

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.

Get One Now 

[<https://www.seeedstudio.com/Grove-Magnetic-Switch-p-744.html>]

Features

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



Tip

More details about Grove modules please refer to [Grove System](#)

[https://wiki.seeedstudio.com/Grove_System/]

Application Ideas

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

Specifications

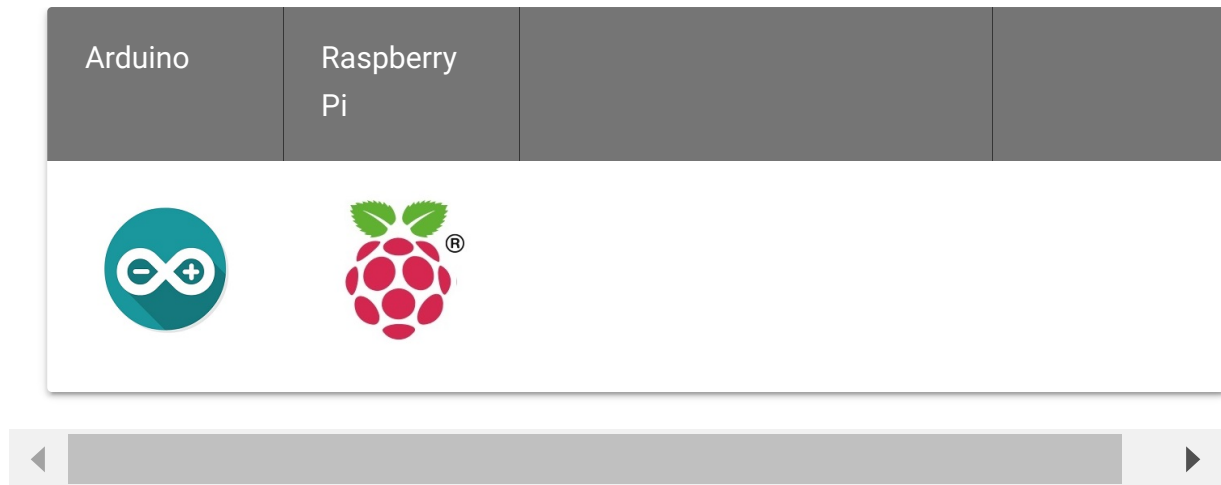
Items	Min	Norm	Max	Unit
Working Voltage	3.3	5.0	5.25	V
Switched Power	10			W
Switched Voltage AC,RMS value(max)	< 140			V
Switched Current DC	< 500			mA
Carry Current DC	< 0.5			A
Contact Resistance	<200			mΩ
Insulation Resistance	>10 ⁶			MΩ
Operating Temperature	-40	-	125	°C
Operate Range	10	-	40	AT



Tip

More details about Grove modules please refer to [Grove System](https://wiki.seeedstudio.com/Grove_System/)
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Platforms Supported



Caution

The platforms mentioned above as supported is/are an indication of the module's software or theoretical 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



Note

If this is the first time you work with Arduino, we firmly recommend you to see [Getting Started with Arduino](https://wiki.seeedstudio.com/Getting_Started_with_Arduino/)
[https://wiki.seeedstudio.com/Getting_Started_with_Arduino/] before the start.



