BIGTREETECH

HBB&HBB Fe V1.0

User Manual

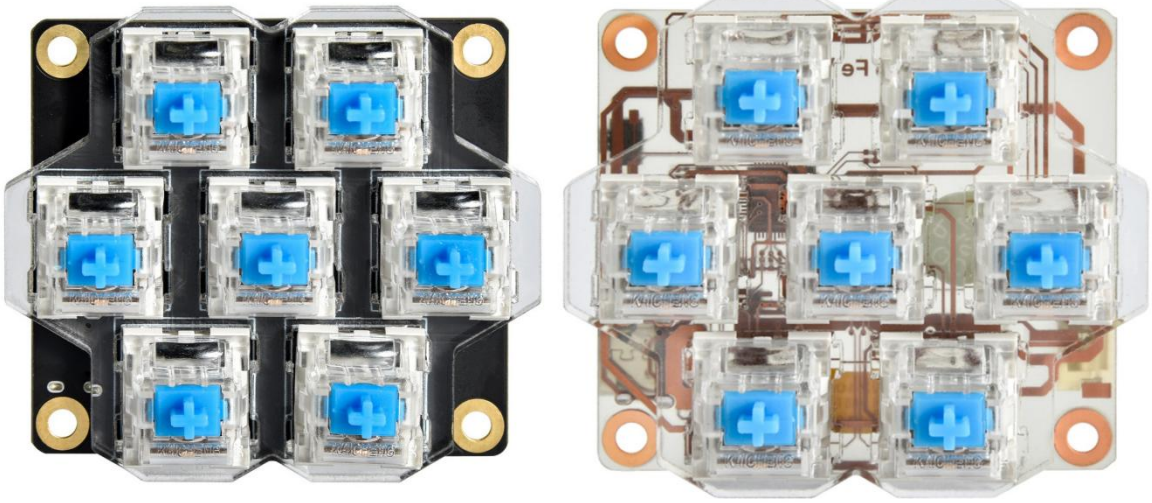


Table of Content

Revision Log

Version	Date	Revisions
v1.00	April 17th, 2024	Initial Version

1. Product Profile

BIGTREETECH HBB V1.0 is a keyboard with preset keys and RGB lighting for enhanced Klipper workflow.

1.1. Feature Highlights

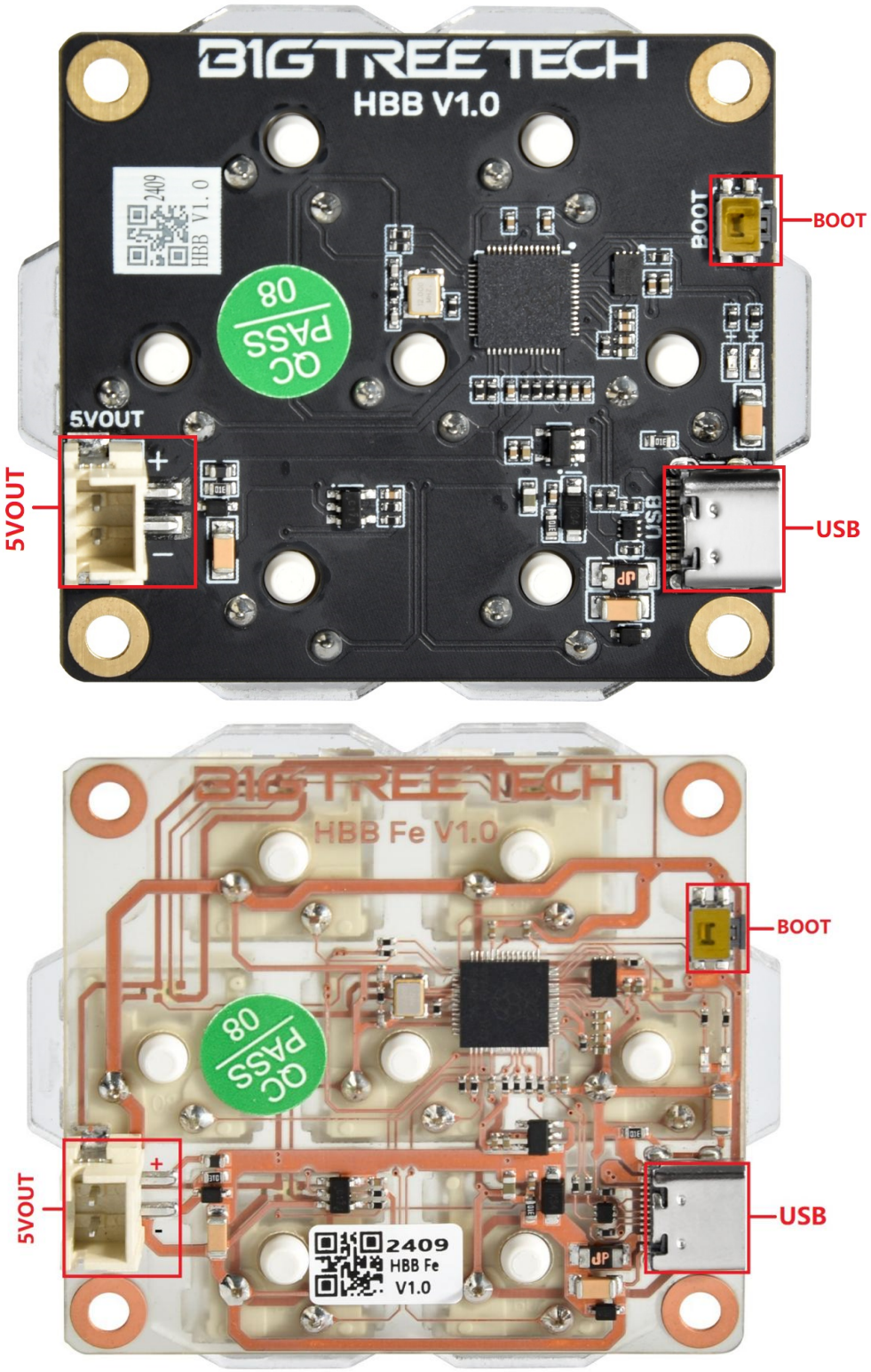
- USB Communication;
- Configurable via Klipper firmware when connected to a Pi;
- Seven buttons and RGB lights, with functionality customizable through configuration files by the user;
- Dedicated BOOT button reserved for easy firmware flashing during DIY projects;
- Provides three sets of casing models, allowing users to print and assemble their own casings and enjoy DIY fun;
- Detachable keycaps for easy DIY customization;
- Features clicky blue mechanical switches, significantly enhancing user experience.

