The Grove-Tilt Switch is the equivalent of a button, and is used as a digital input. Inside the tilt switch is a pair of balls that make contact with the pins when the case is upright. Tilt the case over and the balls don't touch, thus not making a connection. It is wired to the SIG line, NC is not used on this Grove.
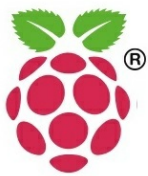
Features

- Grove Interface
- Easy to use
- Simple Grove module

> **Tip**
> More details about Grove modules please refer to Grove System

Specifications

Item	Min	Typical	Max	Unit
Voltage	3	5.0	5.25	V
Connecting Angle	10° ~170°			-
Disconnect angle	190° ~350°			-
Electrical Life	100,000			Cycle

Platforms Supported

Arduino	Raspberry Pi	

> **Caution**
> The platforms mentioned above as supported is/are an indication of the module's software or theoritical compatibility. We only provide software library or code examples for Arduino platform in most cases. It is not possible to provide software library / demo code for all possible MCU platforms. Hence, users have to write their own software library.

Getting Started

Play With Arduino

The SIG pin of the Grove - Tilt Switch output LOW normally. When the Tilt Switch is upright, a pair of balls inside the tilt switch will contact with the pins and the SIG pin will output HIGH.

The following sketch demonstrates a simple application of using the Tilt Switch and Grove - Button to control the led.

- As the following picture indicates, the Tilt Switch is connected to digital port 5 of the Grove - Base Shield and the Grove-Button to digital port 7. The LED is connected to digital port 1. The hardware installation is as follows:
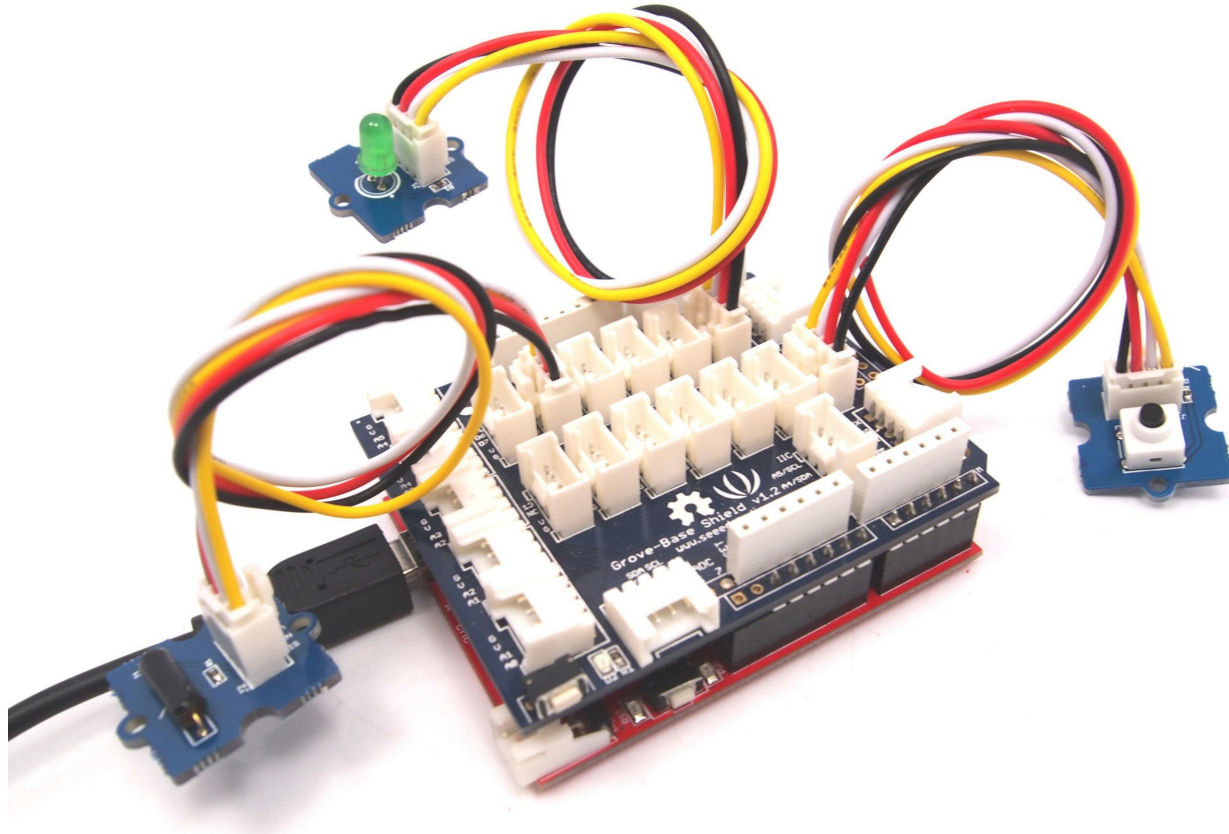
- Copy and paste code below to a new Arduino sketch.

```
void setup()
{
    pinMode(1, OUTPUT);
    pinMode(5, INPUT);
    pinMode(7, INPUT);
}

void loop()
{

    if (digitalRead(5)==HIGH)
    {
        digitalWrite(1, HIGH);
        delay(100);
        digitalWrite(1, LOW);
    }

    if (digitalRead(7)==HIGH)
    {
        digitalWrite(1, HIGH);
        delay(200);
        digitalWrite(1, LOW);
    }

}
```

