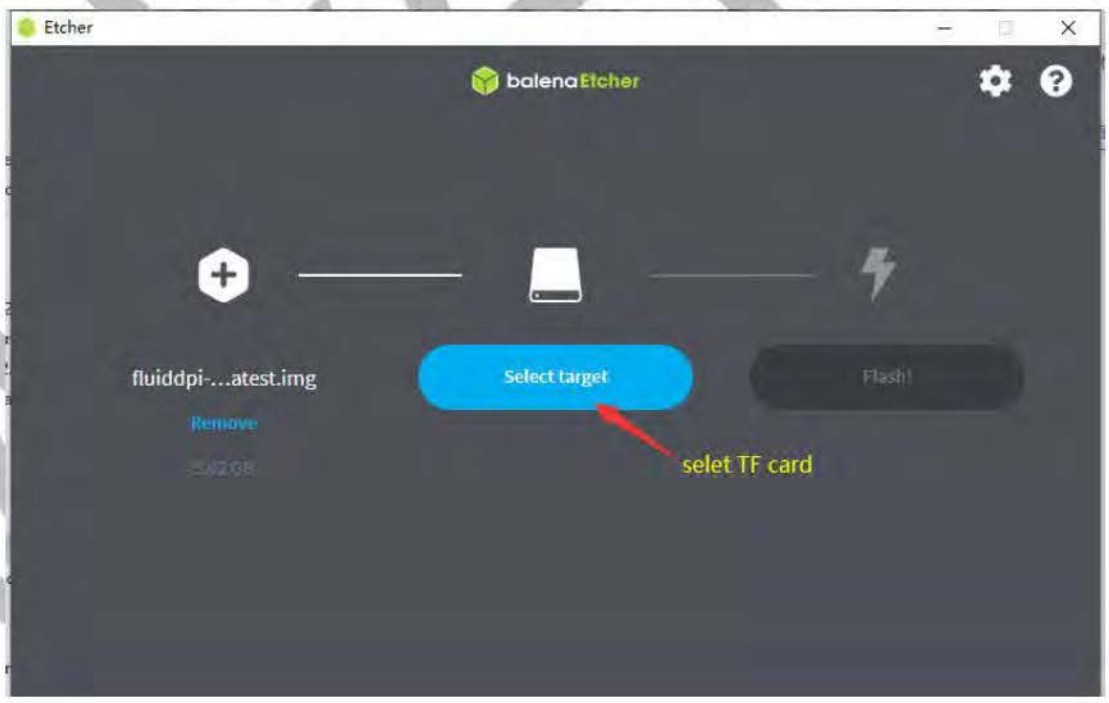
4) Run balenaEtcher



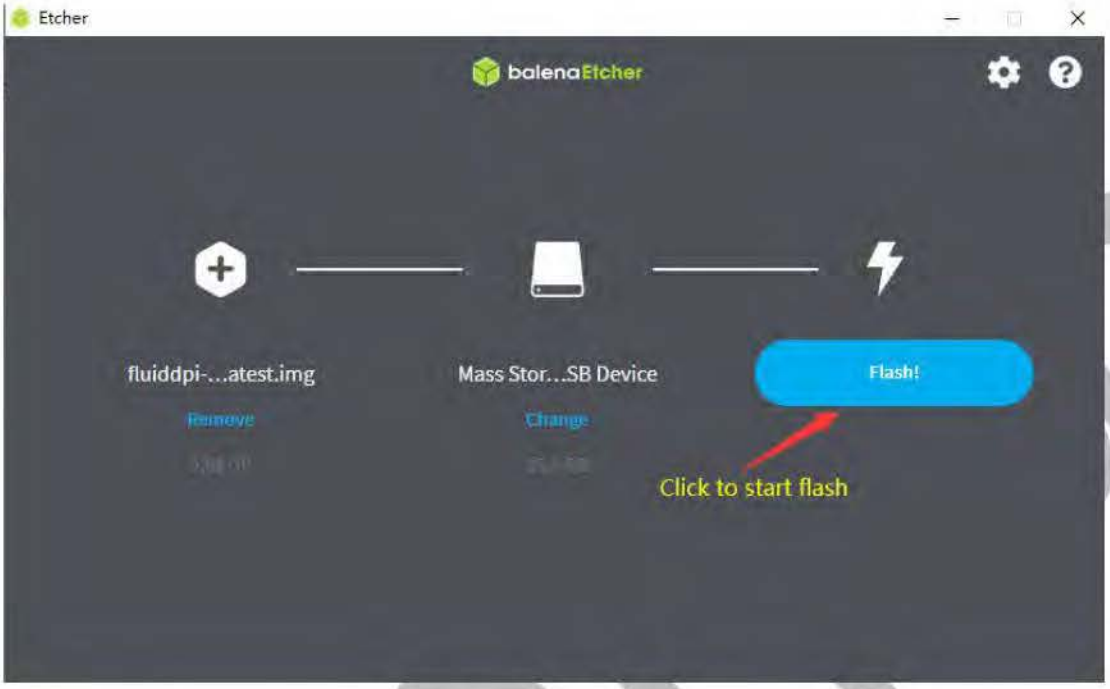
5) Import the decompressed image file



6) selet TF card



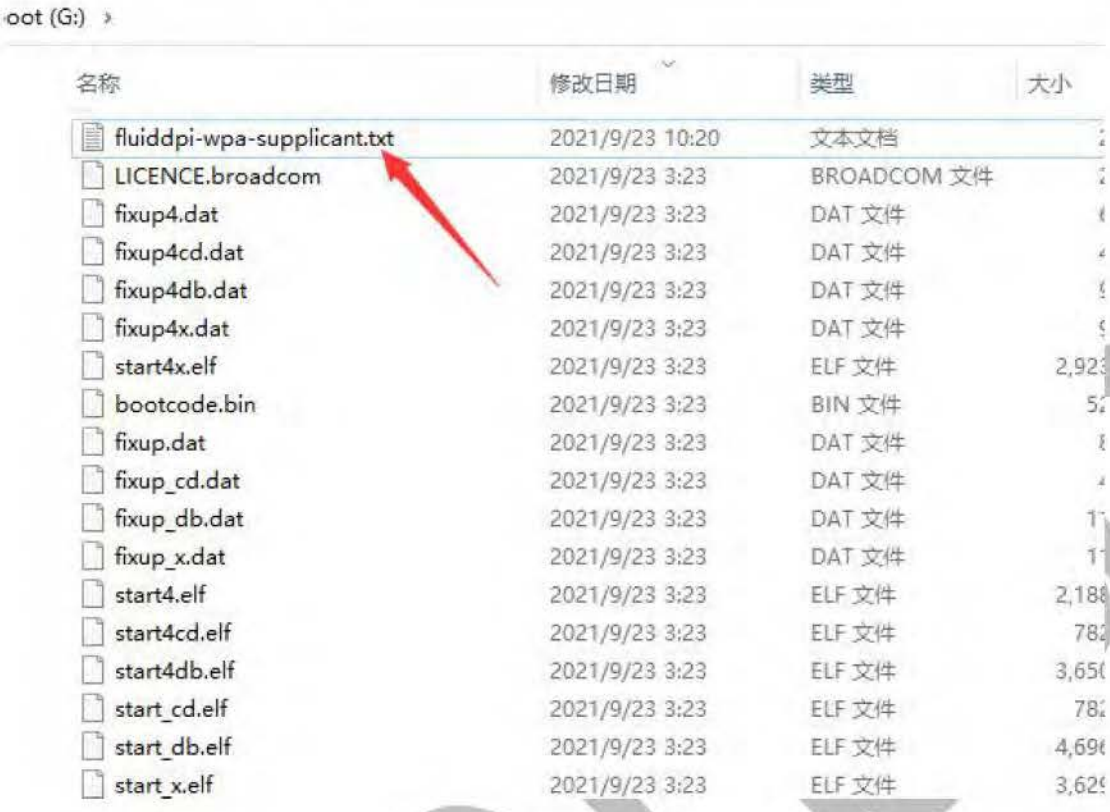
7) Click to start flash

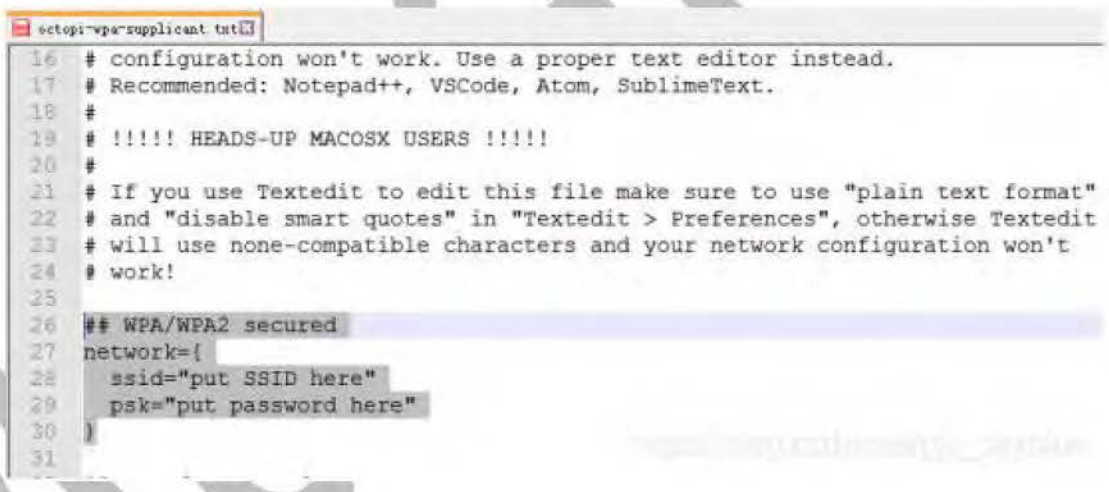


3.4 Raspberry Pi network connection

1) Safely eject the TF card and reinsert the card reader. The system will recognize a 256M partition, open the partition and find the "fluiddpi-wpa-supplicant.txt" file.

