SunFounder PiPower

www.sunfounder.com

Aug 07, 2023

CONTENTS

1 Component List **3**

2 Assemble the PiPower **5**

3 Features **11**

4 Downloads **15**

5 About the Battery **17**

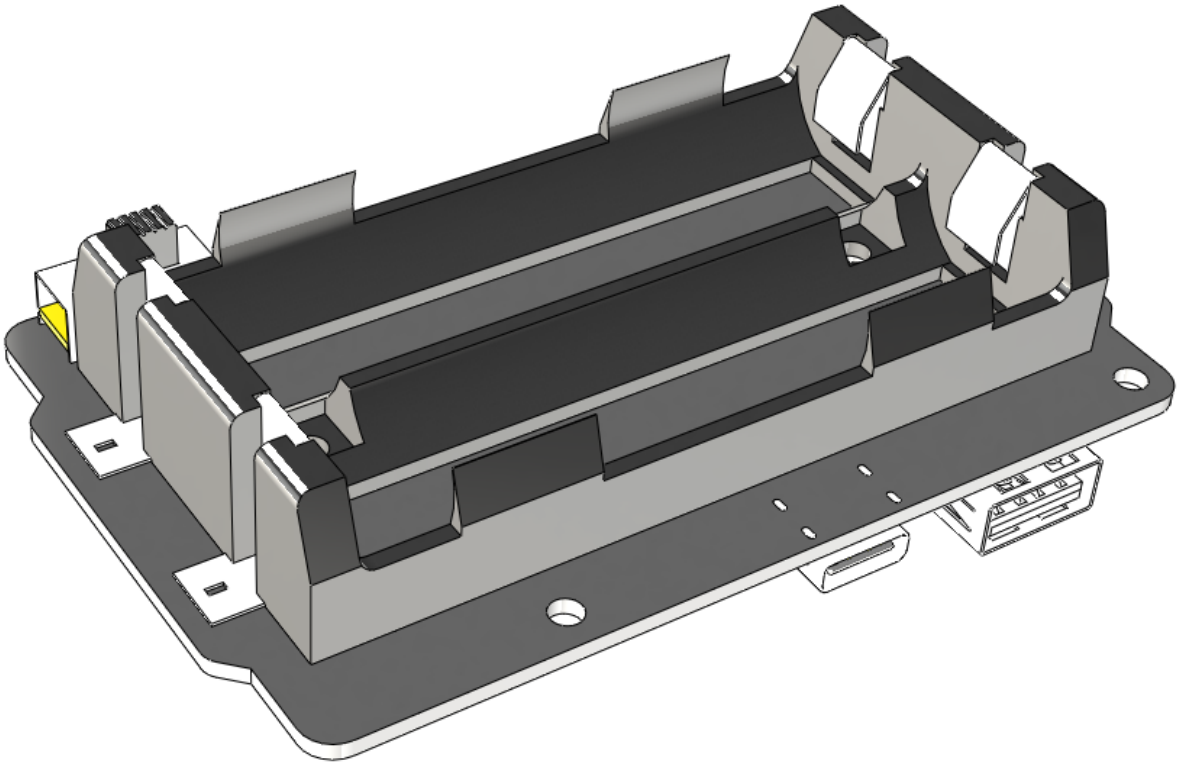
6 faq **19**

6.1 PiPower not working? 19

PiPower is a power supply module for Raspberry Pi with recharging function. It can output 5V/3A power supply to meet various Raspberry Pi usage situation. It has 4 power indicators; each indicator represents 25% of the power, and is equipped with a power switch to turn on/off the power of the Raspberry Pi without plugging or unplugging the power cord.

When the battery power is low, you can insert a 5V/2A Micro USB cable to charge the batteries, and the charging indicator will light up and turn off when fully charged. You need to use two 18650 flat top rechargeable batteries. The larger the battery capacity, the longer you use. You can choose according to your needs.

Warning: When you put the battery in for the first time or when the battery is unplugged and put in again, the battery will not work properly, at this time, you need to plug the Type C cable into the charging port to turn off the protection circuit, and the battery can be used normally.



CHAPTER

ONE

COMPONENT LIST

Note: This kit does not come with batteries, so you will need to purchase 2 x 18650 batteries and fully charge them before assembling the PiPower to the Raspberry Pi. For more information, please refer to *About the Battery*.

