BIGTREETECH

SKSM

User Manual

Revision Log

Version	Date	Revisions
v1.00	April 19th, 2024	Initial Version

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1. Product Information

The SKSM is a handy external module designed for 3D printers. Its key feature is the ability to save your printing data during a power outage. This module is specifically compatible with 3D printers that use 24V DC power supply units, such as the Ender 3.

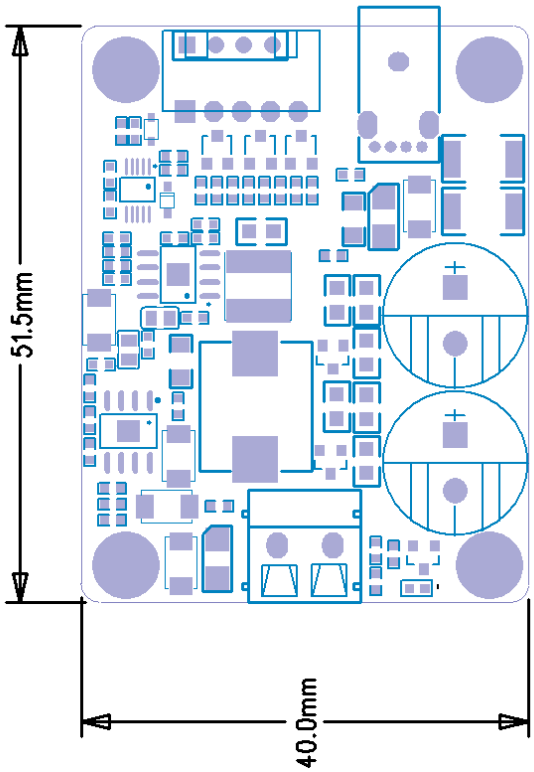
1.1. Feature Highlights

- Smart Power Outage Detection: It has a high-sensitivity MCU chip that can quickly detect power losses.
- Backup Power: Equipped with two 2.7V 20F supercapacitors, it ensures your printer has enough power to save your work during an outage.
- Safe Power Input: Comes with reverse polarity protection to safeguard against wrong connections, thus protecting your printer’s circuit board.
- Compact Design: Its small size makes installation simple and hassle-free.
- Power Output: Offers a Type-C output with +5V/2A power.
- Main Function: Its primary role is to enable saving your print data during power outages.

1.2. Specifications

- Size: 40.8mm x 32.9mm
- Input Power: DC7-24V
- Outputs: BAT +5V/2A
- Outputs: USB +5V/2A
- Charging Time: 100 seconds (starting from power on)
- Battery Output Power: 5W with a discharge time of 13 seconds (please be aware of the load power)
- Compatibility: 3D printers powered by DC 24V using Klipper (such as the Ender3)