1.2. Specifications

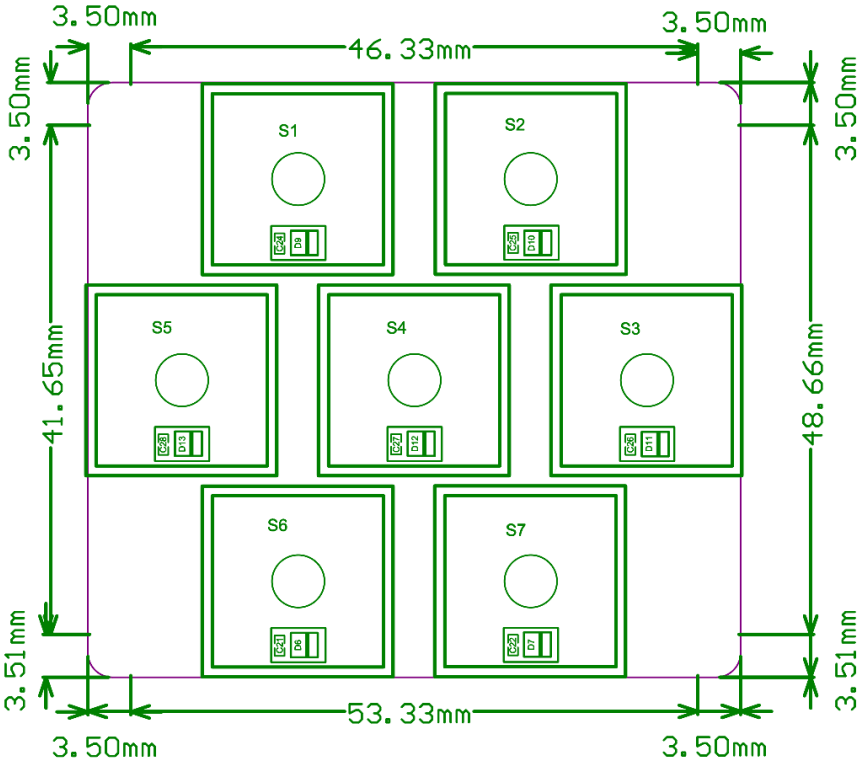
- Dimensions: 52.44*59.55mm
- Power Input: DC 5V
- Logic Voltage: DC 3.3V
- Number of Buttons: 7 PCS Blue Switches
- Number of RGB Lights: WS2812B x 7PCS

