

Robotbit

robotics expansion board for micro:bit

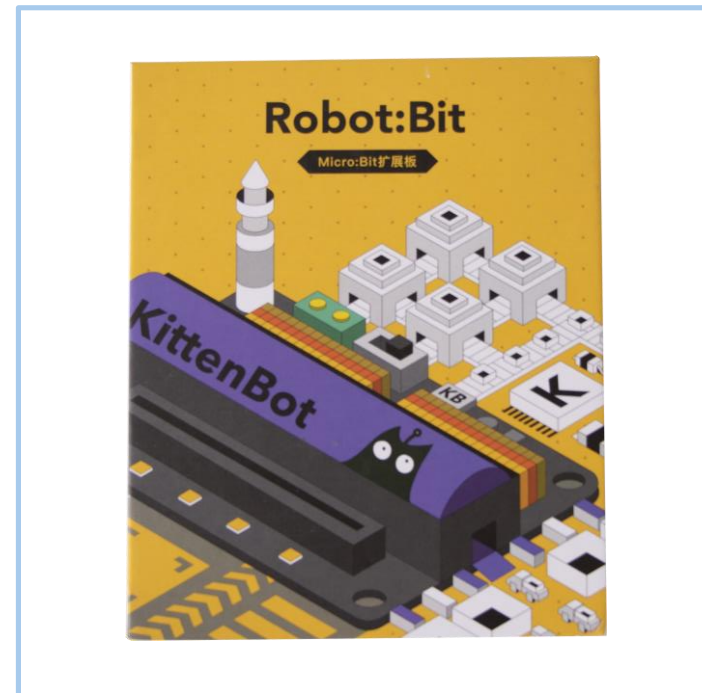
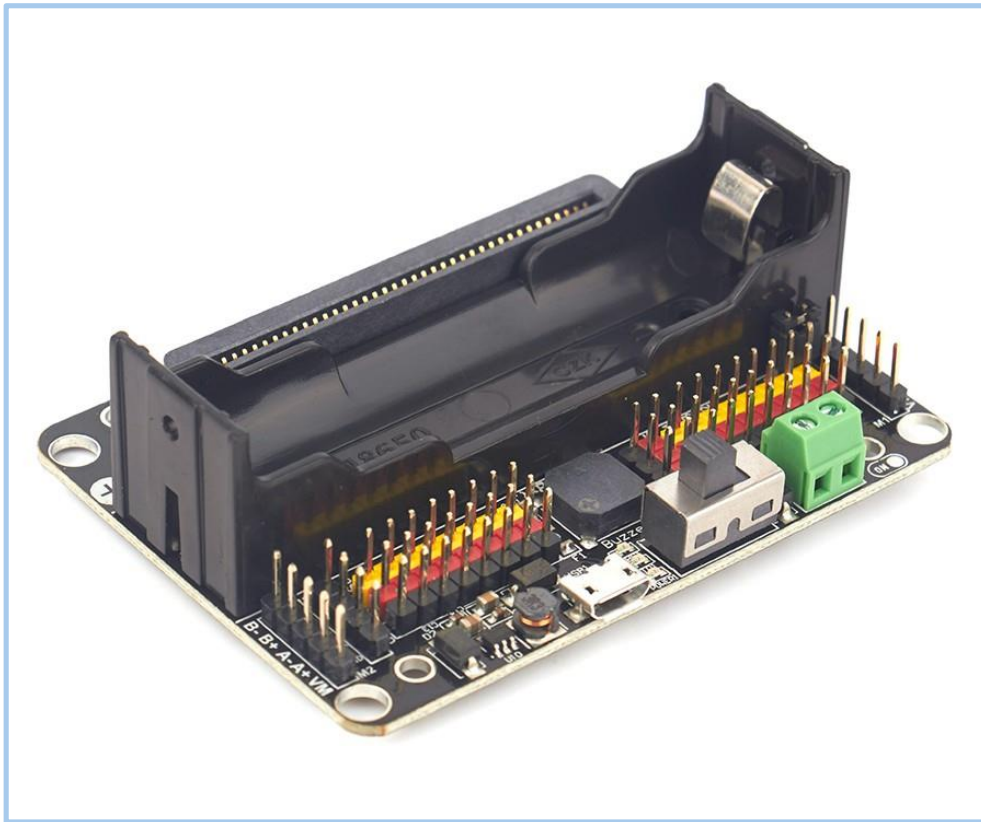
DATASHEET