- Upload the code.
- Then the LED will light when you press the button or activate the tilt-switch. Have a try!

Play with Codecraft

Hardware

Step 1. Connect a Grove - Tilt Switch to port D5, then connect a Grove - Button and Grove - Red LED to port D7 and D2 of a Base Shield.

Step 2. Plug the Base Shield to your Seeeduino/Arduino.

Step 3. Link Seeeduino/Arduino to your PC via an USB cable.

Software

Step 1. Open Codecraft, add Arduino support, and drag a main procedure to working area.

> **Note**
> If this is your first time using Codecraft, see also Guide for Codecraft using Arduino.

Step 2. Drag blocks as picture below or open the cdc file which can be downloaded at the end of this page.

Upload the program to your Arduino/Seeeduino.

> **Success**
> When the code finishes uploaded, tilt the tilt switch or press the button, the LED will goes on.
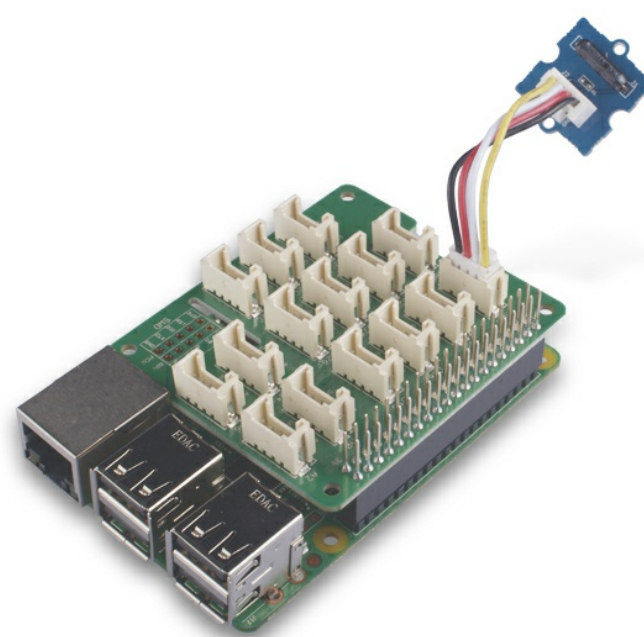
Play With Raspberry Pi (With Grove Base Hat for Raspberry Pi)

Hardware

- Step 1. Things used in this project:

Raspberry pi	Grove Base Hat for RasPi	Grove - Tilt Switch
Get ONE Now	Get ONE Now	Get ONE Now

- Step 2. Plug the Grove Base Hat into Raspberry.
- Step 3. Connect the tilt switch to port 12 of the Base Hat.
- Step 4. Connect the Raspberry Pi to PC through USB cable.

> **Note**
> For step 3 you are able to connect the tilt switch toany GPIO Port but make sure you change the command with the corresponding port number.