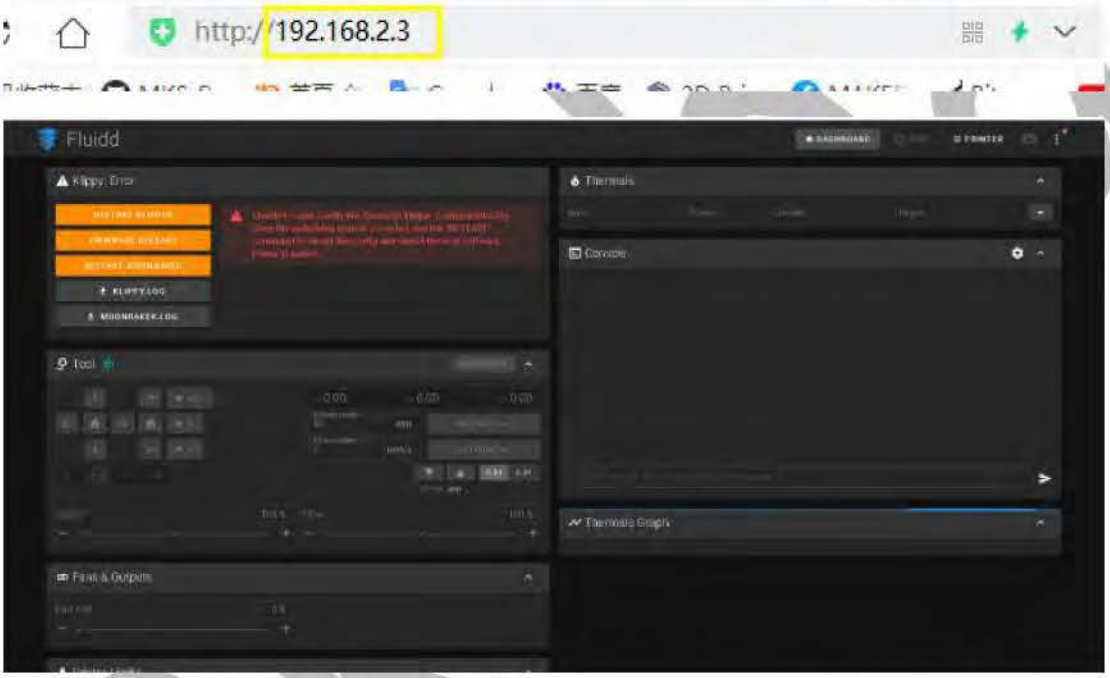
2) Enter the wireless network name and password, and uncomment the # sign. After setting, save and exit, remove the card, install it on the Raspberry Pi and power on.





3) Check the iP of the new device on the router management interface and record

4) Enter the recorded ip address in the browser and enter the fluidd interface



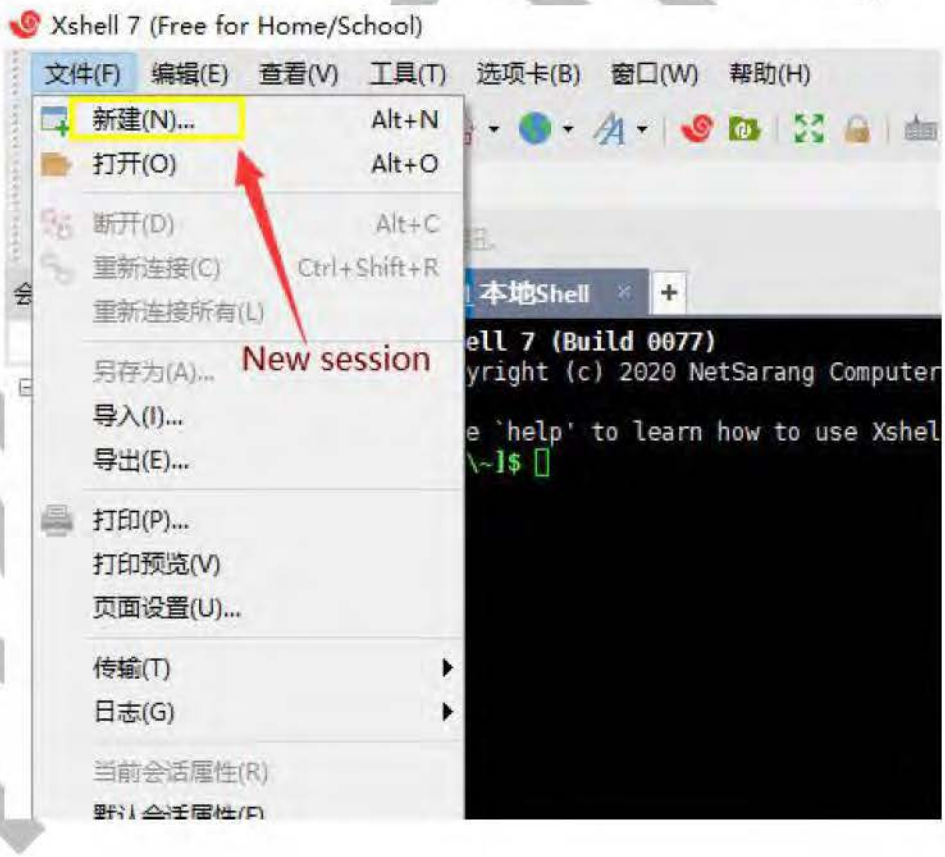
Note: After logging in for the first time, an error will occur when the correct configuration file is not fully configured, and you don't need to deal with it. After the correct configuration file is configured later, the error will not appear.

4.SSH connection

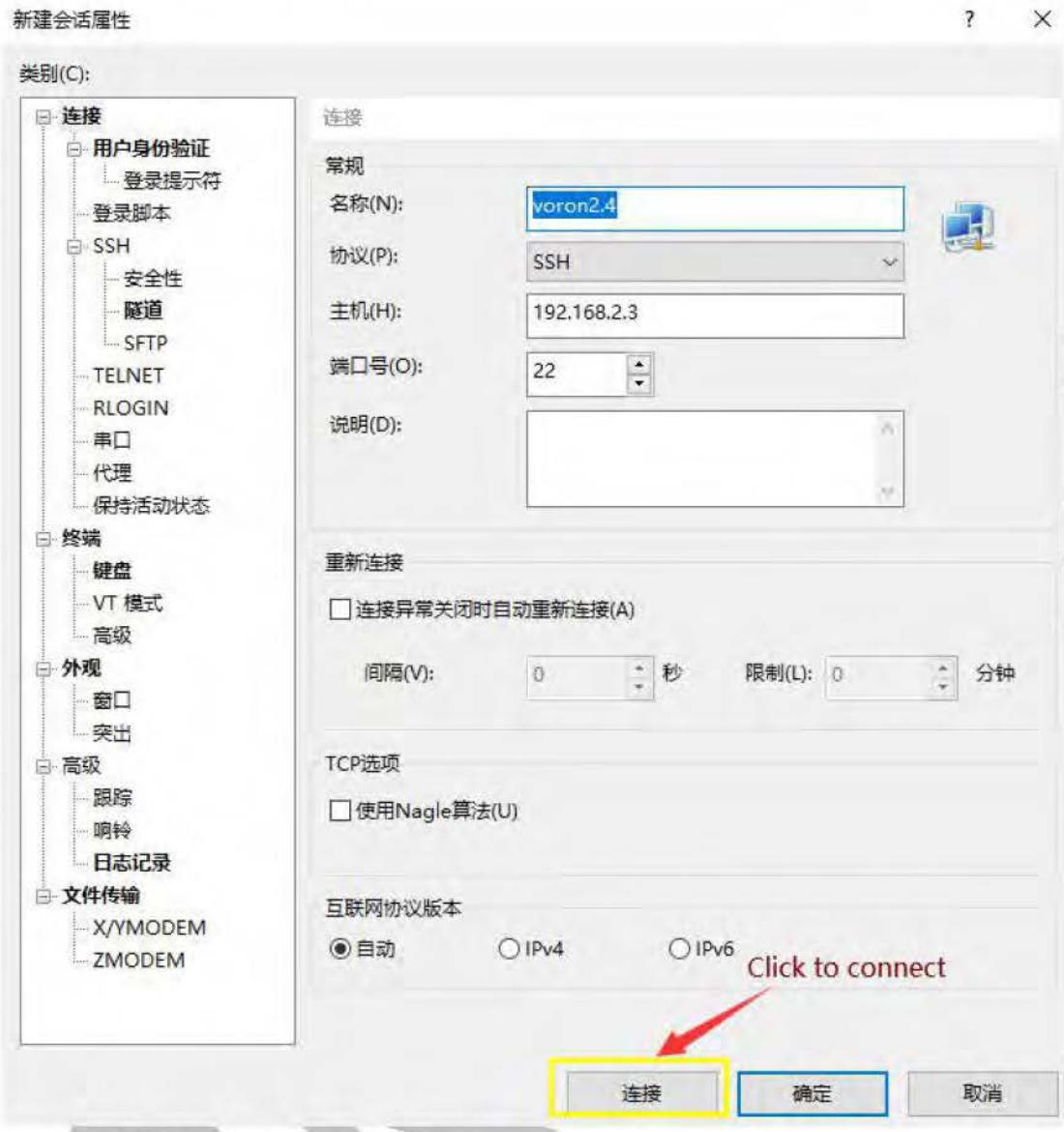
The function of SSH is to send commands to operate the Raspberry Pi, compile firmware, upgrade the system, and so on.

