

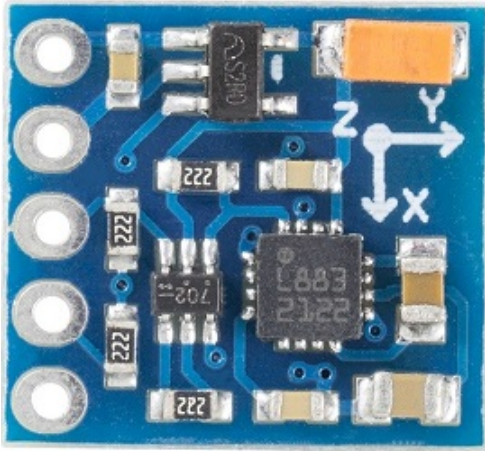
GY-271 HMC5883L 3-Axis Magnetic Electronic Compass Module

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

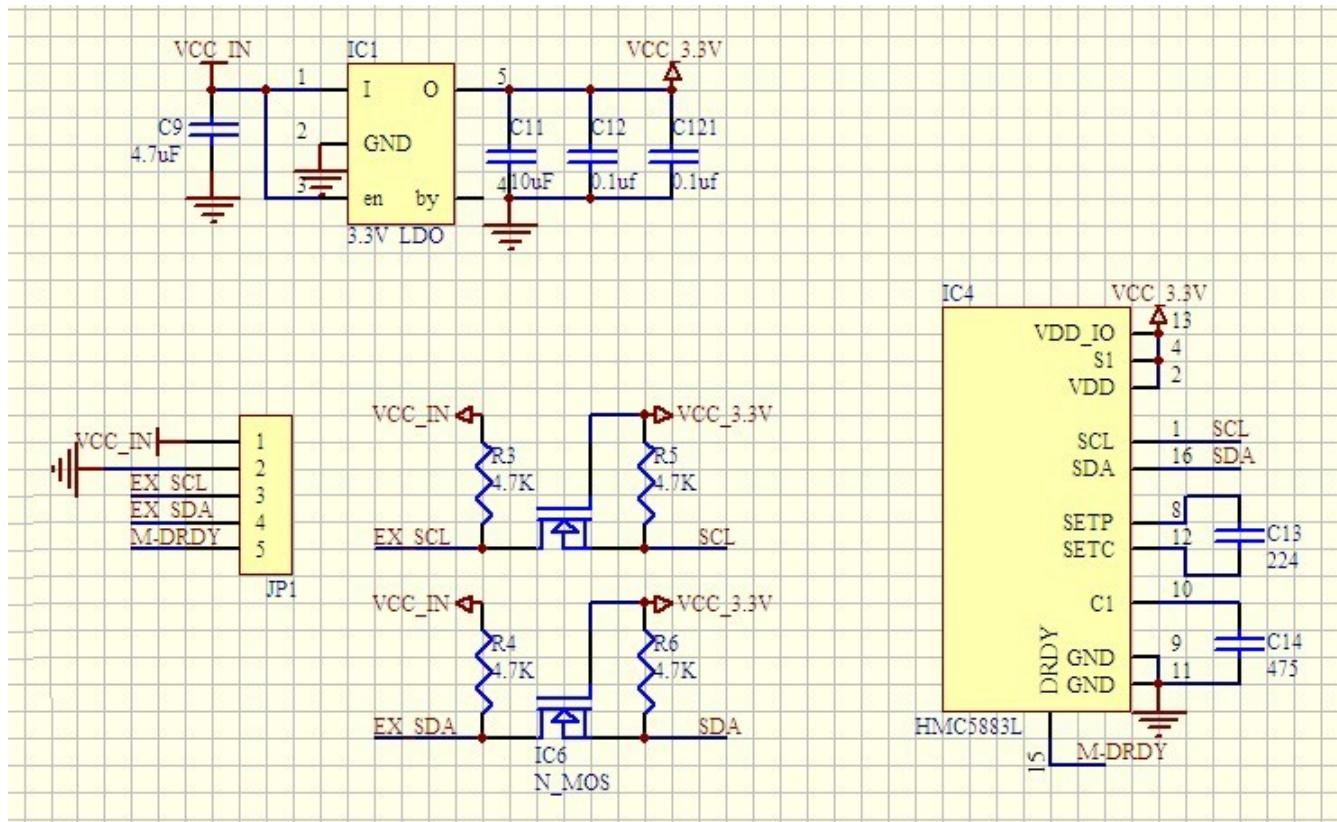
1. Gold plating PCB, applying machine welding technology, superb technique and reliably quality guarantee!
2. Name: HMC5883L Module (Triaxial Magnetic Field Module);
3. Type: GY-271;
4. Used Chip: HMC5883L;
5. Power Supply: 3~5V;
6. Communication Mode: Standard IIC communicating protocol;
7. Measuring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

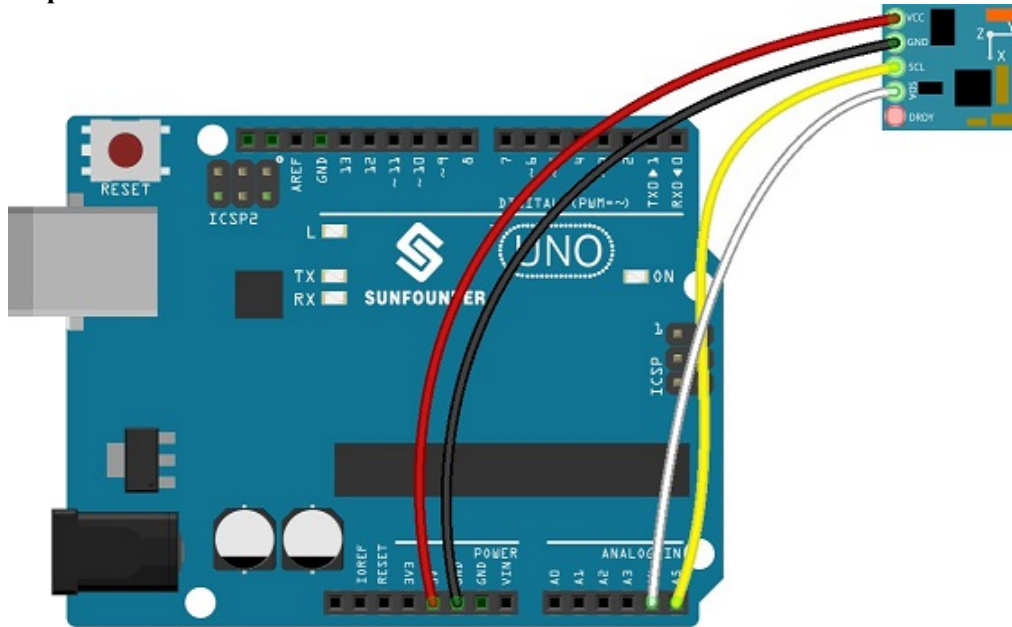
Honeywell HMC5883L is a kind of SMT High integration module that has a weakly magnetic sensor chip with digital interface. It is widely used



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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