

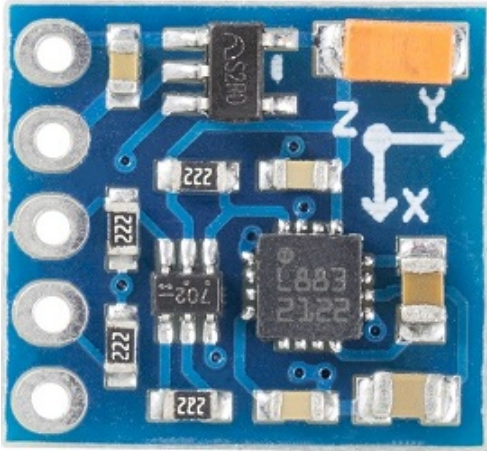
# GY-271 HMC5883L 3-Axis Magnetic Electronic Compass Module

From Wiki

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## Introduction



The Compass Module is designed for low-field magnetic sensing with a digital interface and perfect to give precise heading information. This compact sensor fits into small projects such as UAVs and robot navigation systems. The sensor converts any magnetic field to a differential voltage output on 3 axes. This voltage shift is the raw digital output value, which can then be used to calculate headings or sense magnetic fields coming from different directions.

## Main Features

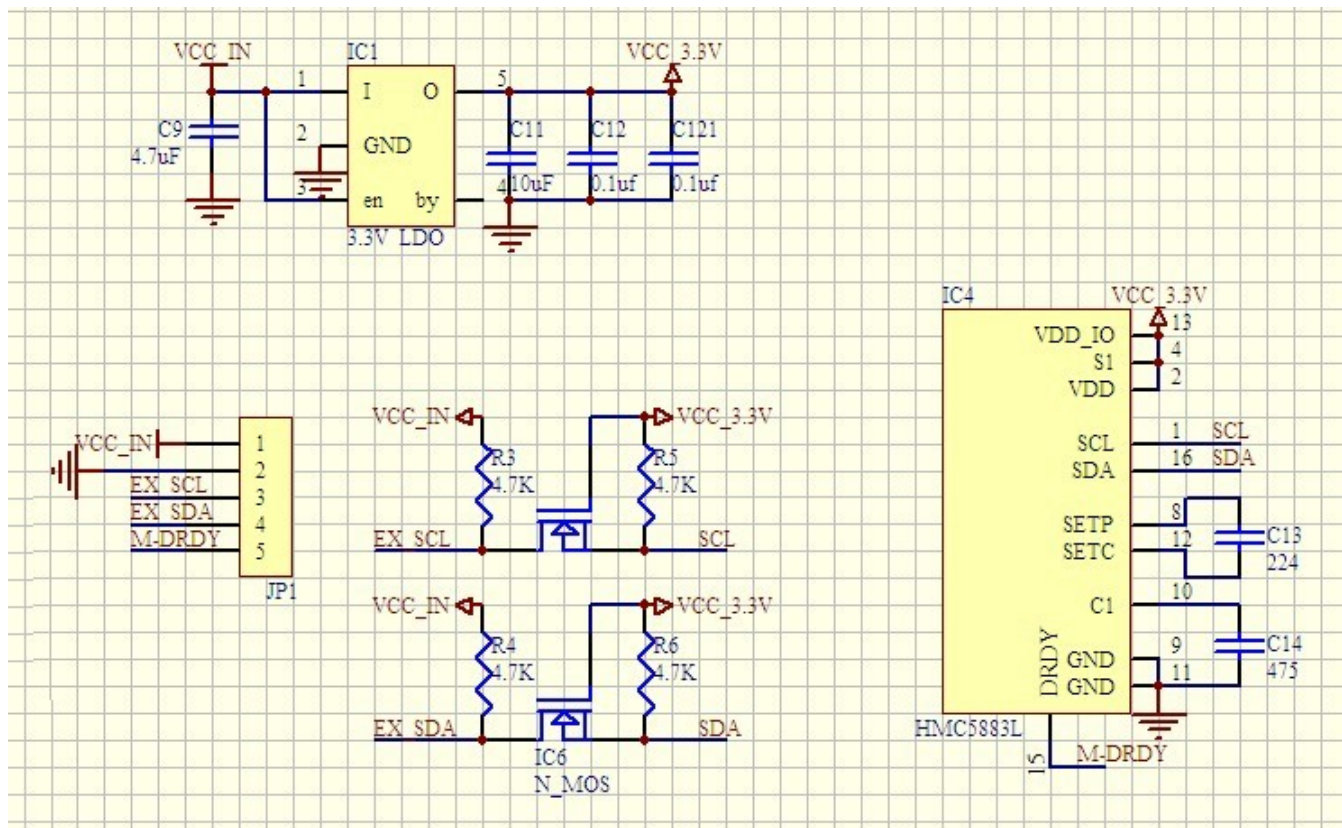
1. Gold plating PCB, applying machine welding technology, superb technique and reliably quality guarantee!
2. Name: HMC5883L Module (Triaxial Magnetic Field Module);
3. Type: GY-271;
4. Used Chip: HMC5883L;
5. Power Supply: 3~5V;
6. Communication Mode: Standard IIC communicating protocol;
7. Measuring Range:  $\pm 1.3$ -8 Gauss.