1) Download and install Xshell software, Xshell6Portable download address:https://www.netsarang.com/zh/free-for-home-school/

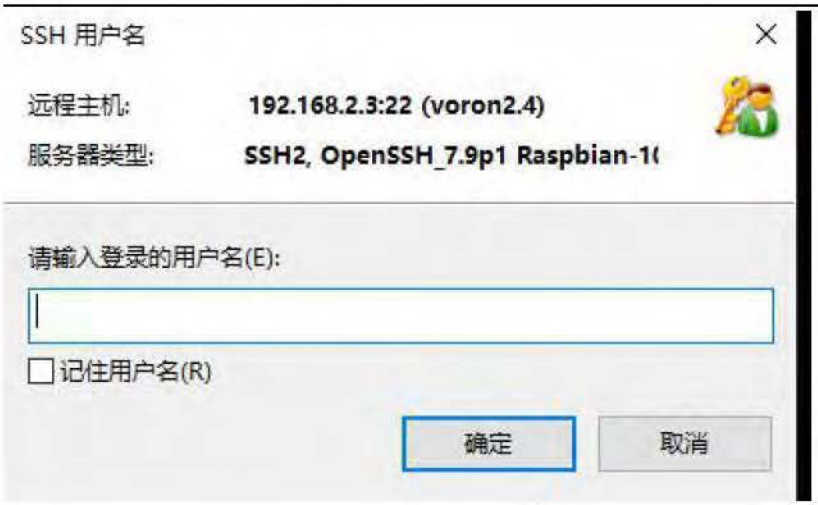
2) Open the Xshell software and establish a new session



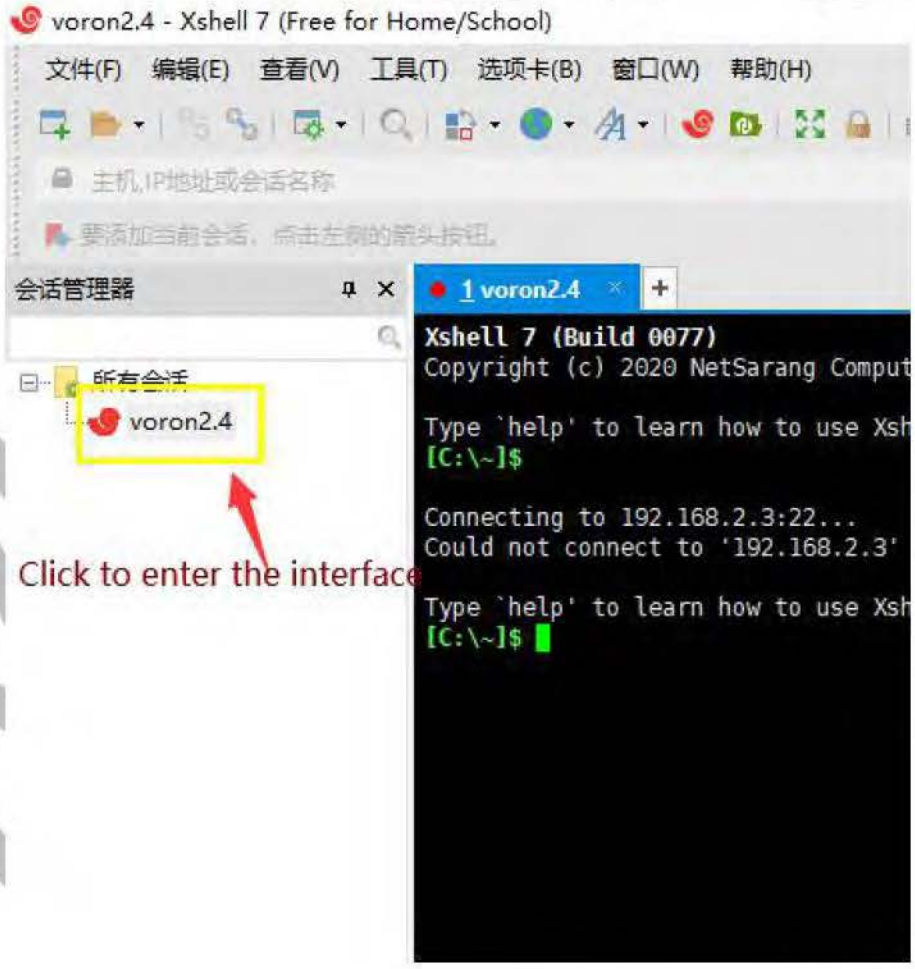
3)Then click connect



4) After connecting, the user name setting interface will pop up, enter the usr name: pi



5) Click on the newly created session connection, the password input interface will pop up, password: raspberry, enter the user interface shell of the Linux operating system after entering the password.



5. Firmware update

5.1 Connection between motherboard and Raspberry Pi

Use a USB TypeC cable to connect to the Raspberry Pi, the Raspberry Pi needs a separate 5V power supply

5.2 Update firmware

Copy the firmware mks_monster8.bin file to the TF card, insert the TF card into the TF card slot of the motherboard, and then power on the motherboard, wait for one minute, after the firmware upgrade, the mks_monster8.bin file in the TF card will be renamed to MKS_MONSTER8.CUR Firmware download link:

https://github.com/makerbase-mks/MKS-Monster8/tree/main/klipper%20firmware

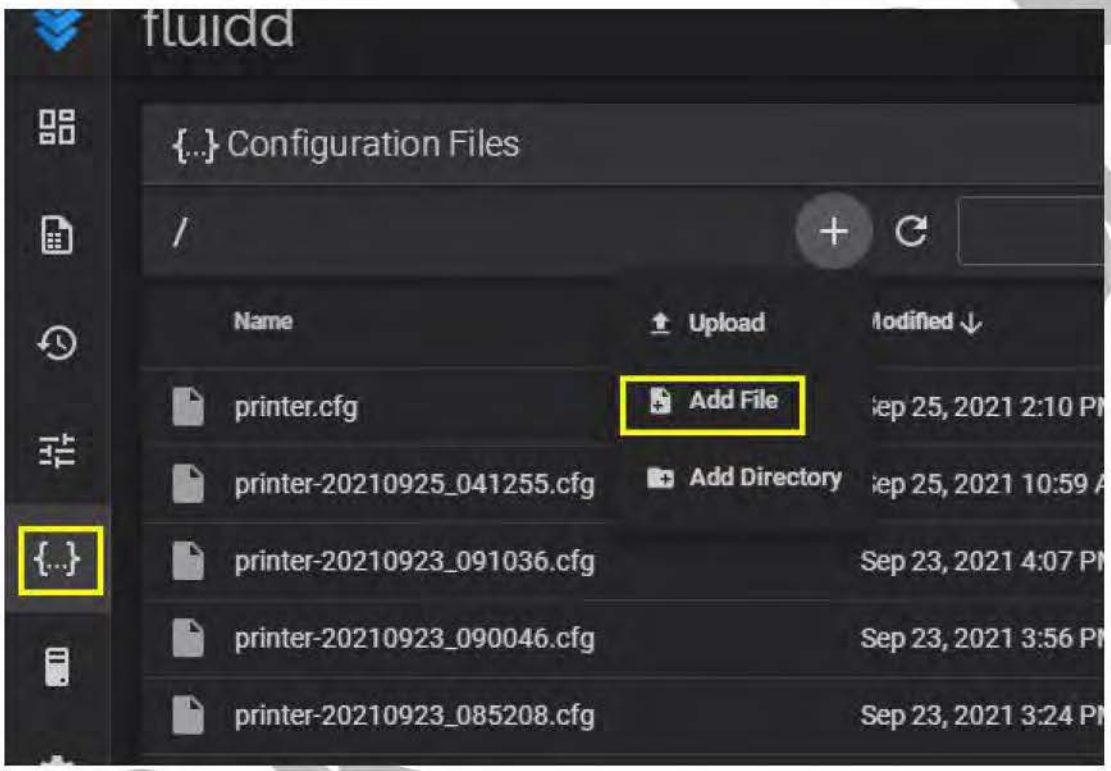
6. Modify printer.cfg file

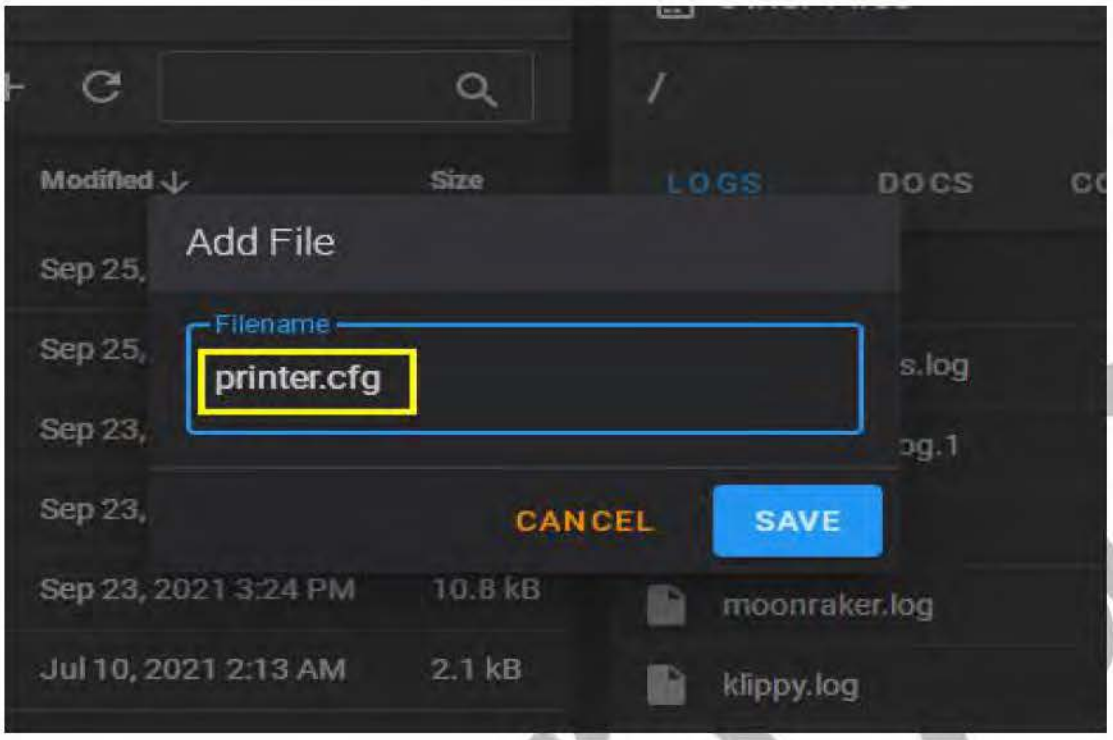
Download link of printer.cfg of MKS MONSTER8 V1.0：

https://github.com/makerbase-mks/MKS-Monster8/tree/main/klipper%20firmware/Voron%202.4%20config

6.1 Create a new file on fluidd

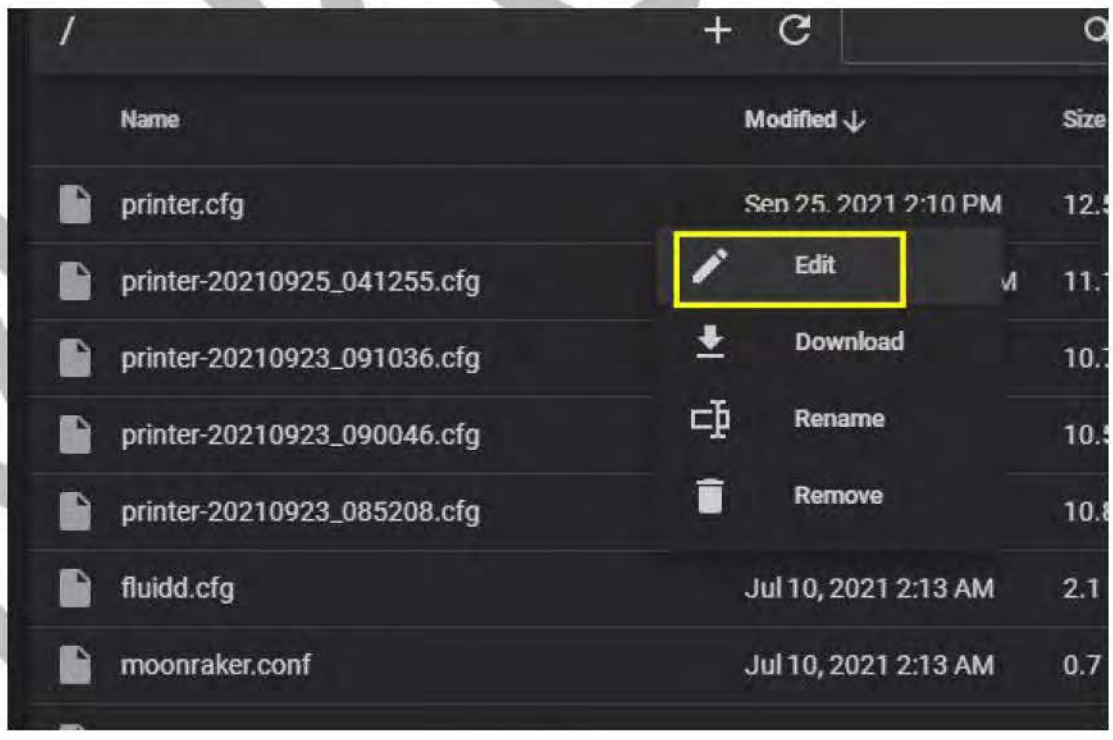
Find the "+" in the "Configuration" tab, click to add a file, the file name is: printer.cfg





6.2 Edit the printer.cfg file

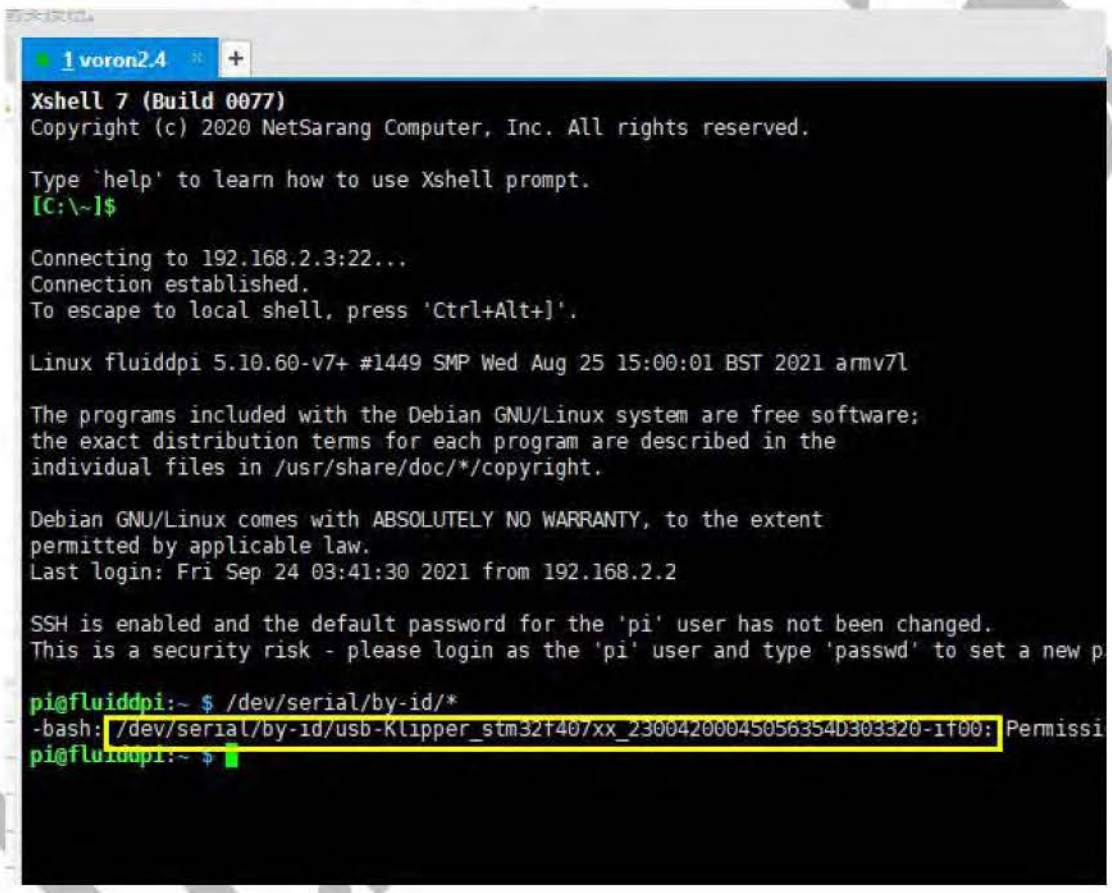
1) Click the newly added file "printer.cfg" and select "Edit"