Play With Arduino

Demonstration

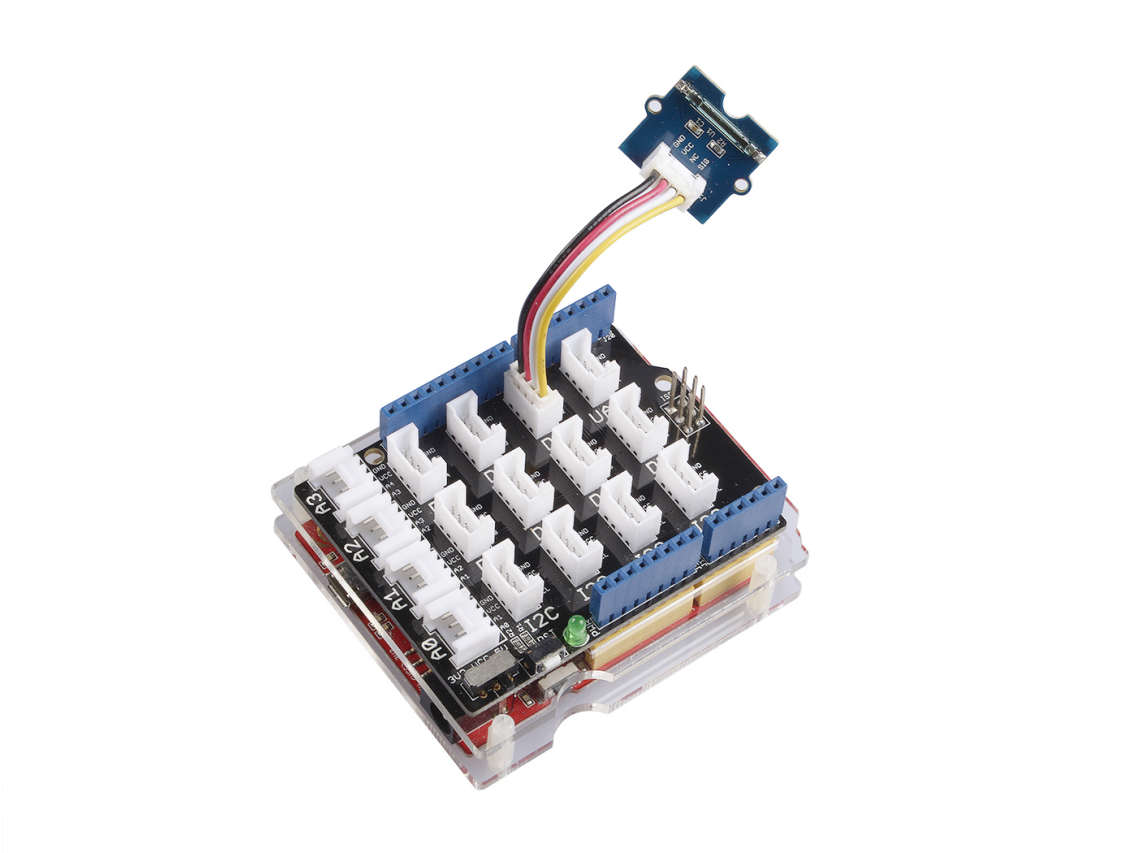
The SIG pin of the module output LOW normally. When a magnet approaches the switch, the magnetic switch close and the SIG pin output HIGH.

Hardware

- **Step 1.** Prepare the below stuffs:

Seeeduino V4.2	Base Shield
	
<p>Get One Now [https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html]</p>	<p>Get One Now [https://www.seeedstudio.com/Base-Shield-V2-p-1378.html]</p>

- **Step 2.** Connect Grove - Magnetic Switch to port **D2** of Grove-Base Shield.
- **Step 3.** Plug Grove - Base Shield into Seeeduino.
- **Step 4.** Connect Seeeduino to PC via a USB cable.

**Note**

If we don't have Grove Base Shield, We also can directly connect Grove-Magnetic-Switch to Seeeduino as below.

Seeeduino	Grove-Magnetic_Switch
5V/3.3V	Red
GND	Black
NC	White
D2	Yellow

Software

- **Step 1.** Copy the code into Arduino IDE and upload. If you do not know how to upload the code, please check [how to upload code](https://wiki.seeedstudio.com/Upload_Code/) [https://wiki.seeedstudio.com/Upload_Code/].

```
1  /*****
2
3  /*macro definitions of magnetic pin and LED pin*/
4  #define MAGNETIC_SWITCH 2
5  #define LED 13//the on board LED of the Arduino or Seeed
6
7  void setup()
8  {
9      pinsInit();
10 }
11
12 void loop()
13 {
14     if(isNearMagnet())//if the magnetic switch is near the magnet, it will return true
15     {
16         turnOnLED();
17     }
18     else
19     {
20         turnOffLED();
21     }
22 }
23 void pinsInit()
24 {
25     pinMode(MAGNETIC_SWITCH, INPUT);
26     pinMode(LED,OUTPUT);
27 }
28
29 /*If the magnetic switch is near the magnet, it will return true
30 /*otherwise it will return false
31 boolean isNearMagnet()
32 {
33     int sensorValue = digitalRead(MAGNETIC_SWITCH);
34     if(sensorValue == HIGH)//if the sensor value is HIGH
35     {
```

```
36     return true;//yes,return ture
37   }
38   else
39   {
40     return false;//no,return false
41   }
42 }
43 void turnOnLED()
44 {
45     digitalWrite(LED,HIGH);
46 }
47 void turnOffLED()
48 {
49     digitalWrite(LED,LOW);
50 }
```

- **Step 2.** Then the LED turns on when there is Magnetic approaches the switch. Have a try!

Play with Codecraft

Hardware

Step 1. Connect a Grove - Magnetic Switch to port D2 of a Base Shield.