M2.5x6 Screw (6)

M2.5x11 Nylon Standoff (6)

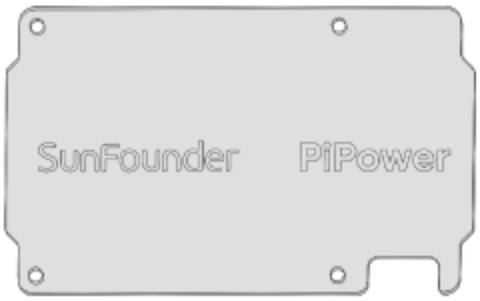
M2.5x8+6 Nylon Standoff (6)

M2.5x20+6 Nylon Standoff (6)

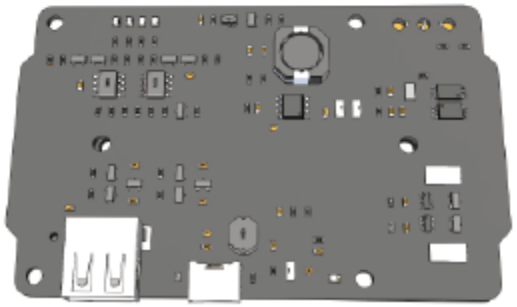
Screwdriver (1)

Type-C USB Cable (1)

Micro USB Cable (1)



Back Cover (1)



PiPower Module (1)

CHAPTER

TWO

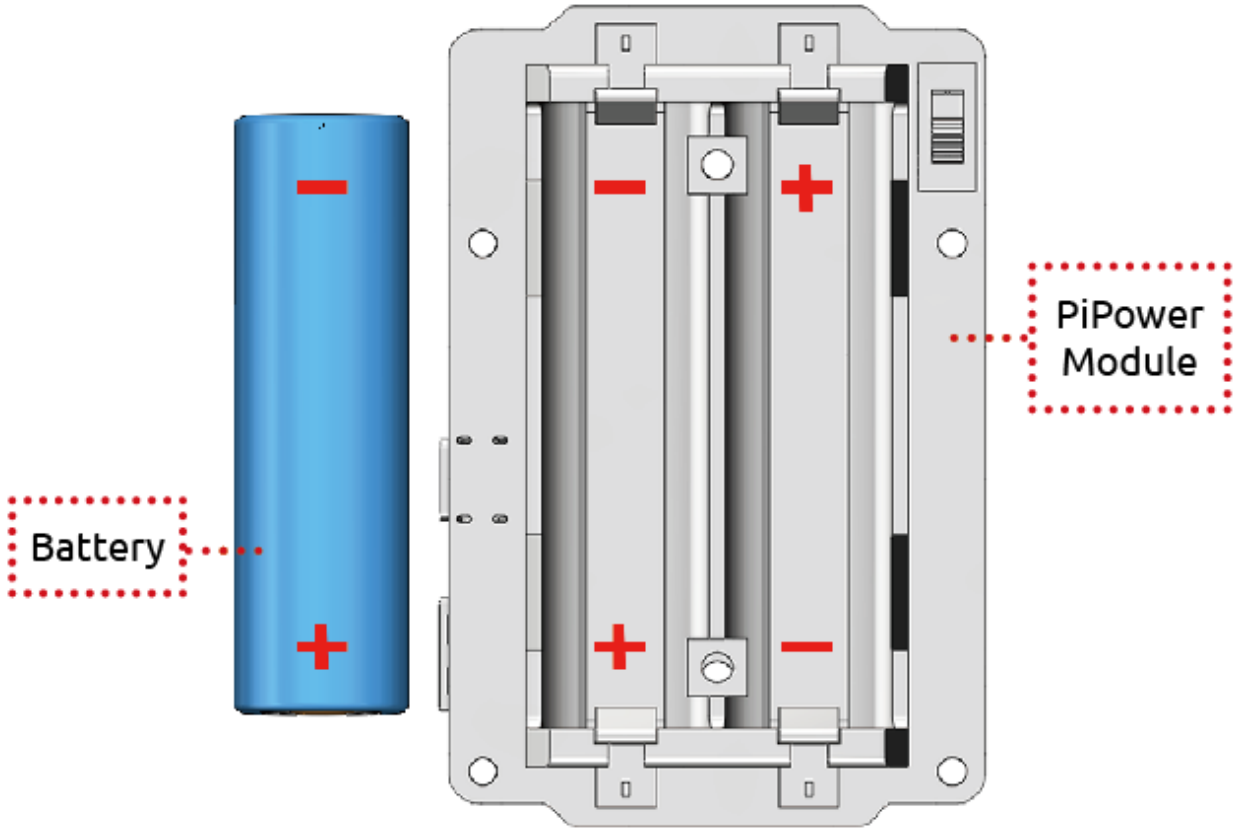
ASSEMBLE THE PIPOWER

After getting familiar with the components in the package, we start to assemble PiPower.

