

Mercury Switch

Introduction

Similar to a tilt switch, a mercury switch is used to detect slight inclinations of a large angle. A mercury switch (also known as a mercury tilt switch) is a switch which opens and closes an electrical circuit through a small amount of liquid mercury.

Mercury switches have one or more sets of electrical contacts in a sealed glass envelope which contains a bead of mercury. The envelope may also contain air or inert gas, or is just vacuum. Gravity is constantly pulling the drop of mercury to the lowest point in the envelope. When the switch is tilted in the appropriate direction, the mercury will touch the set of contacts, thus completing the electrical circuit through those contacts. Tilting the switch in the opposite direction causes the mercury to separate from the contacts, thus breaking that circuit.

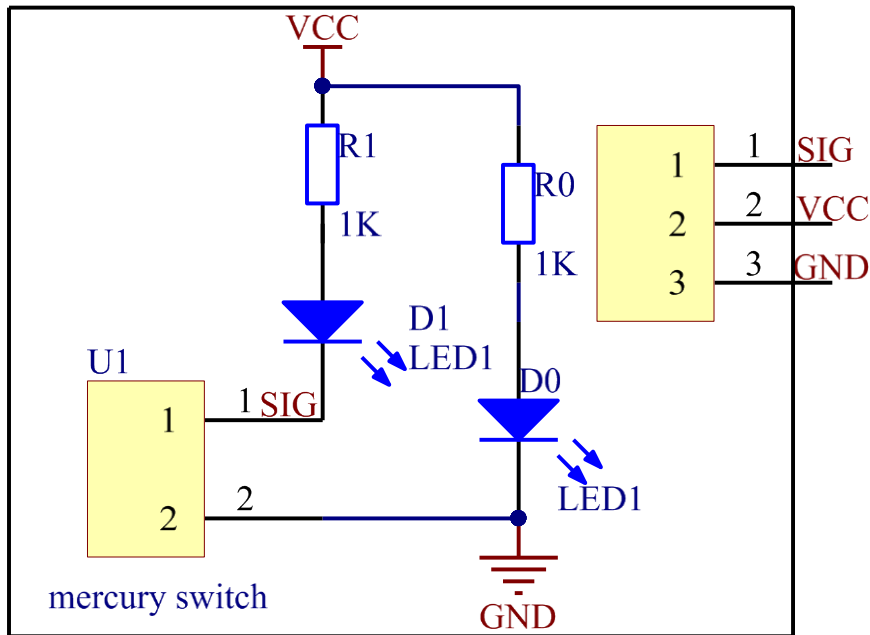


Components

- 1 * Raspberry Pi
- 1 * Breadboard
- 4 * Jumper wires (Male to Male, 2 red and 2 black)
- 1 * Network cable (or USB wireless network adapter)
- 1 * Dual-color LED module
- 1 * Mercury switch module
- 2 * 3-Pin anti-reverse cable

Experimental Principle

When you tilt the switch, the circuit will conduct and the LED flashes red. Place it horizontally and the LED will change to green. The schematic diagram of the module is as shown below:



Note:

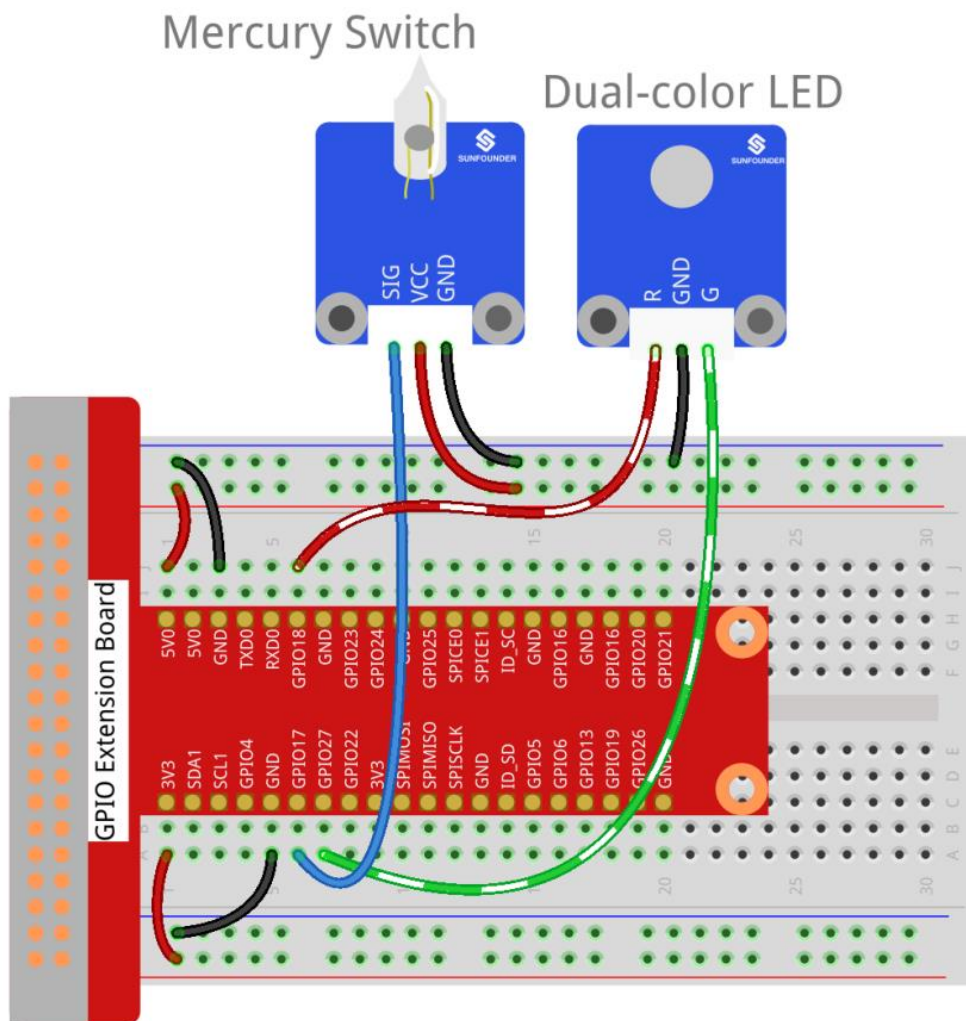
Mercury is harmful to human body and environment. Thus, please be careful when using a mercury switch in case of glass breaking. It should also be properly handled if it's no longer used.

Experimental Procedures

Step 1: Connect the circuit

Raspberry Pi	T-Cobbler	Mercury Switch Module
GPIO0	GPIO17	SIG
5V	5V0	VCC
GND	GND	GND

Raspberry Pi	T-Cobbler	Dual-Color LED Module
GPIO1	GPIO18	R
GND	GND	GND
GPIO2	GPIO27	G



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Download the source code **Mercury_Switch_test_experiment_for_Raspberry_Pi.zip**

unzip the file and move it to */home/pi/* on your Raspberry Pi.

For C language users:

Step 2: Change Directory

```
cd /home/pi/Mercury_Switch_test_experiment_for_Raspberry_Pi/ C_Code/
```

Step 3: Compile

```
gcc mercury_switch.c -lwiringPi
```

Step 4: Run

```
sudo ./a.out
```

For Python users:

Step2: Change Directory

```
cd /home/pi/Mercury_Switch_test_experiment_for_Raspberry_Pi/Python_Code/
```

Step 3: Run

```
sudo python mercury_switch.py
```

Place the mercury switch module horizontally, and the LED will light up green. Tilt it at an angle. Then "Mercury Tilt!" will be printed on the screen and the LED will flash red. Place it horizontally again, and it will change back to green.

