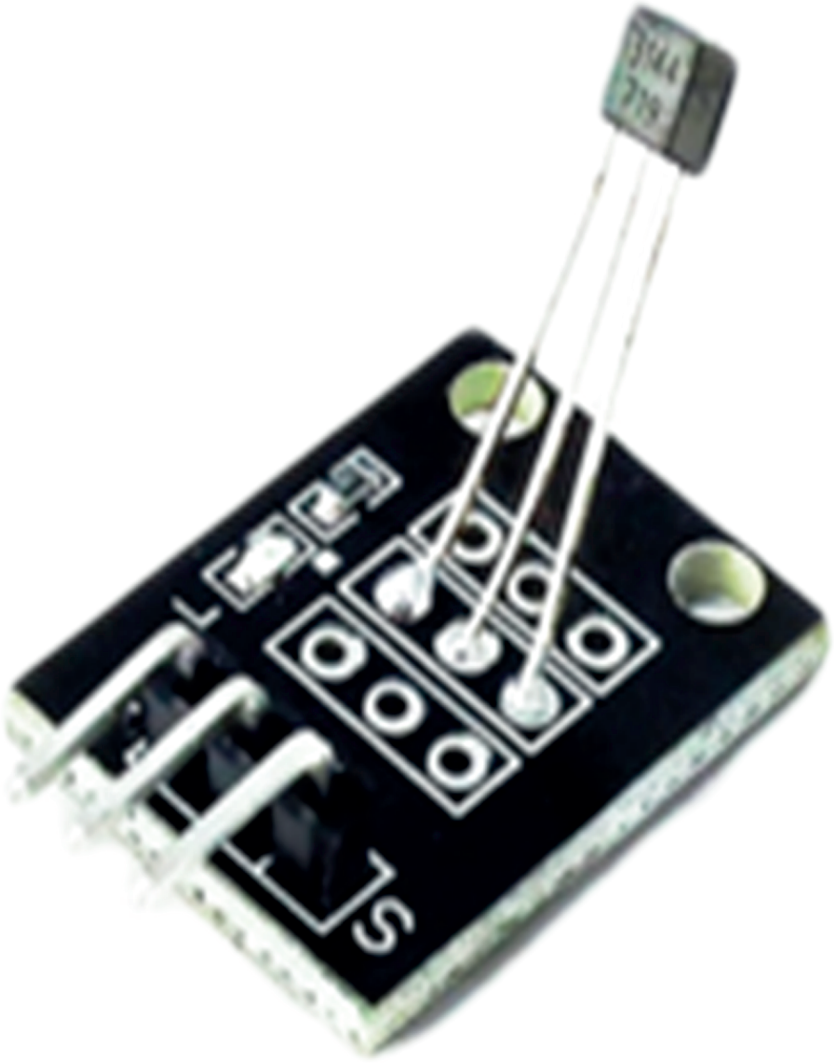
AZ-Delivery
Ihr Experte für Mikroelektronik!

KY-035 Hall Sensor Magnetisch Modul (analog) Datenblatt



Contents:

1. Technical Data

Chipset: AH49E

The sensor measures the current magnetic field, near to the sensor.

2. Pinout

The program measures the current voltage value at the sensor, calculates with it and a known resistor the resistance from the sensor and shows the results via serial output.

```
int sensorPin = A5; // Declaration of the input pin

// Serial OUT in 9600 baud
void setup()
{
    Serial.begin(9600);
}

// The program measures the current voltage at the sensor,
// calculates the resistance with it and a known resistor
// and outputs it via serial OUT

void loop()
{
        // Measuring of the current voltage...
    int rawValue = analogRead(sensorPin);
        float voltage = rawValue * (5.0/1023) * 1000;

        float resitance = 10000 * ( voltage / ( 5000.0 - voltage) );

    // ... output via serial interface
    Serial.print("Voltage:");   Serial.print(voltage); Serial.print("mV");
    Serial.print(", Resistance:"); Serial.print(resitance); Serial.println("Ohm");
    Serial.println("-------------------------------------");

    delay(500);
}
```

Connections Arduino:

Sensor GND = [Pin GND]
Sensor +V = [Pin 5V]
Sensor Signal = [Pin A5]

4. Code Example Raspberry Pi

!! Attention !! Analog Sensor !! Attention !!