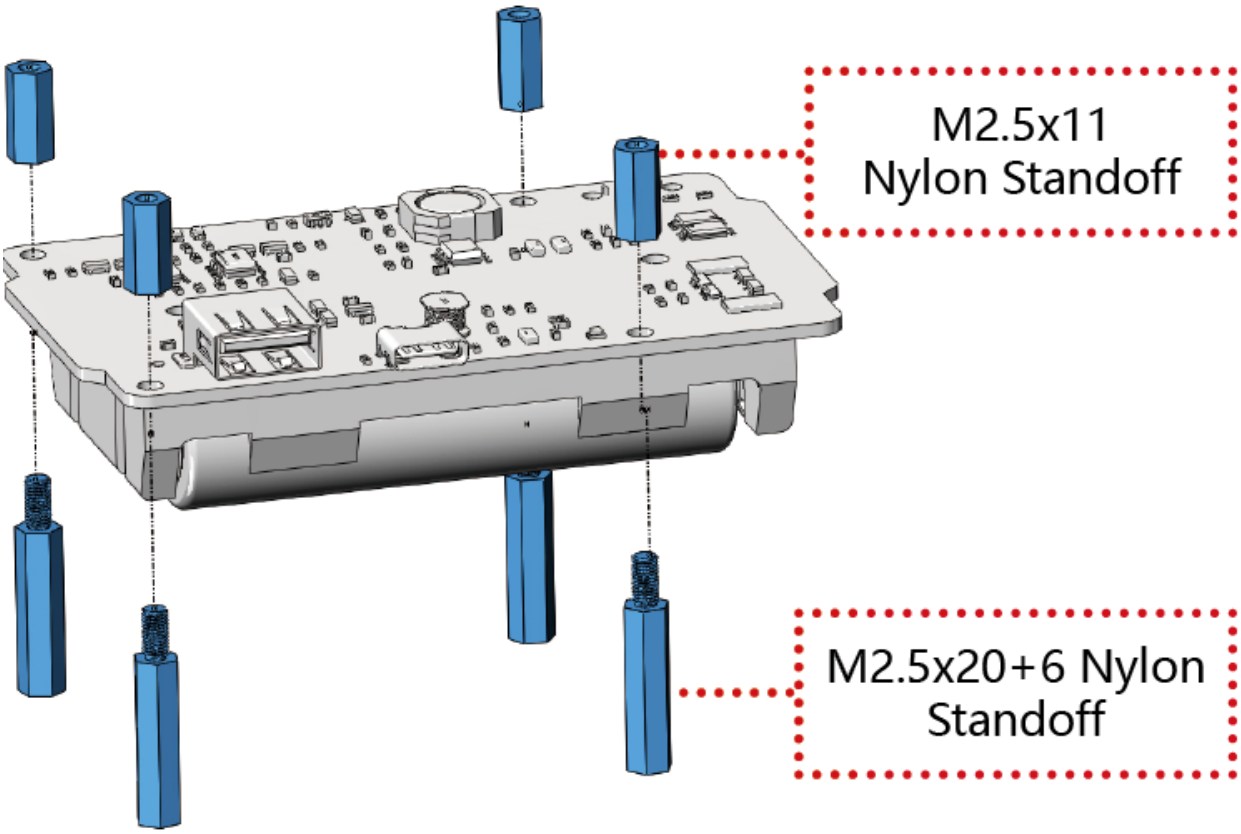
In the next steps, there are a lot of details you need to notice, especially the assembly position of the battery and the clear acrylic back cover.

Place the Batterries

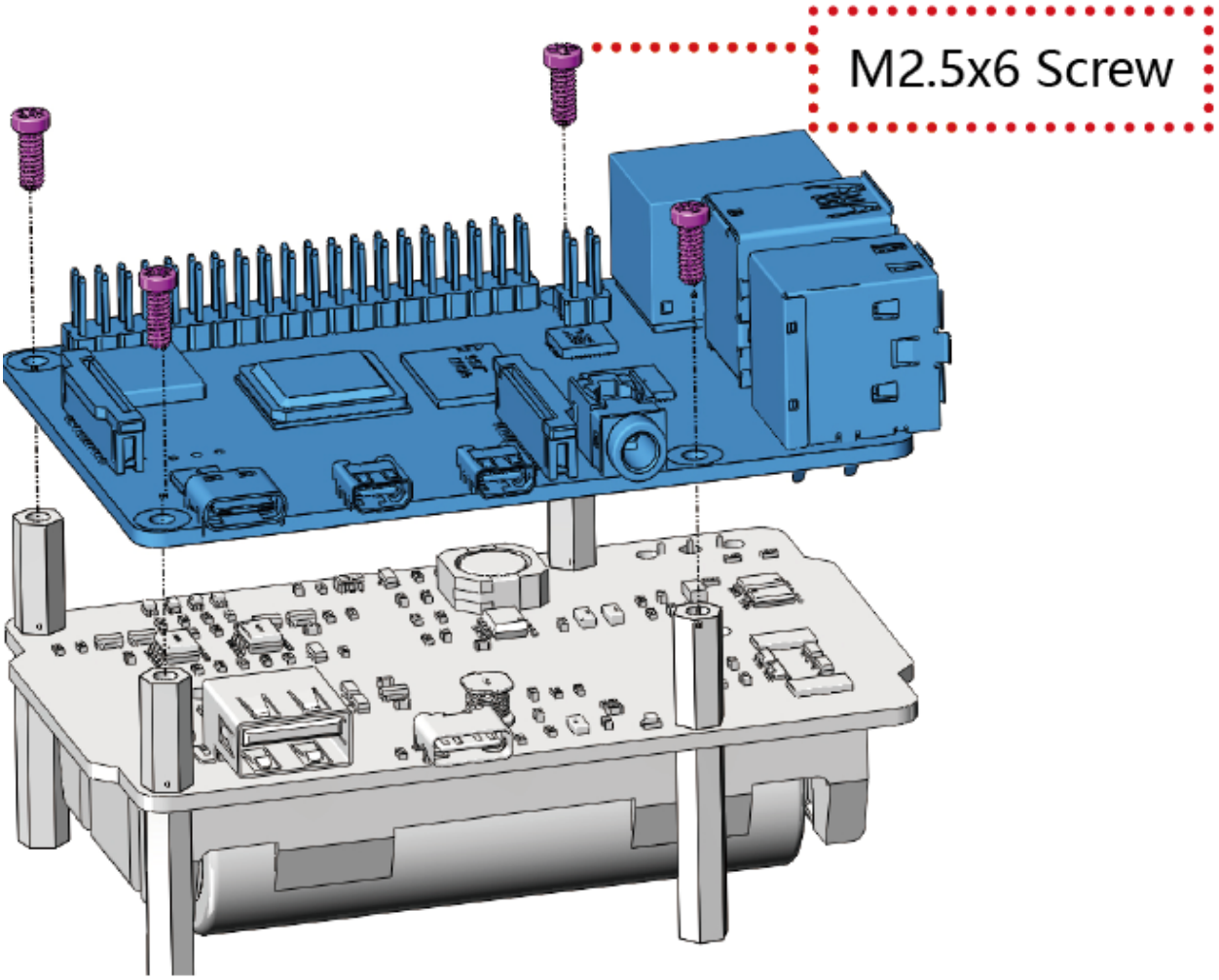
You can place the battery according to it: anode to anode; cathode to cathode.