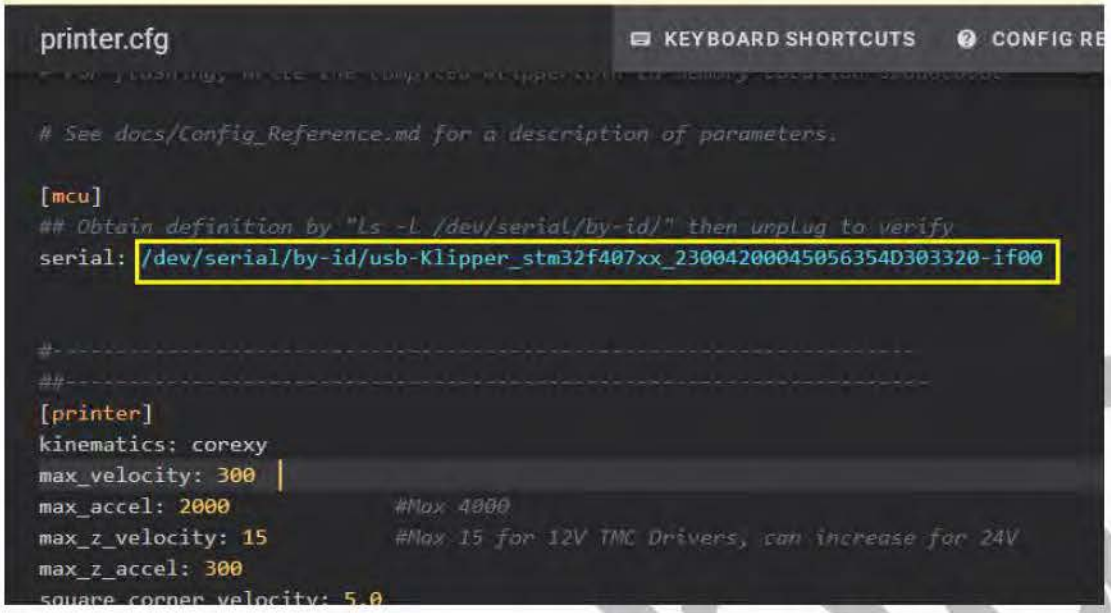
2) Open the downloaded printer.cfg and copy the contents to the newly created configuration file printer.cfg

6.3 Modification of motherboard id

1) Enter ls /dev/serial/by-id/* in the shell, then press Enter, the iD of the motherboard will be displayed in the shell



2) Copy the motherboard ID to printer.cfg



3) Save and restart. After restarting, klipper will automatically connect to the printer without the previous error. At this time, you can control and operate the printer.

7. Check and modify basic parameters

7.1 Limit switch pin configuration

Based on Voron 2.4, the X and Y limits are connected to the X_max limit and Y_max limit respectively, the Z limit is connected to the Z_min limit, X_max pin is PA13, Y_max pin PC5, and Z_min pin is PB13.

7.2 X Y Z axis limit switch inspection

Make sure that the limit switches of the X, Y, and Z axes are not triggered, and then send the command through the console:QUERY_ENDSTOPS

The return value is "open", then the limit trigger level type is set correctly, if it is "triggered", you need to modify the limit level type (take the X axis as an example)

```
[stepper_X]
endstop_pin:PA13      #before fixing
endstop_pin:!PA13     #after modification
          OR
endstop_pin:!PA13     #before fixing
endstop_pin: PA13     #after modification
```

7.3 Motor movement direction configuration

Note: Before moving the motor, please make sure that the wiring of the motor is done in accordance with the wiring diagram in 1.3.2.

Whether the X and Y movement directions are correct, we can check by operating the zero return operation on fluidd. Looking at the printer, the correct movement direction is to move the X axis to the right first, and then the Y axis to move backward. If the movement sequence or direction is wrong, To modify the moving direction of the motor, the modification method and reference are as follows:

Case 1: After clicking the reset button, move backward and then to the right. Motor A (Y-axis motor) is in the wrong direction, and motor B (X-axis motor) is in the correct direction. You need to modify the Y-axis movement in the configuration file. direction:

```
[stepper_y]
dir_pin:!PE4  #before fixing
dir_pin:PE4   #after modification
         OR
dir_pin:PE4    #before fixing
dir_pin:!PE4   #after modification
```

Case 2: After clicking Return to zero, first move forward and then move left. Motor A (Y-axis motor) is in the correct direction, and motor B (X-axis motor) is in the wrong direction. You need to modify the X-axis

motor direction in the configuration file. :

```
[stepper_X]
dir_pin:!PC13  #before fixing
dir_pin:PC13   #after modification
         OR
dir_pin:PC13    #before fixing
dir_pin:!PC13   #after modification
```

Case 3: After clicking the return to zero, first move to the left, then move forward, the direction of the A motor (Y-axis motor) and B motor (X-axis motor) are both wrong, you need to modify the X and Y axis in the configuration file at the same time Motor direction:

```
stepper_X]
dir_pin:!PC13   #before fixing
dir_pin:PC13    #after modification

     OR
dir_pin:PC13     #before fixing
dir_pin:!PC13    #after modification

[stepper_y]
dir_pin:!PE4   #before fixing
dir_pin:PE4     #after modification

     OR
dir_pin:PE4    #before fixing
dir_pin:!PE4    #after modification
```

Z-axis motor direction configuration:

Whether the moving direction of the Z-axis motor is correct, we can send instructions through fluidd to check, the operation is as follows:

STEPPER_BUZZ STEPPER=stepper_z #Test the Z0 axis motor, the gantry of this axis should first rise and then fall to reciprocate

STEPPER_BUZZ STEPPER=stepper_z1 #Test the Z1 axis motor, the gantry of this axis should move up and down first and then move back and forth

STEPPER_BUZZ STEPPER=stepper_z2 #Test the Z2 axis motor, the gantry of this axis should move up and down first and then move back and forth

STEPPER_BUZZ STEPPER=stepper_z3 #Test the Z3 axis motor, the gantry of this axis should first rise and then fall to reciprocate

If the moving direction is wrong, you need to modify the moving direction of the motor:

```
[stepper_z]
dir_pin:!PE0  ##before fixing
dir_pin:PE0   #after modification
     OR
dir_pin:PE0  #before fixing
dir_pin:!PE0   #after modification

[stepper_z1]
dir_pin:!PD5  #before fixing
dir_pin:PD5    #after modification
      OR
dir_pin:PD5   #before fixing
dir_pin:!PD5   #after modification
```

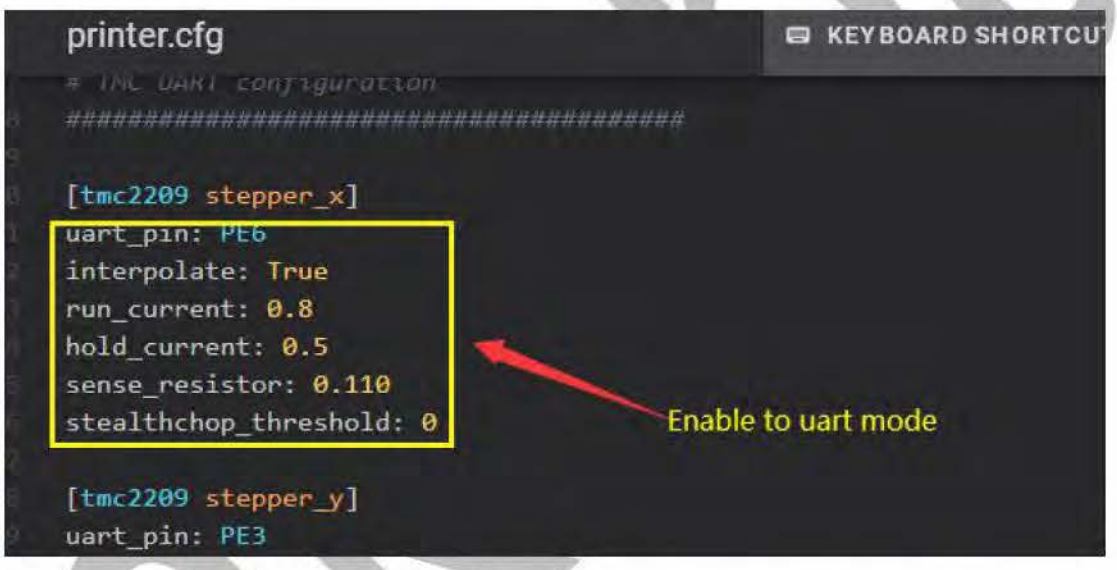
```
[stepper_z2]
dir_pin:!PD1  #before fixing
dir_pin:PD1    #after modification
```

```
      OR
dir_pin:PD1   #before fixing
dir_pin:!PD1   #after modification
```

```
[stepper_z3]
dir_pin:!PC6  #before fixing
dir_pin:PC6   #after modification
      OR
dir_pin:PC6   #before fixing
dir_pin:!PC6  #after modification
```

