Marquee

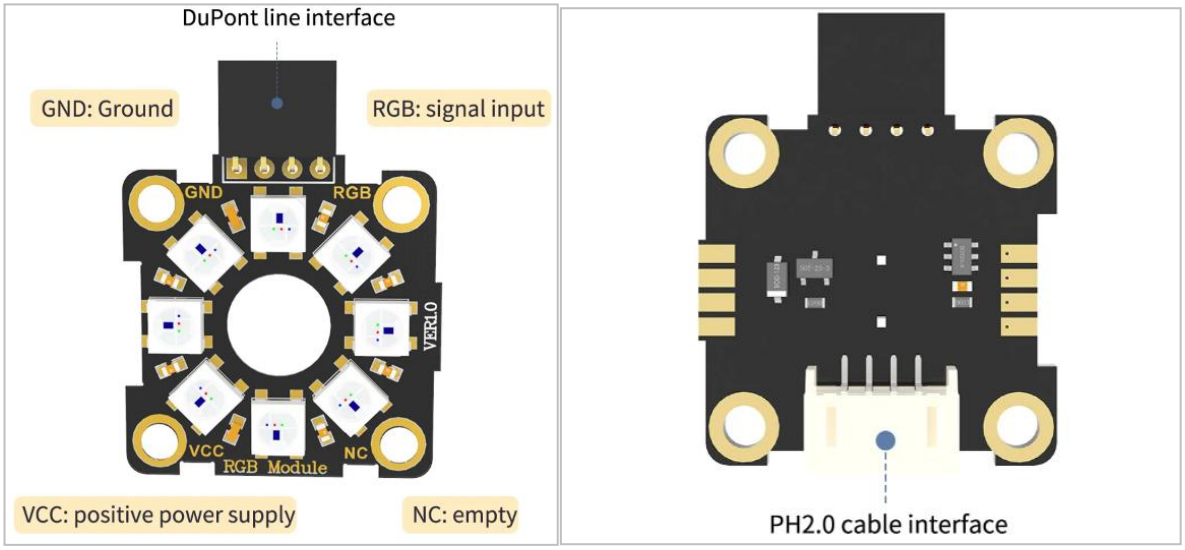
1. Learning target

1.1 In this course, we will learn how to use pins of the Raspberry Pi Pico board.
1.2 How to use drive RGB halo module displays the marquee effect.

2. Preparation

Raspberry Pi Pico board *1
Pico sensor expansion board *1
PC *1
RGB halo module *1
USB data cable *1
Female-to-male DuPont line *3

RGB lights are designed according to the principle of color light emission, with the effect of mixing red, green and blue lights. The brightness of the red, green, and blue lights are all adjustable. When they are all adjusted to the brightest, they are displayed in white.
Each color of red, green, and blue is divided into 256 levels of brightness. 0 means the brightness is the lowest, and the display is turned off; 255 means the brightness is the highest. When the three-color value is 255, it is the brightest white.
You can also call up different colors according to the RGB values assigned with different brightness. This module uses a programmable RGB lamp with a chip inside, and 8 lights are cascaded to achieve the effect of one signal port to control 8 RGB lights.

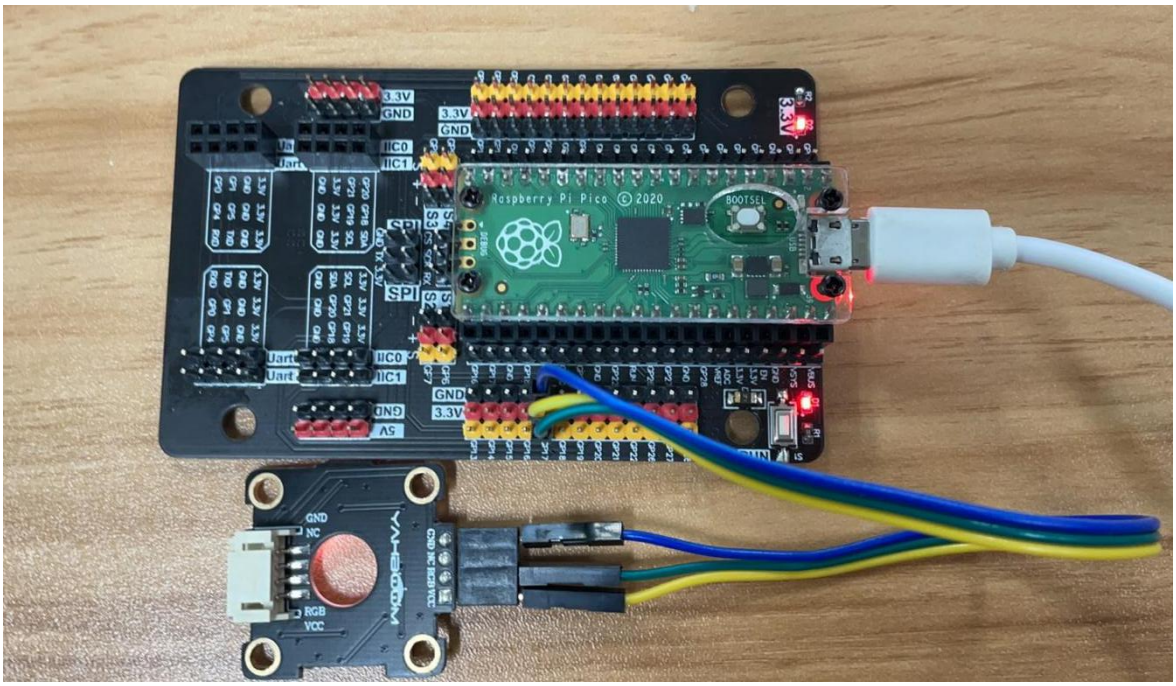


Module parameters:

VCC: power supply interface, can be connected to 3.3V, 5V
GND: Ground RGB: signal input
NC: empty interface, no need to connect
Working voltage: 3.3V/5V Module size: 28.7mm*30mm
RGB lamp model: TX1812C
Interface mode: Alligator clip, DuPont line, PH2.0 cable interface

3. About wiring

RGB halo module	Pico sensor expansion board
RGB	GP17
GND	GND
VCC	3.3V



4. About code

Thonny programming

About how to using ThonnyIDE, please check the tutorials in【2.Development environment】

```
import ws2812b
import random
import utime

ring_pin = 17 # Mdoule connect pin
```

```
numpix = 8    # Number of RGB lights
# Initialize RGB light halo
strip = ws2812b.ws2812b(numpix, 0, ring_pin)
strip.fill(0,0,0) # Clear RGB buffer
strip.show()          # Refresh display

while True:
    for i in range(numpix):
        strip.fill(0,0,0)
        r = random.randint(0, 256)
        g = random.randint(0, 256)
        b = random.randint(0, 256)

        strip.set_pixel(i, r, g, b)
        strip.show()
        utime.sleep(.2)
```

Before running this program, you need to load ws2812b, please check the specific steps in 【2.Development environment】

5. Phenomenon

Click the green run button  of Thonny IDE to start running the program. Click the red stop button  to stop the program. When the program is running, all RGB lights on the module will be turned on to achieve the effect of marquee.