1.3. Dimensions



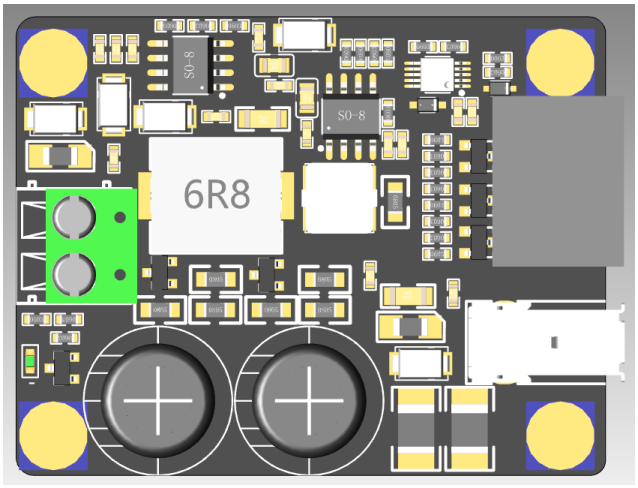
2. Powering Up

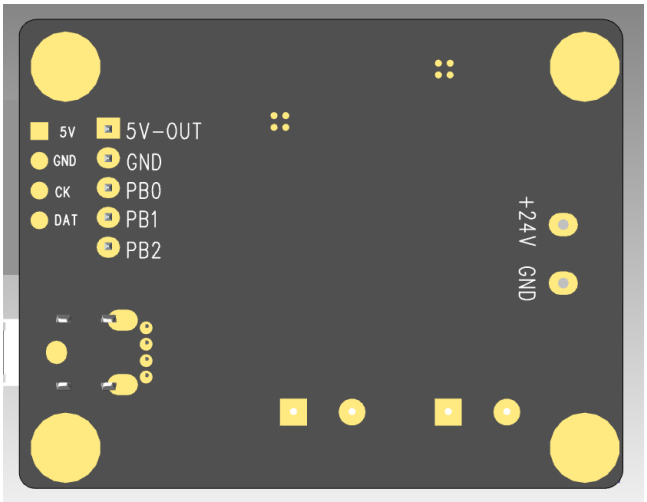
When the SKSM is powered on, the red LED in the upper left corner (which flashes for 15 seconds when the capacitors are completely discharged) indicates its status. The red light flashes during charging, and once the BAT+5V begins to discharge normally, the red light stays on continuously.

Note: It's designed for 24V DC input only. Always check the polarity before connecting, and connect only when the power is off. Incorrect connections are not covered under warranty.