## Introduction of Pins

Pin Introduction	
VCC	Connected to the anode of the power supply (3~5v)
GND	Connected to the cathode of the power supply
SCL	I <sup>2</sup> C clock
SDA	I <sup>2</sup> C data
DRDY	Interrupting pin for data preparation, DRDY is pulled up inside and keeps the low level for 250μsec when the data are on the output register.

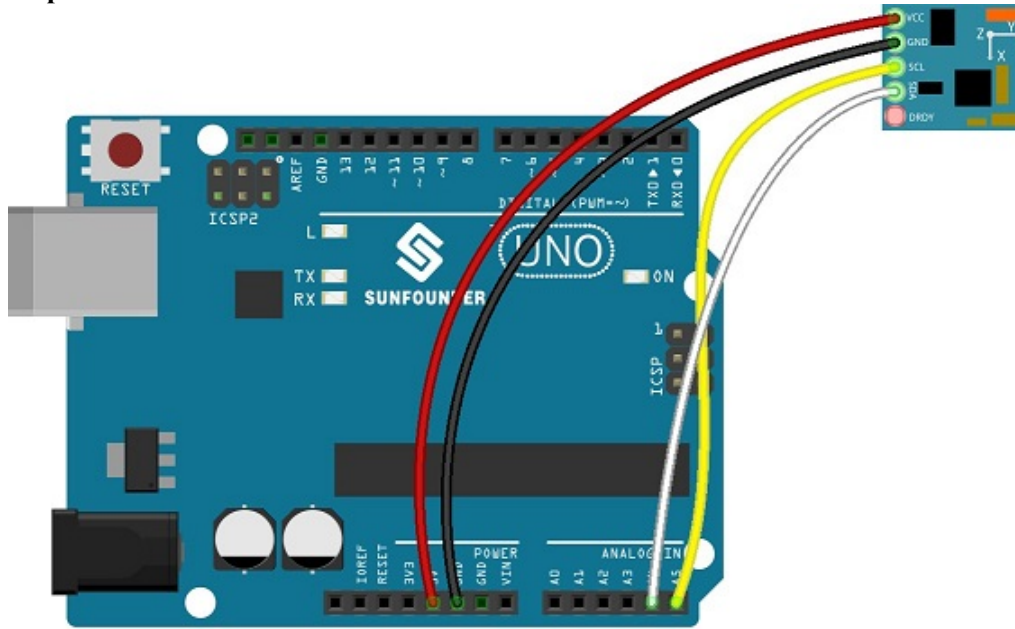
## Principle

Honeywell HMC5883L is a kind of SMT High integration module that has a weakly magnetic sensor chip with digital interface. It is widely used