7.4uart mode configuration

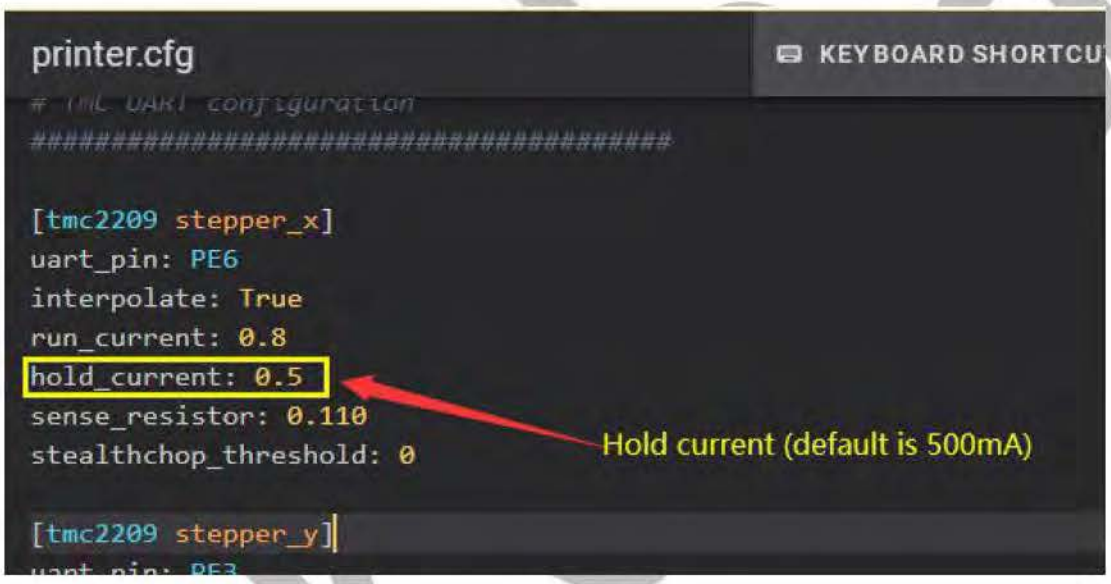
1) uart mode configuration, delete the # before TMC driver configuration in the printer.cfg file to configure uart mode (take the X axis as an example, the default configuration printer.cfg is set to uart mode for all drivers):



Note: The configuration enable is uart mode, which requires hardware support, uart mode drives jumpers, see 2.4 for details

2)uart mode current setting

The current configuration of uart mode is divided into two parts, namely the peak current and the holding current; the peak current needs to be set according to the rated current of the motor you use.



7.5 Machine type configuration

The machine type of Voron 2.4 is corexy, you need to enable corexy in the configuration file

printer.cfg

```
[printer]
kinematics: corexy
max_velocity: 300
max_accel: 2500              #Max 4000
max_z_velocity: 15           #Max 15 for 12V TMC Drivers, can increase for 24V
max_z_accel: 350
square_corner_velocity: 5.0

[stepper_x]
step_pin:PC14
dir_pin:!PC13
enable_pin:!PC15
```

7.6 Setting the direction to go home

Set the zero direction in the configuration file. Based on voron 2.4, the zero points of the X and Y axes are in the upper right corner, then X and Y are zero in the maximum direction, and the Z axis is zero in the minimum direction (the default firmware has been configured as X And Y return to zero in the maximum direction).

printer.cfg

```
dir_pin:!PC13
enable_pin:!PC15
microsteps: 16
rotation_distance: 40    ##主动带轮周长mm（2GT-20T带轮40，2GT-16T带轮32
full_steps_per_rotation:200  #电机单圈脉冲数（1.8度电机:200，0.9度电机:
endstop_pin:PA13
position_min: 0
position_endstop: 250
position_max: 250

#-----------------------------------------------------------------
homing_speed:50
```

Maximum limit position of X axis

printer.cfg KEYBOARD SHORTCUTS

```
homing_speed:50
homing_retract_dist:5
homing_positive_dir:true

[stepper_y]
step_pin:PE5
dir_pin:!PE4
enable_pin:!PC15
microsteps:16
rotation_distance: 40    ##主动带轮周长mm（2GT-20T带轮40，2GT-16T带轮32）
full_steps_per_rotation:200  #电机单圈脉冲数（1.8度电机:200，0.9度电机:400）
endstop_pin:PC5
position_min: 0
position_endstop:250
position_max:250
```

Maximum limit position of Y axis

7.7 Print platform range setting

Voron 2.4 machine print size is divided into 3 types (unit mm):

250x250x230, 300x300x280, 350x350x330; you can set according to the size of your own machine, the default configuration size is 250x250x230.

printer.cfg KEYBOARD SHORTCUTS CONFIG

```
[stepper_x]
step_pin:PC14
dir_pin:!PC13
enable_pin:!PC15
microsteps: 16
rotation_distance: 40    ##主动带轮周长mm（2GT-20T带轮40，2GT-16T带轮32）
full_steps_per_rotation:200  #电机单圈脉冲数（1.8度电机:200，0.9度电机:400）
endstop_pin:PA13
position_min: 0
position_endstop: 250
position_max: 250

#--------------------------------------------------------------------
```

X axis maximum range

printer.cfg KEYBOARD SHORTCUTS

```
[stepper_y]
step_pin:PE5
dir_pin:!PE4
enable_pin:!PC15
microsteps:16
rotation_distance: 40    ##主动带轮周长mm（2GT-20T带轮40，2GT-16T带轮32）
full_steps_per_rotation:200  #电机单圈脉冲数（1.8度电机:200，0.9度电机:400）
endstop_pin:PC5
position_min: 0
position_endstop:250
position_max:250
#-----------------------------------------------------------------------
homing_speed:50
```

Y axis maximum range

printer.cfg KEYBOARD SHORTCUTS CONFIG REFER

```
[stepper_z]
step_pin:PE1
dir_pin:!PE0
enable_pin: !PE2
microsteps: 16
rotation_distance: 40    #主动带轮周长mm（2GT-20T带轮40，2GT-16T带轮32）
full_steps_per_rotation: 200  #电机单圈脉冲数（1.8度电机:200，0.9度电机:400）
gear_ratio: 80:16          #减速比（Z轴大小带轮比为80：16，输出轴在前，输入轴在后）
endstop_pin:probe:z_virtual_endstop ## P812 for Z-max; endstop have'!' is NO

##  Z-position of nozzle (in mm) to z-endstop trigger point relative to print surface (
##  (+) value = endstop above Z0, (-) value = endstop below
##  Increasing position_endstop brings nozzle closer to the bed
##  After you run Z_ENDSTOP_CALIBRATE, position_endstop will be stored at the very end
#position_endstop:-5
position_max: 230
position_min: -15
homing_speed: 8
second_homing_speed: 3
```

Z axis maximum range

7.8 Motor rotation parameter configuration

1) X axis, need to configure the circumference of the driving pulley and

the number of pulses per motor turn

printer.cfg

```
square_corner_velocity: 5.0

[stepper_x]
step_pin:PC14
dir_pin:!PC13
enable_pin:!PC15
microsteps: 16
rotation_distance: 40    ##主动带轮周长mm（2GT-20T带轮40，2GT-16T带轮32）
full_steps_per_rotation:200  #电机单圈脉冲数（1.8度电机:200，0.9度电机:400）
endstop_pin:PA13
position_min: 0
position_endstop: 230
position_max: 230
```

2)Y axis, need to configure the circumference of the driving pulley and the number of pulses per motor turn

printer.cfg

```
[stepper_y]
step_pin:PE5
dir_pin:!PE4
enable_pin:!PC15
microsteps:16
rotation_distance: 40    ##主动带轮周长mm（2GT-20T带轮40，2GT-16T带轮32）
full_steps_per_rotation:200  #电机单圈脉冲数（1.8度电机:200，0.9度电机:400）
endstop_pin:PC3
position_min: 0
position_endstop:230
position_max:230
```

3) For Z-axis, it is necessary to configure the circumference of the driving pulley, the number of single-turn pulses of the motor and the reduction ratio, and all 4 Z-axes need to be configured

printer.cfg KEYBOARD SH

```
[stepper_z]
step_pin:PE1
dir_pin:!PE0
enable_pin: !PE2
microsteps: 16
rotation_distance: 40     #主动带轮周长mm（2GT-20T带轮40，2GT-16T带轮32）
full_steps_per_rotation: 200  #电机单圈脉冲数（1.8度电机:200，0.9度电机:400）
gear_ratio: 80:16          #减速比（Z轴大小带轮比为80：16，输出轴往前，输入轴往后）
endstop_pin:probe:z_virtual_endstop ## PB12 for Z-max; endstop have ! is NO
```

