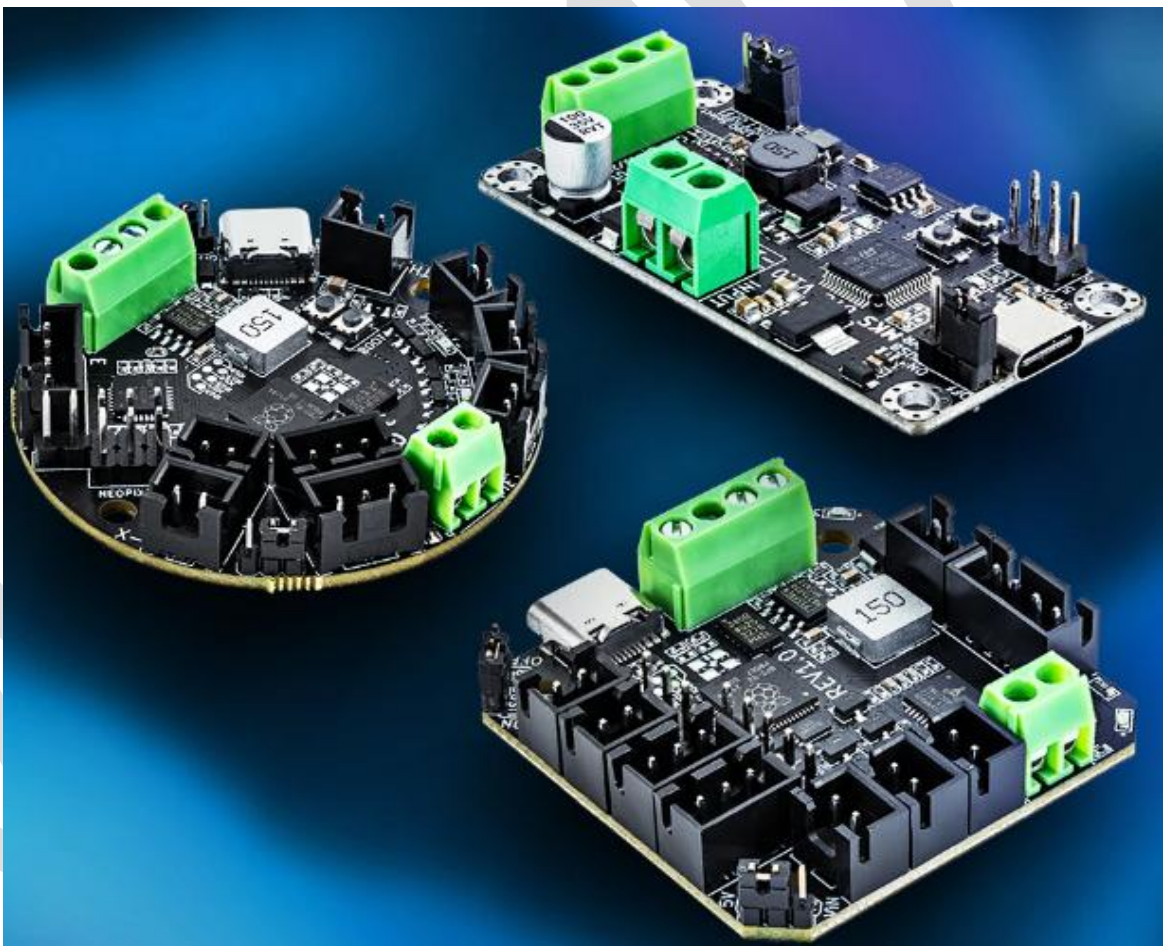
Guangzhou Qianhui Information Technology Co., Ltd.

MKS THR 36&42&UTC V1.0 Datesheet



content

1.Product Brief

MKS 36&42 is a module that can simplify the wiring of 3D printing heads and expand functions. The module integrates TMC2209 driver and ADXL345 sensor; supports E axis, BLtouch, neopixel, three controlled fans, X, Y, Z enstop, Support USB or Can bus to communicate with SOC, which makes the wiring of the printer easier and allows users to reflect the superior performance of the klipper firmware.

UTC is a USB to CAN communication module, used for communication between THR module and SOC.

1.1Features and advantages

1.Integrated 8M NOR FLASH.

2.Integrated TMC2209 silent driver, UART driver mode.

3.Integrated CAN transceiver, integrated 120Ω terminal resistance. Can be used for CAN communication to connect to MKS UTC.

4.Integrated ADXL345 acceleration sensor.

5.3-way controllable fan output, 1 heating head output, 1 NTC100K temperature measurement.

6.Integrated X, Y, Z enstop interface (Z enstop can be set to 5V or VIN power supply, compatible with proximity switch), broken material detection, Neopixel, 3D TOUCH function interface.

7.The BOOT button is reserved, and the U disk mode can be set to update the firmware through USB. USB can also be used for communication to connect to MKS Pi, Raspberry Pi.

8.MKS THR36 holes are compatible with 36 motors; MKS THR42 holes are compatible with 42 motors.

9.Support DC12-24V power input, Reserved maximum current 7A

10.The motherboard integrates TVS peak absorption protection; Schottky diode clamping protection circuit; drive phase sequence output protection.

11.Easy wiring with screw terminals.