## Experimental Procedures for Arduino

GY-271	Arduino uno
VCC	VCC
GND	GND
SCL	A5
SDA	A4

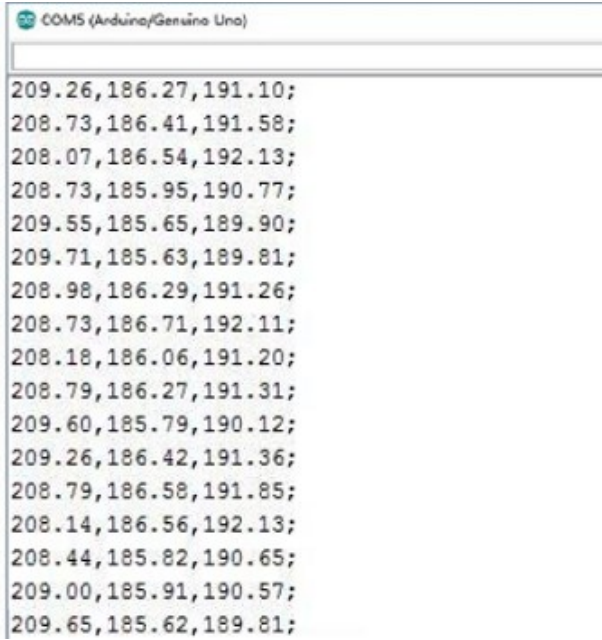
**Step 1:** Connect the circuit:

The serial monitor shows the results (X plane angle, Y plane angle, Z plane angle in degrees) of different positions of the module.

**Step 2:** Compile and upload the code.

```
#include <Wire.h>
#include <HMC5883L.h>
HMC5883L compass;
void setup()
{
  Serial.begin(9600);
  Wire.begin();
  compass = HMC5883L();
  compass.SetScale(1.3);
  compass.SetMeasurementMode(Measurement_Continuous);
}
void loop()
{
  MagnetometerRaw raw = compass.ReadRawAxis();
  MagnetometerScaled scaled = compass.ReadScaledAxis();
  float xHeading = atan2(scaled.YAxis, scaled.XAxis);
  float yHeading = atan2(scaled.ZAxis, scaled.XAxis);
  float zHeading = atan2(scaled.ZAxis, scaled.YAxis);
  if(xHeading < 0) xHeading += 2*PI;
  if(xHeading > 2*PI) xHeading -= 2*PI;
  if(yHeading < 0) yHeading += 2*PI;
  if(yHeading > 2*PI) yHeading -= 2*PI;
  if(zHeading < 0) zHeading += 2*PI;
  if(zHeading > 2*PI) zHeading -= 2*PI;
  float xDegrees = xHeading * 180/M_PI;
  float yDegrees = yHeading * 180/M_PI;
  float zDegrees = zHeading * 180/M_PI;
  Serial.print(xDegrees);
  Serial.print(",");
  Serial.print(yDegrees);
  Serial.print(",");
  Serial.print(zDegrees);
  Serial.println("");
  delay(100);
}
```

The serial monitor shows the results (X plane angle, Y plane angle, Z plane angle in degrees) of different positions of the module.



```
COM5 (Arduino/Genuino Uno)
209.26,186.27,191.10;
208.73,186.41,191.58;
208.07,186.54,192.13;
208.73,185.95,190.77;
209.55,185.65,189.90;
209.71,185.63,189.81;
208.98,186.29,191.26;
208.73,186.71,192.11;
208.18,186.06,191.20;
208.79,186.27,191.31;
209.60,185.79,190.12;
209.26,186.42,191.36;
208.79,186.58,191.85;
208.14,186.56,192.13;
208.44,185.82,190.65;
209.00,185.91,190.57;
209.65,185.62,189.81;
```

## Resource

HMC5883L library (<http://wiki.sunfounder.cc/images/a/af/HMC5883L.zip>) 

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- This page was last modified on 25 September 2019, at 08:51.