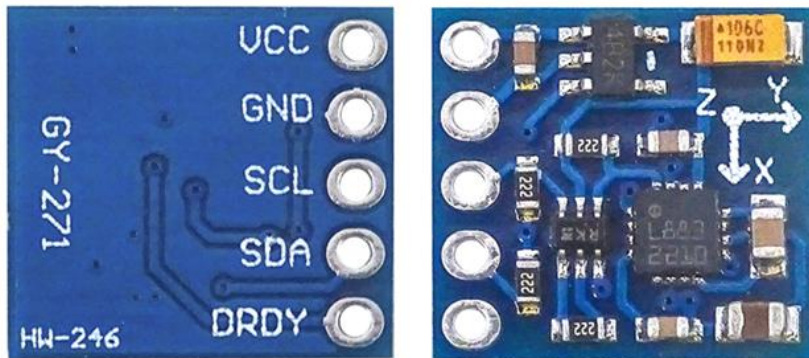




HMC5883L 3-Axis Electronic Compass Module

This Compass Module is designed for low-field magnetic sensing with a digital interface and perfect to give precise direction information. This compact sensor fits into small projects such as UAVs and robot navigation systems. The sensor converts magnetic field to a differential voltage output on 3 axis.



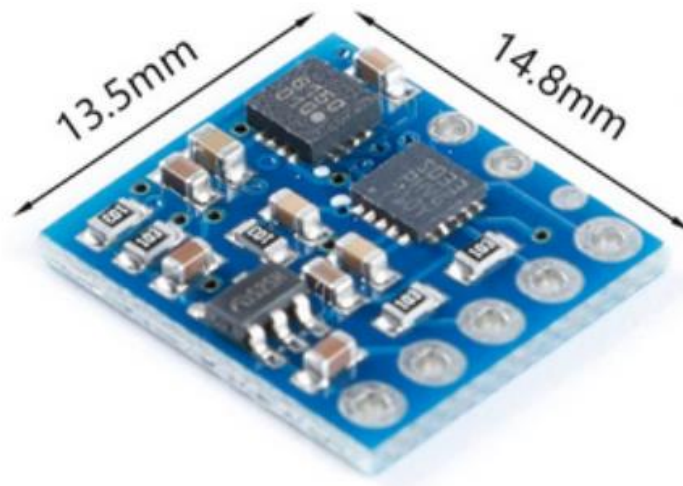
SKU: SSR1063

Brief Data:

- Name: GY-271 HMC5883L Module.
- Number of Axis: 3.
- 16 Bit ADC With Low Noise AMR Sensors.
- Sensor Chip: HMC5883L.
- Power Supply: 3~5V;
- Communication Mode: I2C.
- Measuring Range: ± 8 Gauss.

Mechanical Dimension:

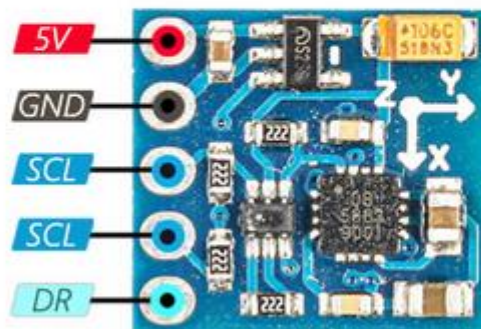
Unit: mm



Pin Function Assignment:

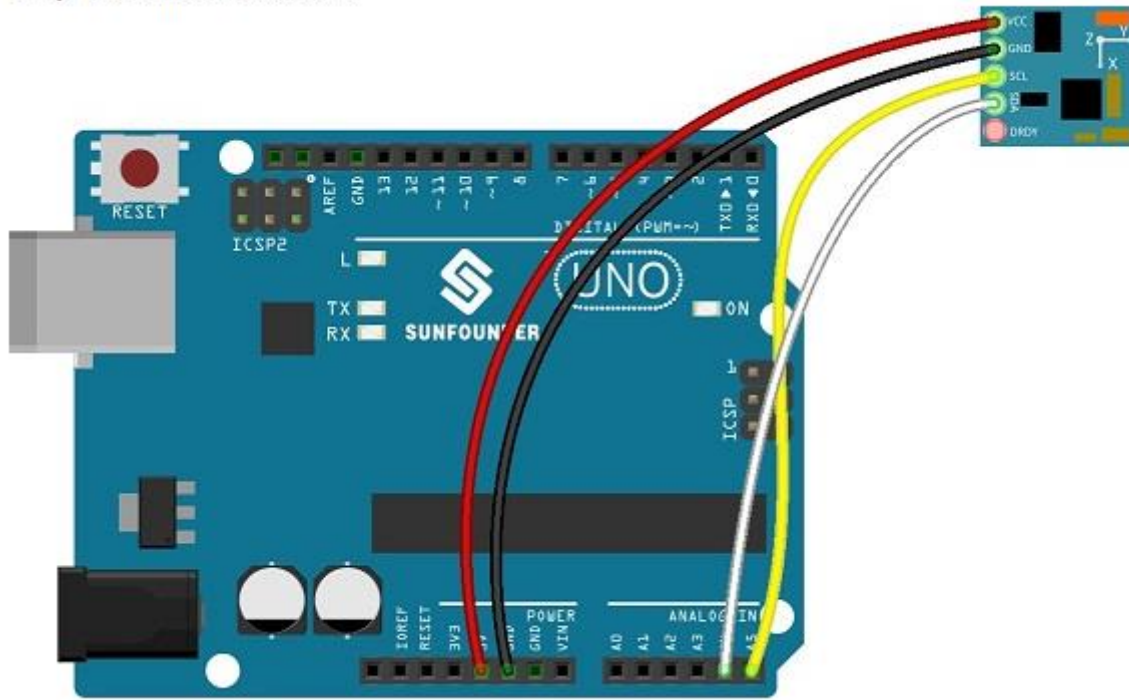
GY-271 Module has 5 pins. The application of them is as follows:

- VCC: Module power supply – 3 to 5 volts.
- GND: Ground.
- SCL: I2C Clock pin.
- SDA: I2C Data pin.
- DRDY (Data Ready): When the output value of the sensor is ready, an interrupt occurs in this pin. This pin is pulled up inside the module by default. When the output value of the module is ready, the pin is “0” for 250 microseconds.



Application Examples:

Step 1: Connect the circuit:



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

Upload the below sketch to the Arduino controller board:

/*

* HMC5883L Demo.

*

* Hardware Used:

*

* Arduino UNO or compatible

* GY271 module (dipmicro part DE4196)