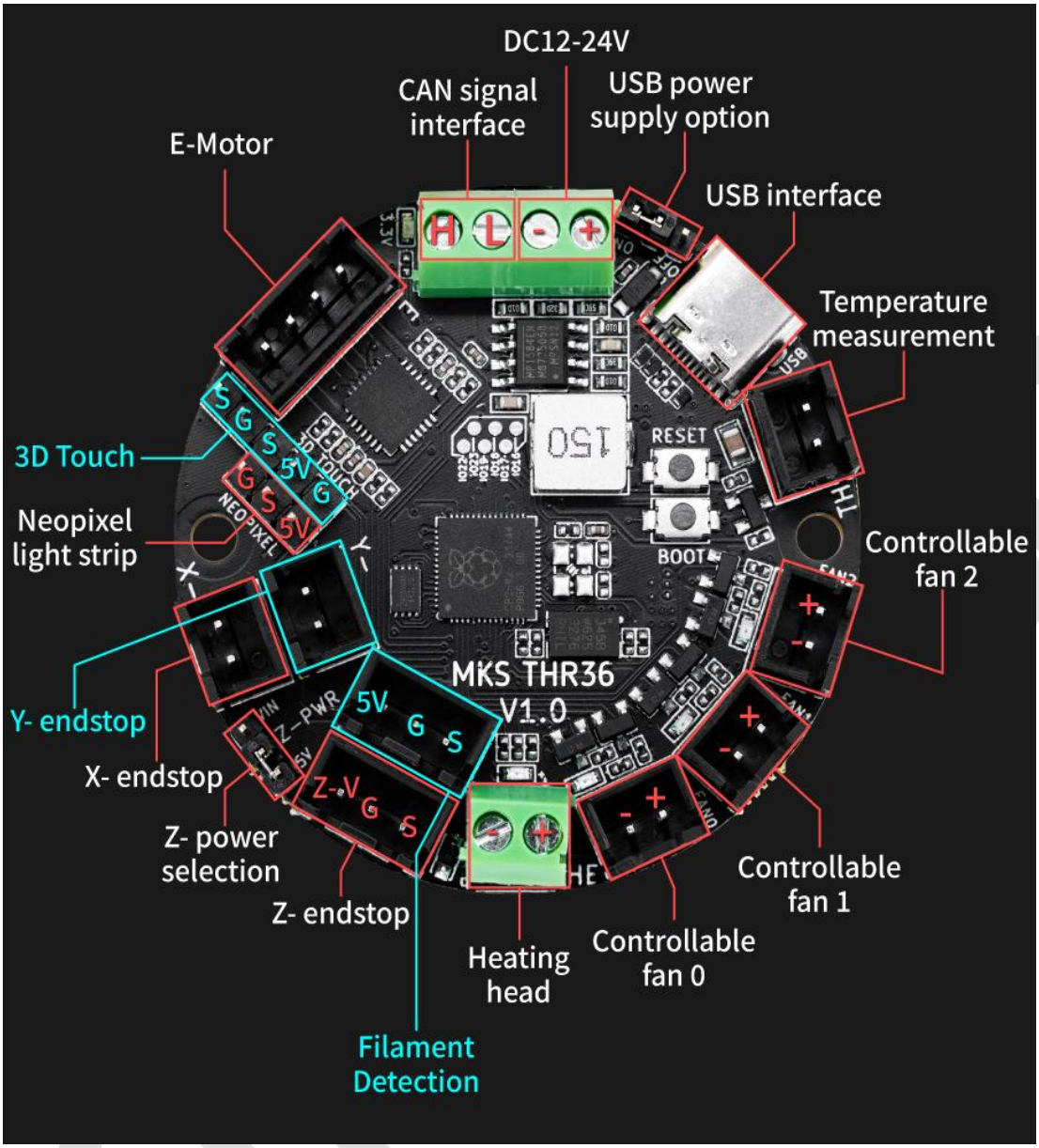
1.2 Motherboard parameters

Motherboard type:	**MKS THR36 V1.0**	**microprocessor:**	**RP2040**
physical dimension:	R=25mm	**Mounting hole size:**	43.850
Input voltage:	12V~24V 7A	**motor driver:**	TMC2209
Temperature sensor interface:	NTC 100K	**Firmware:**	klipper

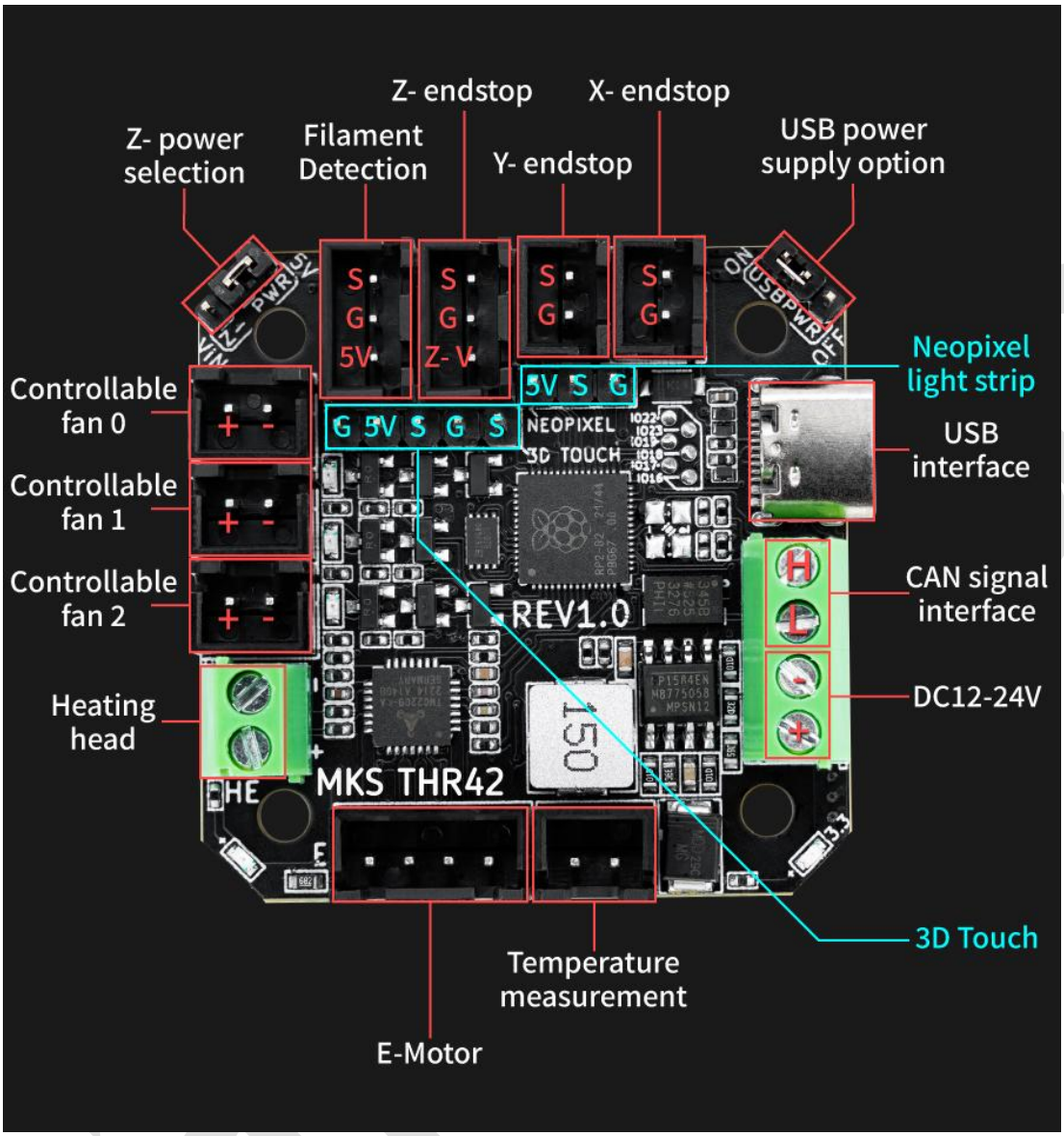
Motherboard type:	**MKS THR42 V1.0**	**microprocessor:**	**RP2040**
physical dimension:	42mm*42mm	**Mounting hole size:**	31mm*31mm
Input voltage:	12V~24V 7A	**motor driver:**	TMC2209
Temperature sensor interface:	NTC 100K	**Firmware:**	klipper

