Sound control LED

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 sound module.

2. Preparation

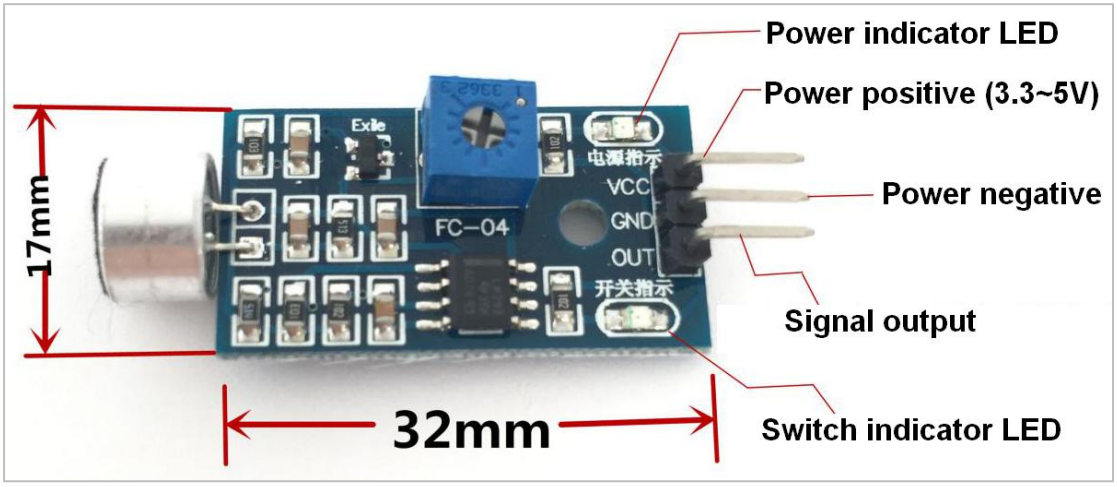
Raspberry Pi Pico board *1
Pico sensor expansion board *1
PC *1
USB data cable *1
Sound module*1
Male-to-male DuPont line *5

Working principle:

The sound sensor can detect the sound intensity of the surrounding environment.
Note: this sensor can only identify the presence or absence of sound (according to the principle of vibration) and cannot identify the size of the sound or the sound of a specific frequency.

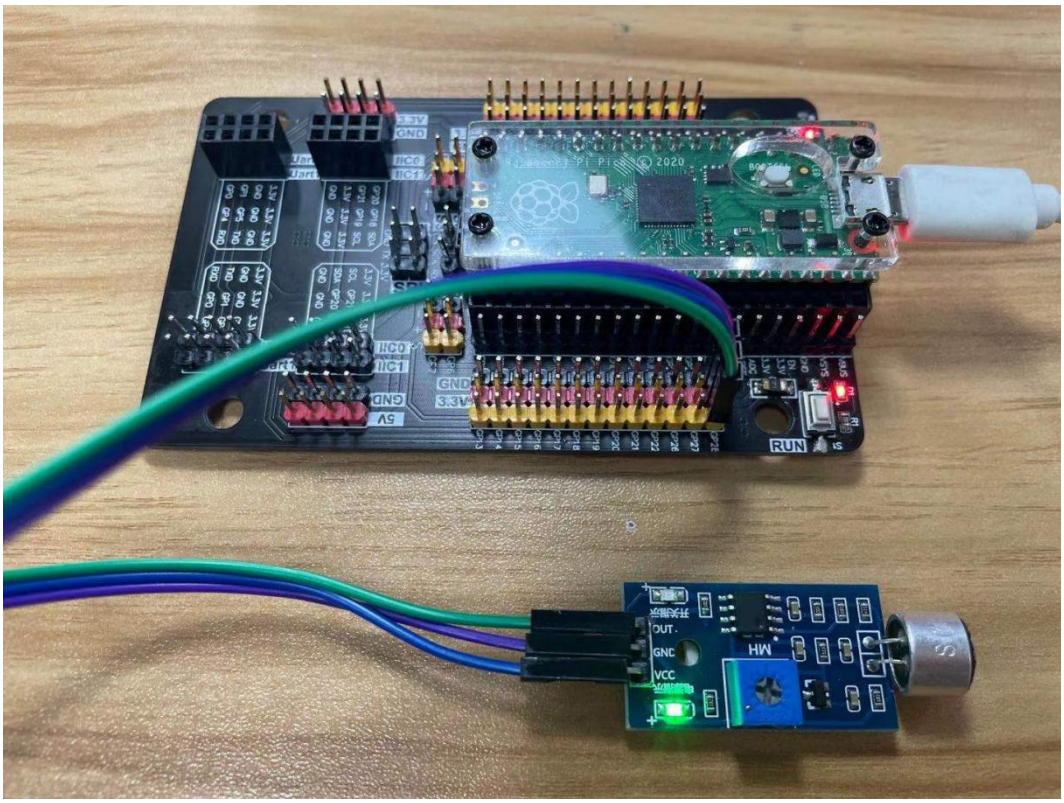
Output signal:

When the intensity of the ambient sound of the module does not reach the set threshold, the D0 pin outputs a high level. When the intensity of the ambient sound exceeds the set threshold, the D0 pin of the module outputs a low level (0 and 1 high and low levels) .



3. About wiring

Sound module	Pico sensor expansion board
VCC	GP28
GND	GND
OUT	GP28



4. About code

Thonny programming

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

```
from machine import Pin
import utime

led = Pin(25, Pin.OUT)
sound = Pin(28, Pin.IN)

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

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

# Read the state of the sound module,
# Return True if the sound exceeds the threshold,
# Return False if it does not exceed the threshold
def sound_state():
    if sound.value() == 0:
        return True
```

```
    return False

# Main loop function, detect the sound module,
# If the threshold is exceeded, the LED light is turned on, otherwise it is turned off
while True:
    if sound_state() == True:
        print("get sound")
        led_on()
        utime.sleep(.1)
    else:
        led_off()
```

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, when the ambient sound exceeds the threshold, the indicator light on the Pico board will light up.