Assemble the PiPower Module

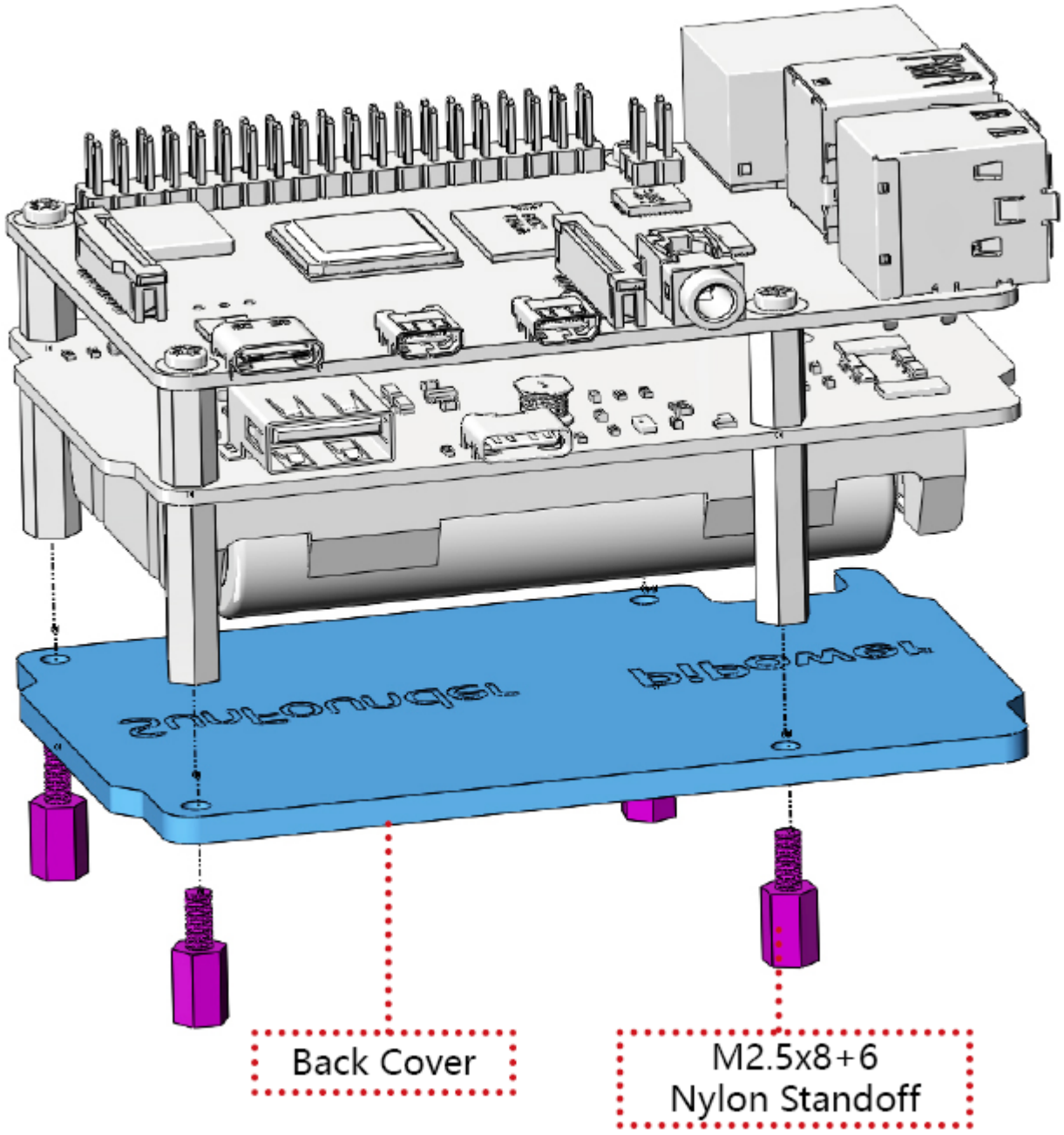


Assemble the Raspberry Pi

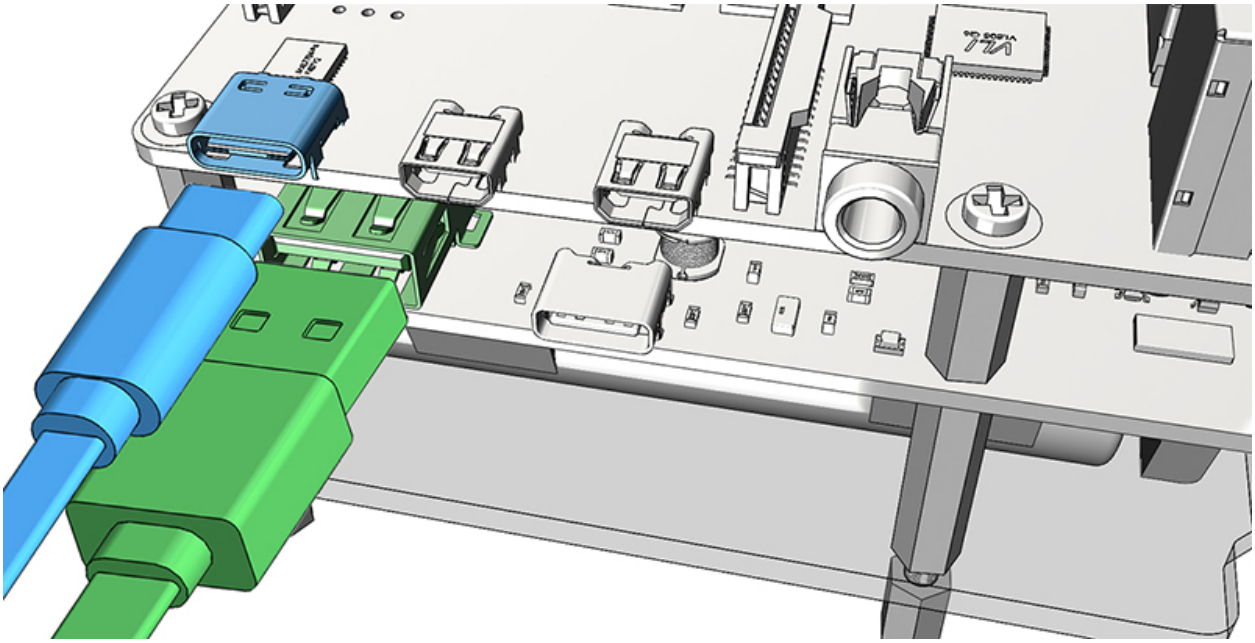


Assemble the Back Cover

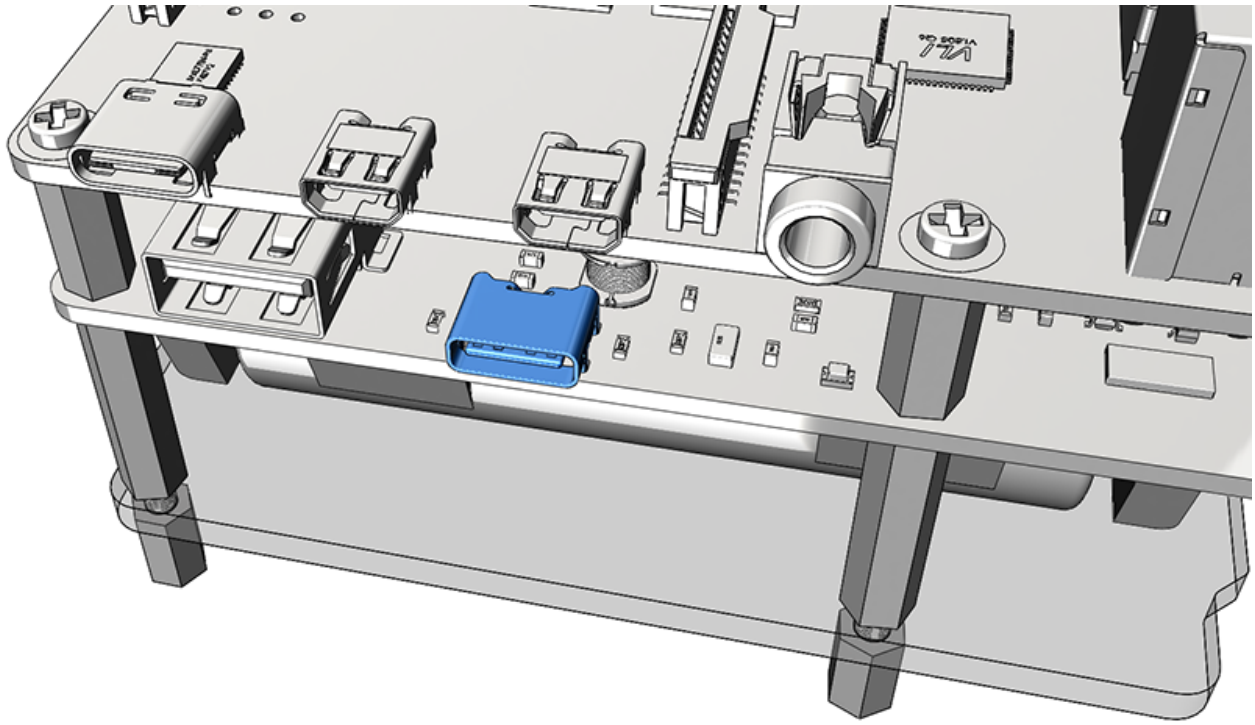
Put the gap side of acrylic back cover under the switch of PiPower module so that you can easily power the PiPower on/off.



Plug the USB Cable



When the battery is about to be run out, you can charge the battery through the Type-C USB port of the PiPower module.



Warning: When you put the battery in for the first time or when the battery is unplugged and put in again, the battery will not work properly, at this time, you need to plug the Type C cable into the charging port to turn off the protection circuit, and the battery can be used normally.

