

# Grove - Magnetic Switch User Manual

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Wiki:http://www.seeedstudio.com/wiki/index.php?title=Twig -

<u>Magnetic\_Switch</u>

Bazaar: http://www.seeedstudio.com/depot/Grove-Magnetic-Switch-

<u>p-744.html</u>



# **Document Revision History**

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# 1. Introduction

This is a Grove interface compatible Magnetic switch module. It is based on encapsulated dry reed switch CT10. CT10 is single-pole, single throw (SPST) type, having normally open ruthenium contacts. The sensor is a double-ended type and may be actuated with an electromagnet, a permanent magnet or a combination of both. The magnetic switch is a wonderful tool for designers who would like to turn a circuit on and off based on proximity.





# 2. Features

- Grove compatible interface
- 2.0cm x 2.0cm Grove module
- Minimum external parts
- 10W rating
- Rugged encapsulation



# 3. Application Ideas

- Proximity Sensor
- Security Alarm Sensor
- Level Sensor
- Flow Sensor
- Pulse Counter



# 4. Specification

Items	Min	Norm	Max	Unit	
Working Voltage	4.75	5.0	5.25	V	
Switched Power		W			
Switched Voltage AC,RMS value(max)		V			
Switched Current DC		mA			
Carry Current DC		А			
Contact Resistance		mΩ			
Insulation Resistance		MΩ			
Operating Temperature	-40	-	125	°C	
Operate Range	10	-	40	AT	



# 5. Usage

## 5.1 With Arduino

The SIG pin of the module output LOW normally. When a magnet approaches the switch, the magnetic switch close and the SIG pin output HIGH.

The following sketch demonstrates a simple application of using the Magnetic switch to control the led. When you put a magnet that has enough magnetic power close to the module, the switch is closed .Then the SIG pin out put a high voltage. You can use this to control the led.

As the picture on the below indicates, the Magnetic switch is connected to digital port 9 of the Grove

- Basic Shieldand the LED is connected to digital port 13. When there is Magnetic approaches the

switch, the SIG pin output a High voltage. Then the LED light. The hardware installation is as follows:



• Copy and paste code below to a new Arduino sketch.



```
}
void loop()
{
    if(isNearMagnet())//if the magnetic switch is near the magnet?
     {
         turnOnLED();
    }
    else
     {
         turnOffLED();
    }
void pinsInit()
{
    pinMode(MAGNECTIC_SWITCH, INPUT);
    pinMode(LED, OUTPUT);
/*If the magnetic switch is near the magnet, it will return ture, */
/*otherwise it will return false
                                                                   */
boolean isNearMagnet()
{
    int sensorValue = digitalRead(MAGNECTIC_SWITCH);
     if(sensorValue == HIGH)//if the sensor value is HIGH?
     {
         return true;//yes,return ture
    }
    else
     {
         return false;//no,return false
    }
void turnOnLED()
{
    digitalWrite(LED, HIGH);
}
void turnOffLED()
{
    digitalWrite(LED,LOW);
```

- Upload the code, Please click <u>here</u> if you do not know how to upload.
- Then the LED light when there is Magnetic approaches the switch. Have a try!



#### With Raspberry Pi 5.2

1. You should have got a raspberry pi and a grovepi or grovepi+.

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

#### 3. Connection.

Plug the Magnet Switch to grovepi socket D3 by using a grove cable. 

#### 4. Navigate to the demos' directory:

cd yourpath/GrovePi/Software/Python/

```
• To see the code (this demo has the same usage with tilt switch)
nano grovepi_tilt_switch.py # "Ctrl+x" to exit #
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 a magnet upon the sensor, the SIG pin will output HIGH.



<b>P</b>	pi@raspberrypi: ~/Desktop/GrovePi/Software/Python	-		×
pi@raspberryp 0 0 0 0 1 1 1 1 1 1 1 0 0 0	i ~/Desktop/GrovePi/Software/Python \$ sudo python grove_til	t_swit	ch.p)	~



# 6. Resources

- Grove-Magnetic Switch v1.9 Eagle File
- CT10 datasheet
- Grove-Magnetic Switch v1.3 Eagle File
- Grove-Magnetic Switch v1.3 PDF File





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