Software

- Step 1. Follow Setting Software to configure the development environment.
- Step 2. Download the source file by cloning the grove.py library.

```
cd ~
git clone https://github.com/Seeed-Studio/grove.py
```

- Step 3. Excute below commands to run the code.

```
cd grove.py/grove
python grove_tilt_switch.py 12
```

Following is the grove_tilt_switch.py code.

```python
import time
from grove.gpio import GPIO


class GroveTiltSwitch(GPIO):
    def __init__(self, pin):
        super(GroveTiltSwitch, self).__init__(pin, GPIO.IN)
        self._on_trigger = None
        self._on_release = None

    @property
    def on_trigger(self):
        return self._on_trigger

    @on_trigger.setter
    def on_trigger(self, callback):
        if not callable(callback):
            return

        if self.on_event is None:
            self.on_event = self._handle_event

        self._on_trigger = callback

    @property
    def on_release(self):
        return self._on_release

    @on_release.setter
    def on_release(self, callback):
        if not callable(callback):
            return

        if self.on_event is None:
            self.on_event = self._handle_event

        self._on_release = callback

    def _handle_event(self, pin, value):

        if value:
            if callable(self._on_trigger):
                self._on_trigger()
        else:
            if callable(self._on_release):
                self._on_release()

Grove = GroveTiltSwitch


def main():
    import sys

    if len(sys.argv) < 2:
        print('Usage: {} pin'.format(sys.argv[0]))
        sys.exit(1)

    swicth = GroveTiltSwitch(int(sys.argv[1]))

    def on_trigger():
        print('Triggered')
    def on_release():
        print("Released.")

    swicth.on_trigger = on_trigger
    swicth.on_release = on_release

    while True:
        time.sleep(1)


if __name__ == '__main__':
    main()
```

> **Success**
> If everything goes well, you will be able to see the following result when you touch the tilt switch

```
pi@raspberrypi:~/grove.py/grove $ python grove_tilt_switch.py 12
Triggered
Released.
Triggered
^CTraceback (most recent call last):
  File "grove_tilt_switch.py", line 106, in <module>
    main()
  File "grove_tilt_switch.py", line 102, in main
    time.sleep(1)
KeyboardInterrupt
```

You can quit this program by simply press `Ctrl` + `C` .

Play With Raspberry Pi (with GrovePi_Plus)

With Raspberry Pi

1.You should have a Raspberry Pi and a Grovepi or Grovepi+.

2.You should have completed configuring the development enviroment, otherwise follow here .

3.Connection

- Plug Tilt_Switch into grovepi socket D3 by using a grove cable.

4.Navigate to the demos' directory:

```
cd yourpath/GrovePi/Software/Python/
```

- To see the code

```
nano grovepi_tilt_switch.py   # "Ctrl+x" to exit #
```

```python
import time
import grovepi

# Connect the Grove Tilt Switch to digital port D3
# SIG,NC,VCC,GND
tilt_switch = 3

grovepi.pinMode(tilt_switch,"INPUT")

while True:
    try:
        print grovepi.digitalRead(tilt_switch)
        time.sleep(.5)

    except IOError:
        print "Error"
```

5.Run the demo.

```
sudo python grove_tilt_switch.py
```

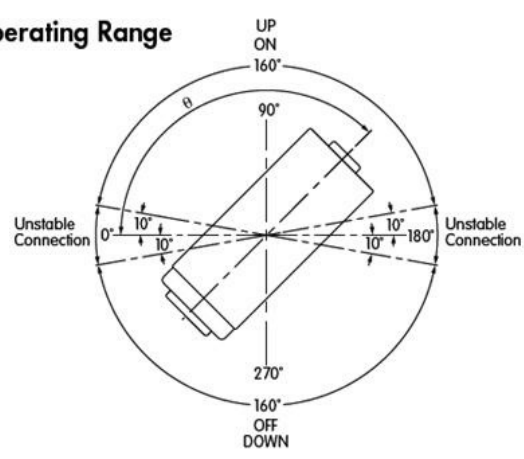6.Result: Put the sensor upright by one side, the SIG pin will output HIGH.
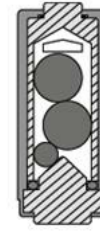