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

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

Software

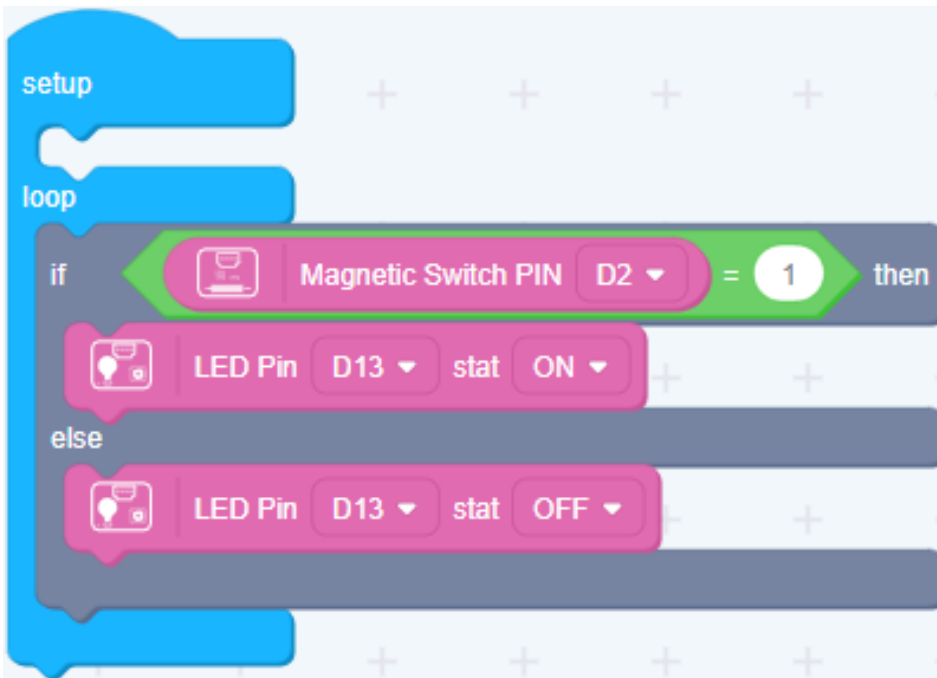
Step 1. Open [Codecraft](https://ide.chmakered.com/) [https://ide.chmakered.com/], add Arduino support, and drag a main procedure to working area.



Note

If this is your first time using Codecraft, see also [Guide for Codecraft using Arduino](https://wiki.seeedstudio.com/Guide_for_Codecraft_using_Arduino/) [https://wiki.seeedstudio.com/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/Seeedduino.



Success

When the code finishes uploaded, move the magnet close to the magnetic switch and you will see the LED on the Arduino 13 pin turns on.

Play With Raspberry Pi

Hardware

- **Step 1.** Prepare the below stuffs:

Raspberry pi



GrovePi_Plus



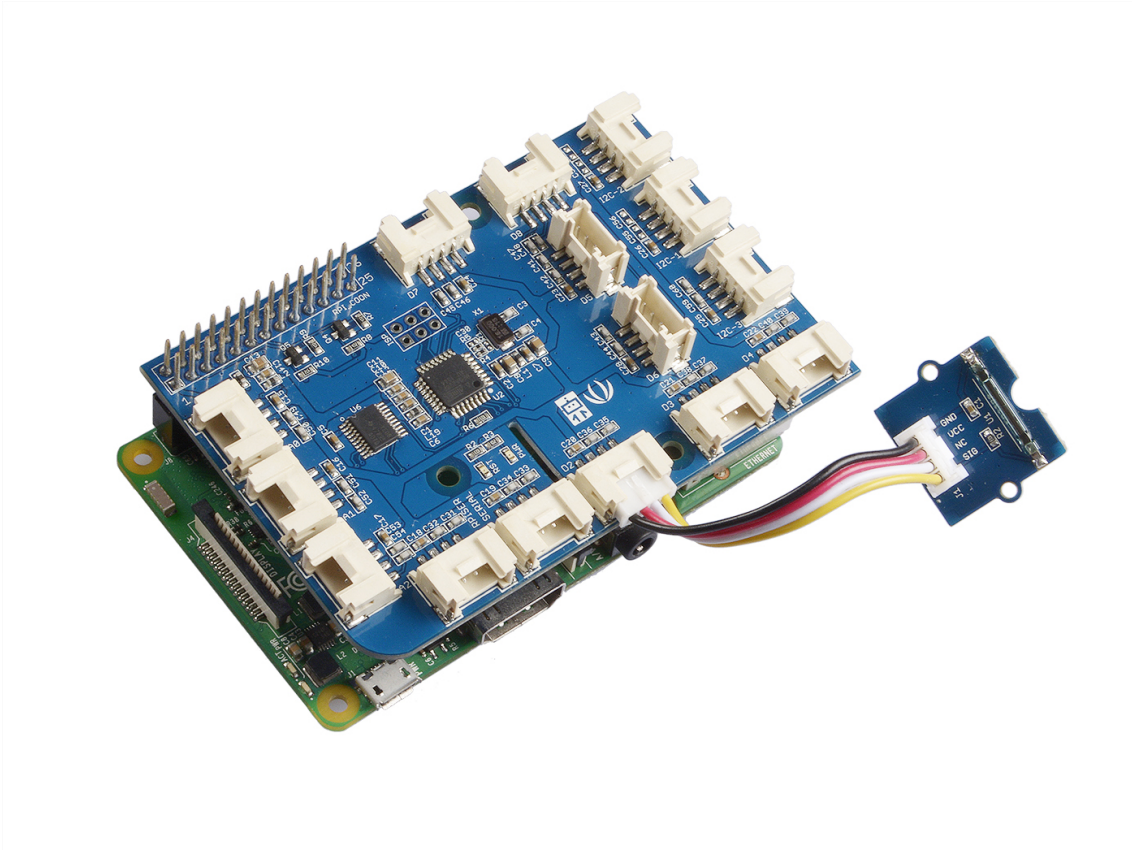
[Get One Now](#)

