



## Gravity: Hall Angle Sensor SKU: SEN0221



### Introduction

The Hall Angle Sensor is a miniature 360 degree sensor which works based on the principle of the Hall effect. It is compatible with the DFRobot Gravity sensor interface, and works with a 5V DC power supply. The analog output is also 0~5V so it can work directly with Arduino.

The Hall angle sensor works by converting its angle information to an electrical signal. When the rotation angle of the object is passed to the axis of rotation sensors, it outputs an electrical signal that is proportional to the rotational angle.

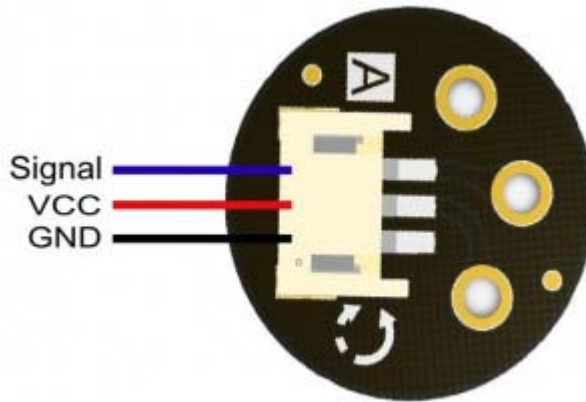
The angular sensor shell is constructed from robust aluminum alloy, using Hall-type non-contact technology. It includes high-quality imported high-speed stainless steel bearings and other components for reduced frictional resistance when taking readings.

The unit offers a long service life and is compact, with a high resolution, smooth rotation and dynamic noise. This unit is guaranteed performance in various harsh industrial environments and is protected from electromagnetic interference, water, oil, vibration and shock. A typical application is crank angle sensing and steering angle measurement.

## Specification

- Mechanical Angle: 0-360° (No stop)
- Operating Voltage: 5V  $\pm$  10%
- Operating Current: <13.5mA
- Output Signal: 0-5V DC (Ratio)
- Resolution: 0.088° (12-bit ADC)
- Accuracy:  $\pm$  0.3% FS
- Output Shaft Dimension: 6 mm (D Sharp)
- Rotational Torque: <5mN·m
- Refresh Rate: 0.6ms / 0.2ms (high speed)
- Operating Temperature: -30 °C ~ +80 °C
- Allowable Axial Load: Horizontal <5N; Vertical <10N
- Protection Class: IP40
- Mechanical Life:> 50 million revolutions
- Weight: 36g

## Board Overview



Hall Angle Sensor

Num	Label	Description
1	Signal	Analog Signal
2	VCC	Power +
3	GND	Power -

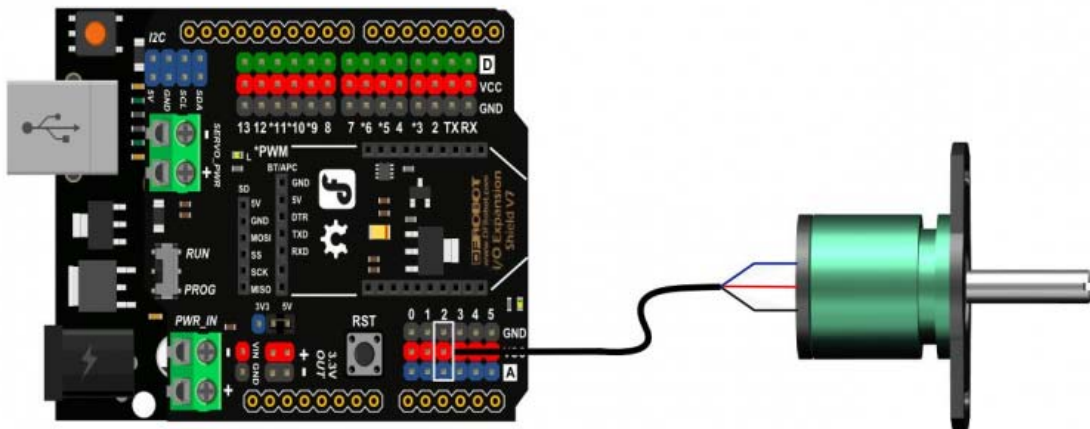
# Tutorial

This tutorial demonstrates how to use hall angle sensor in 5 minutes.

## Requirements

- **Hardware**  
DFRduino UNO R3 x1  
Gravity: IO Expansion Shield for Arduino V7.1 x1  
Hall Angle Sensor x1  
M-M/F-M/F-F Jumper wires x1
- **Software**  
• Arduino IDE Click to Download Arduino IDE from Arduino® <https://www.arduino.cc/en/Main/Software%7C>

## Connection Diagram



## Sample Code

```
/*  
*****  
* Hall angle sensor  
* *****  
* This example The sensors detect turn round  
  
* @author lg.gang@qq.com
```

```

* @version  V1.0
* @date    2016-7-12

* GNU Lesser General Public License.
* See <http://www.gnu.org/licenses/> for details.
* All above must be included in any redistribution
* *****/

void setup()
{
  Serial.begin(115200);
}

void loop()
{
  float analogValue = analogRead(A2);    //Voltage reading
  float amp = analogValue/1024.0 * 360; //Angle calculation ( UNO is a 10-
bit AD )
  Serial.print("Angle:");
  Serial.println(amp);
  delay(500);
}

```

## Expected Results

The serial monitor shows the angle value.

## Dimension

