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	microproce ssor:	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**	microproce ssor:	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:

MKS THR36 V1.0 接口说明图
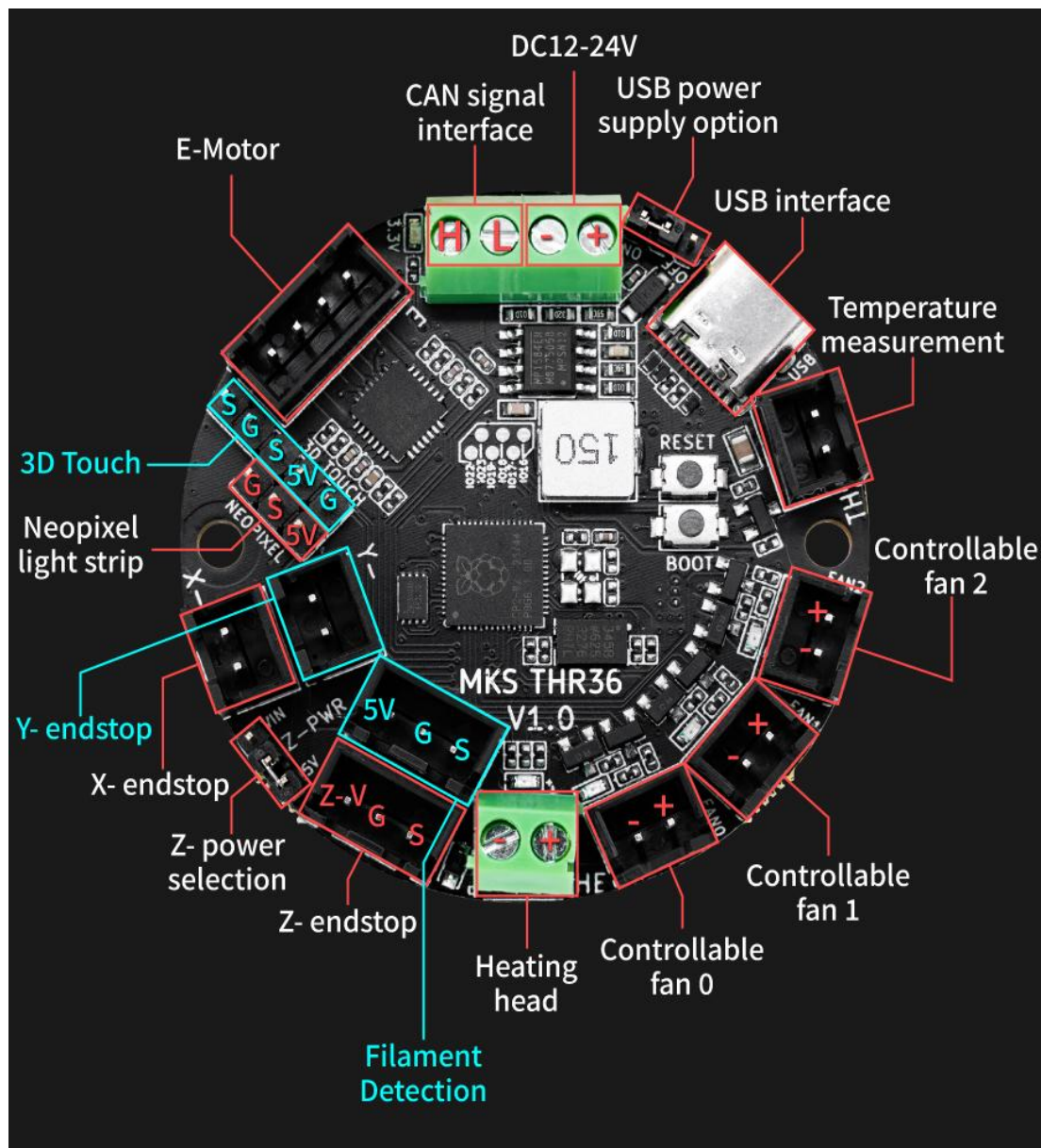
MKS THR42 each port diagram:
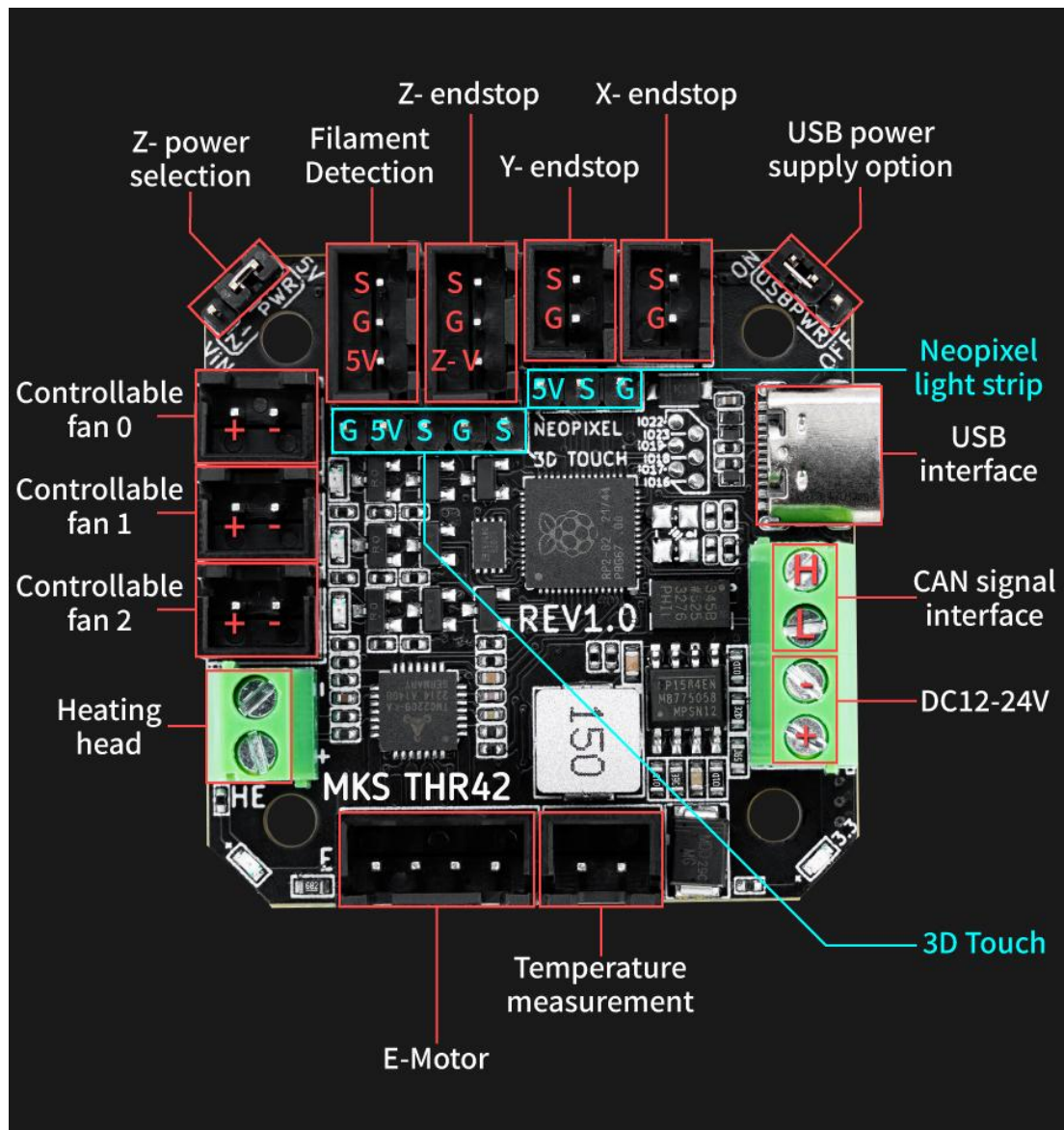
MKS UTC each port diagram:
