Relay switch

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 Pico board to control relays.

2. Preparation

Raspberry Pi Pico board *1

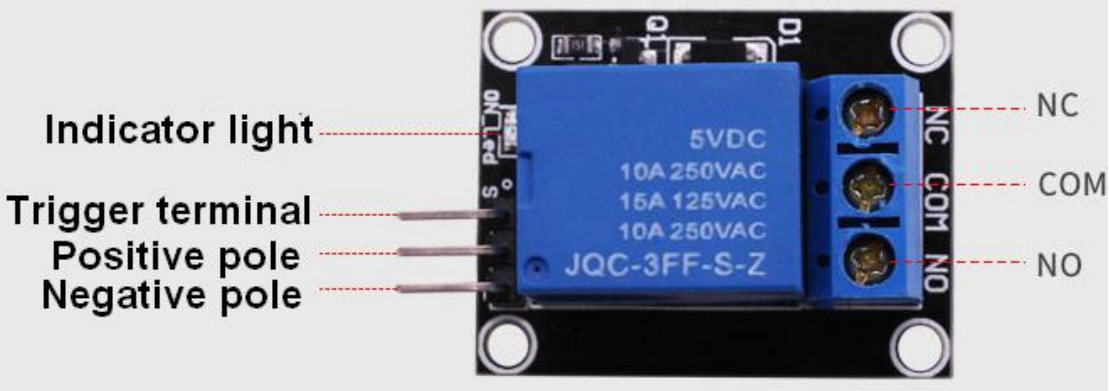
Pico sensor expansion board *1

PC *1

USB data cable *1

Relays module*1

Male-to-male DuPont line *3



3. About wiring

ULN2003 board	Pico sensor expansion board
S	GP4
+	3.3V
GND	GND

4. About code

Thonny programming

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

```
from machine import Pin
import utime

relay = Pin(4, Pin.OUT)

# The relay is opened, COM and NO are connected on the relay, and COM and NC are disconnected.
def relay_on():
    relay(1)

# The relay is closed, the COM and NO on the relay are disconnected, and the COM and NC are connected.
```

```
def relay_off():
    relay(0)

# Loop, the relay is on for one second and off for one second
while True:
    relay_on()
    utime.sleep(1)

    relay_off()
    utime.sleep(1)
```

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, the relay will switch on and off cyclically, turning on for one second and turning off for another second.
At the same time, the sound of the relay switch can be heard, and the indicator light on the relay will indicate the status change.