Human infrared detector

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 human infrared detector.

2. Preparation

Raspberry Pi Pico board *1

Pico sensor expansion board *1

PC *1

USB data cable *1

Human infrared detector module*1

Male-to-male DuPont line *3

The human body infrared sensor module, which works by detecting the infrared rays of about 10 um emitted by the human body. A Fresnel lens filter is attached to the surface to reduce the interference of the external environment on the detection.

Once a person enters the detection area, the infrared radiation of the human body is focused by a part of the mirror, and an alarm signal is generated after processing, and the pin outputs a high level, otherwise it outputs a low level.

Output signal:

After the module is triggered, it will generate a high level. After a period of delay, the output signal will automatically change from high level to low level.
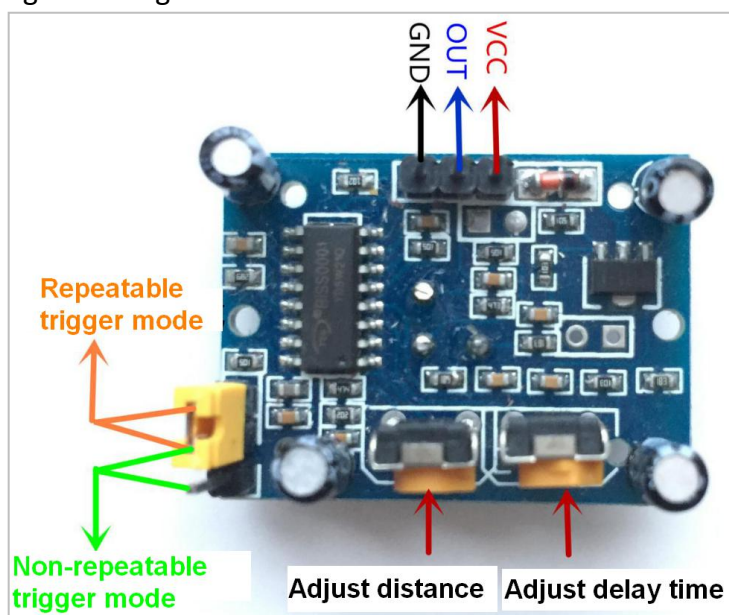
1) Adjust the distance potentiometer to rotate clockwise, the sensing distance will increase, otherwise, the sensing distance will decrease.

2) Adjust the delay potentiometer to rotate clockwise, the induction delay will be longer, otherwise, the induction delay will be shortened.

3. About wiring

Human infrared module	Pico sensor expansion board
OUT	GP11
GND	GND
VCC	3.3V
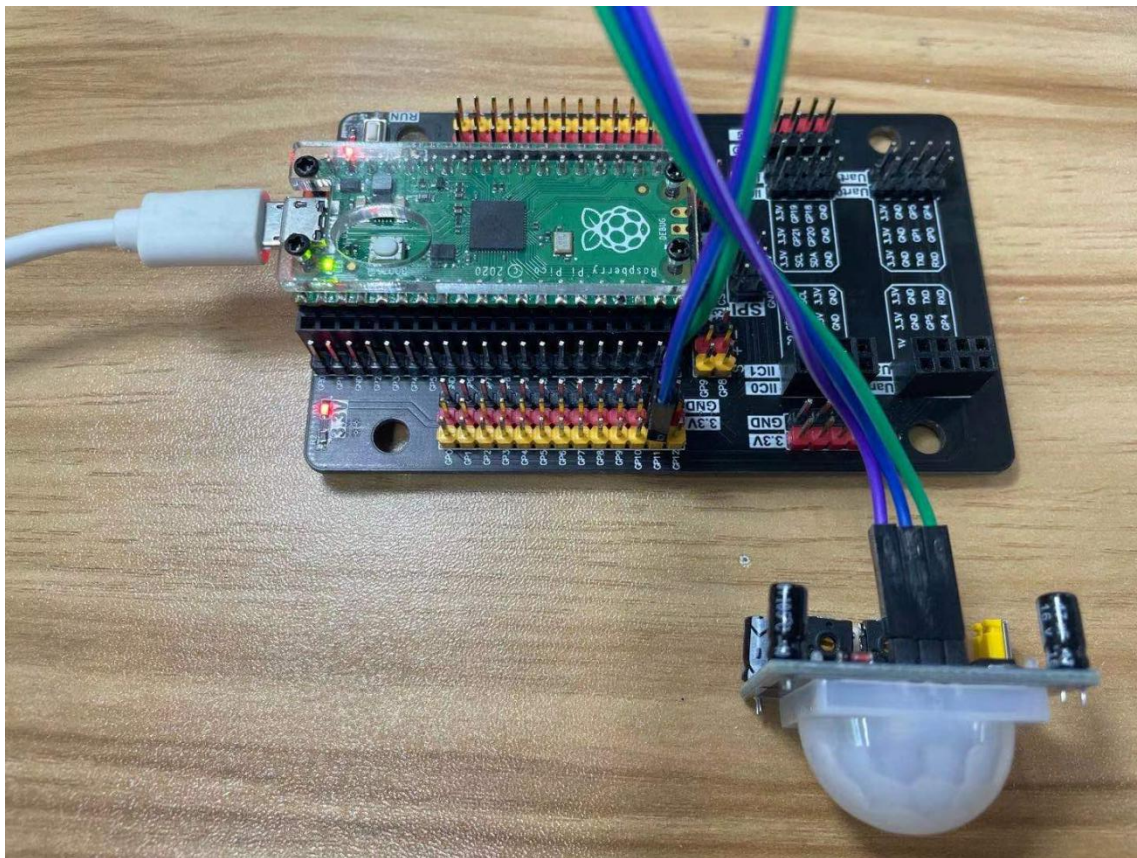
4. About code

Thonny programming

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

```
from machine import Pin
import utime

human = Pin(11, Pin.IN)
led = Pin(25, Pin.OUT)

abc = 0
```

```python
# Turn on the LED light that comes with the board
def led_on():
    led.value(1)

# Turn off the LED light that comes with the board
def led_off():
    led.value(0)


def detect_someone():
    if human.value() == 1:
        return True
    return False

while True:
    if detect_someone() == True:
        abc += 1
        led_on()
        print("value=", abc)
        utime.sleep(1)
    else:
        if abc != 0:
            led_off()
            abc = 0
```

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, if the sensor detects that a

person enters the sensing range, the indicator light on the Pico board will light up.

If the indicator light of the Pico board is always on, please adjust the delay potentiometer on the sensor to reduce the delay time.

When the sensor is triggered once, the indicator light of the Pico board is lit and then kept off (the sensor cannot be triggered repeatedly), please adjust the jumper cap on the sensor to change it to a repeatable triggered mode.