2. Peripheral Interface

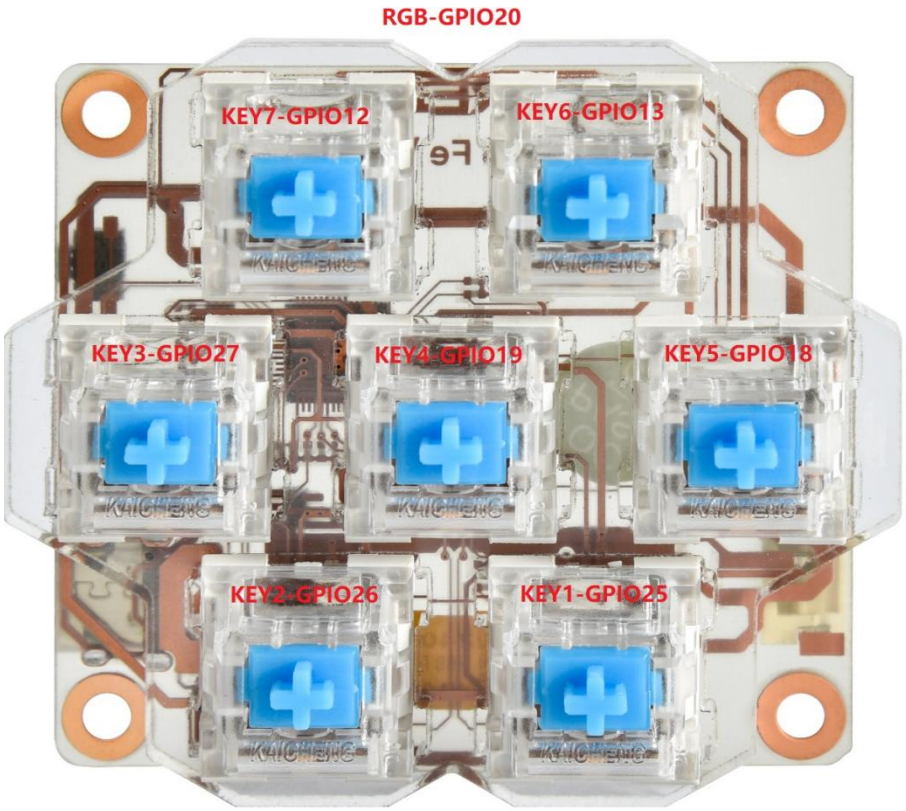
2.1. Interface Diagram



2.2. Dimensions