1.3 Wiring diagram

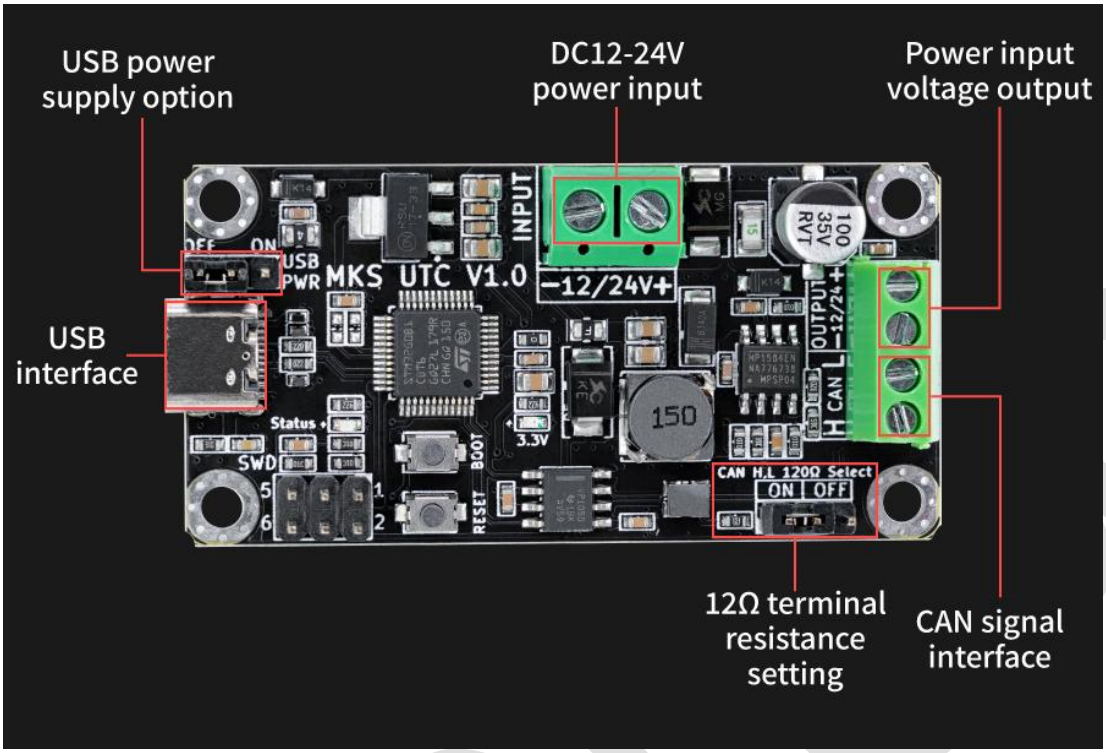
MKS THR 36 each port diagram:


DC12-24V
CAN signal interface
USB power supply option
E-Motor
USB interface
Temperature measurement
3D Touch
Neopixel light strip
Controllable fan 2
Y- endstop
X- endstop
Z- power selection
Z- endstop
Heating head
Controllable fan 0
Controllable fan 1
Filament Detection
MKS THR36
V1.0
RESET
BOOT