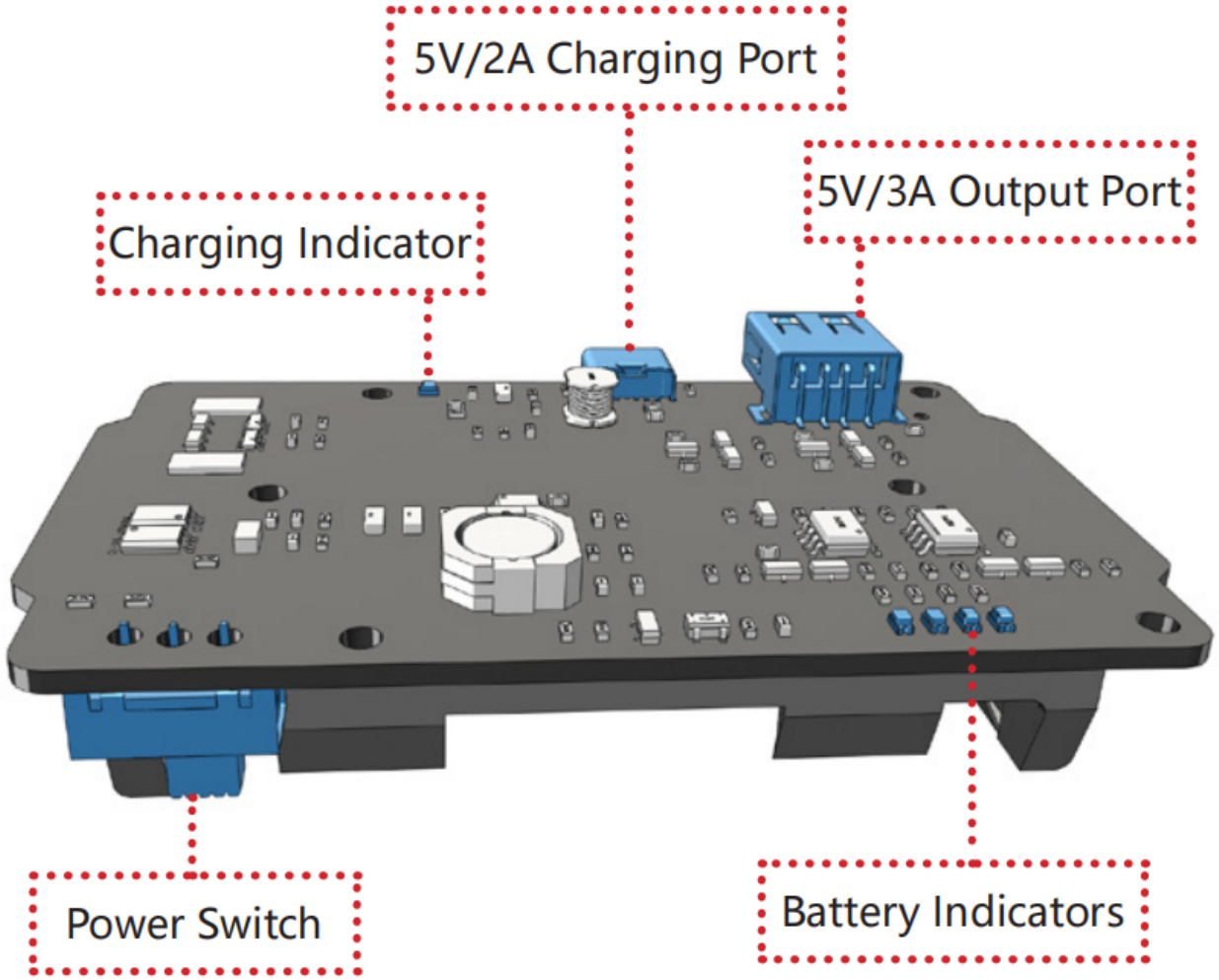
CHAPTER

THREE

FEATURES

- Pass through Charging
- Output: USB Type-A, 5V/3A
- Input: USB Type-C, 5V/2A
- Power Switch
- 1 Charge Indicator
- 4 Battery Indicators
- Dimension: 90mm x 60mm x 24.9mm
- Battery: 2 x 3.7V 18650 lithium battery (Self-provided)
- Over Discharge Protection Voltage: 3.2V
- Overcharge Protection Voltage: 4.2V

Interfaces



Over-discharge Protection

When the single battery voltage is below 3.2V, the battery protection activates and the battery is no longer discharged.

When the battery is unplugged, due to the mechanism of the on-board over-discharge protection circuit, the voltage will be considered too low, thus activating the protection circuit; when you replug the battery into the PiPower, the battery will not work properly, at this time, you need to plug the Type C cable into the charging port to turn off the protection circuit, and the battery can be used normally.

Overcharge Protection