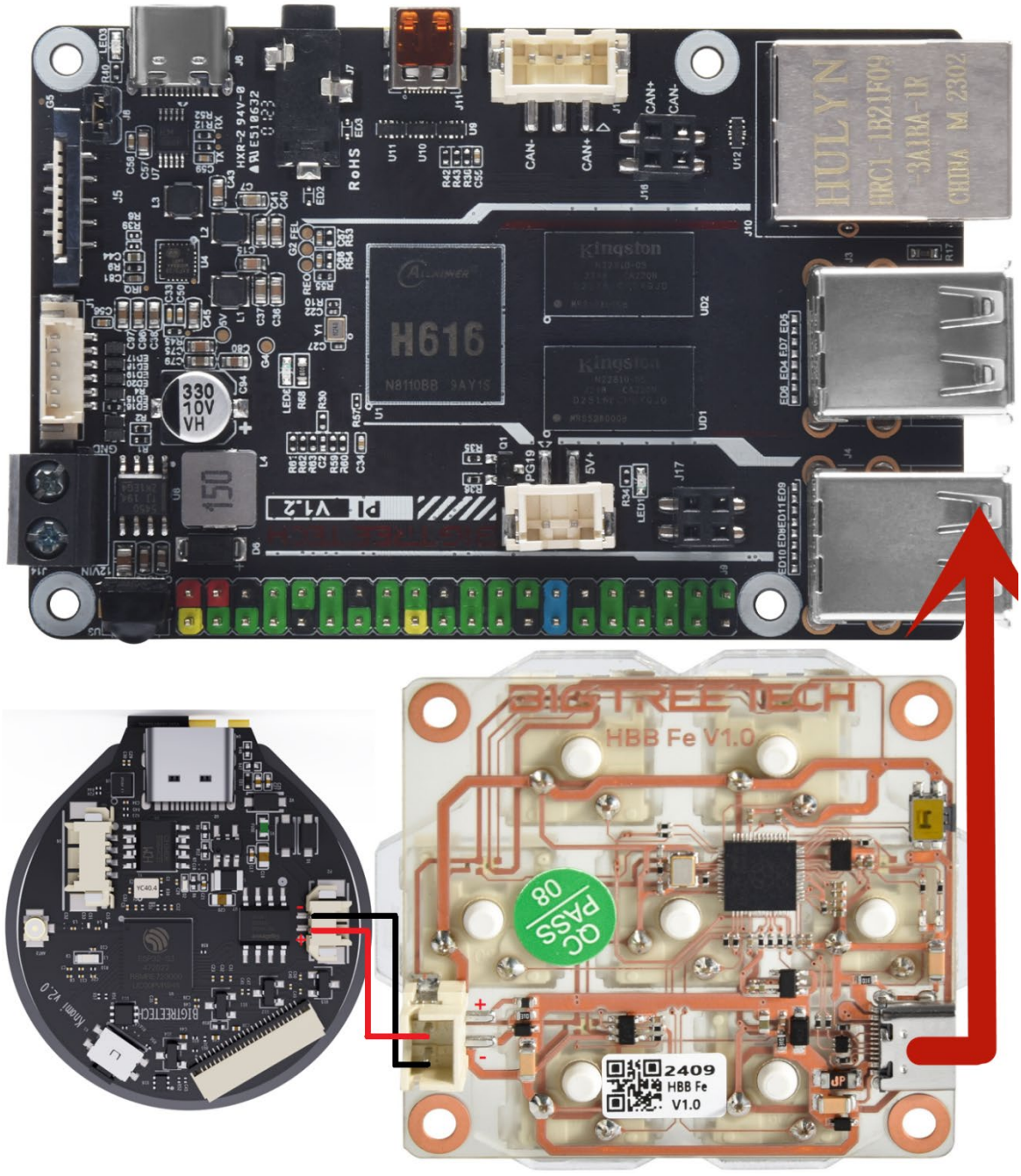


2.3. Pin Description

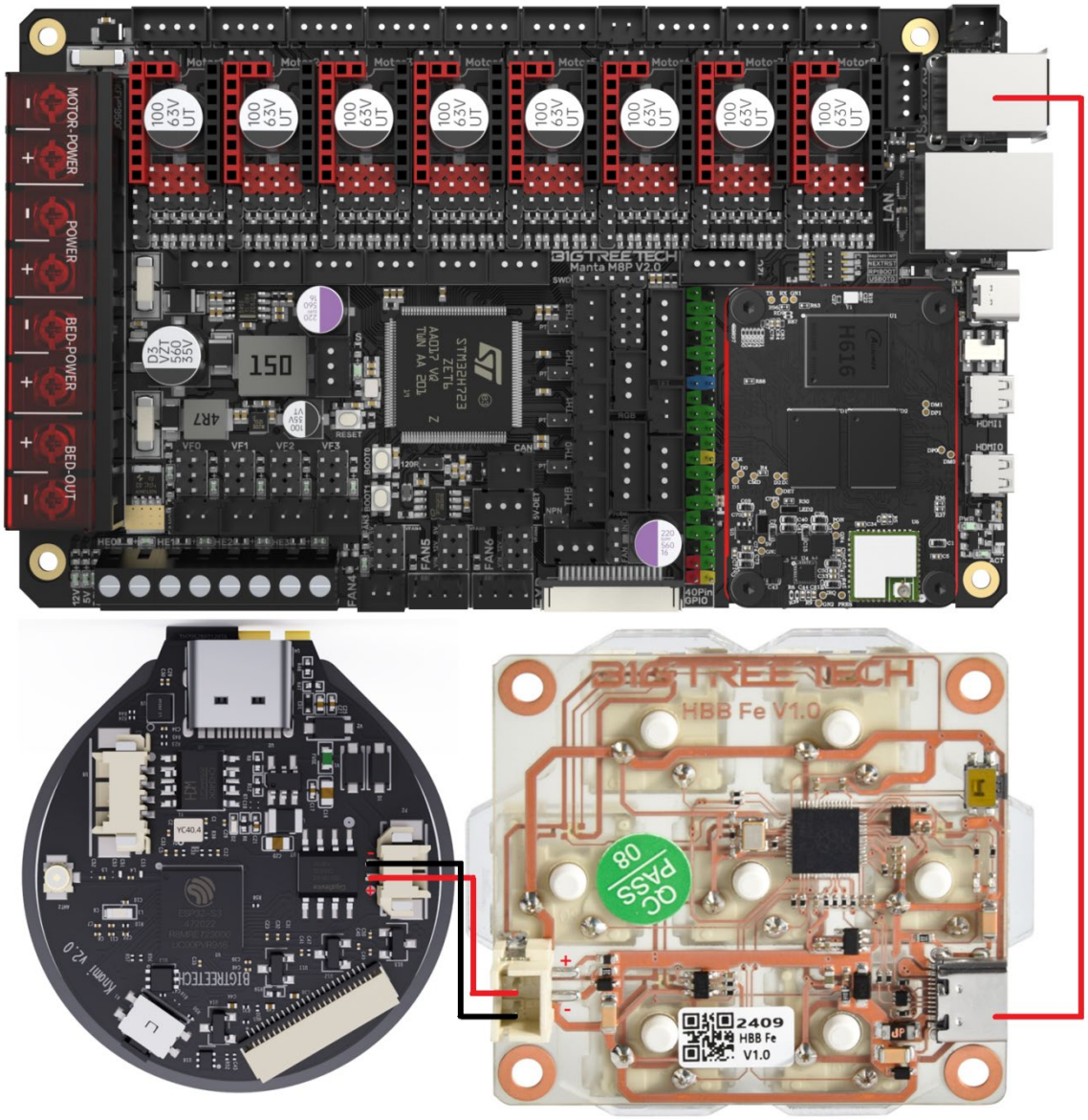