4) The extruder needs to be configured with the circumference of the active pulley, the number of pulses per motor turn and the reduction ratio

printer.cfg KEYBOARD SH

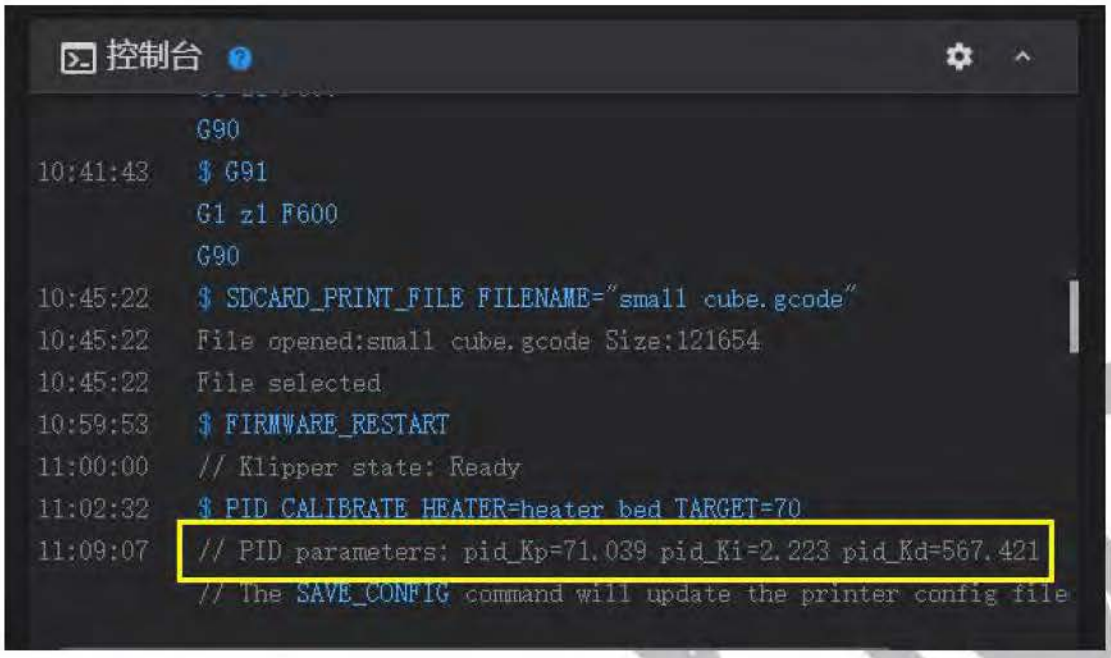
```
[extruder]
step_pin:PB5
dir_pin:!PB4
enable_pin:!PB6
microsteps:16
rotation_distance: 25.12     # 主动带轮周长mm（BMG）
gear_ratio: 50:17            # 减速比（BMG齿轮比为50：17，输出轴往前，输入轴往后）
full_steps_per_rotation: 200     # 电机单圈脉冲数（1.8度电机:200，0.9度电机:400）
nozzle_diameter: 0.400
filament_diameter: 1.750
min_temp: 0
max_temp: 275
heater_pin: PB1
```

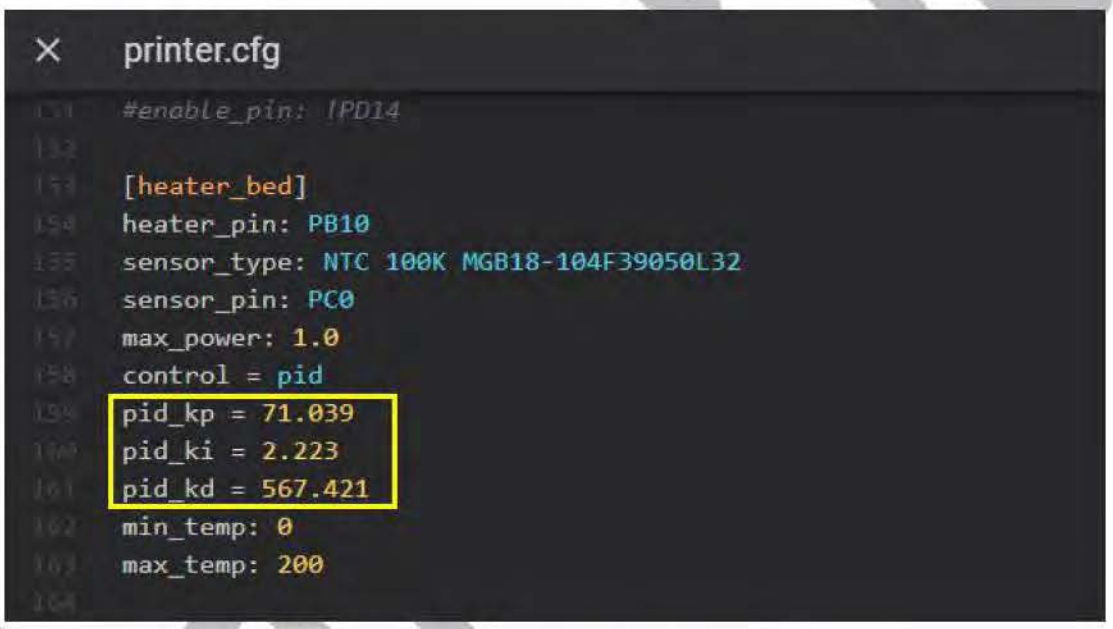
7.9 Hot bed PID calibration

After G28 is reset to zero, move the nozzle to the center of the hot bed, about 5-10mm above the bed surface, and then send the command:

PID_CALIBRATE HEATER=heater_bed TARGET=100

It will perform a PID calibration procedure, which will last about 10 minutes. After completion, the console will return the PID value and copy it to the PID setting of the hot bed.





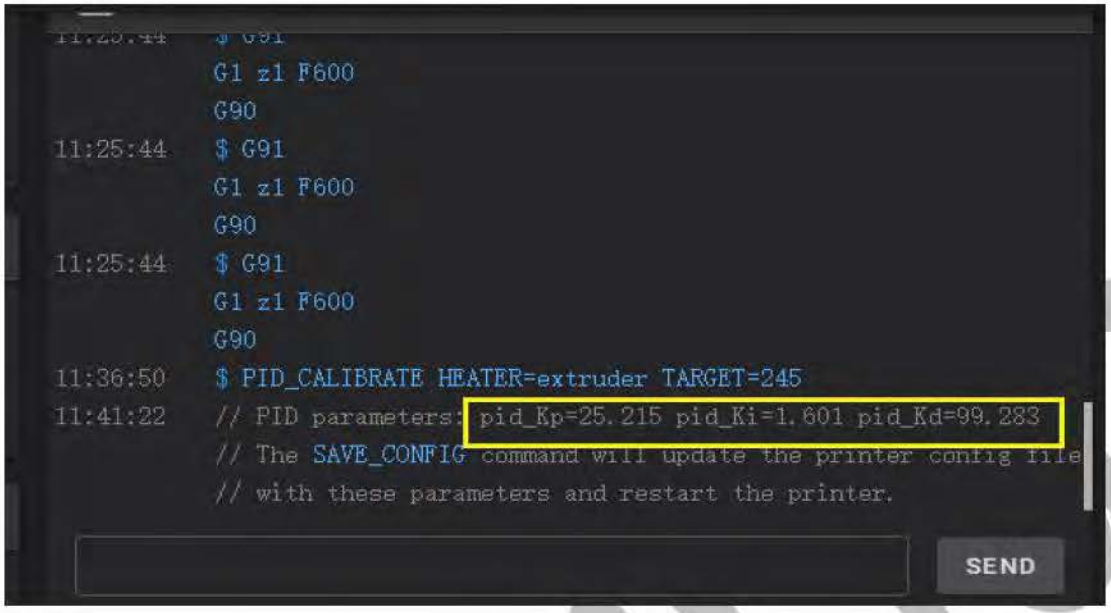
7.10 PID calibration of extrusion head

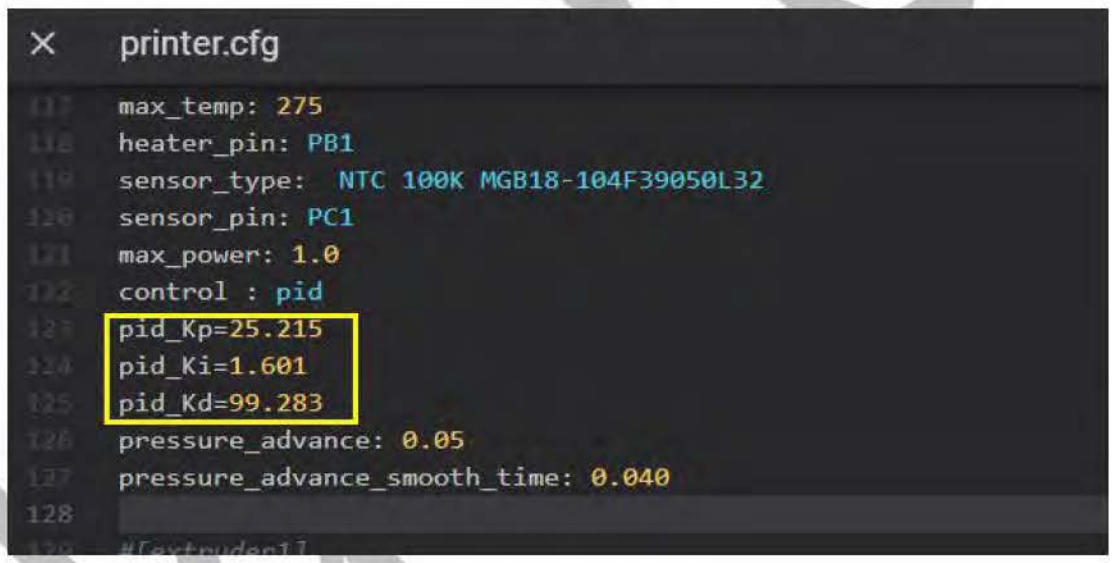
First set the model cooling fan to 25% speed (M106 S64), and then send the command:

PID_CALIBRATE HEATER=extruder TARGET=245

It will execute a PID calibration procedure, which will last about 5 minutes. After completion, the console will return the PID value, just

copy it to the configuration file.