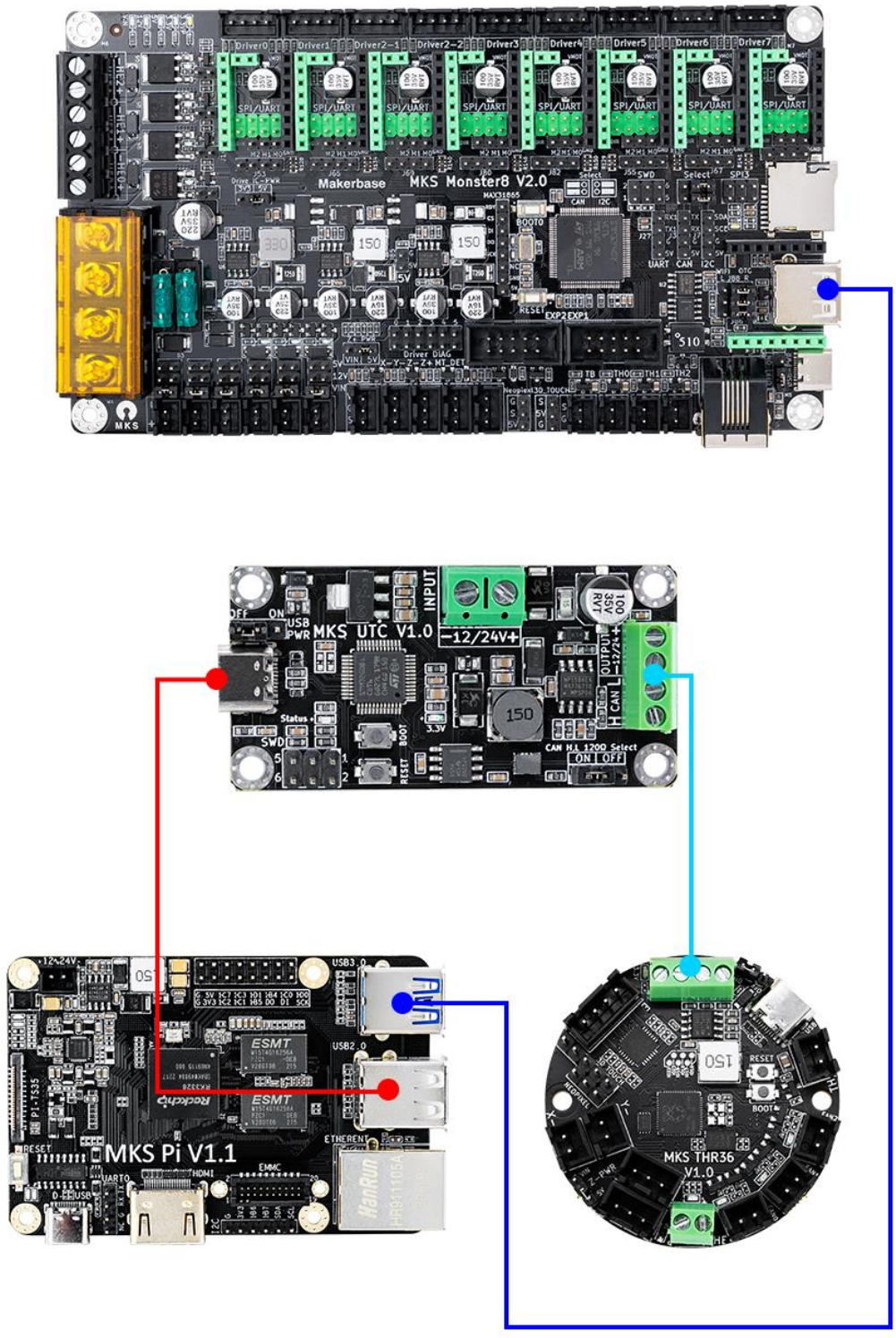
MKS THR42 each port diagram:



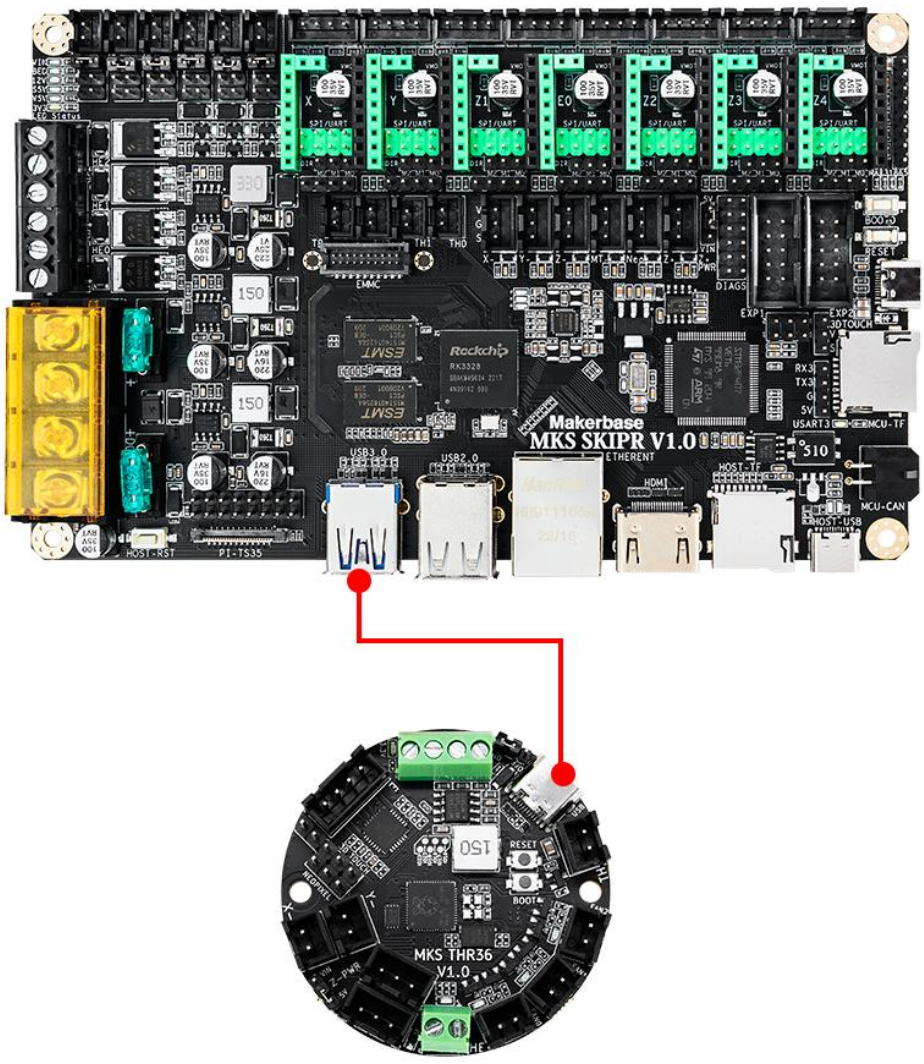
MKS UTC each port diagram:



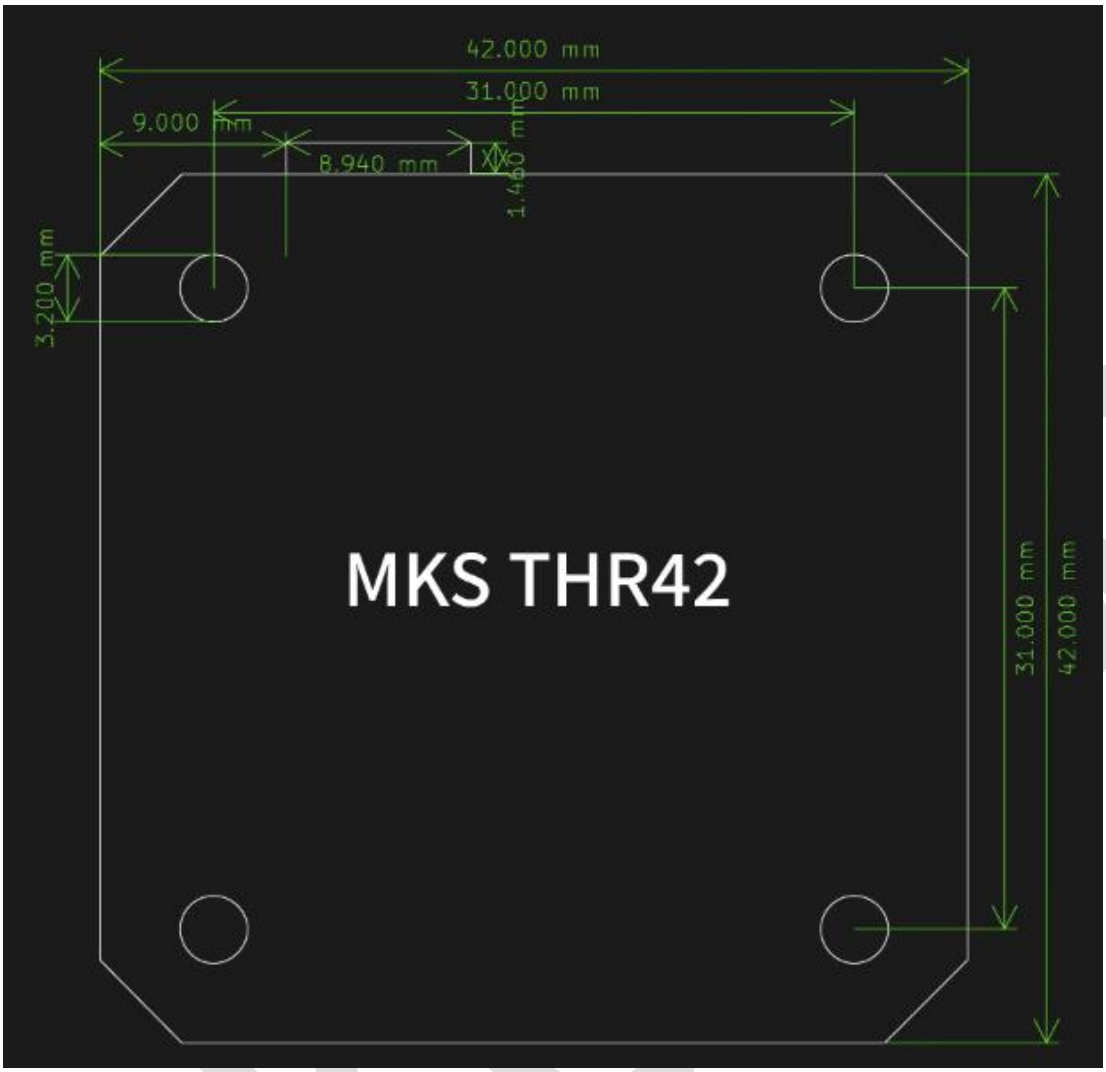
Connection with motherboard (MKS Monster8、MKS PI,Can communication)



Connection with motherboard (MKS SKIPR,USB communication)