Unlike the Arduino, the Raspberry Pi doesn't provide an ADC (Analog Digital Converter) on its Chip. This limits the Raspbery Pi if you want to use a non digital Sensor.

This module is connected via I2C to the Raspberry Pi.
It measures the analog data and converts it into a digital signal which is suitable for the Raspberry Pi.

So we recommend to use the KY-053 ADC if you want to use analog sensors along with the Raspberry Pi.

!! Attention !! Analog Sensor !! Attention !!

The program uses the specific ADS1x15 and I2C python-libraries from the company Adafruit to control the ADS1115 ADC.

The program reads the current values of the input pins and outputs it at the terminal in [mV].

Additianal to that, the status of the digital pin will be shown at the terminal to show if the extreme value was exceeded or not.

```
##################################################################################################
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### Commercial use only after permission is requested and granted
###
### KY-053 Analog Digital Converter - Raspberry Pi Python Code Example
###
##################################################################################################


# This code is using the ADS1115 and the I2C Python Library for Raspberry Pi
# This was published on the following link under the BSD license
# [https://github.com/adafruit/Adafruit-Raspberry-Pi-Python-Code]
from Adafruit_ADS1x15 import ADS1x15
from time import sleep

# import needed modules
import time, signal, sys, os
import RPi.GPIO as GPIO
GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)

# initialise variables
delayTime = 0.5 # in Sekunden

# assigning the ADS1x15 ADC

ADS1015 = 0x00  # 12-bit ADC
ADS1115 = 0x01  # 16-bit

# choosing the amplifing gain
gain = 4096  # +/- 4.096V
# gain = 2048  # +/- 2.048V
# gain = 1024  # +/- 1.024V
# gain = 512   # +/- 0.512V
# gain = 256   # +/- 0.256V

# choosing the sampling rate
# sps = 8    # 8 Samples per second
# sps = 16   # 16 Samples per second
# sps = 32   # 32 Samples per second
sps = 64   # 64 Samples per second
# sps = 128  # 128 Samples per second
# sps = 250  # 250 Samples per second
# sps = 475  # 475 Samples per second
# sps = 860  # 860 Samples per second

# assigning the ADC-Channel (1-4)
adc_channel_0 = 0    # Channel 0
adc_channel_1 = 1    # Channel 1
adc_channel_2 = 2    # Channel 2
adc_channel_3 = 3    # Channel 3

# initialise ADC (ADS1115)
adc = ADS1x15(ic=ADS1115)

##################################################################################################

# ########
# Main Loop
# ########
# Reading the values from the input pins and print to console

try:
        while True:
                #read values
                adc0 = adc.readADCSingleEnded(adc_channel_0, gain, sps)
                adc1 = adc.readADCSingleEnded(adc_channel_1, gain, sps)
                adc2 = adc.readADCSingleEnded(adc_channel_2, gain, sps)
                adc3 = adc.readADCSingleEnded(adc_channel_3, gain, sps)

                # print to console
                print "Channel 0:", adc0, "mV "
                print "Channel 1:", adc1, "mV "
                print "Channel 2:", adc2, "mV "
                print "Channel 3:", adc3, "mV "
                print "----------------------------------------"

                time.sleep(delayTime)


except KeyboardInterrupt:
        GPIO.cleanup()
```

Connections Raspberry Pi:

Sensor

GND= GND[Pin 06 (RPi)]
+V = 3,3V [Pin 01 (RPi)]
analog Signal = Analog 0 [Pin A0 (ADS1115 - KY-053)]
ADS1115 - KY-053:

VDD= 3,3V [Pin 17]
GND= GND[Pin 09]
SCL = GPIO03 / SCL [Pin 05]
SDA= GPIO02 / SDA [Pin 03]
A0= look above [Sensor: analog Signal]

To start, enter the command:

```
sudo python KY-053_RPi-AnalogDigitalConverter.py
```