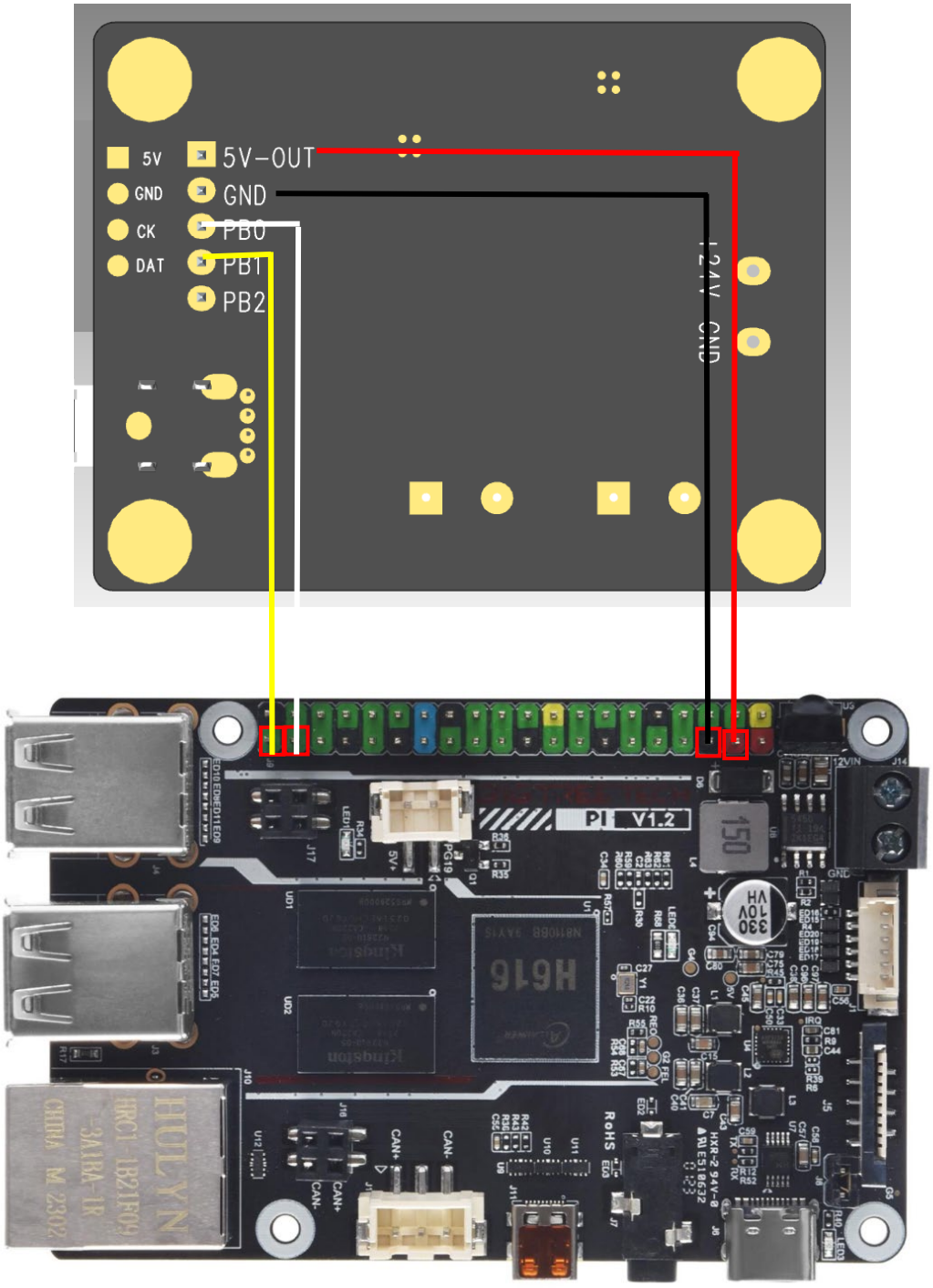
3. Connecting to Your Printer

The SKSM uses a XH2.54mm 5P cable for communication with the printer's mainboard. Make sure the "PB0 PB1 PB2" signal lines are correctly connected; otherwise, the power outage save feature won't work.