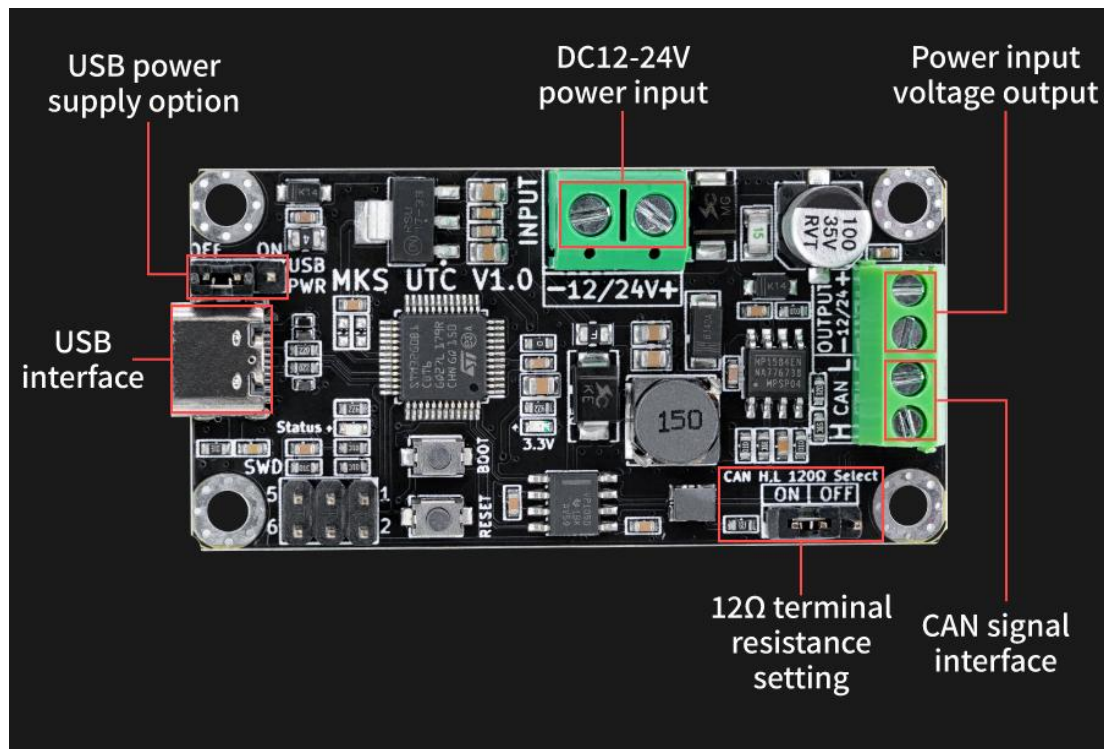
Connection with motherboard (MKS Monster8、MKS PI,Can communication)
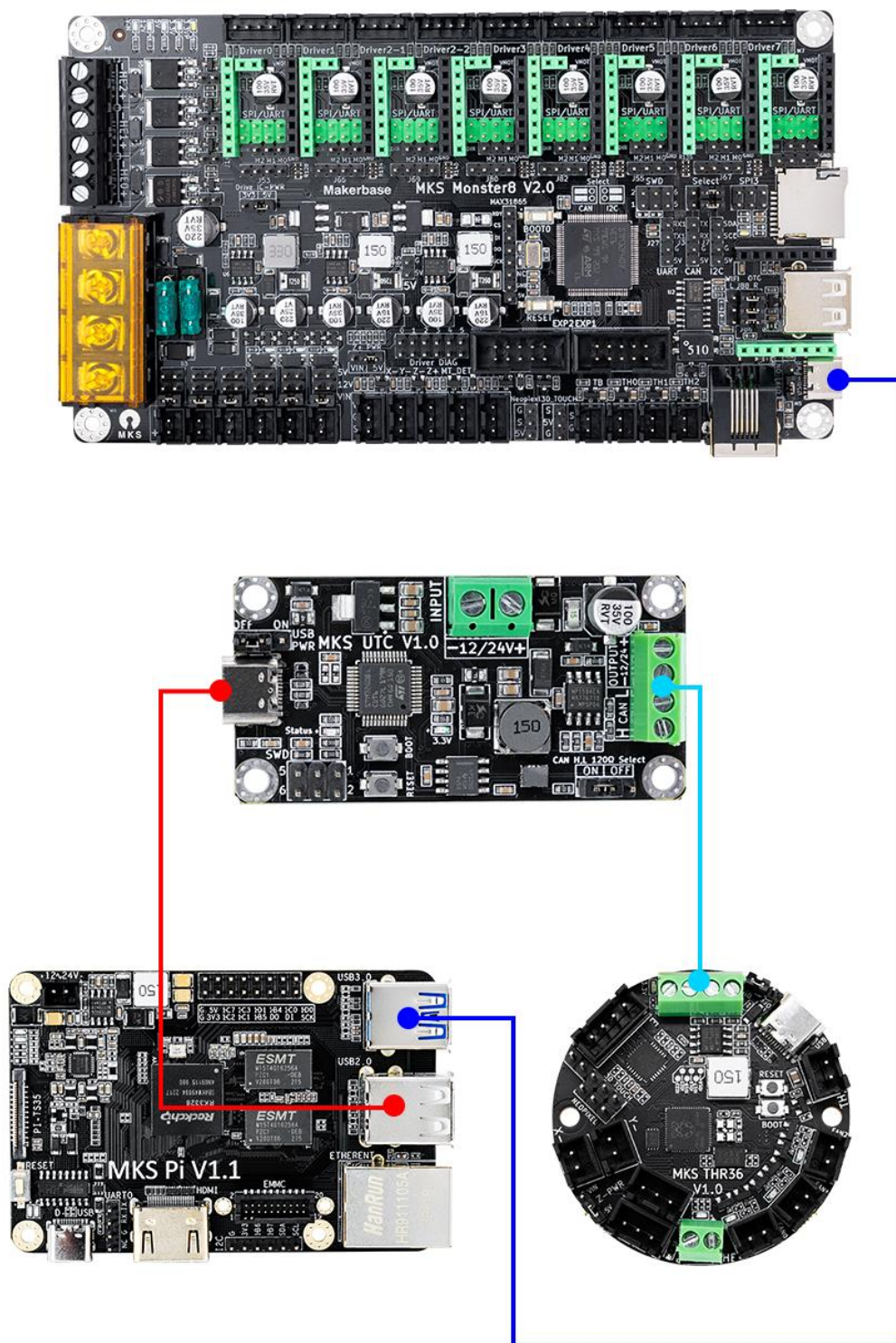
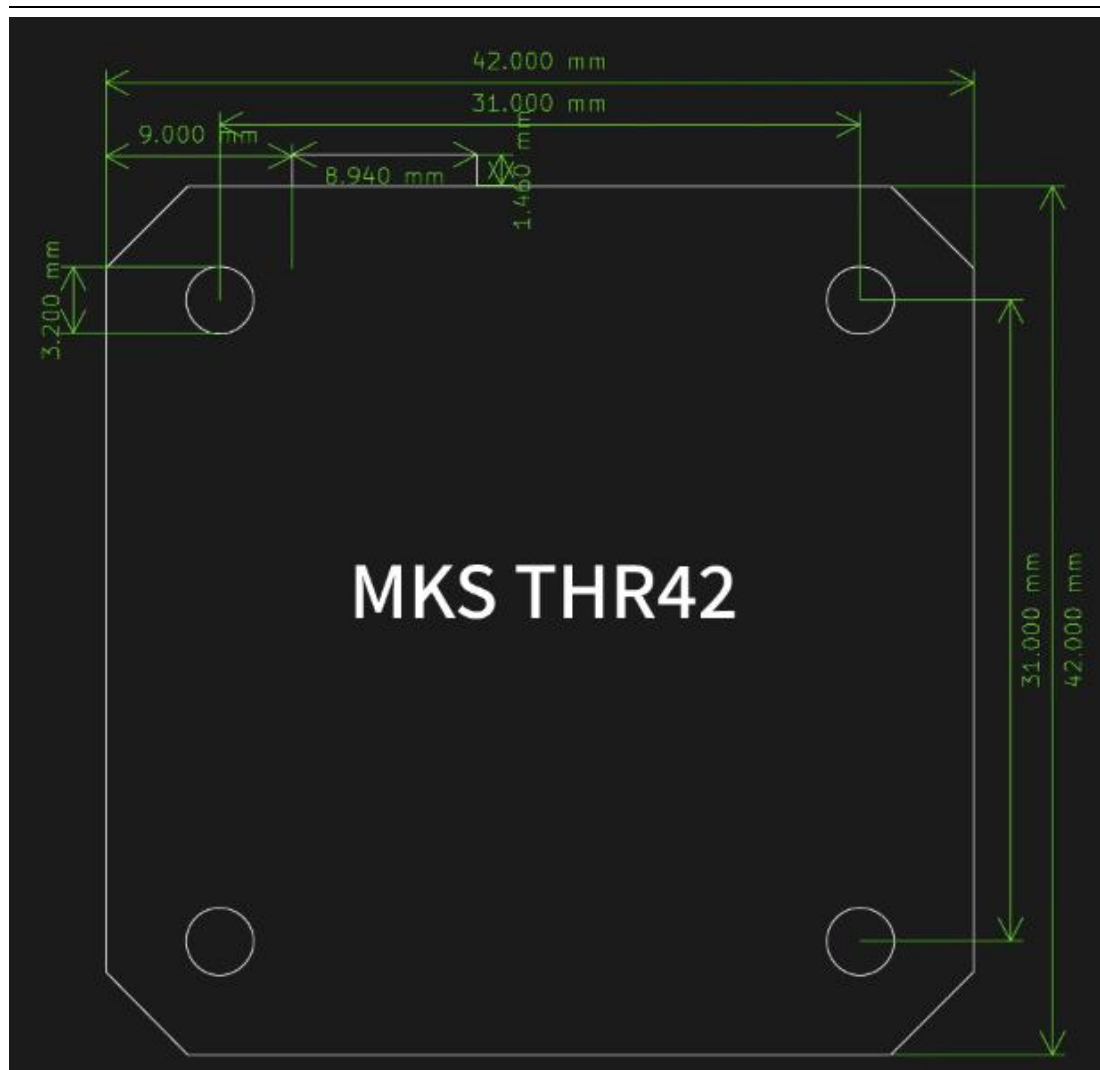# Connection with motherboard (MKS SKIPR,USB communication)
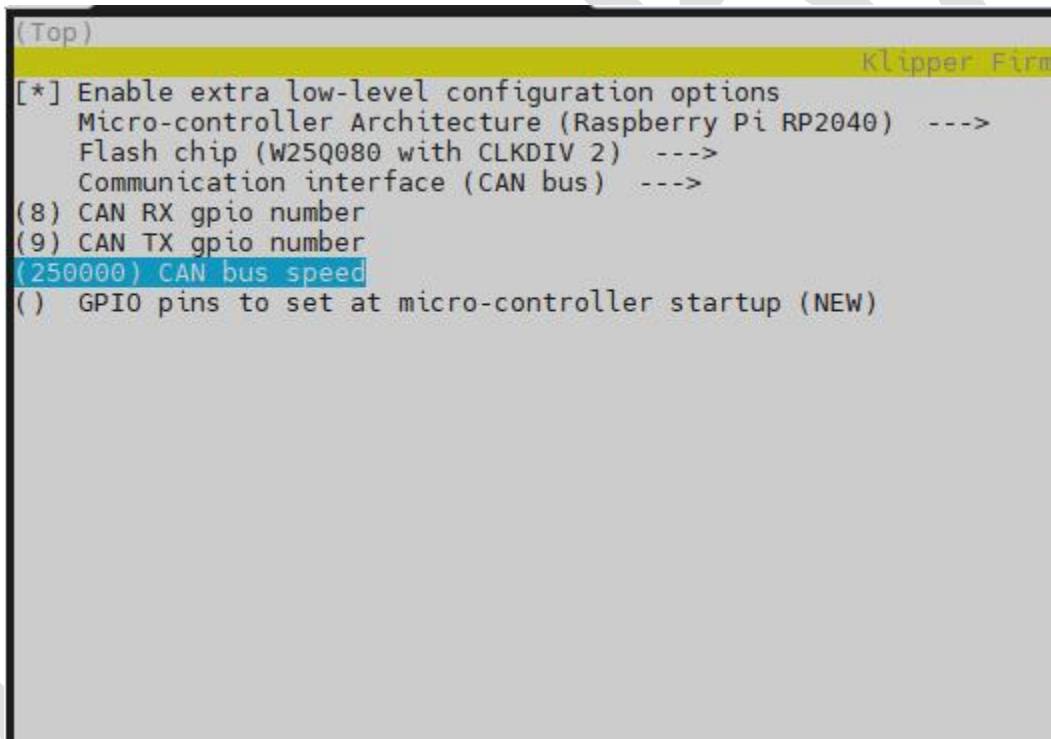
1.4 Dimensions

MKS THR42

MKS UTC
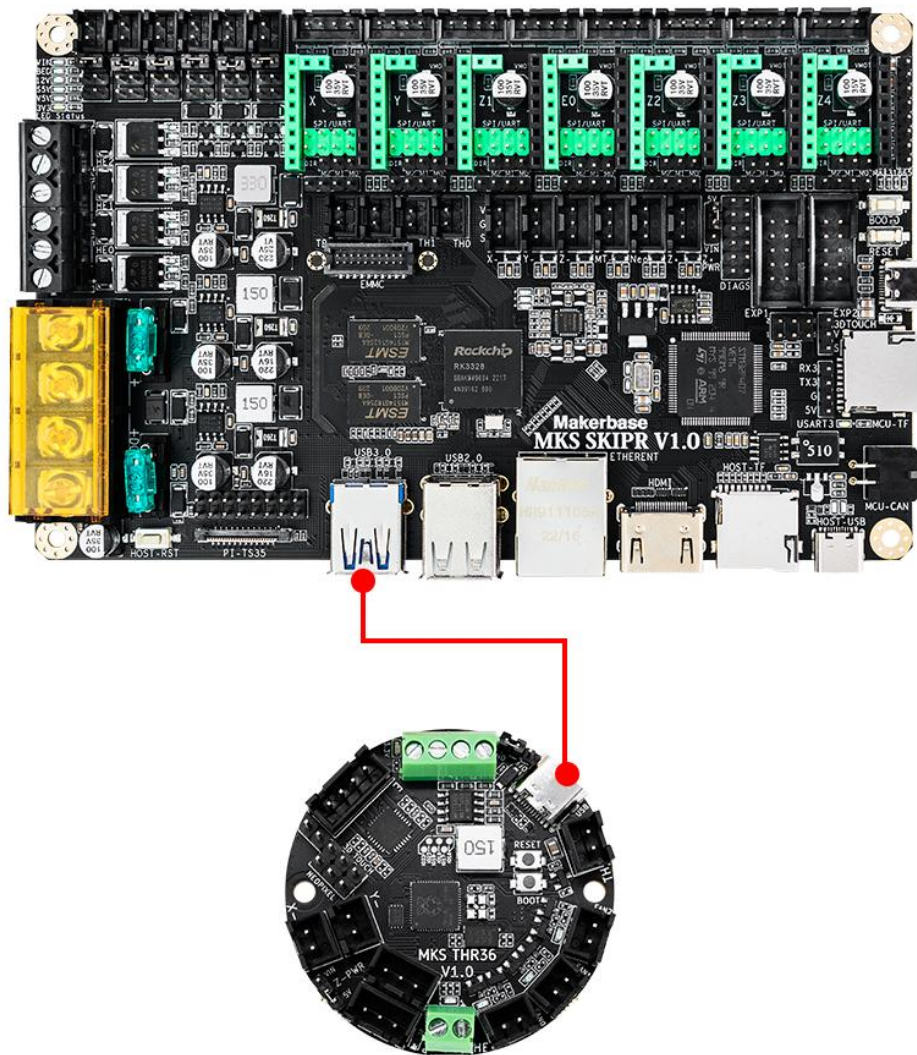
1. Firmware update