3. Connection Examples

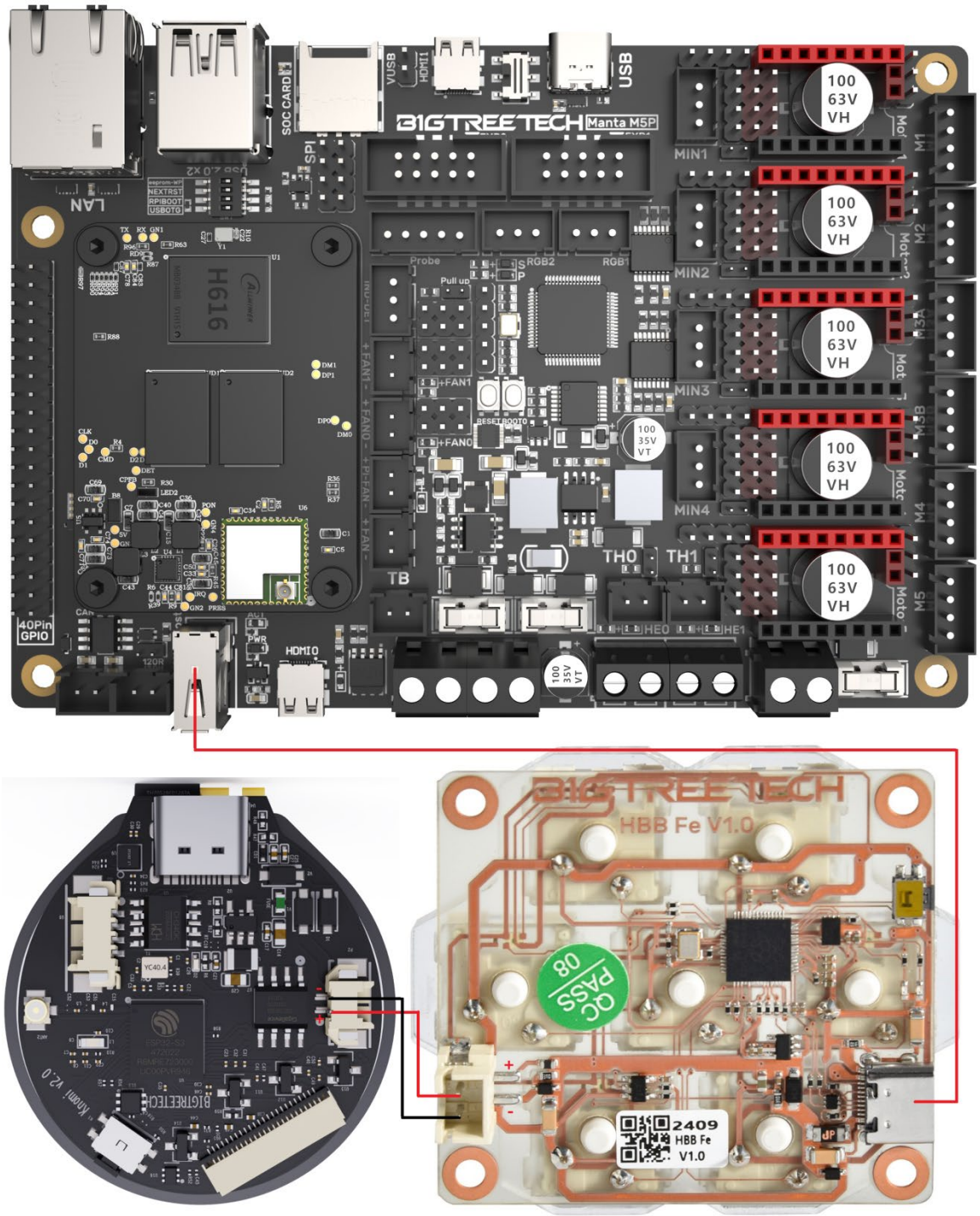
3.1. HBB or HBB Fe + Pi V1.2 + Knomi V2



