



Project 19: Change Colors

Overview

In this project, we will use a keyestudio RGB LED module. This Common Anode RGB LED module is a fun and easy way to add some color to your projects. In our program, we will connect the RGB module to micro:bit, then control the P0, P1, P2 Analog Input of micro:bit main board. You will learn how to control the RGB LED on the module firstly show three colors (Red, Green and Blue), then quickly change the color state.

Component Required:

- Micro:bit main board*1
- Keyestudio Micro bit Sensor V2 Shield*1
- USB Cable*1
- keyestudio RGB LED Module*1
- Dupont jumper wire*4
- Premium Battery Holder 6-cell AA*1
- 1.5V AA Battery*6

RGB LED Module:

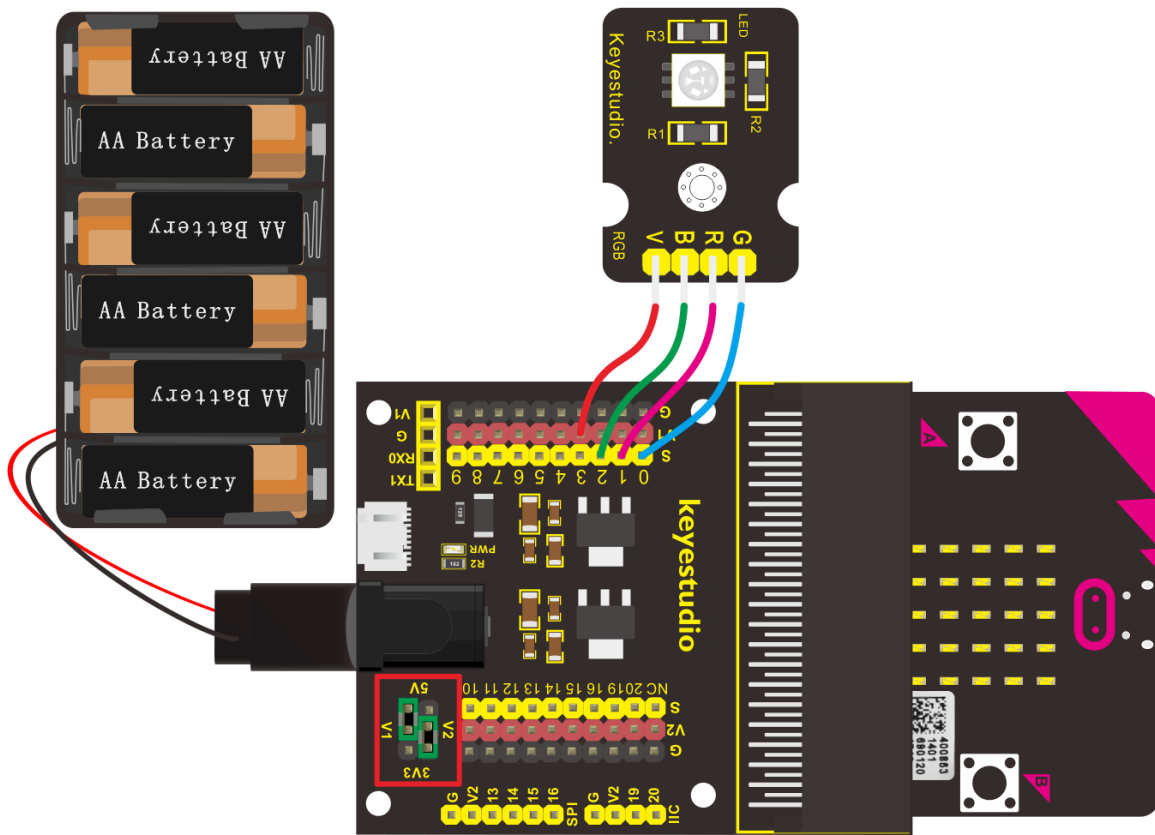
RGB comes from the initials of three additive primary colors, red, green, and blue. RGB LEDs are like 3 regular LEDs in one, how to use and connect them is not much different. They come mostly in 2 versions: Common Anode or Common Cathode. Common Anode uses 5V on the common pin, while



Common Cathode connects to ground.

This keyestudio RGB LED module is Common Anode. It can be seen as separate LEDs. LEDs have three different color-emitting diodes that can be combined to create all sorts of colors. This RGB LED module is very easy for wiring, with a fixed hole that you can mount it on your any devices.

Connection Diagram



Test Code

```
on start
  led enable false

forever
  analog write pin P2 to 0
  analog write pin P0 to 1023
  pause (ms) 1000
  analog write pin P0 to 0
  analog write pin P1 to 1023
  pause (ms) 1000
  analog write pin P1 to 0
  analog write pin P2 to 1023
  pause (ms) 1000
  for val from 0 to 513
    do
      analog write pin P0 to val
      analog write pin P1 to 1023 - val
      analog write pin P2 to 512 - val
      pause (ms) 1
  for val from 0 to 513
    do
      analog write pin P0 to 512 - val
      analog write pin P1 to 1023 - val
      analog write pin P2 to val
      pause (ms) 1
```

“on start” : command block only runs once to start program.
Turn off LED matrix
The program under the block “ forever ” runs cyclically.
Set analog value of P2 to 0
Set analog value of P0 to 1023
Delay in 1000ms.
Set analog value of P0 to 0
Set analog value of P1 to 1023
Delay in 1000ms
Set analog value of P1 to 0
Set analog value of P2 to 1023
Delay in 1000ms
When the value of variable val is in the range of 0-513, execute the program under do block
Set the analog value of P0 to val
Set analog value of P1 to 1023-val
Set analog value of P2 to 512-val
Delay in 1ms
When value of val is in the range of 0-513, execute the program under do block
Set the analog value of P0 to 512-val
Set the analog value of P1 to 1023-val
Set the analog value of P2 to val.
Delay in 1ms.

Test Results

Done wiring and powered up, send the code to micro:bit, you should see the RGB module firstly show three colors, separately red, green and blue light. Then change the color quickly and circularly.