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)

```
(Top)
                                           Klipper Firm
[*] Enable extra low-level configuration options
    Micro-controller Architecture (Raspberry Pi RP2040)  --->
    Flash chip (W25Q080 with CLKDIV 2)  --->
    Communication interface (CAN bus)  --->
(8) CAN RX gpio number
(9) CAN TX gpio number
(250000) CAN bus speed
() GPIO pins to set at micro-controller startup (NEW)
```

2.2 THR 36/42 Configuration (connect with USB)

```
(Top)
                                                    Klipper Firmwar
[*] Enable extra low-level configuration options
    Micro-controller Architecture (Raspberry Pi RP2040)  --->
    Flash chip (W25Q080 with CLKDIV 2)  --->
    Communication interface (USB)  --->
    USB ids  --->
() GPIO pins to set at micro-controller startup
```

2.3 MKS UTC Configuration

```
(Top)
                                                    Klipper Firmware Configura
[*] Enable extra low-level configuration options
    Micro-controller Architecture (STMicroelectronics STM32)  --->
    Processor model (STM32G0B1)  --->
    Bootloader offset (No bootloader)  --->
    Clock Reference (8 MHz crystal)  --->
    Communication interface (USB to CAN bus bridge (USB on PA11/PA12))  --->
    CAN bus interface (CAN bus (on PB8/PB9))  --->
    USB ids  --->
(250000) CAN bus speed
() GPIO pins to set at micro-controller startup
```

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.