* Arduino GND -> GY271/HMC5883L GND

* Arduino 3.3V -> GY271/HMC5883L VCC

* Arduino A4 (SDA) -> GY271/HMC5883L SDA

* Arduino A5 (SCL) -> GY271/HMC5883L SCL

*/

```
#include <Wire.h> //I2C Arduino Library
```

```
#define HMC5883L_ADDR 0x1E //0011110b, I2C 7bit address of HMC5883
```

```
bool haveHMC5883L = false;
```

```
bool detectHMC5883L ()
```

```
{
```

```
    // read identification registers
```

```
    Wire.beginTransmission(HMC5883L_ADDR); //open communication with HMC5883
```

```
    Wire.write(10); //select Identification register A
```

```
    Wire.endTransmission();
```

```
    Wire.requestFrom(HMC5883L_ADDR, 3);
```

```
    if(3 == Wire.available()) {
```

```
        char a = Wire.read();
```

```
        char b = Wire.read();
```

```
        char c = Wire.read();
```

```
        if(a == 'H' && b == '4' && c == '3')
```

```
            return true;
```

```
    }
```

```
    return false;
```

```
}
```

```
void setup()
```

```
{
```

```
    //Initialize Serial and I2C communications
```

```
    Serial.begin(9600);
```

```
Serial.println("GY271 TEST");

Wire.begin();

// lower I2C clock http://www.gammon.com.au/forum/?id=10896
TWBR = 78; // 25 kHz

TWSR |= _BV (TWPS0); // change prescaler
}

void loop()
{
  bool detect = detectHMC5883L();

  if(!haveHMC5883L)
  {
    if(detect)
    {
      haveHMC5883L = true;

      Serial.println("We have HMC5883L, moving on");

      // Put the HMC5883 IC into the correct operating mode

      Wire.beginTransmission(HMC5883L_ADDR); //open communication with HMC5883

      Wire.write(0x02); //select mode register

      Wire.write(0x00); //continuous measurement mode

      Wire.endTransmission();
    }

    else
    {
      Serial.println("No HMC5883L detected!");

      delay(2000);

      return;
    }
  }
}
```

```

}

else

{

  if(!detect) {

    haveHMC5883L = false;

    Serial.println("Lost connection to HMC5883L!");

    delay(2000);

    return;

  }

}

int x,y,z; //triple axis data

//Tell the HMC5883 where to begin reading data

Wire.beginTransmission(HMC5883L_ADDR);

Wire.write(0x03); //select register 3, X MSB register

Wire.endTransmission();

//Read data from each axis, 2 registers per axis

Wire.requestFrom(HMC5883L_ADDR, 6);

if(6<=Wire.available()){

  x = Wire.read()<<8; //X msb

  x |= Wire.read(); //X lsb

  z = Wire.read()<<8; //Z msb

  z |= Wire.read(); //Z lsb

  y = Wire.read()<<8; //Y msb

  y |= Wire.read(); //Y lsb

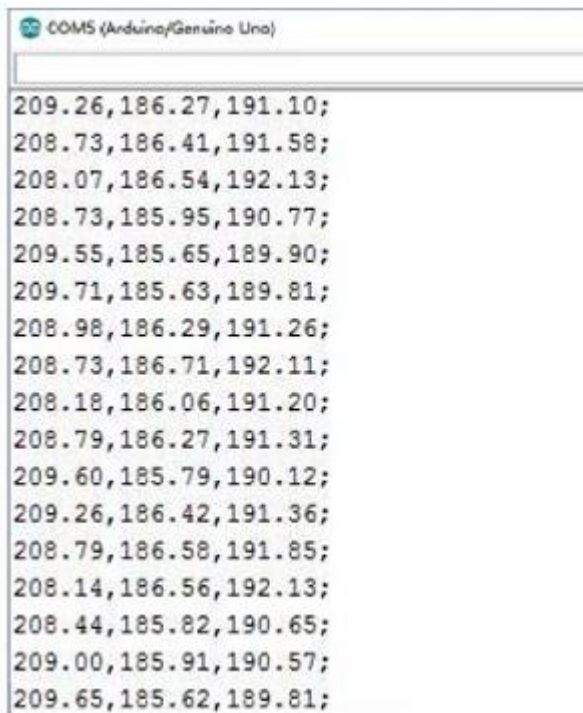
}

//Print out values of each axis

```

```
Serial.print("x: ");  
  
Serial.print(x);  
  
Serial.print(" y: ");  
  
Serial.print(y);  
  
Serial.print(" z: ");  
  
Serial.println(z);  
  
delay(250);  
  
}
```

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



COMS (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;
```

Web Resources:

- <https://electropeak.com/learn/interfacing-gy-271-hmc5883l-compass-magnetometr-with-arduino/>
- [http://wiki.sunfounder.cc/index.php?title=GY-271_HMC5883L_3-Axis Magnetic Electronic Compass Module](http://wiki.sunfounder.cc/index.php?title=GY-271_HMC5883L_3-Axis_Magnetic_Electronic_Compass_Module)
- <https://learn.adafruit.com/adafruit-hmc5883l-breakout-triple-axis-magnetometer-compass-sensor>
-



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