



# Grove - Electromagnet

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Version : 1.0

Wiki: [http://www.seeedstudio.com/wiki/Grove - Electromagnet](http://www.seeedstudio.com/wiki/Grove_-_Electromagnet)

Bazaar: <http://www.seeedstudio.com/depot/Grove-Electromagnet-p-1820.html>

## Document Revision History

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Revision	Date	Author	Description
1.0	Sep 21, 2015	Victor.He	Create file

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### *Disclaimer*

*For physical injuries and possessions loss caused by those reasons which are not related to product quality, such as operating without following manual guide, natural disasters or force majeure, we take no responsibility for that.*

*Under the supervision of Seeed Technology Inc., this manual has been compiled and published which covered the latest product description and specification. The content of this manual is subject to change without notice.*

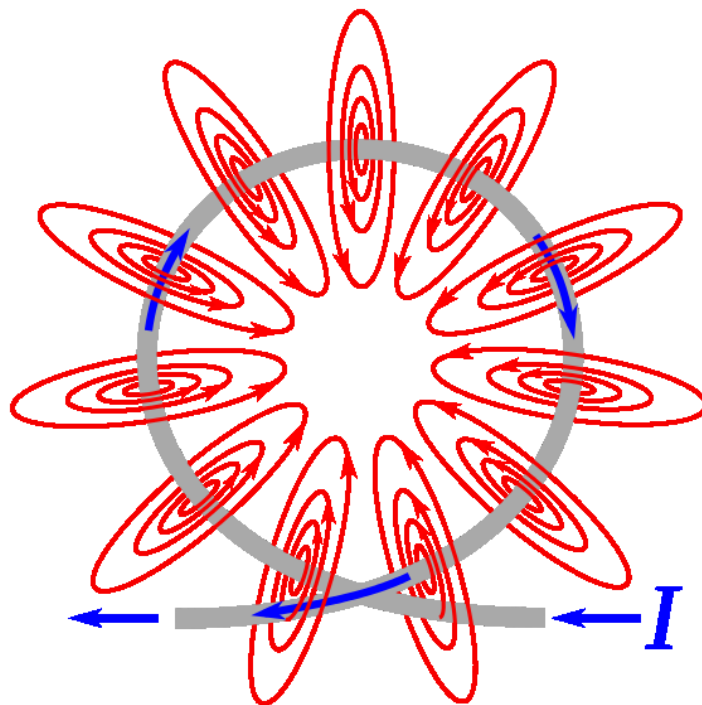
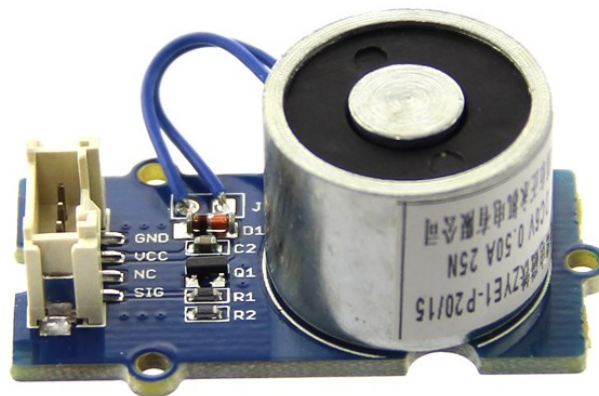
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## 1. Introduction

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An electromagnet is a type of magnet in which the magnetic field is produced by electric current. An electric current flowing in a wire creates a magnetic field around the wire, due to Ampere's law (see drawing below). To concentrate the magnetic field, in an electromagnet the wire is wound into a coil with many turns of wire lying side by side. The magnetic field of all the turns of wire passes through the center of the coil, creating a strong magnetic field there. Grove - Electromagnet can shuck 1KG weight and hold on. It easy to use, to learn electromagnet principle.



## 2. Features

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- Grove shape
- 1KG peak suction
- Low standby current

### 3. Specification

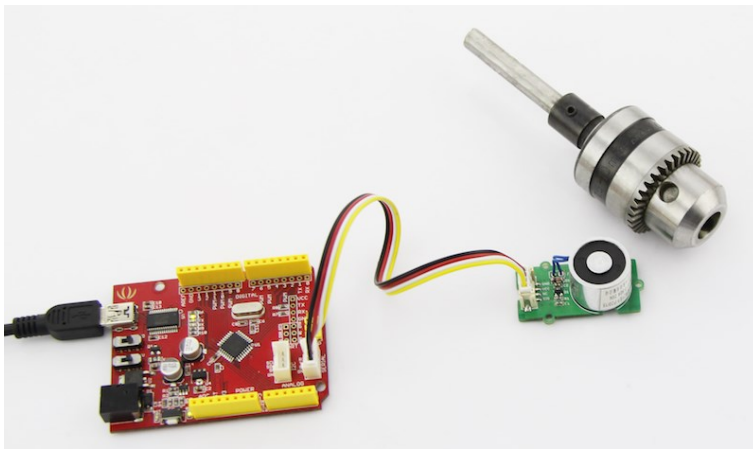
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Working Voltage	DC 5V
Working Current	400mA
Standby current	200uA
Load Weight	1KG

## 4. Usage

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### 4.1 With [Arduino](#)



```
/*  
Turns on an Electromagnet on for one second, then off for one second,  
repeatedly.  
  
This example code is in the public domain.  
*/  
  
int Electromagnet = 0;  
int LED = 13;  
  
// the setup routine runs once when you press reset:  
void setup() {  
  // initialize the digital pin as an output.  
  pinMode(Electromagnet, OUTPUT);  
  pinMode(LED, OUTPUT);  
}  
  
// the loop routine runs over and over again forever:  
void loop() {
```



```
digitalWrite(Electromagnet, HIGH); // turn the Electromagnet on (HIGH
is the voltage level)
digitalWrite(LED, HIGH); // turn the LED on (HIGH is the voltage
level)
delay(1000); // wait for a second
digitalWrite(Electromagnet, LOW); // turn the Electromagnet off by
making the voltage LOW
digitalWrite(LED, LOW); // turn the LED off by making the voltage LOW
delay(1000); // wait for a second
```

## 4.2 With [Raspberry Pi](#)

1. You should have got a raspberry pi and a grovepi or grovepi+.
2. You should have completed configuring the development environment, otherwise follow [here](#).
3. Connection. Plug the sensor to grovepi socket D4 by using a grove cable.
4. Navigate to the demos' directory:

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

To see the code

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

```
import time
import grovepi

# The electromagnet can hold a 1KG weight

# Connect the Grove Electromagnet to digital port D4
# SIG,NC,VCC,GND
electromagnet = 4

grovepi.pinMode(electromagnet,"OUTPUT")
time.sleep(1)

while True:
    try:
        # Switch on electromagnet
        grovepi.digitalWrite(electromagnet,1)
        print "on"
        time.sleep(2)

        # Switch off electromagnet
```

```
grovepi.digitalWrite (electromagnet,0)
print "off"
time.sleep(2)

except KeyboardInterrupt:
    grovepi.digitalWrite (electromagnet,0)
    break
except IOError:
    print "Error"}
```

5. Run the demo.

```
sudo python grove_electromagnet.py
```

## 5. Resource

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[File:Grove Electromagnet v1.0 SCH PCB.zip](#)

[Datasheet ZYE1-P20-15 PDF](#)