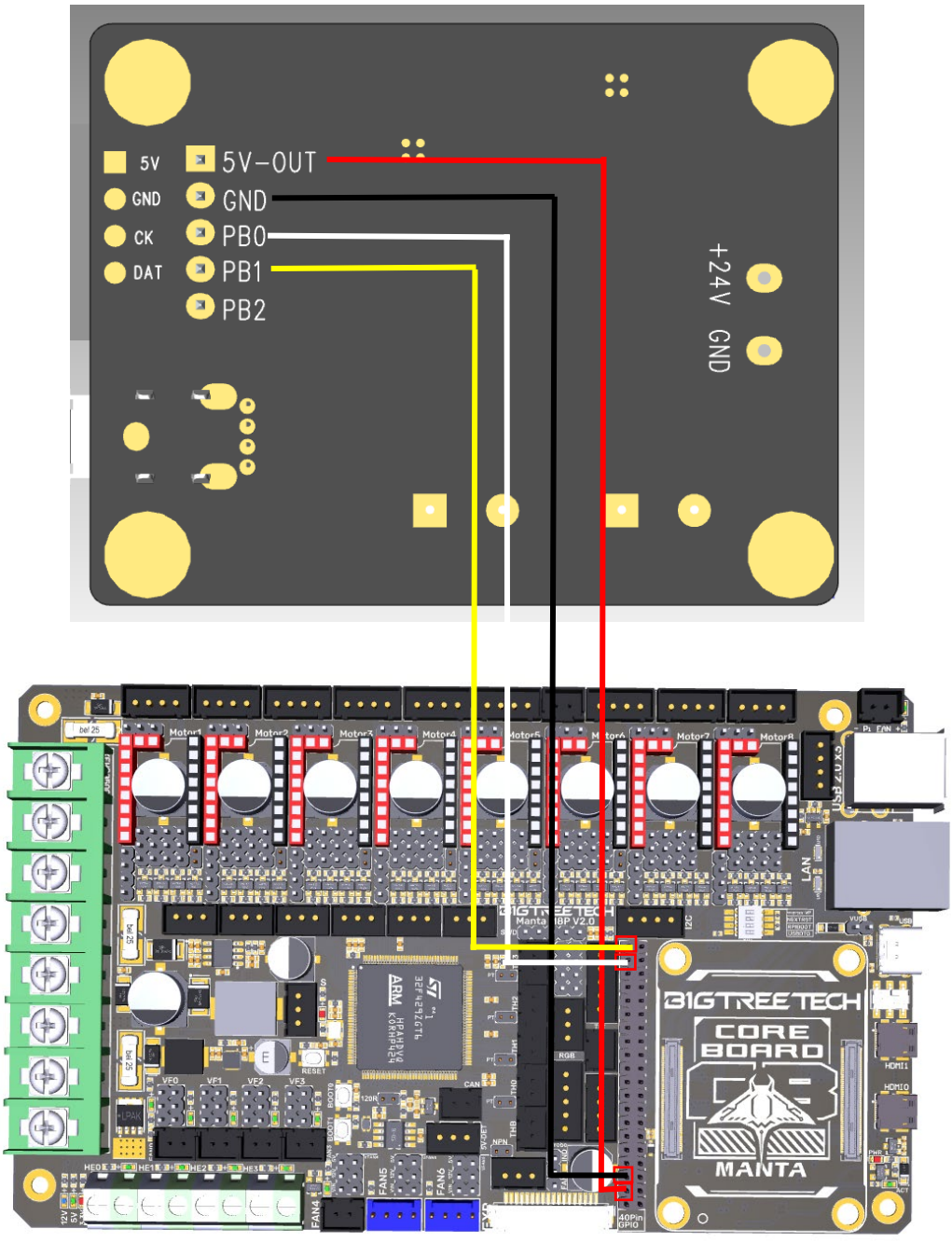

6R8
SO-8
SO-8


5V
GND
CK
DAT
5V-OUT
GND
PB0
PB1
PB2
+24V
GND

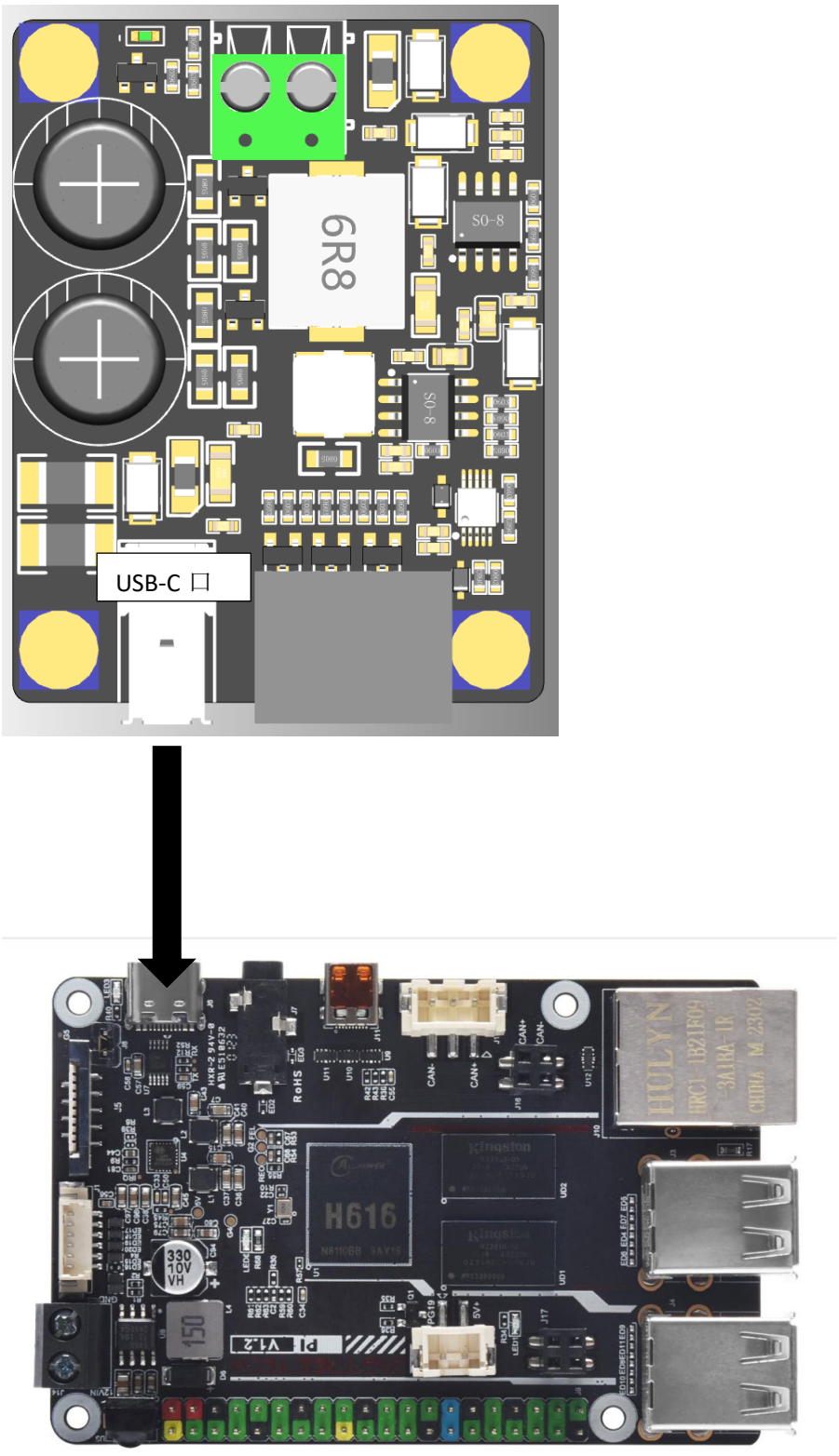
3.1. SKSM+PI Wiring



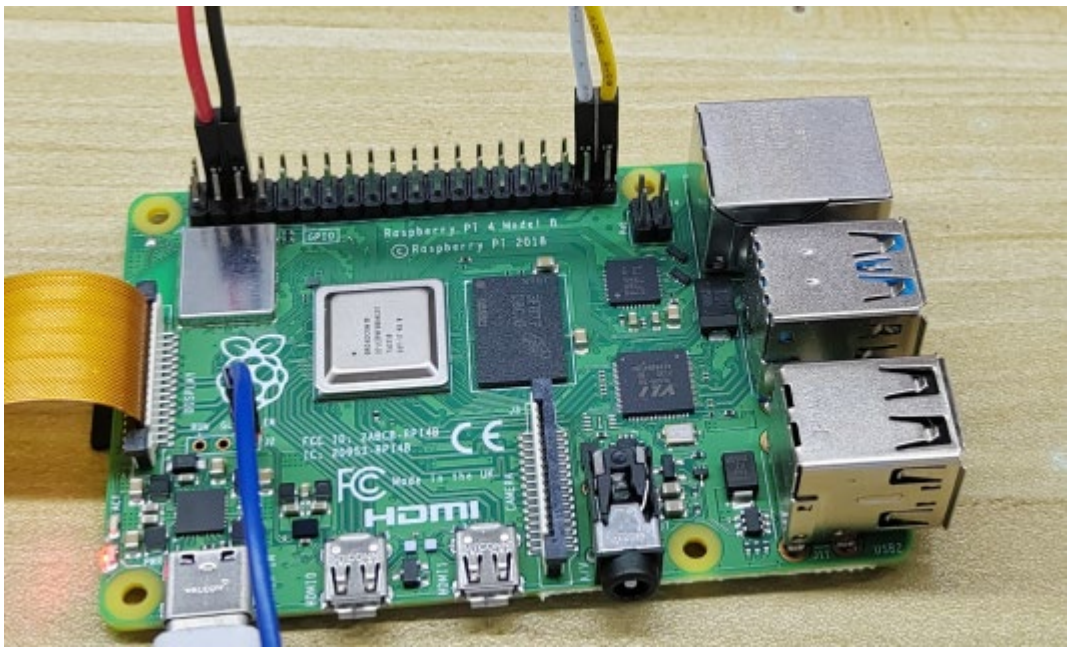
3.2. SKSM+Manta Wiring

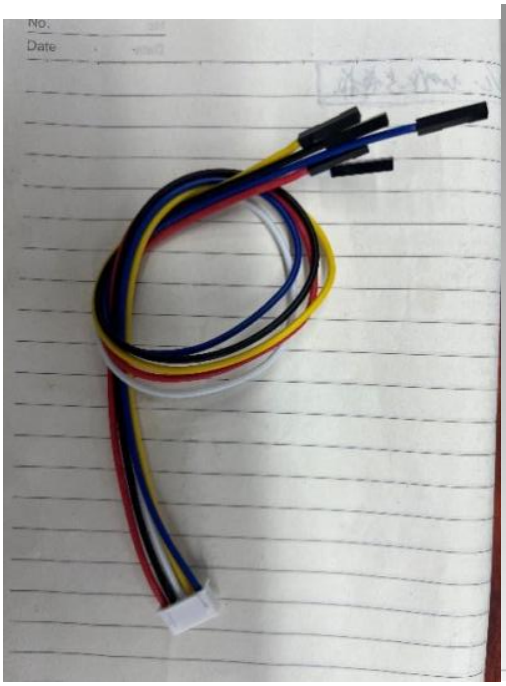


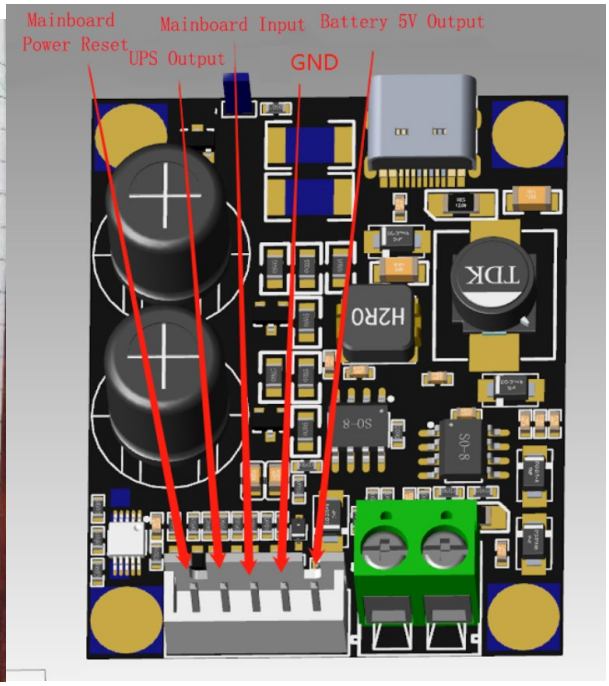
3.3. SKSM USB Interface +Pi Wiring



3.4. Raspberry Pi Wiring and Actual Wires





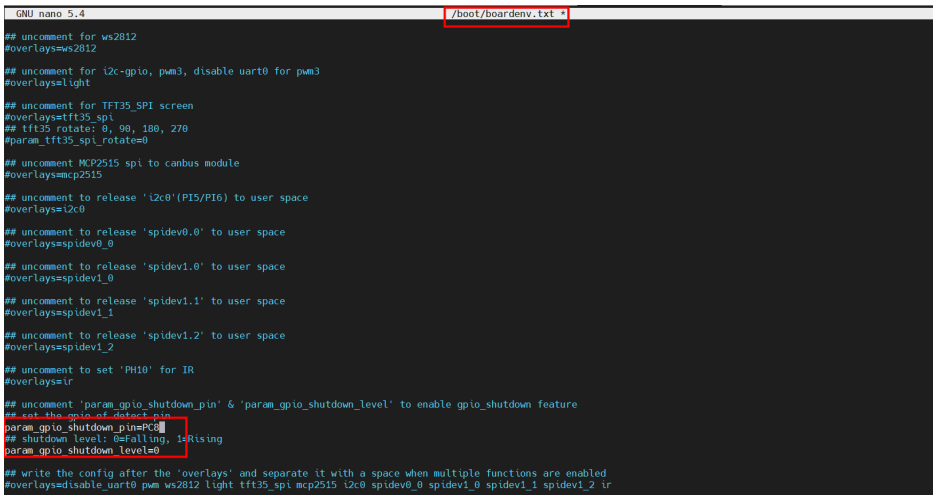


PB0 SKSM: Input detection, activated when detecting high voltage levels.
PB1 SKSM: Outputs low level; upon detection of this level by the host, data is synchronized and the system shuts down.