SKU : KBK9001A



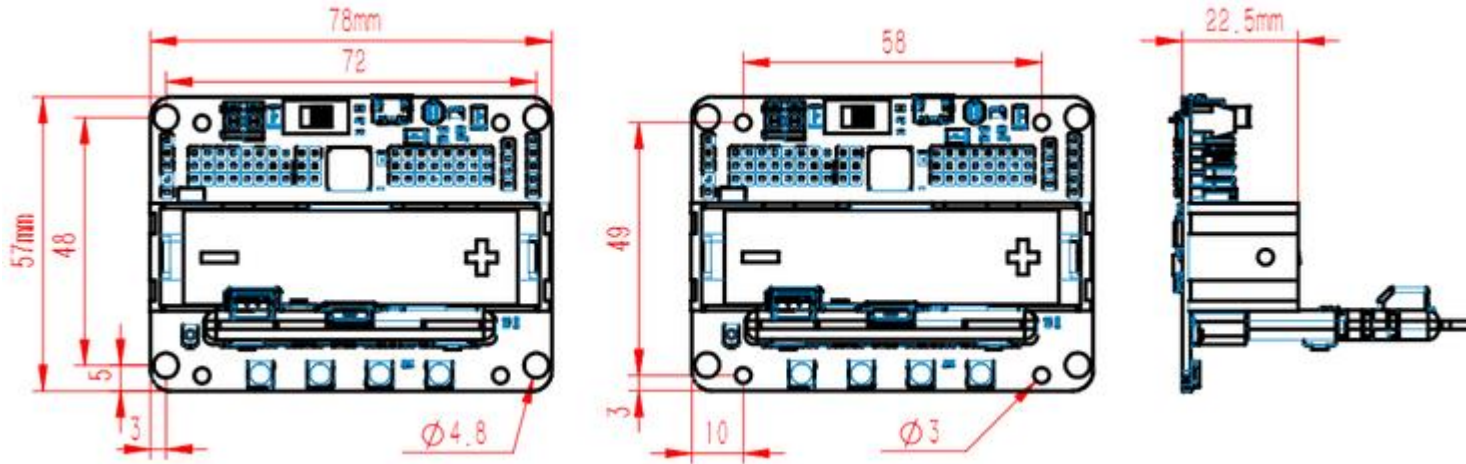
Product Overview

This is an expansion board for micro:bit. In addition some programmable I/O, it can also directly drive actuator such as DC motor and servo below 1A. It is very suitable for making robots and other projects.



Top Cover: 90 x 110 x 50 mm
Weight: 110g

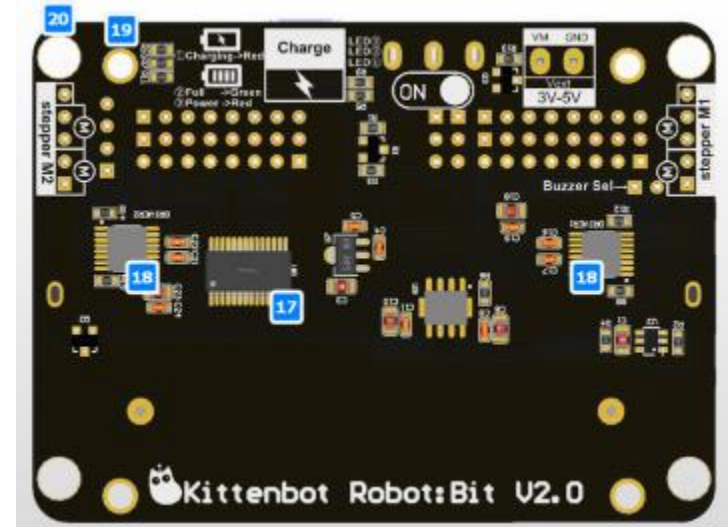
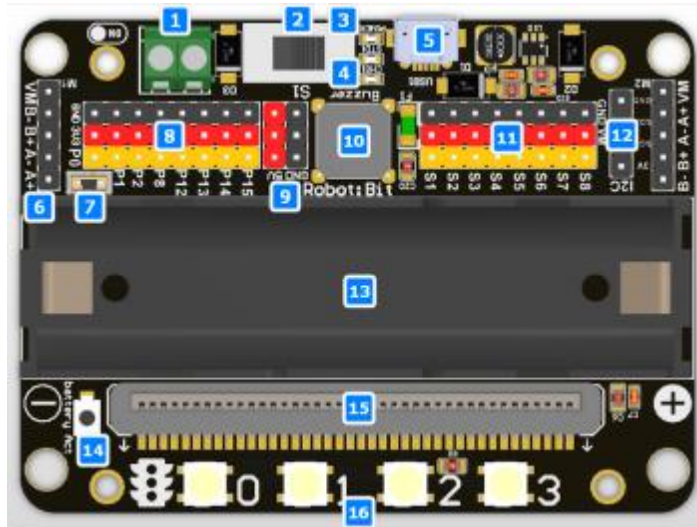
Product Parameter



Dimension	78 x 57 x 23 mm
Power	18650 Li-ion battery / Micro USB / External power supply (6V 3A max)
Operating voltage	3.3V / 5V
Programming support	Kittenblock / Makecode / Micropython API
Hardware resources	RGB ws2812 x4、Buzzer、Connector(Motor x4、 Servo x8、 Stepper motor x2)、 Power management