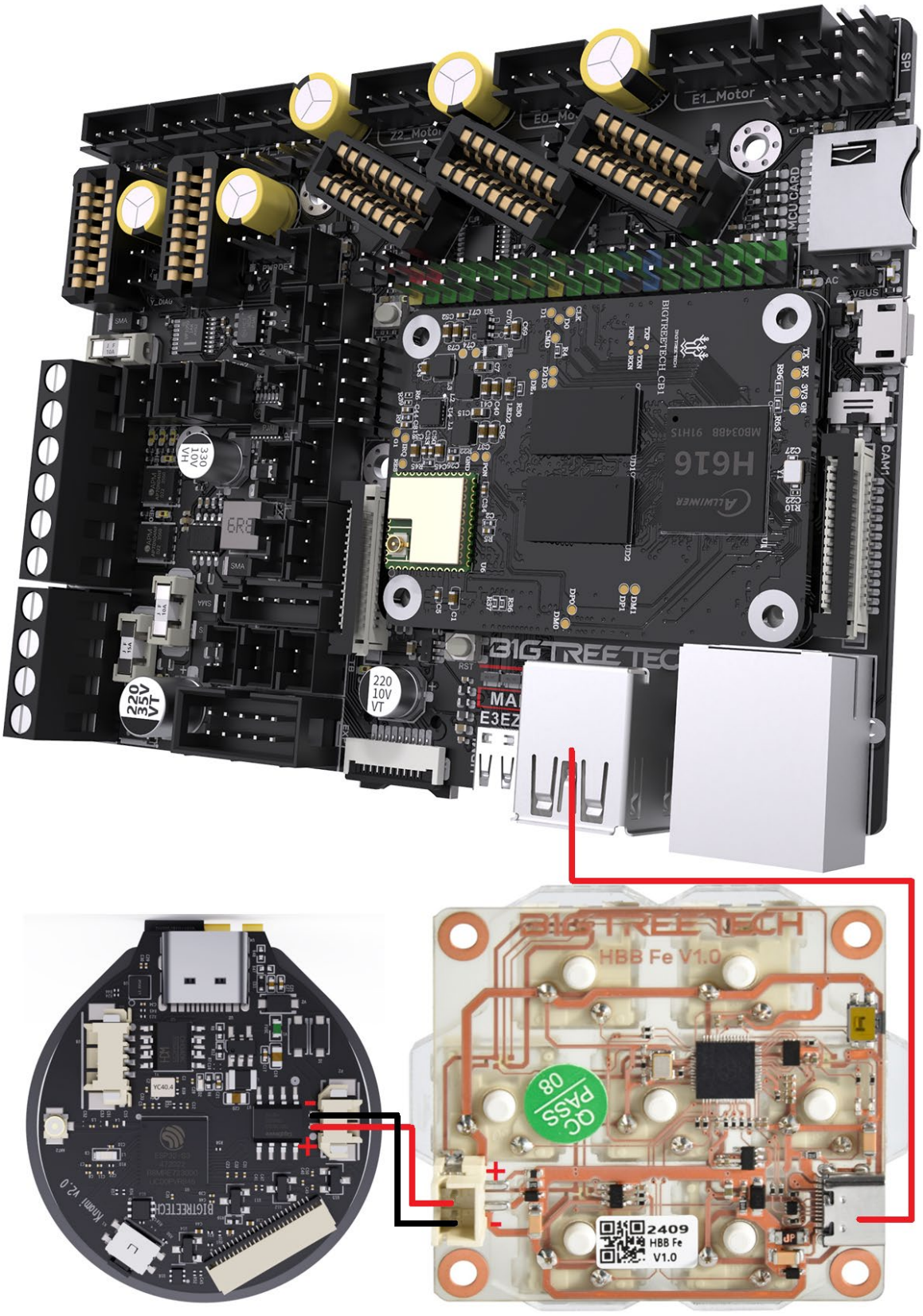
3.2. HBB or HBB Fe + Manta M8P + CB1 + Knomi V2