Charging ends when the total battery voltage reaches 8.4V.

Charge Balance

When a single battery exceeds 4.2V, the voltage divider resistor channel conducts and the battery charging current is reduced or even discharged. It is recommended to use the same type of battery with similar voltage for both batteries.

Battery Indicators

The relationship between the battery indicators and voltage is as follows:

- 4 LEDs all on: voltage > 7.8V
- 3 LEDs on: voltage > 7.44V
- 2 LEDs on: voltage >7.04V

- 1 LED on: voltage > 6.68V
- 4 LEDs all off: voltage <6.68Vat this timebatteries need to be charged.

Temperature

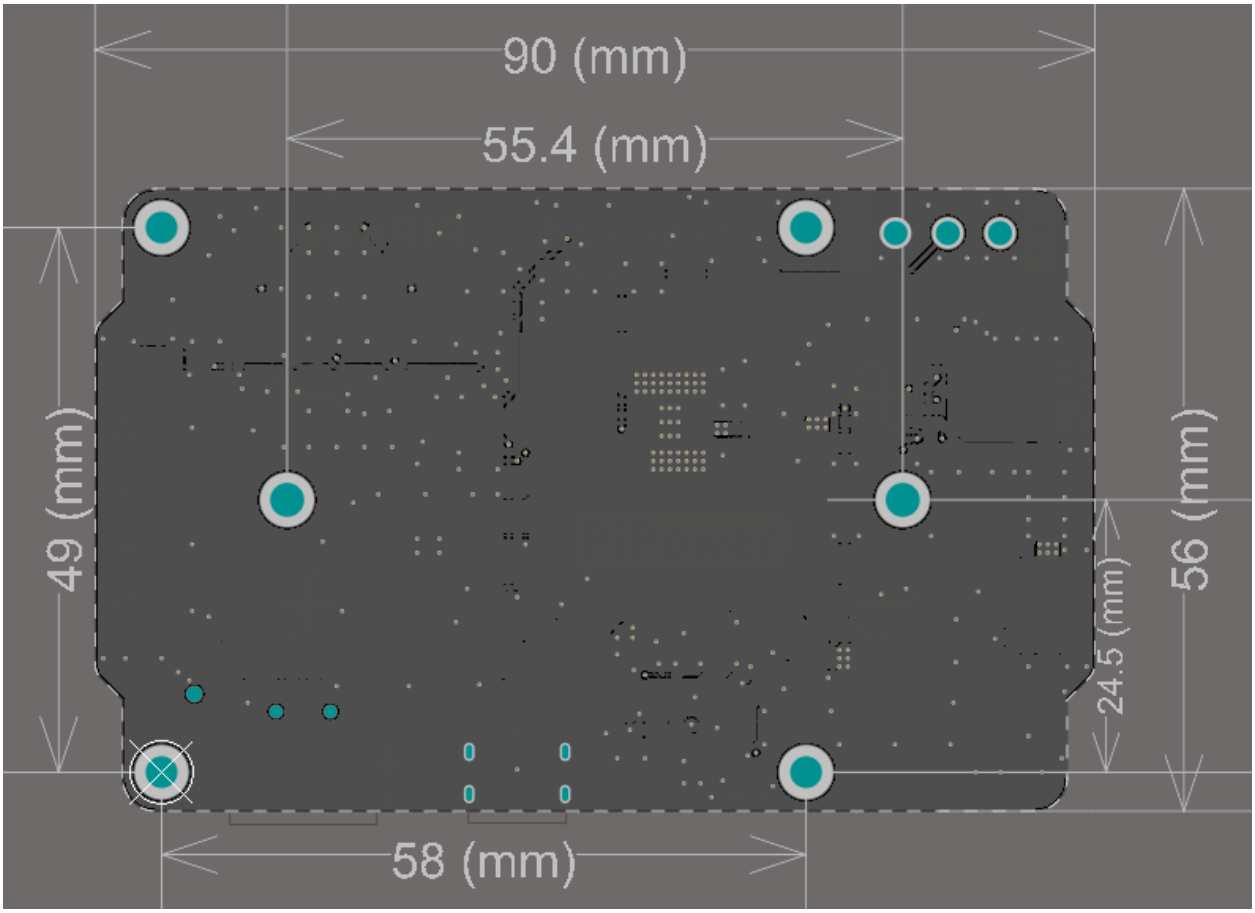
When the output power reaches the maximum nominal 5V/3A, the temperature of DC-DC buck chip U1 will rise to about 70-80 degrees Celsius, so be careful not to touch it to prevent burns and keep ventilation. When the temperature reaches the DC-DC protection temperature of 75 degrees Celsius, the DC-DC will shut down to prevent overheating damage.