Design Documents

Hardware

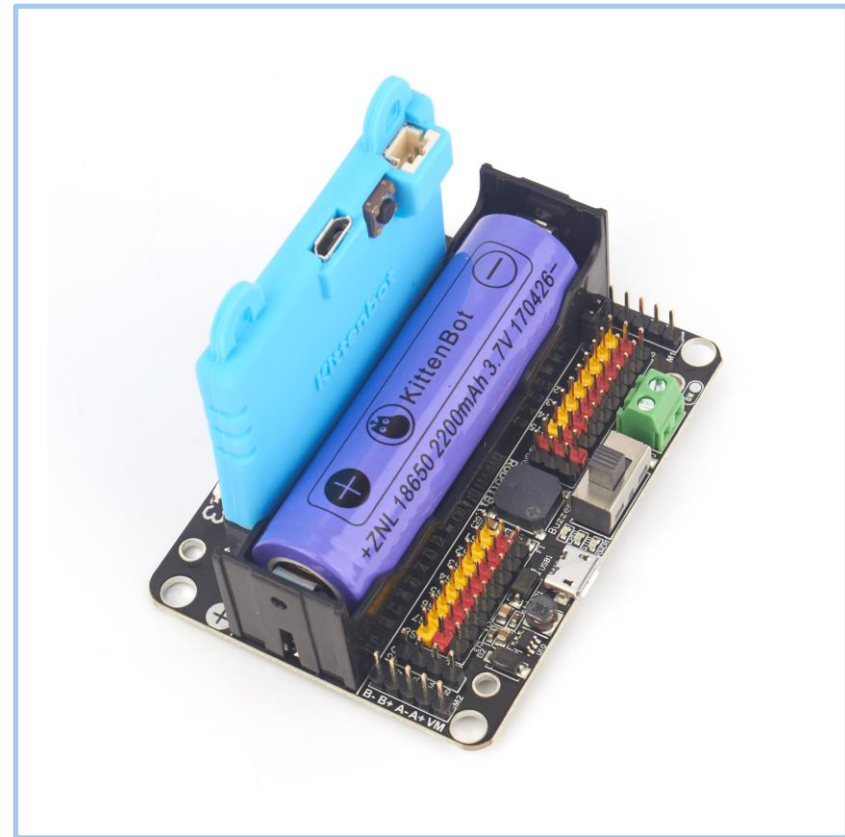
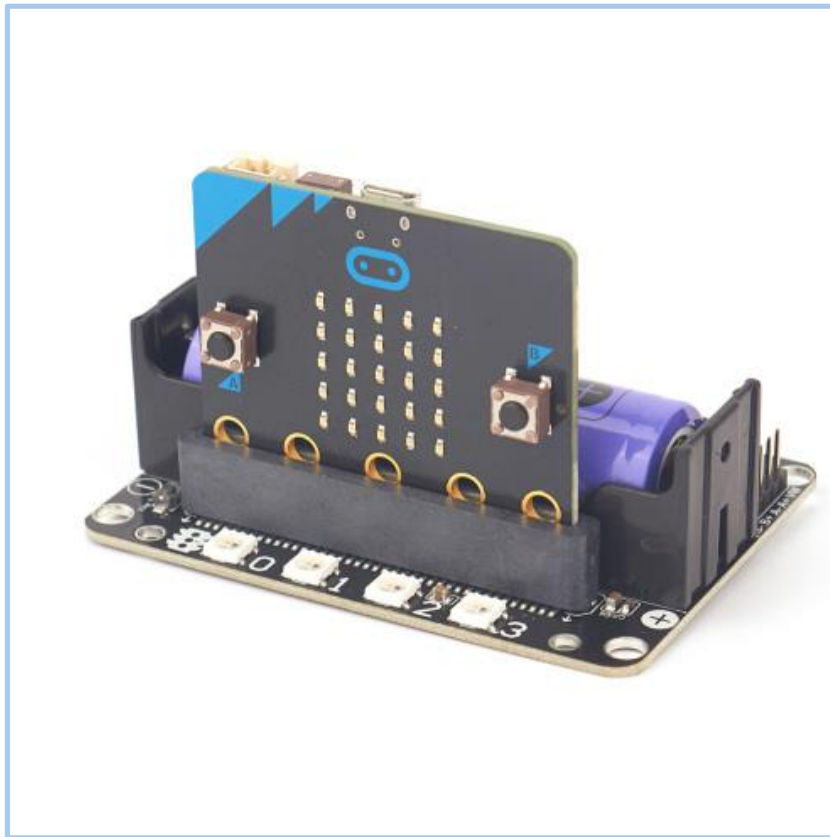


1. External power terminal (5V=3A)	2. power switch	3. Power indicator	4. battery indicator	5. Charging interface (Micro USB)
6. 4 Motor Interface / 2 stepper motor Interface	7. Buzzer sw	8. 8 I/O pins	9. VCC & GND	10. Passive Buzzer
11. 8 channel servo interface	12. I2C	13. 18650 Lithium battery holder	14. Power activation button	15. 40P edge connector
16. 4 rgb LED(ws2812)	17. PWM IC	18. motor driver IC	19. M3 copper column fixing hole	20. LEGO standard hole

Design Documents

Hardware

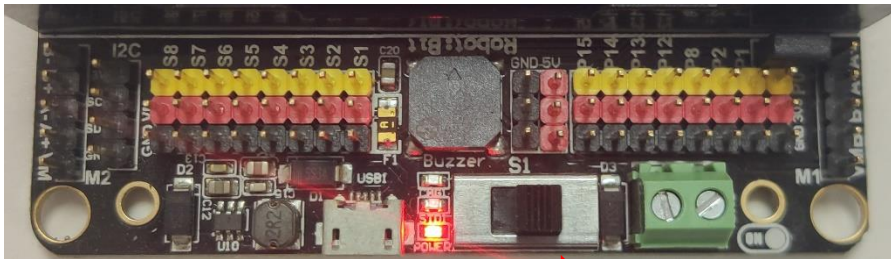
- Connected with micro:bit
- Powered by 3.7V lithium battery



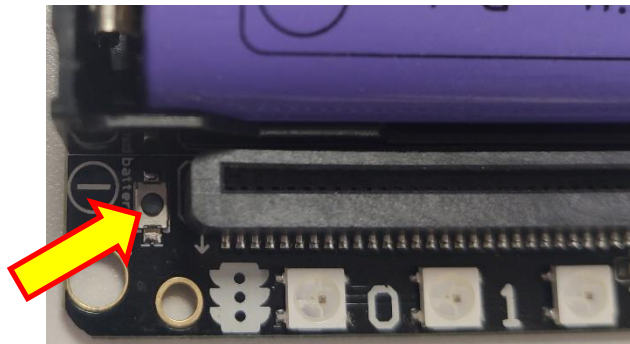
Design Documents

Hardware

- Turn on the power



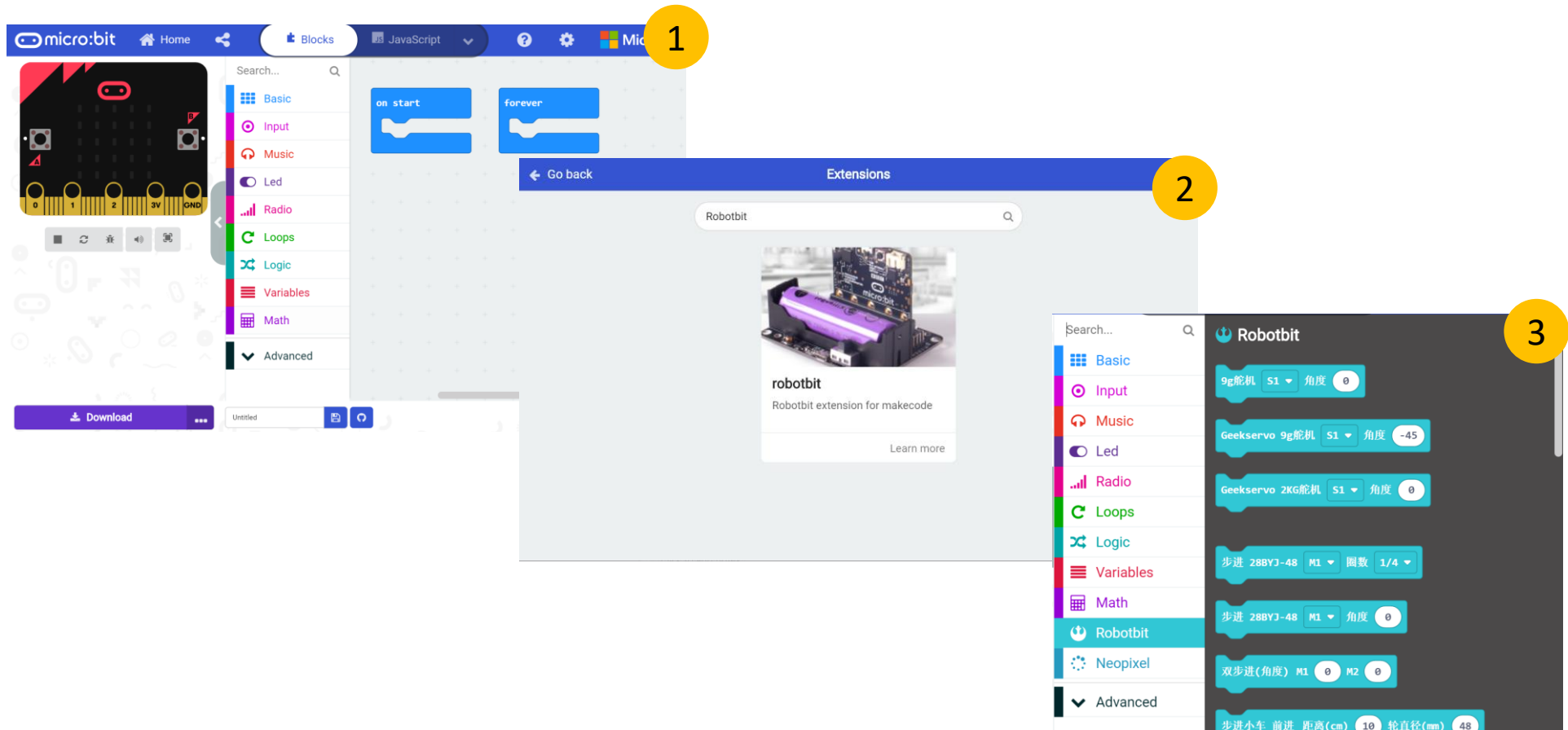
- If you turn on the power switch and the power does not light up, you need to click the power activation button at this time



Design Documents

Programming—Preparation

- Go to Programming platform: <https://makecode.microbit.org/>
- Search 'Robotbit' to load Robotbit extension



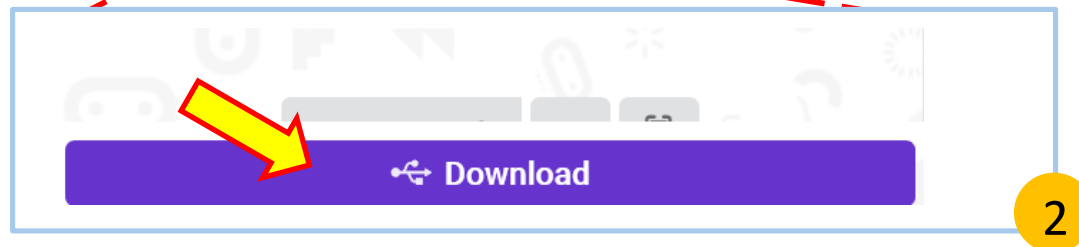
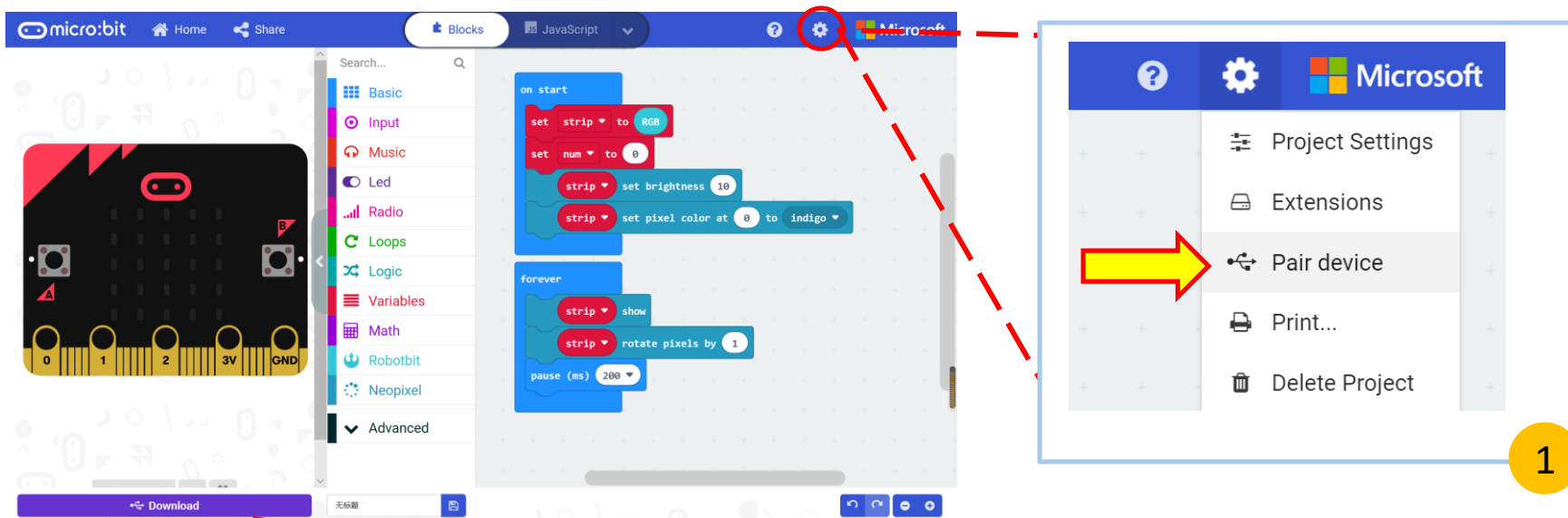
The image shows a three-step process for installing the Robotbit extension in the MakeCode Micro:bit programming environment:

- Step 1:** The main MakeCode interface is shown. The 'Extensions' button in the top right corner is highlighted with a yellow circle containing the number '1'.
- Step 2:** The 'Extensions' panel is open, displaying a search bar with 'Robotbit' entered. A search result for the 'robotbit' extension is shown, featuring an image of the extension board and the text 'Robotbit extension for makecode'. A yellow circle with the number '2' is next to the search bar.
- Step 3:** The 'Robotbit' extension is installed and its blocks are visible in the 'Advanced' category of the left-hand block palette. A yellow circle with the number '3' is next to the extension's name in the palette. The blocks include:
 - 9g舵机 (9g Servo) with motor 'S1' and angle '0'.
 - Geekservo 9g舵机 (Geekservo 9g Servo) with motor 'S1' and angle '-45'.
 - Geekservo 2KG舵机 (Geekservo 2KG Servo) with motor 'S1' and angle '0'.
 - 步进 28BYJ-48 (Stepper 28BYJ-48) with motor 'M1', gear ratio '1/4'.
 - 步进 28BYJ-48 (Stepper 28BYJ-48) with motor 'M1' and angle '0'.
 - 双步进(角度) (Dual Stepper (Angle)) with motors 'M1' and 'M2', and angle '0'.
 - 步进小车 前进 距离(cm) (Stepper Car Forward Distance) with distance '10' and wheel diameter '48'.

Design Documents

Programming—Download

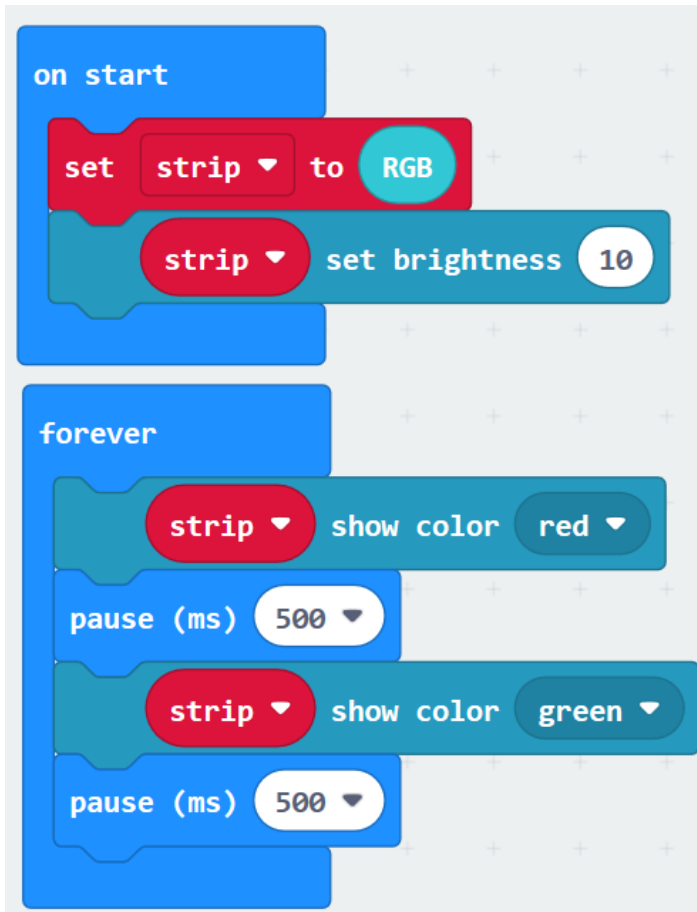
- Pair with the micro:bit, then you can download the program directly to the micro:bit via the Micro USB cable



Design Documents

Programming—Use RGB

■ Change All RGB lights

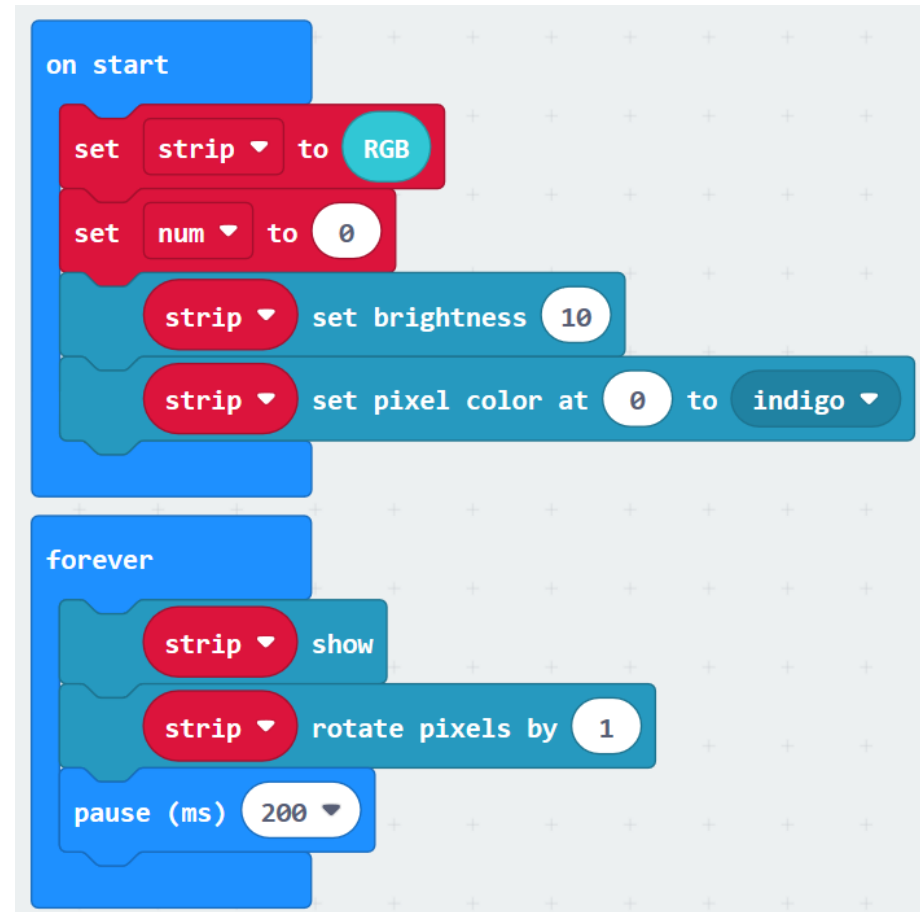


```
on start
  set strip to RGB
  strip set brightness 10

forever
  strip show color red
  pause (ms) 500
  strip show color green
  pause (ms) 500
```

The code for "Change All RGB lights" consists of two main sections. The first section, labeled "on start", contains two blocks: a red "set strip to RGB" block and a teal "strip set brightness 10" block. The second section, labeled "forever", is a loop containing four blocks: a teal "strip show color red" block, a light blue "pause (ms) 500" block, a teal "strip show color green" block, and another light blue "pause (ms) 500" block.

■ Single LED scrolling



```
on start
  set strip to RGB
  set num to 0
  strip set brightness 10
  strip set pixel color at 0 to indigo

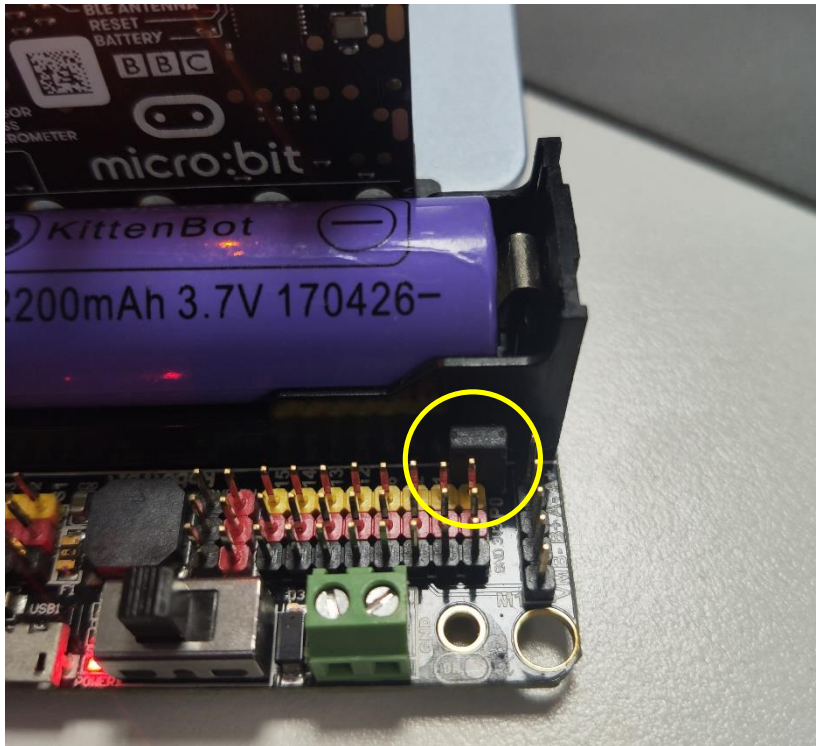
forever
  strip show
  strip rotate pixels by 1
  pause (ms) 200
```

The code for "Single LED scrolling" consists of two main sections. The first section, labeled "on start", contains four blocks: a red "set strip to RGB" block, a red "set num to 0" block, a teal "strip set brightness 10" block, and a teal "strip set pixel color at 0 to indigo" block. The second section, labeled "forever", is a loop containing three blocks: a teal "strip show" block, a teal "strip rotate pixels by 1" block, and a light blue "pause (ms) 200" block.

Design Documents

Programming—Use buzzer

- Before using of buzzer, please ensure the cap is installed (the default is installed)



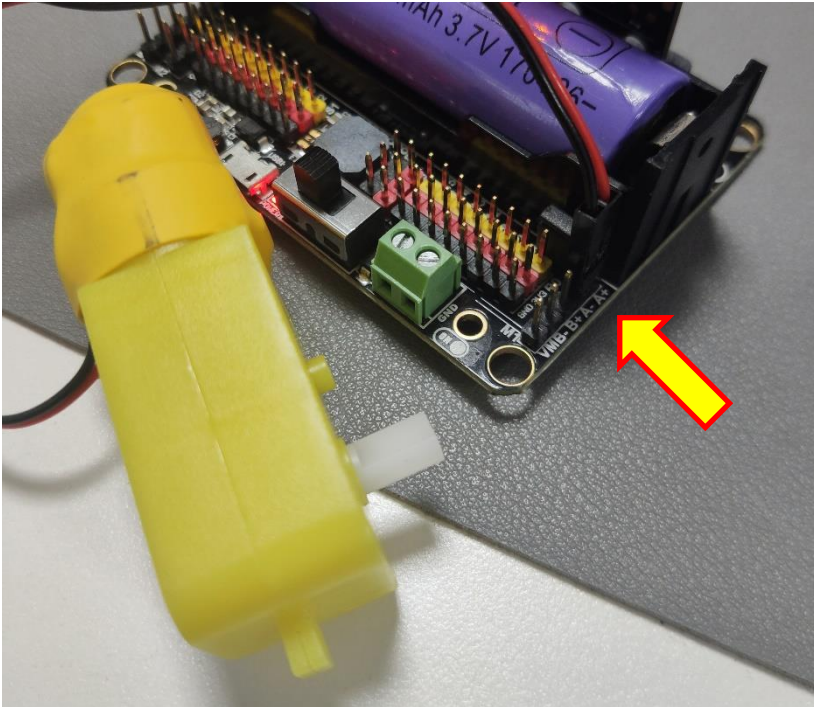
- Loop play do re mi



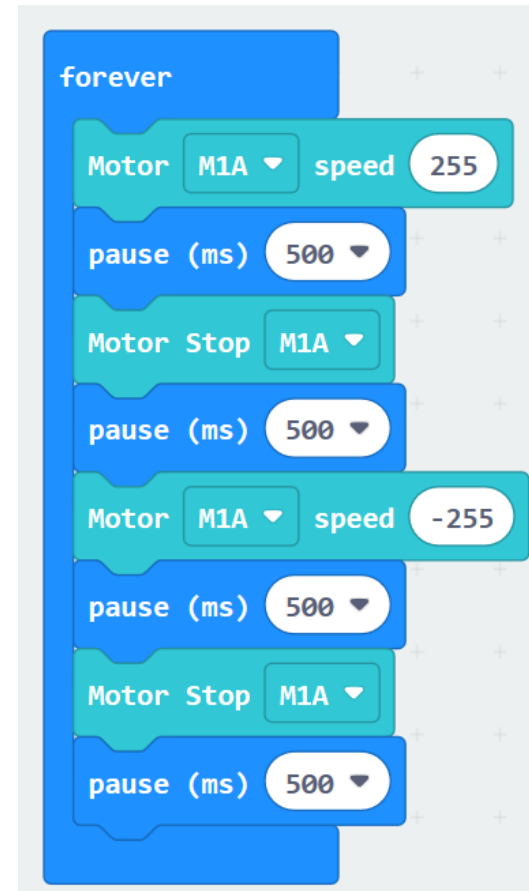
Design Documents

Programming—Use DC motor

- There is some white silkscreen on the board and you can follow below to connect the motor



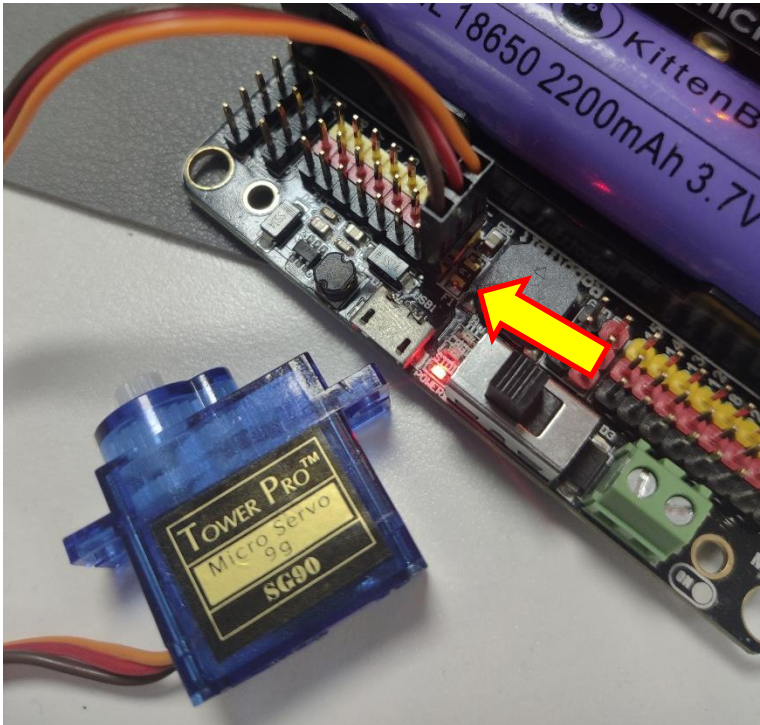
- Single motor rotation control



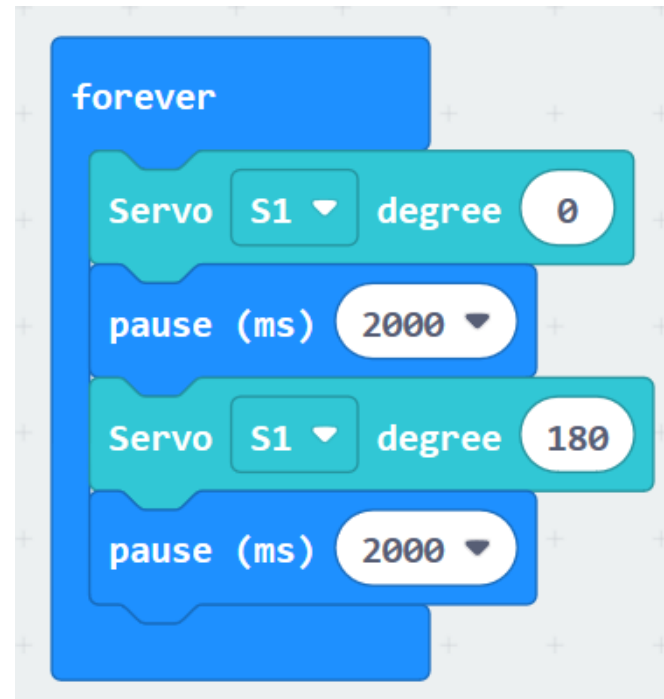
Design Documents

Programming—Use servo

- Connect servo such SG90 to S1, please pay attention to the line order



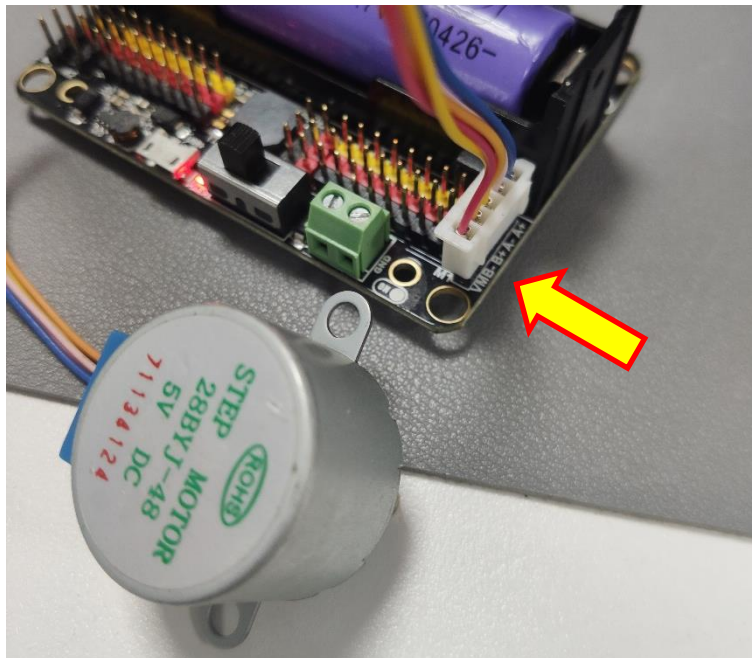
- Control the angle of 9g servo



Design Documents

Programming—Use stepper motor

- Connect the stepper motor like this please pay attention to the line order



- Control the rotation of the stepper motor by the number of turns and the angle respectively