Reference

The operating angle of Grove-Tilt Switch as shown below:
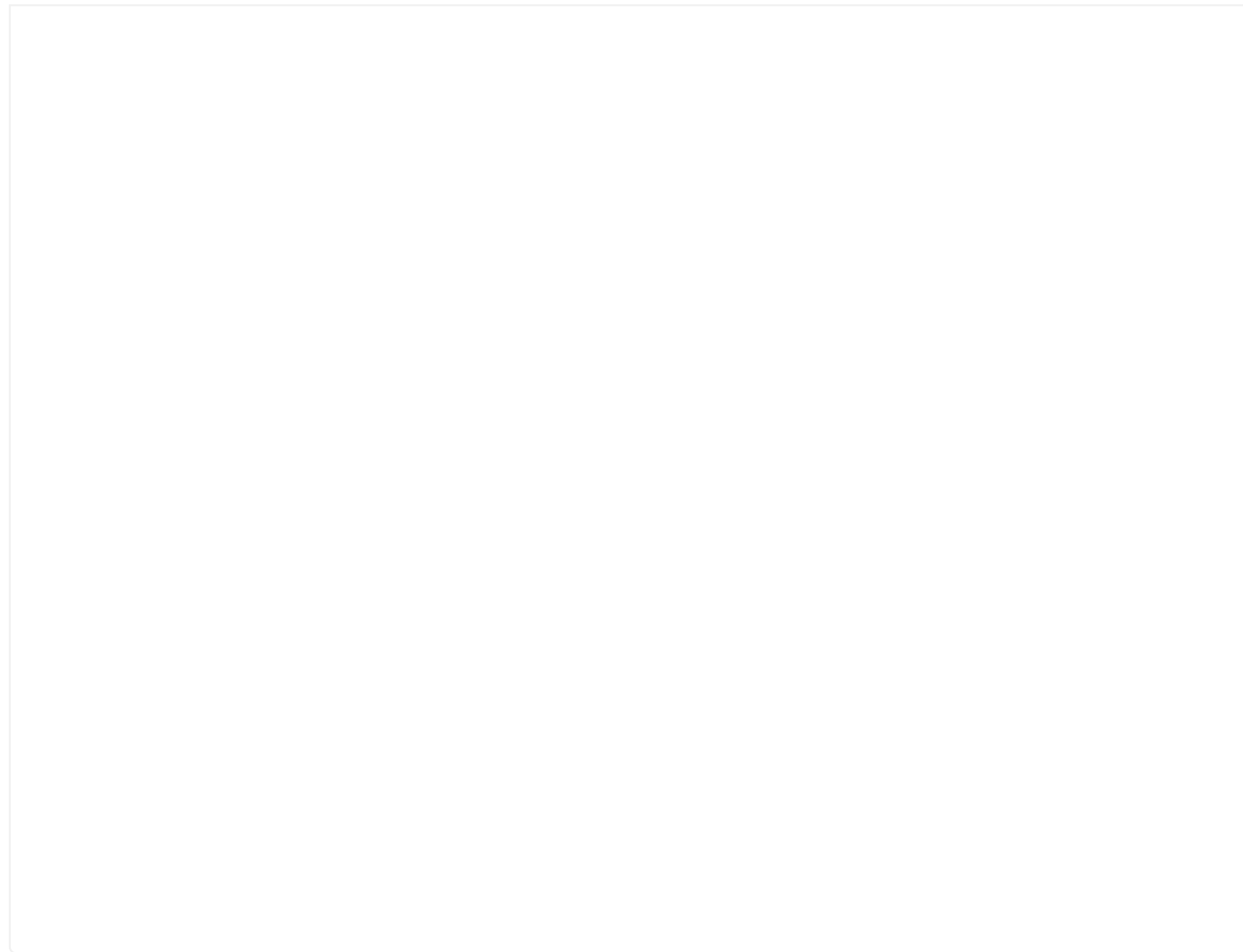
Operating Range

Cross Section

Allow 500ms settling time between states.

> **Note**
> The mark J1 on the Grove is the reference terminal.

Grove - Tilt Switch v1.0 Eagle File

Grove - Tilt Switch v1.1 Eagle File

Resources

- Grove - Tilt Switch v1.0 Eagle File
- Grove - Tilt Switch v1.1 PDF File
- Grove - Tilt Switch v1.1 Eagle File
- SW200D Datasheet
- Codecraft CDC File

Tech Support

Please submit any technical issue into our forum .