PB2 SKSM: Outputs low level to reset the host.

4. System Configuration

4.1. Usage for Pi V1.2

1. Access Pi V1.2 by entering its IP address in remote login software.
2. Send the command: sudo nano /boot/boardEnv.txt
3. Modify according to the diagram shown.



4. After making changes, save (Ctrl + S) and exit (Ctrl + X), then type sudo reboot to restart the host machine.

4.2. Usage for Pi 2:

1. Access Pi 2 by entering its IP address in remote login software.
2. Send the command: sudo nano /boot/armbianEnv.txt
3. Enable the content shown in the picture.

4. After making changes, save (Ctrl + S) and exit (Ctrl + X), then type sudo reboot

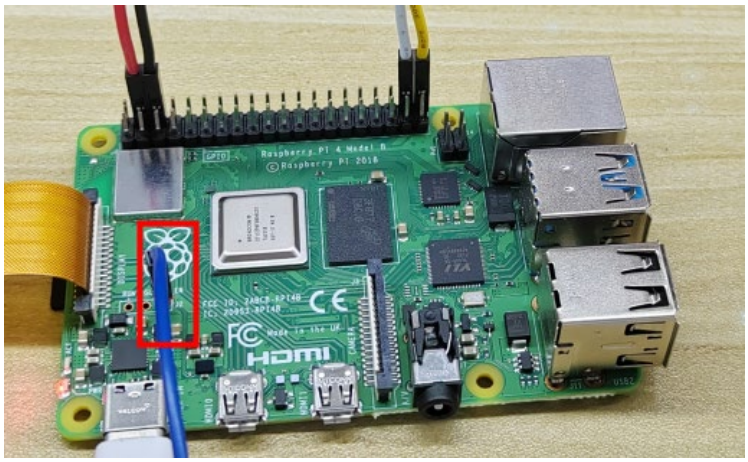
to restart the host machine.

4.3. Usage for Raspberry Pi

The process for Raspberry Pi differs from the above. It involves inserting an SD card with the system image into a computer, then adding the line dtoverlay=gpio-shutdown,gpio_pin=21 to the config.txt file, and saving the changes.

5. Precautions

1. Upon detecting a drop in 24V power, the module will maintain a 5V output for up to 15 seconds.
2. Pi2 requires a 24V power supply and cannot be powered by TYPE-C 5V (to ensure normal operation of the module, the 5V output voltage within the SKSM must not fall below 4.9V, otherwise, SKSM will draw power from an internal boost converter, continuously charging the capacitors and causing the module to heat up continuously).
3. The reset pin on SKSM can be connected to a host machine that includes a power reset feature, such as the Pi4B.(If the reset wire is not connected, and the host computer experiences a power loss followed immediately by power resumption, the host will enter standby mode instead of restarting automatically. In such cases, a manual restart of the host is required.)



Should you require 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.