1.4 Dimensions

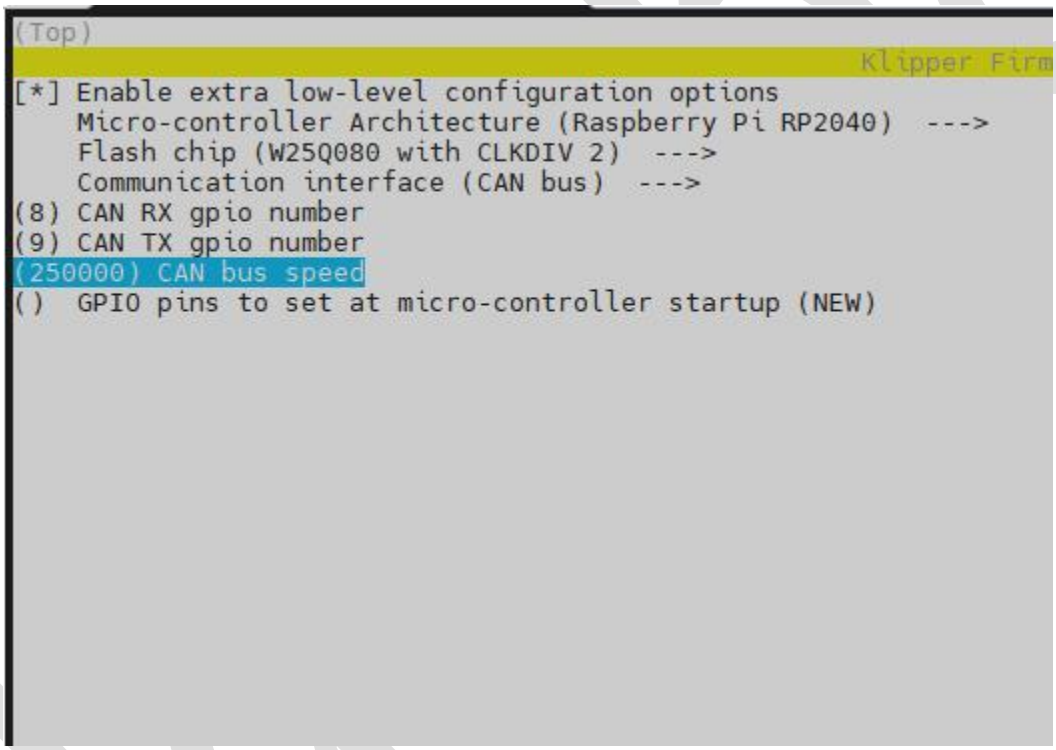

42.000 mm
31.000 mm
9.000 mm
8.940 mm
1.460 mm
3.200 mm
MKS THR42
31.000 mm
42.000 mm


1.400 mm
30.000 mm
24.000 mm
10.530 mm
MKS UTC
54.000 mm
60.000 mm

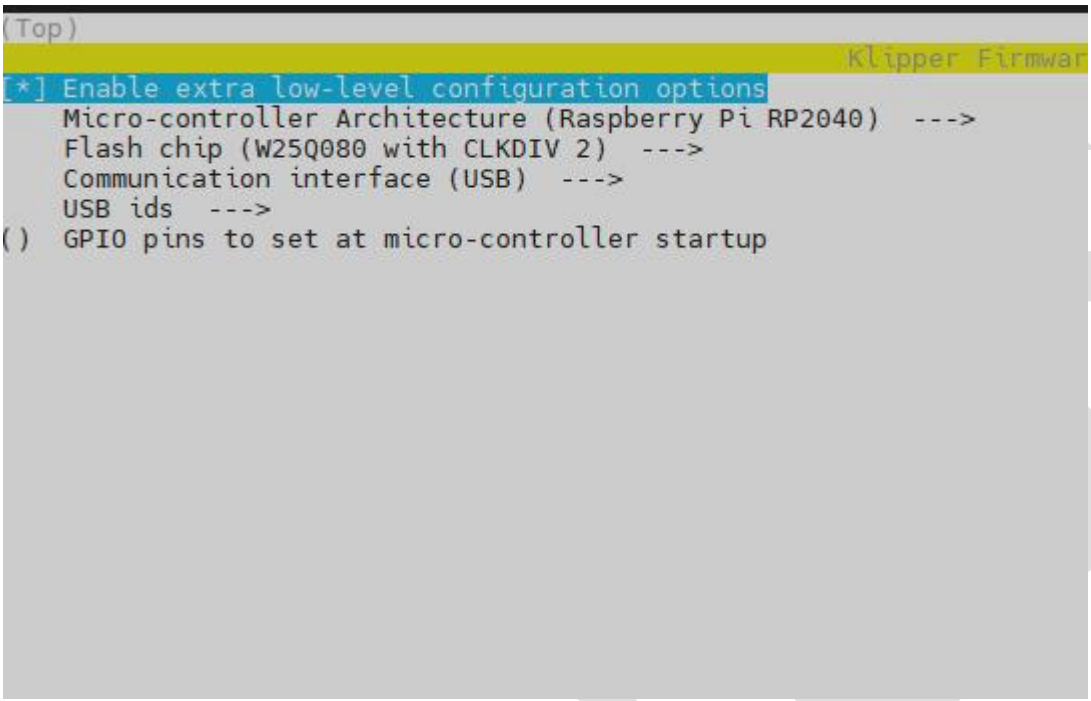
1. Firmware update

The firmware of the module has been flashed by default (the default firmware is usb communication), if you want to update to can communication, you can download the compiled firmware from our github to update, or follow the steps below to configure and compile the firmware to update

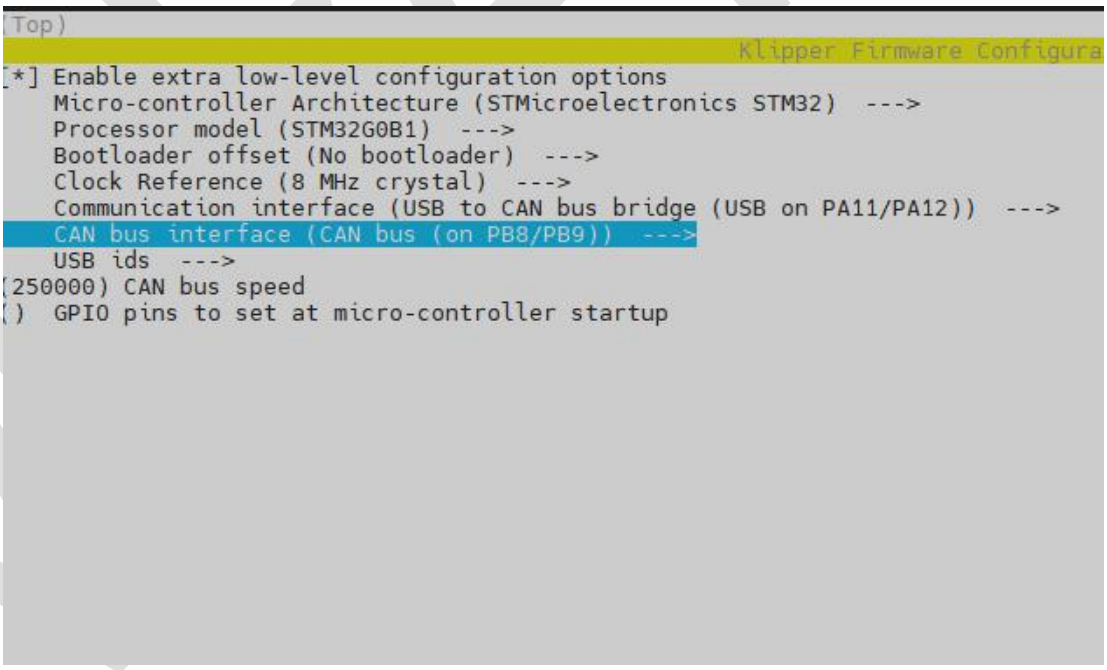
2.1THR 36/42 Configuration (connect with Can)