3.3. HBB or HBB Fe + Manta M5P + CB1 + Knomi V2



3.4. HBB or HBB Fe + Manta E3EZ + CB1 + Knomi V2



3.5. Printable Housing Model

4. Klipper

4.1. Compiling the Firmware

1. SSH into the host machine and enter the following commands in the terminal:
   cd ~/klipper/
   make menuconfig
   Use the following configuration to compile the firmware

```
(Top)
                    Klipper Firmware Configuration
[*] Enable extra low-level configuration options
    Micro-controller Architecture (Raspberry Pi RP2040)  --->
    Bootloader offset (No bootloader)  --->
    Flash chip (W25Q080 with CLKDIV 2)  --->
    Communication interface (USB)  --->
    USB ids  --->
()  GPIO pins to set at micro-controller startup
```

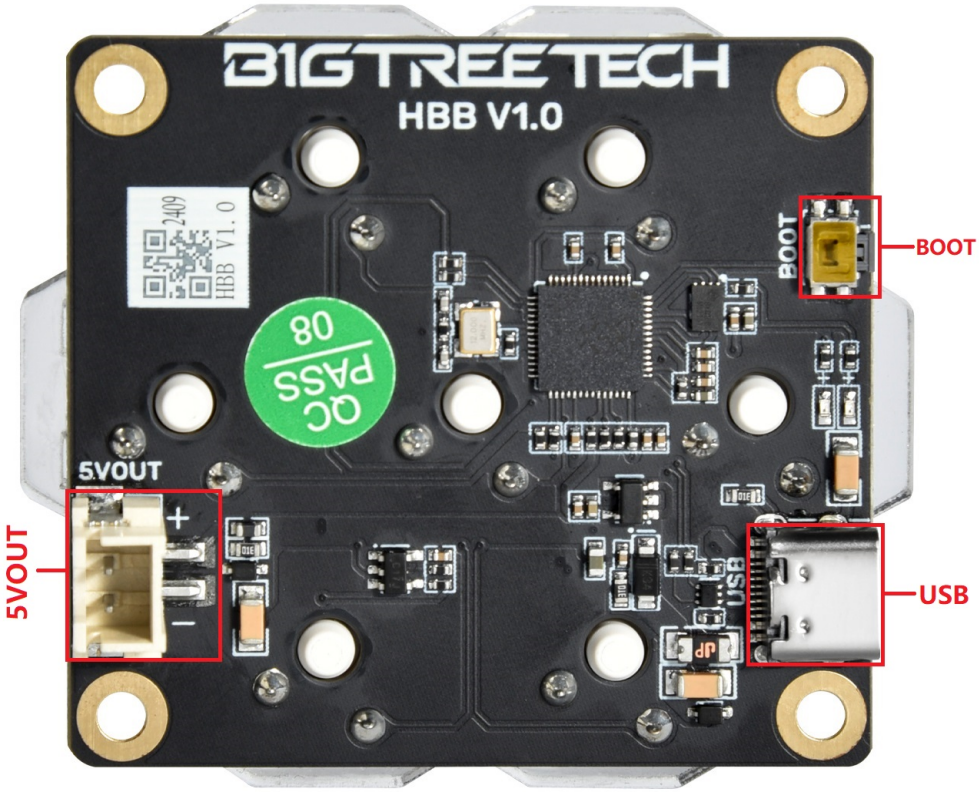
   [*] Enable extra low-level configuration optionsMicro-controller
   Micro-controller Architecture (Raspberry Pi RP2040) --->
   Bootloader offset (No bootloader) --->
   Flash chip (W25Q080 with CLKDIV 2) --->
   Communication interface (USB) --->
   USB ids --->
   () GPIO pins to set at micro-controller startup

2. After configuring, enter ‘q’ to exit the configuration interface. When asked to save configuration, select ‘Yes’.

3. Enter make to compile the firmware. When make is completed, the required klipper. uf2 firmware will be generated in the home/pi/klipper/out folder.