CHAPTER

FOUR

DOWNLOADS

Dimensional Drawing



- Datasheet of the main components on PiPower
- Schematic
- 3D Model(.step)

CHAPTER

FIVE

ABOUT THE BATTERY

Applicable Parameters

- 3.7V
- 18650
- Rechargeable
- Li-ion Battery
- Flat Top
- No Protective Board

Warning:

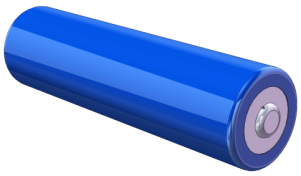
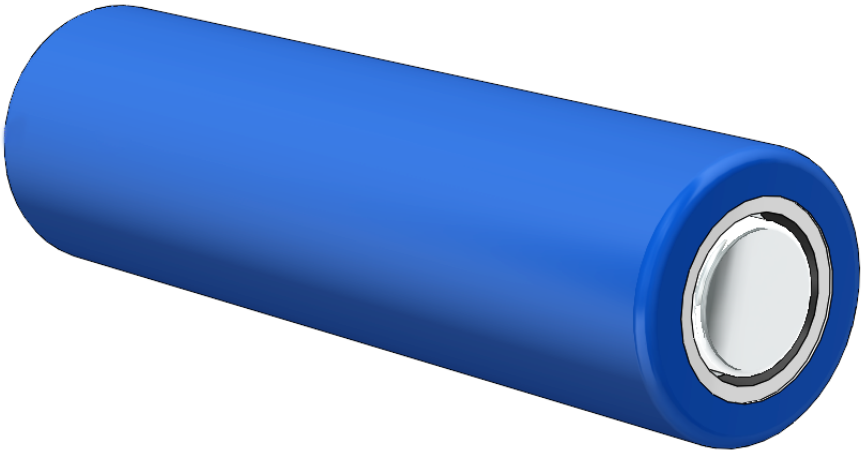
- Please purchase qualified batteries.
- Pay attention to the poles of the battery, and DO NOT connect to the positive and negative poles inversely.
- Do not use batteries that are damaged in appearance.

Duration of Use

18650 Batteries (Fully Charged)	Raspberry Pi	Battery Life
2 x 3.7V/3000mAh	Idel (0.3A)	13 hours
	Constant Use (0.5A)	8 hours
	Full Load (3A)	1.3 hours
2 x 3.7V/2200mAh	Idel (0.3A)	10 hours
	Constant Use (0.5A)	5.8 hours
	Full Load (3A)	1 hours

Button Top vs Flat Top?

Please choose battery with flat top to ensure a good connection between the battery and the battery holder.

Button Top	Flat Top
	

No protective board?

It is recommended to use a battery without a protection plate to maximize the performance of the module, and the on-board overcharge and over-discharge protection can be used without worrying about battery damage. If you use a battery with a protection plate may cause the output power does not reach the nominal 5V/3A.

Battery capacity?

In order to keep the robot working for a long time, use large-capacity batteries as much as possible. It is recommended to purchase batteries with a capacity of 3000mAh and above.

Try to choose the same brand, the same model, the voltage difference between the two batteries within 0.1V.

CHAPTER

SIX

FAQ

6.1 PiPower not working?

When you put the battery in for the first time or when the battery is unplugged and put in again, the battery will not work properly.

This is because when the battery is removed, due to the mechanism of the on-board over-discharge protection circuit, the voltage will be considered too low, thus activating the protection circuit;

At this time, you need to plug the **Type C** cable into the charging port to turn off the protection circuit, and the battery can be used normally.