2.2 THR 36/42 Configuration (connect with USB)

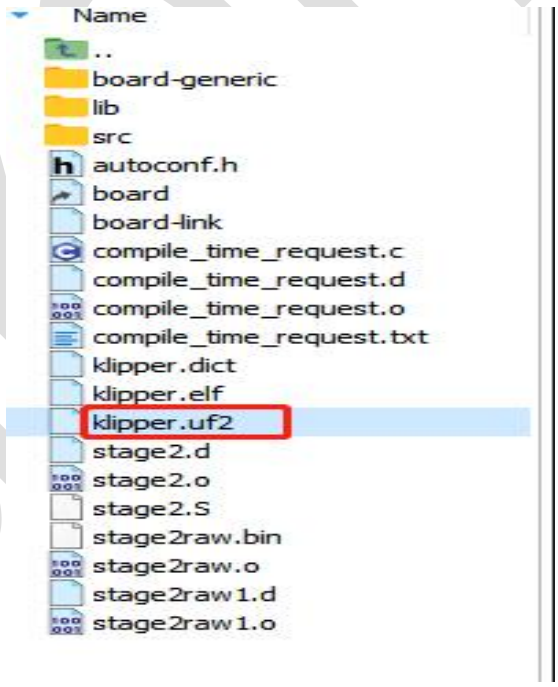


2.3 MKS UTC Configuration



2.4 THR36/42 firmware update

Press and hold the boot button on the THR board, connect the THR board and the computer with a Type_C cable, the computer can recognize the RPI_RP2 disk, copy the compiled firmware klipper.uf2 (path: klipper/out) to the disk, the firmware update completed.



2.5 MKS UTC firmware update

Press and hold the boot button on the THR board, connect the THR board and the computer with a Type_C cable,put the compiled firmware klipper.bin into the MKS UTC DFU-UPLOAD folder,then click DFU-upload-firmware.bat to update the firmware

2.6 klipper system configuration (Can communication)

Enter the command sudo nano /etc/network/interfaces.d/can0 in ssh, copy the following code into the created file, then press ctrl+S to save, and ctrl+X to exit.

(Reference link:https://www.klipper3d.org/CANBUS.html?h=canbus)

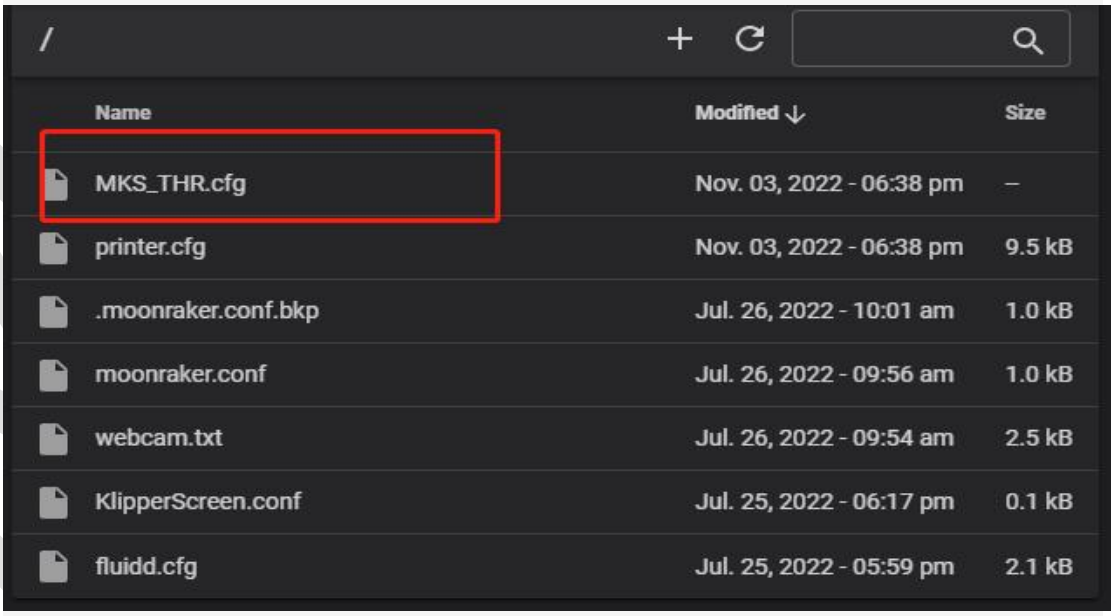
```
auto can0
iface can0 can static
   bitrate 250000
   up ifconfig $IFACE txqueuelen 128
```