8. 4Z automatic leveling (sensor is PL08N)

8.1 Set sensor signal pin

The sensor signal pin needs to be set according to the wiring of the motherboard (the black line is the signal line of PL08N, which is connected to the Z_MAX limit PB12 based on Voron 2.4).

Note: Use the z_safe_home function, skip this configuration, see 8.4 z_safe_home configuration (the default configuration is to enable the PL08N z_safe_home function)

8.2 Offset setting

Based on Voron2.4, the X and Y axis offsets are 0 and 25, and the Z offset (z_offset) can be tested and adjusted after leveling.

printer.cfg

```
#   Probe
#####################################################################
[probe]
pin:!PB12
x_offset: 0
y_offset: 25.0
z_offset: 3.31
speed: 10.0
samples: 2
samples_result: median
sample_retract_dist: 3.0
samples_tolerance: 0.05
samples_tolerance_retries: 1

#####################################################################
```

8.3 Set the probe position

The setting of the probe position can be set according to the size of your own machine. The default configuration is a machine with a size of 250X250mm.

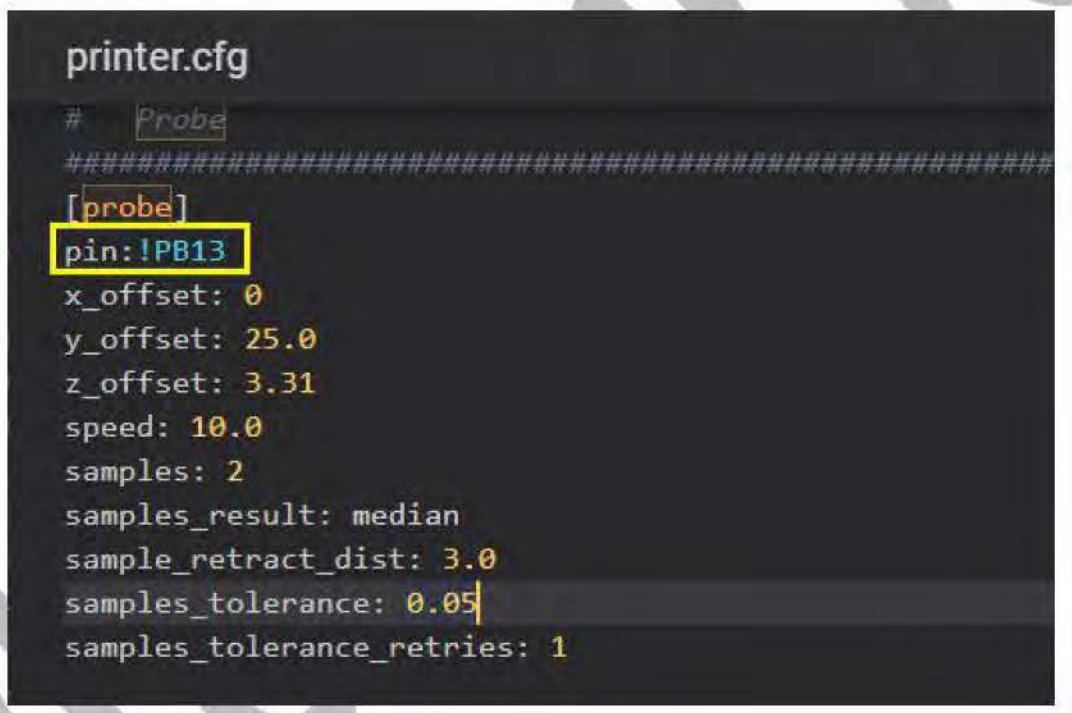
printer.cfg

```
[quad_gantry_level]
gantry_corners:
    -58,-7
    308,318
##  Probe points
points:
    10,10
    10,200
    220,200
    220,10
speed: 80
horizontal_move_z: 10
retries: 1
retry_tolerance: 0.05
max_adjust: 30
```

8.4 z_safe_home settings

Note: z_safe_home uses PL08N as the zero return limit of the Z axis. Other configuration items are the same as those without z_safe_home (except 7.2 setting the sensor signal pin). If the z_safe_home function is not used, the following configuration is not necessary.

1), sensor signal pin setting, use z_safe_home function, use z_min limit pin, z_min pin is PB13, z_enstop pin needs to be set to be consistent with the detection pin



printer.cfg

```
[stepper_z]
step_pin:PE1
dir_pin:!PE0
enable_pin: !PE2
microsteps: 16
rotation_distance: 40
full_steps_per_rotation: 200
gear_ratio: 80:16
endstop_pin:probe:z_virtual_endstop ## PB12 for Z-max; endstop have'!' is NO

##  Z-position of nozzle (in mm) to z-endstop trigger point relative to print surfa
##  (+) value = endstop above Z0, (-) value = endstop below
##  Increasing position endstop brings nozzle closer to the bed
```

2). Add the z_safe_home code in the configuration file, and set the position when z_safe_home is reset (z_safe_home is generally in the middle of the platform)

printer.cfg

```
[idle_timeout]
timeout: 3600

[safe_z_home]
home_xy_position: 125,125 # Change coordinates to the center of your print
speed: 100
z_hop: 10                 # Move up 10mm
z_hop_speed: 5

[quad_gantry_level]
gantry_corners:
    -58,-7
    308,318
##  Probe points
points:
```

9.automatic leveling operation on fluidd

Send the command G32 in the console to start automatic leveling

10. z_offset adjustment

1) Operate the X and Y axis to zero on fluidd, and move the extrusion head to the middle of the platform

2) Then the console sends the command PROBE_CALIBRATE

3) Then send the command TESTZ Z=-1 or TESTZ Z=-0.1 to the console, and slowly lower the Z axis until the extrusion nozzle and the platform keep the distance of A4 paper thickness

4) Finally, send the command ACCEPT, the console will return the value of z_offset, and then copy the value to z_offset in the configuration file.

11. LCD shell, motherboard mounting bracket stl file download link

MKS MINI12864 V3.0 shell installation download link:

https://www.thingiverse.com/thing:4918948

Download link of motherboard mounting bracket:

https://www.thingiverse.com/thing:4977292

12.FAQ

For more information about Voron2.4 machine and Klipper firmware configuration, please log in to Voron official github and Klipper firmware official github respectively

Voron githube link: https://github.com/VoronDesign/Voron-2

Klipper github link: https://github.com/Klipper3d/klipper

Question 1: The Octoprint terminal cannot return the temperature when sending FIRMWARE_RESTART, how to deal with it?

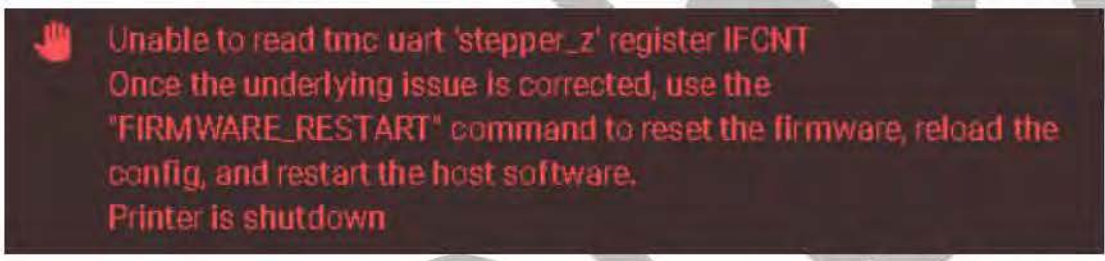
Answer: Manually reset the motherboard and resend the "FIRMWARE_RESTART" command

Question 2: After copying the configuration file to printer.cfg, fluidd still displays an error, how to deal with it?

Answer: Check whether the motherboard id in the configuration is correct, see 6.3 for details, you need to save and restart after copying the id to the configuration

Question 3: How to deal with common errors?

Error 1: TMC UART

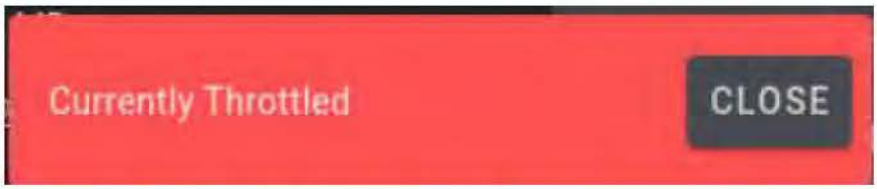


Answer: The TMC driver reports an error because the motherboard firmware enables the TMC driver uart mode, and the communication between the motherboard and the driver fails.

1). Confirm whether the motherboard uses TMC driver (TMC2208, 2209, 2225, 2226), if not, you need to shield the TMC driver in the configuration file, see 7.3

2). The TMC driver is used, and the firmware configuration is correct. You need to confirm whether the hardware has been set to uart mode, that is, whether the jumper under the driver is correct, see 2.4 for details

Error 2: Currently Throttled



Answer: When the power supply of the Raspberry Pi is insufficient or the voltage is unstable, a Current Throttled error will be reported. You need to ensure that the power supply is stable (a separate 5V switching power supply) and the power cord is well wired.