

# Using the Magnetic Analog Hall Sensor KY-035 with Arduino

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## INTRODUCTION:

In this tutorial, we will learn about the KY-035 module, what is a Hall-effect switch and we will build a simple project to sense magnetic fields using the KY-035 with an Arduino.

## MAGNETIC ANALOG HALL SENSOR KY-035:

The KY-035 Module will be our main component for this tutorial. This module has a 49E Hall-effect switch IC in a TO-92 package and mounted on a breakout board with an LED and resistor. Figure 1 shows the module as seen in fritzing.

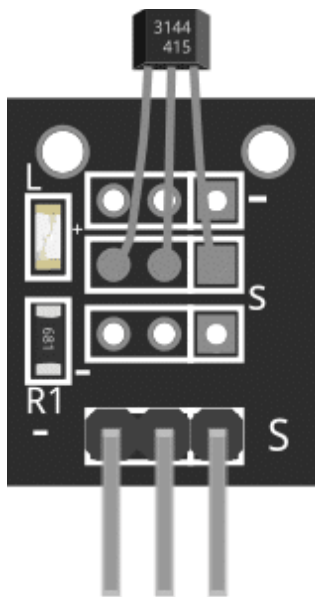


Figure 1: KY-035 Magnetic Hall Sensor

## PIN OUT:

The KY-035 module has three pins.

Pin	Description
(-)	GND
Middle Pin	+5V
S	Signal

## WHAT IS A HALL-EFFECT SENSOR 49E?

The Hall-Effect Sensor Analog 49E can detect the magnetic pole and relative strength of a magnetic field. In the case of our module, it sends an analog signal whenever it senses a magnetic field nearby. If there is no magnetic field, analog signal is half of the Vcc. Figure 2 shows the Block Diagram of the IC taken from its datasheet.

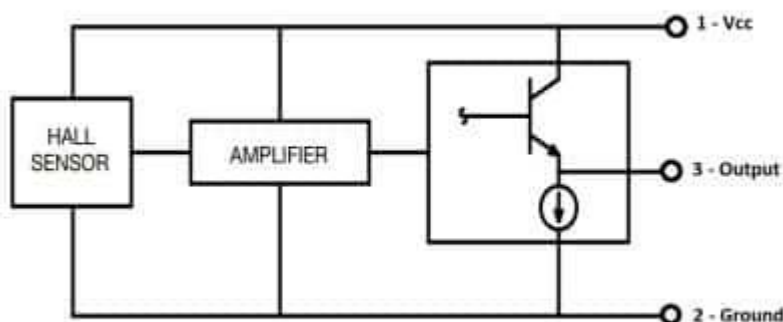


Figure 2: Block Diagram

## PROJECT – ARDUINO MAGNETIC FIELD DETECTOR:

After learning about the KY-035 module and the 49E IC, it is now time to build a project using the module. Our project will activate the built-in LED of an Arduino Uno when there is a magnetic field near the KY-035 module.

## PROJECT COMPONENTS:

For this project, we need the following components:

- Arduino Uno board (1 pc.)
- KY-035 Magnetic Hall Sensor (1 pc.)
- Jumper wires

# WIRING DIAGRAM:

Figure 2 shows the connection between the Arduino Uno and the KY-035 Magnetic Hall Sensor.

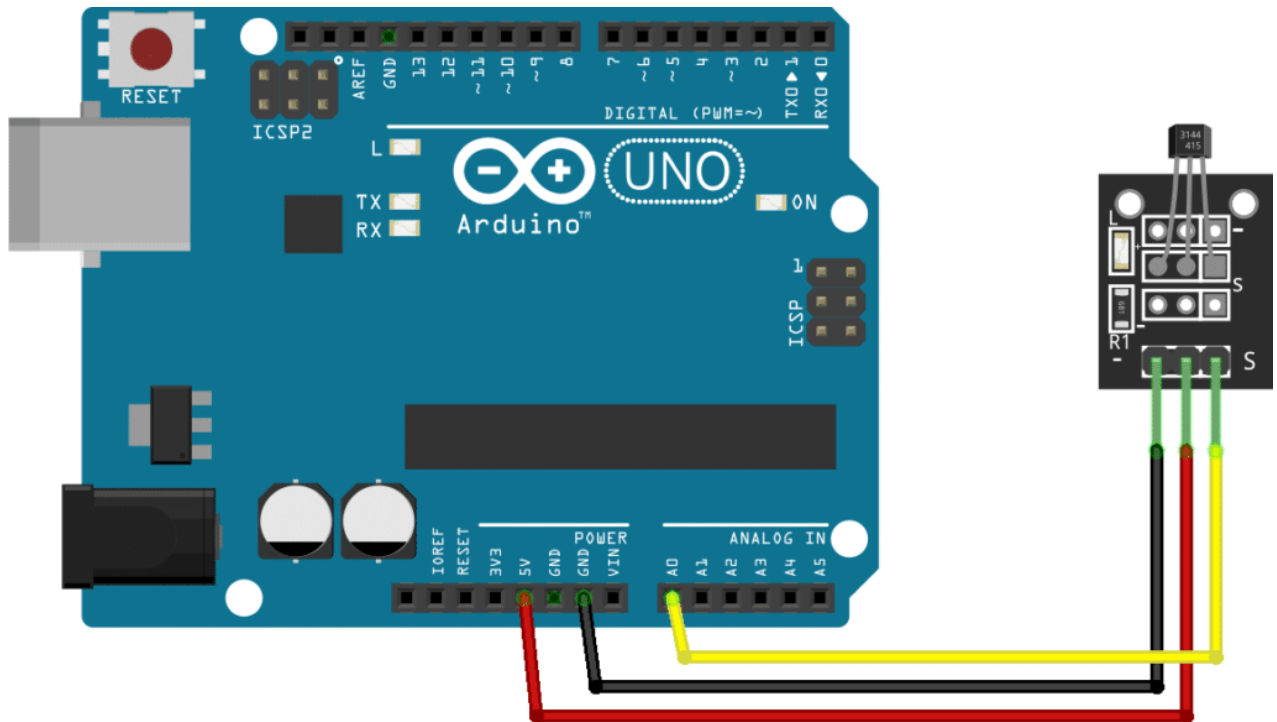


Figure 3: Connection Diagram

The KY-035 module pins are connected to the Arduino Uno board as follows:

## Component Pin UNO Board Pin

(-)	GND
Middle Pin	+5V
S	A0

## CODE:

Below is the Arduino sketch for our project. I have added comments to explain important parts of the code. Save the code as KY-035.ino and upload it to your Arduino board.

```
// Arduino and KY-035 module

void setup ()
{
  Serial.begin(9600); // initialize serial
}

void loop ()
{
  Serial.print(analogRead(A0)); // display analog and digital values to
  serial
}
```

## PROJECT TEST:

Apply power to your Arduino Uno board and open the Serial Monitor. The analog value sent by the module will be displayed in the serial monitor. A value from 0~128 means a negative magnetic polarity while value from 129~255 means a positive magnetic polarity.