4.2. Firmware Update via DFU

1. Hold the Boot button and connect to the host machine using a Type-C cable to enter DFU mode.



2. In the SSH terminal command line, enter lsusb to query the DFU device ID.

```
biqu@BTT-CB1:~$ lsusb
Bus 008 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 004 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 007 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 006 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 002 Device 006: ID 2e8a:0003 Raspberry Pi RP2 Boot
Bus 002 Device 002: ID 1a40:0101 Terminus Technology Inc. Hub
Bus 002 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 005 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
biqu@BTT-CB1:~$
```

3. Enter cd klipper to navigate to the klipper directory, then enter

   make flash FLASH_DEVICE=2e8a:0003

   to start flashing the firmware (note: replace 2e8a:0003 with the actual device ID obtained in the previous step).

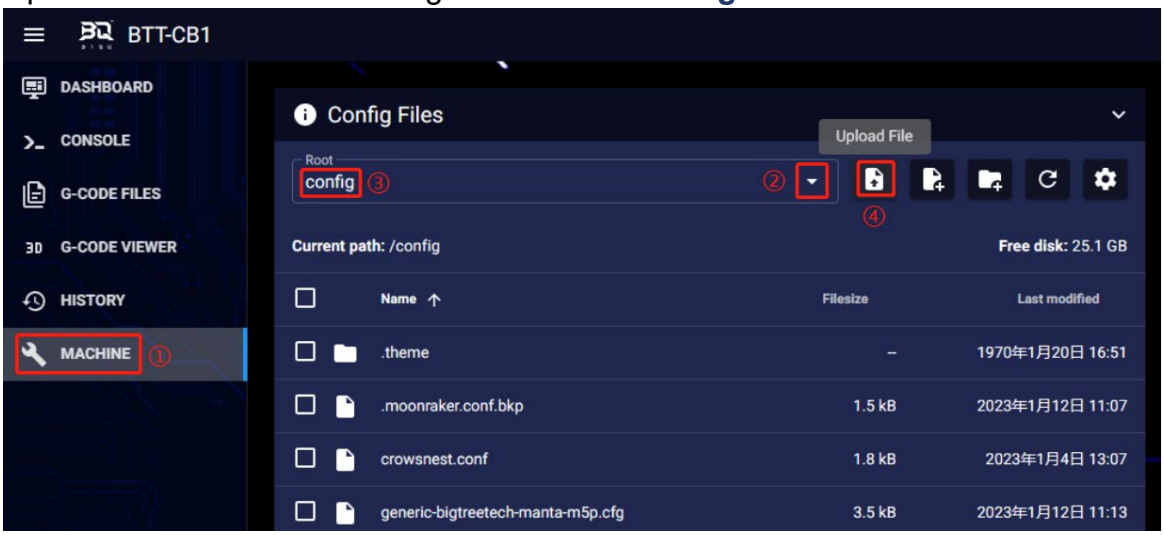
4. If using USB communication, there is no need to manually press the Boot button to enter DFU mode for subsequent updates after the first flashing is completed. Directly enter

   make flash FLASH_DEVICE=/dev/serial/by-id/usb-Klipper_rp2040_hbb-if00

to flash the firmware (note: replace **/dev/serial/by-id/xxx** with the actual ID obtained in the previous step).

4.3. **Configuring Klipper**

1. Download the reference configuration file named “sample-bigtreetech-hbb.cfg” from https://github.com/bigtreetech/HBB
2. Upload the motherboard configuration file to **Configuration Files**.



3. Add this board’s configuration to the “printer.cfg” file:
[include sample-bigtreetech-hbb.cfg]
4. Modify the configuration file’s ID to match the actual board ID.

5. Precautions

1. Be mindful of the USB port's placement during installation to avoid interference and damage to the USB connector.

2.When connecting to Knomi series, pay attention to the wire sequence to avoid incorrect connections and potential damage, especially with the HBB Fe, which lacks silk screening and requires following the manual’s wiring instructions.

3.This product includes seven buttons and seven RGB lights, with customizable functions. Ensure to check the IO allocation for each button to avoid firmware configuration errors.

If you need further resources for this product, you can find them at [GitHub](https://github.com/bigtreetech/). If you cannot find what you need, you may contact our after-sales support(service005@biqu3d.com).

If you encounter any other problems during use or have suggestions or feedback, please contact us. Thank you for choosing BIGTREETECH products.