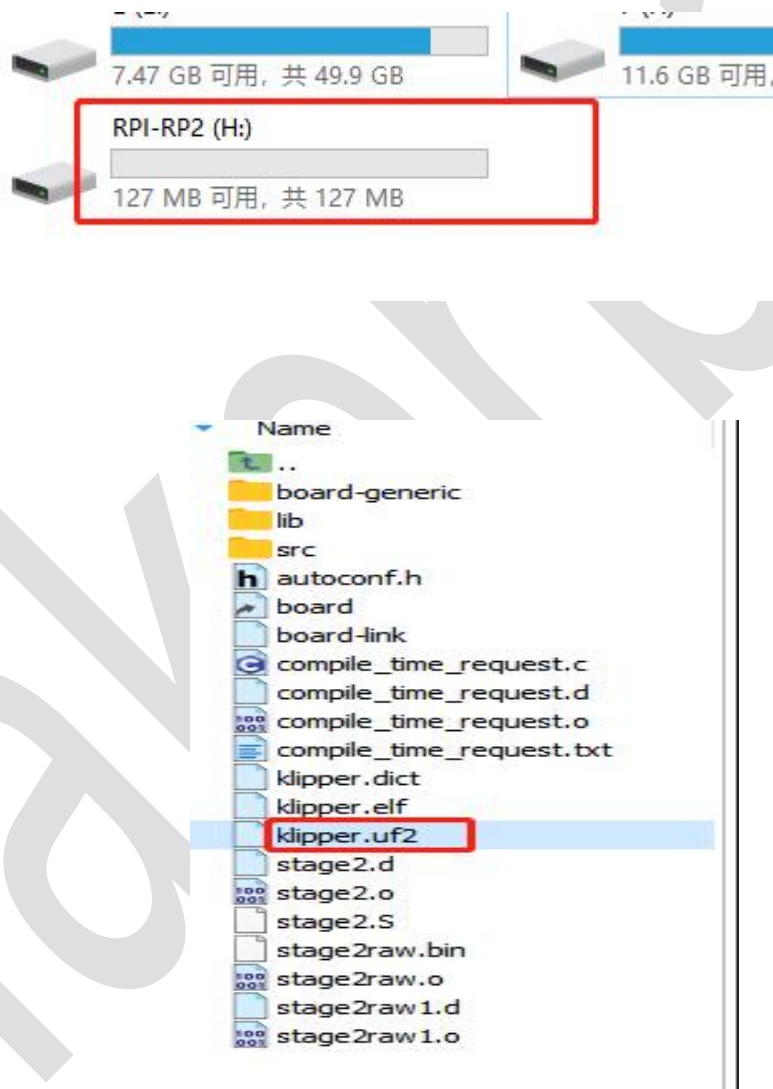
2.5 MKS UTC firmware update

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

名称	修改日期	类型	大小
DFU-Upload-firmware.bat	2022/10/28 10:11	Windows 批处理...	1 KB
dfu-util.exe	2019/2/13 7:00	应用程序	122 KB
klipper.bin	2022/10/28 10:10	BIN 文件	26 KB
libusb-1.0.dll	2019/2/13 7:00	应用程序扩展	196 KB
README.md	2022/10/28 10:14	Markdown 源文件	1 KB
zadig-2.4.exe	2019/8/22 18:18	应用程序	5,038 KB

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

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: