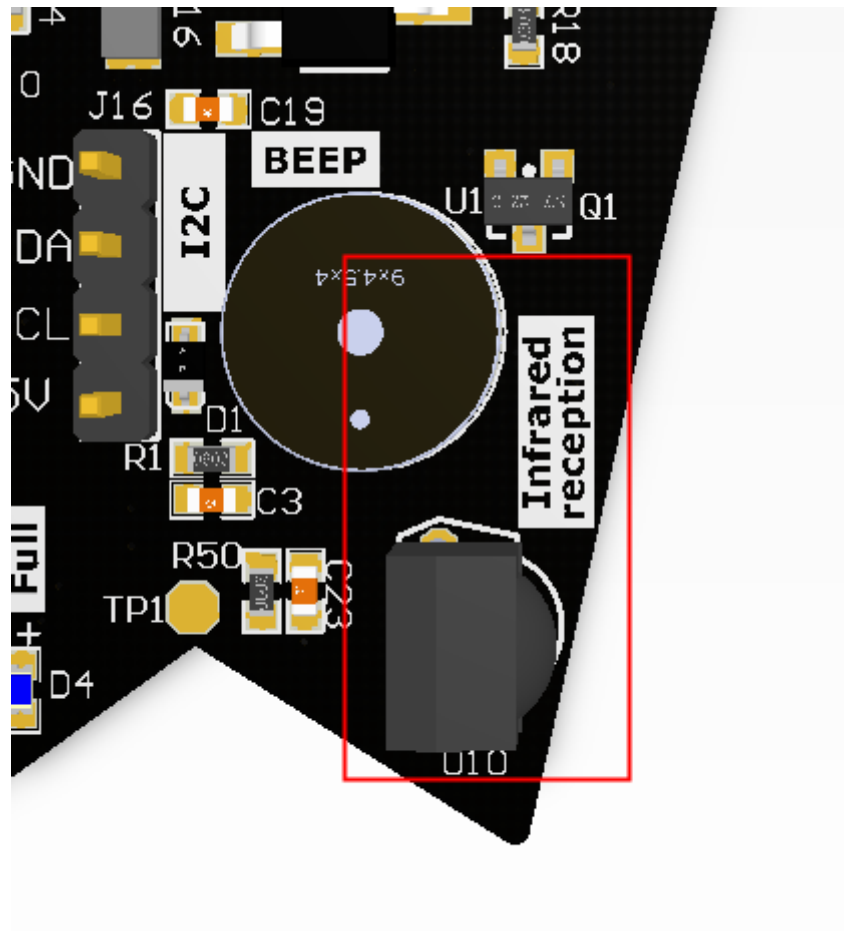# 4.5 Infrared remote control display

I. Learning objectives

1. Learn the infrared reception and OLED combination of the Raspberry Pi Pico 2/Pico mainboard and the car expansion board.
2. Understand the use of infrared reception.

II. Hardware usage

 This course uses the infrared reception and OLED of the Pico 2/Pico mainboard and the car expansion board. In this example, we also need to use an infrared remote control to transmit infrared values to the infrared receiver.

 The spectrum of infrared light is outside the red light, and the wavelength is 0.76 to 1.5μm, which is longer than the wavelength of red light. Infrared remote control is a control method that uses infrared light to transmit information. Infrared remote control has the advantages of anti-interference, simple circuit, easy encoding and decoding, low power consumption and low cost. Infrared remote control is suitable for the control of almost all home appliances. The infrared receiving head has a built-in photoelectric element, which can receive infrared light of the corresponding wavelength and convert it into a digital signal. By reading the signal value, different remote control buttons can be judged.

3. About code

Code path: Code -> 2.Advanced course -> 5. IR control display.py

```python
import time
from machine import Pin, I2C
from pico_car import SSD1306_I2C, ir
#initialization ir
Ir = ir()
#initialization oled
i2c=I2C(1, scl=Pin(15),sda=Pin(14), freq=100000)
oled = SSD1306_I2C(128, 32, i2c)

while True:
    #get value
    value = Ir.Getir()
    time.sleep(0.01)
    if value != None:
        print(value)
        #display press
        if value == 0:
            while value == 0:
                value = Ir.Getir()
            oled.text('Press:Power', 0, 0)
            oled.show()
```

```python
        oled.fill(0)
    elif value == 1:
        while value == 1:
            value = Ir.Getir()
        oled.text('Press:Up', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 2:
        while value == 2:
            value = Ir.Getir()
        oled.text('Press:Light', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 4:
        while value == 4:
            value = Ir.Getir()
        oled.text('Press:Left', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 5:
        while value == 5:
            value = Ir.Getir()
        oled.text('Press:Sound', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 6:
        while value == 6:
            value = Ir.Getir()
        oled.text('Press:Right', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 8:
        while value == 8:
            value = Ir.Getir()
        oled.text('Press:Turn Left', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 9:
        while value == 9:
            value = Ir.Getir()
        oled.text('Press:Down', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 10:
        while value == 10:
            value = Ir.Getir()
        oled.text('Press:Turn Right', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 12:
        while value == 12:
            value = Ir.Getir()
        oled.text('Press:+', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 13:
        while value == 13:
            value = Ir.Getir()
```

```python
        oled.text('Press:0', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 14:
        while value == 14:
            value = Ir.Getir()
        oled.text('Press:-', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 16:
        while value == 16:
            value = Ir.Getir()
        oled.text('Press:1', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 17:
        while value == 17:
            value = Ir.Getir()
        oled.text('Press:2', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 18:
        while value == 18:
            value = Ir.Getir()
        oled.text('Press:3', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 20:
        while value == 20:
            value = Ir.Getir()
        oled.text('Press:4', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 21:
        while value == 21:
            value = Ir.Getir()
        oled.text('Press:5', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 22:
        while value == 22:
            value = Ir.Getir()
        oled.text('Press:6', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 24:
        while value == 24:
            value = Ir.Getir()
        oled.text('Press:7', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 25:
        while value == 25:
            value = Ir.Getir()
        oled.text('Press:8', 0, 0)
        oled.show()
        oled.fill(0)
    elif value == 26:
```

```
        while value == 26:
            value = Ir.Getir()
        oled.text('Press:9', 0, 0)
        oled.show()
        oled.fill(0)
    value = None
```

We use `while value == key value:` to achieve the effect of pressing and releasing the remote control and then executing.

from pico_car import SSD1306_I2C, ir

Use SSD1306_I2C and ir from pico_car, which is our packaged OLED and IR receiver library.

import time

The "time" library. This library handles everything time related, from measuring it to inserting delays into programs. The unit is seconds.

from machine import Pin, I2C

The machine library contains all the instructions that MicroPython needs to communicate with Pico and other MicroPython-compatible devices, extending the language of physical computing, using the Pin and I2C libraries here.

i2c=I2C(1, scl=Pin(15),sda=Pin(14), freq=100000)

Set the IIC 1 pin to SCL 15, SDA 14, and the frequency to 100000.

oled = SSD1306_I2C (128, 32, i2c)

Initialize the size of the OLED to 128*32, and pass in the IIC parameters set earlier.

Ir = ir ()

Initialize the infrared remote control.

value = Ir.Getir ()

Read the infrared remote control value and assign it to the variable value.

oled.show ()

Display the set OLED content.

oled.fill (0)

Clear the settings and prepare for the next display.

oled.text ('Press: Power', 0, 0)

isplay the corresponding key on the OLED, for example, press the power key to display 'Press: Power'.

4. Experimental Phenomenon

After the code is downloaded, when we press the button on IR controller, the corresponding button name will be displayed on the OLED.

At the same time, the print shell will also print corresponding button value.

As shown below.

Keys	Shell prints key values	OLED display
Power	0	Press:Power
Up	1	Press:Up
Light	2	Press:Light
Left	4	Press:Left
Sound	5	Press:Sound
Right	6	Press:Right
Turn Left	8	Press:Turn Left
Down	9	Press:Down
Turn Right	10	Press:Turn Right
+	12	Press:+
0	13	Press:0
-	14	Press:-
1	16	Press:1
2	17	Press:2
3	18	Press:3
4	20	Press:4
5	21	Press:5
6	22	Press:6
7	24	Press:7
8	25	Press:8
9	26	Press:9