[<https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html>]

[Get One Now](#)

[<https://www.seeedstudio.com/Base-Shield-V2-p-1378.html>]

- **Step 2.** Plug the GrovePi_Plus into Raspberry.
- **Step 3.** Connect Grove-Magnetic-Switch ranger to **D2** port of GrovePi_Plus.
- **Step 4.** Connect the Raspberry to PC through USB cable.



Software



Attention

If you are using **Raspberry Pi with Raspberrypi OS >= Bullseye**, you have to use this command line **only with Python3**.

- **Step 1.** Follow [Setting Software](https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/setting-software/) [https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/setting-software/] to configure the development environment.
- **Step 2.** Navigate to the demos' directory:

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



- **Step 3.** To see the code (this demo has the same usage with tilt switch)

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

```
1 import time
2 import grovepi
3
4 # Connect the Grove Tilt Switch to digital port D2
5 # SIG,NC,VCC,GND
6 tilt_switch = 2
7
8 grovepi.pinMode(tilt_switch,"INPUT")
9
10 while True:
11     try:
12         print grovepi.digitalRead(tilt_switch)
13         time.sleep(.5)
14
15     except IOError:
16         print "Error"
```

- **Step 4.** Run the demo.

```
sudo python grovepi_tilt_switch.py
```

- **Step 5.** Result

Put a magnet upon the sensor, the SIG pin will output HIGH.



```
pi@raspberrypi: ~/Desktop/GrovePi/Software/Python
pi@raspberrypi ~/Desktop/GrovePi/Software/Python $ sudo python grove_tilt_switch.py
0
0
0
0
0
0
1
1
1
1
1
1
1
1
0
0
0
0
```

Grove-Magnetic Switch v0.9



Grove-Magnetic Switch v1.3



Resources

- **[Eagle]** [Grove-Magnetic Switch v0.9 Schematic](https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/Magnetic_Switch.zip)
[https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/Magnetic_Switch.zip]
- **[Eagle]** [Grove-Magnetic Switch v1.3 Schematic](https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/Grove-Magnetic_Switch_v1.3_Eagle_File.zip)
[https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/Grove-Magnetic_Switch_v1.3_Eagle_File.zip]

- **[PDF]** [Grove-Magnetic Switch v1.3 PDF File](https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/Grove-Magnetic_Switch_v1.3_PDF_File.pdf)
[https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/Grove-Magnetic_Switch_v1.3_PDF_File.pdf]
- **[Datasheet]** [CT10 Datasheet](https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/CT10.pdf)
[https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/CT10.pdf]
- **[Codecraft]** [CDC File](https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/Grove_Magnetic_Switch_CDC_File.zip) [https://files.seeedstudio.com/wiki/Grove-Magnetic_Switch/res/Grove_Magnetic_Switch_CDC_File.zip]

Tech Support

Please submit any technical issue into our [forum](https://forum.seeedstudio.com/)
[https://forum.seeedstudio.com/].



[https://www.seeedstudio.com/act-4.html?
utm_source=wiki&utm_medium=wikibanner&utm_campaign=newpr
oducts]