3.Configure printer.cfg

1.Add [include MKS_THR.cfg] to the printer.cfg file

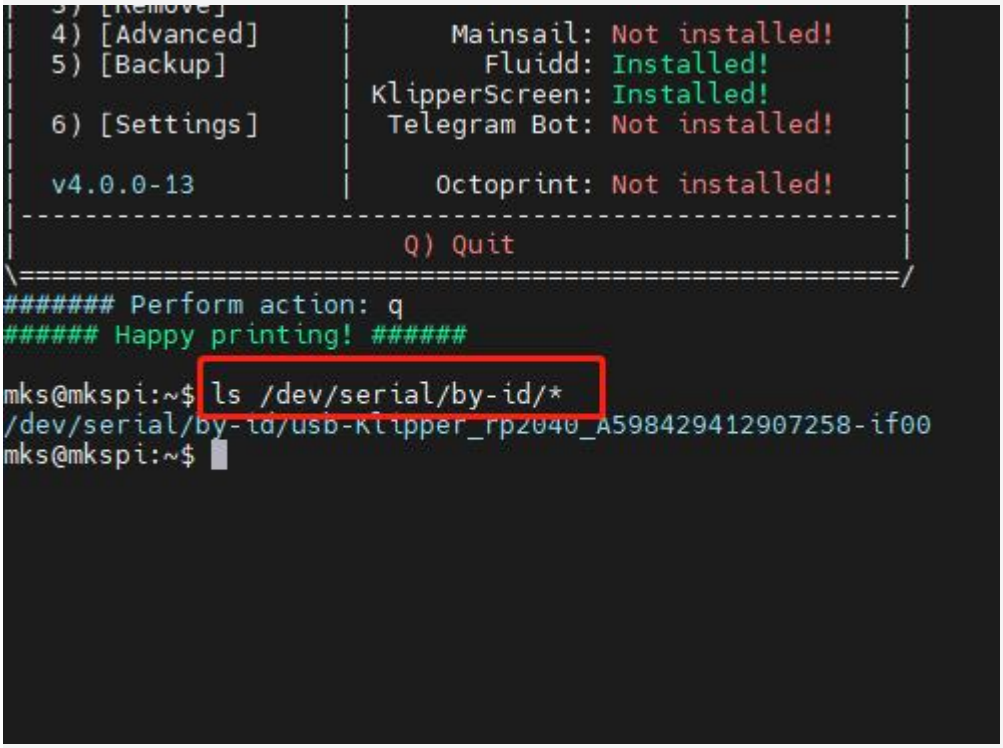
```
# boards. To use this config, the firmware should be compile
# stm32f407. When running "make menuconfig", select the 48Ki
# bootloader, and enable "Serial for communication" and sele

# The "make flash" command does not work on the MKS SKIPR. I
# after running "make", copy the generated "out/klipper.bin"
# file named "mks_skipr.bin" on an SD card and then restart
# MKS SKIPR with that SD card.

# See docs/Config_Reference.md for a description of paramete
View 'include' documentation
[include MKS_THR.cfg]
View 'mcu' documentation
[mcu]
# The hardware use USART1 PA10/PA9 connect to RK3328
#serial: /dev/serial/by-id/usb-Klipper_stm32f407xx_4D0045001
serial: /dev/ttyS0
restart_method: command
```

2.Import the configuration file of MKS_THR.cfg in the file configuration .

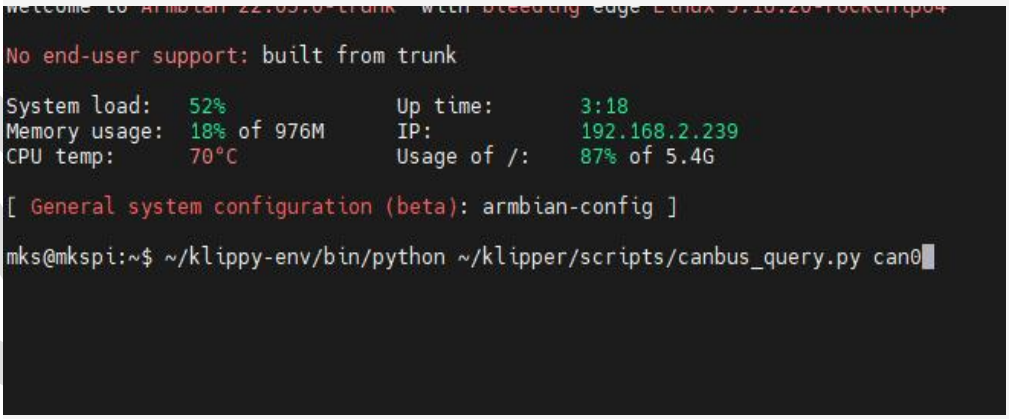


4. ID configuration

1.usb connection Issue commands in ssh ls /dev/serial/by-id/*

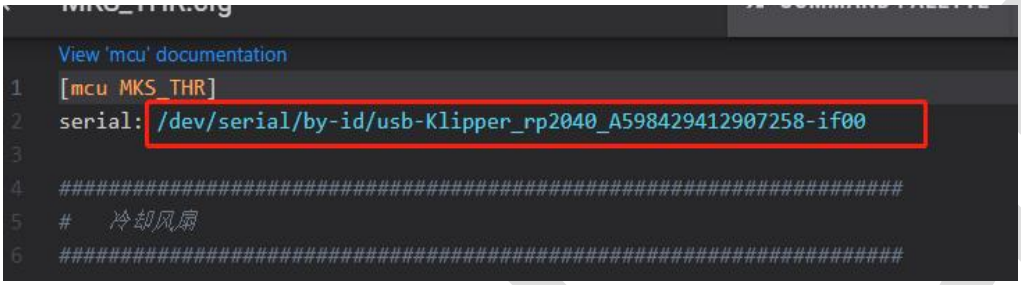


2.Communication with can interface Send commands in ssh ~/klippy-env/bin/python ~/klipper/scripts/canbus_query.py can0



3.Modify the id in the MKS_THR.cfg. If use USB communication, configure it as:

serial:



If it is Can communication，configure it as:

canbus_uuid: