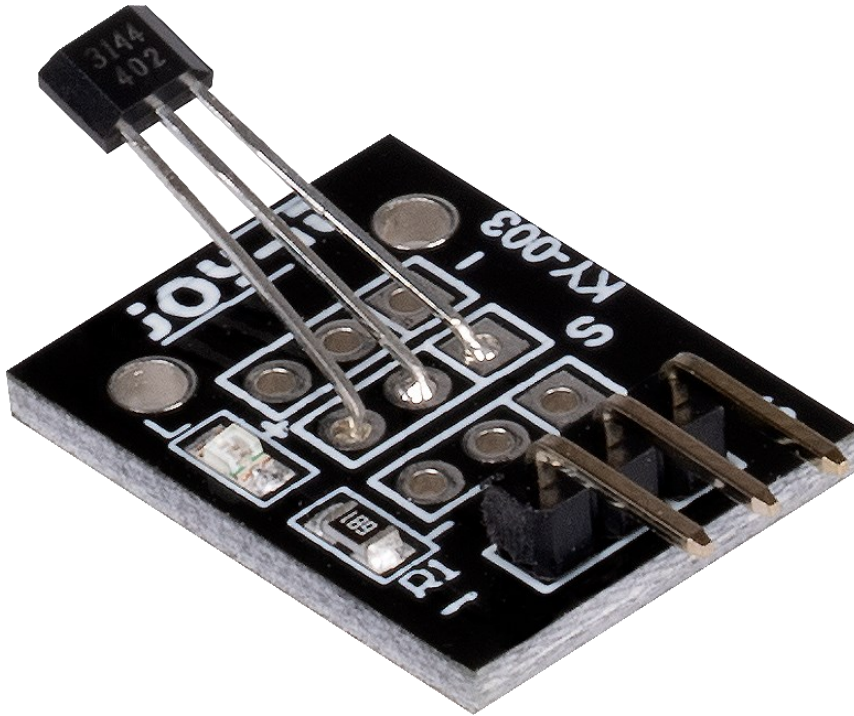


HALL MAGNETIC FIELD SENSOR

SEN-KY003HMS

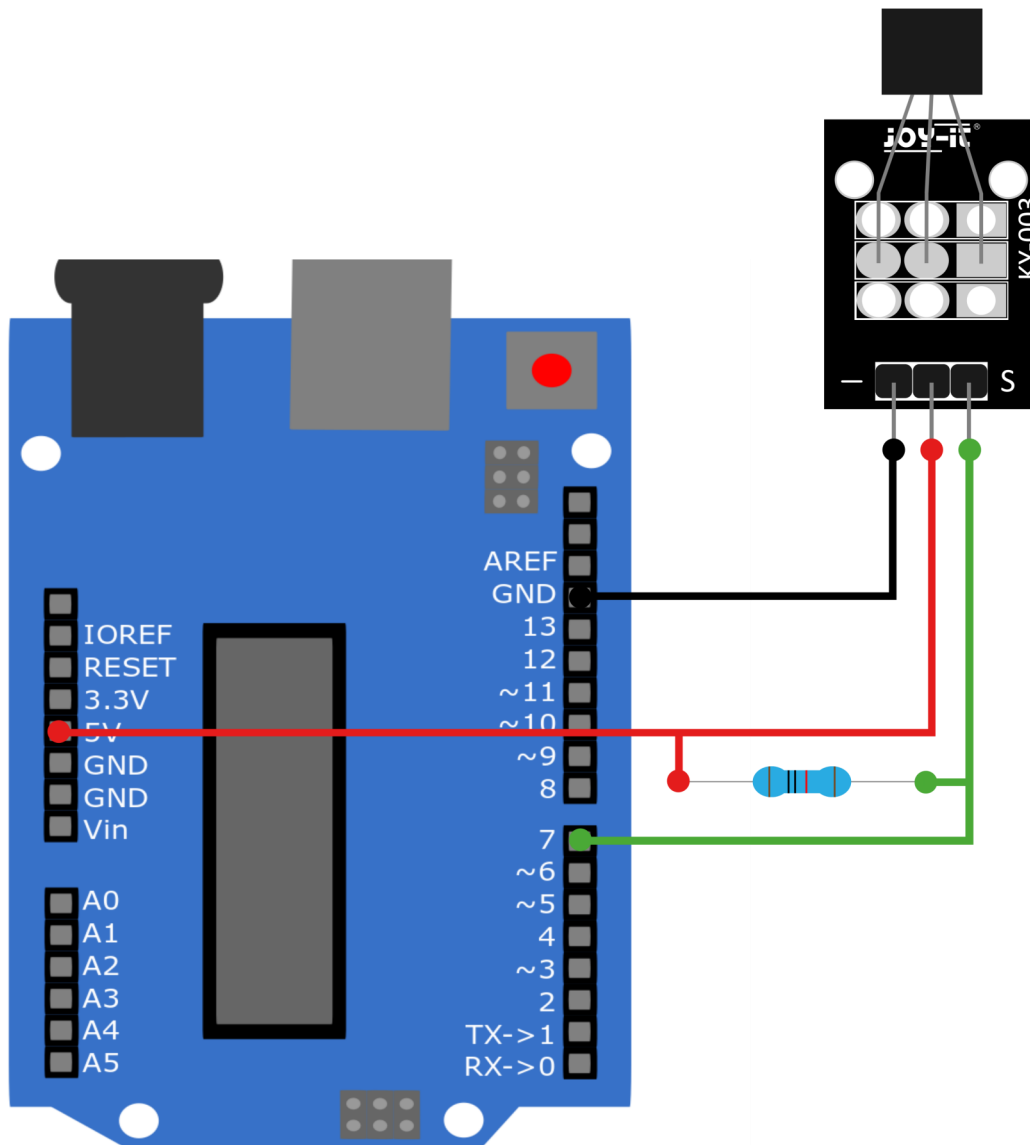


1. GENERAL INFORMATION

Dear customer,
thank you very much for choosing our product.
In the following, we will introduce you to what to observe while starting up and using this product.
Should you encounter any unexpected problems during use, please do not hesitate to contact us.

2. USAGE WITH ARDUINO

Connect your sensor to your Arduino as shown in the diagram and table below. For optimal results, use a pull-up resistor (approx. 10 k Ω) between the sensor's signal line and the 5 V line.



Arduino	Sensor
GND	GND -
5 V	VCC +
Pin 7	Signal

Code example

In the following code example, the serial monitor will indicate every second whether a magnetic field has been detected. Copy the sample code and upload it to your Arduino. Make sure that you have selected the correct board and port in your Arduino IDE.

```
// Declaration and initialisation of the input pin

int Digital_Input= 7; // Digital-Pin

void setup ()
{
  pinMode (Digital_Input, INPUT);

  Serial.begin (9600); // Serial output with 9600 bps
}

// The programme reads the current values of the input pin
// and outputs them on the serial output.
void loop ()
{
  int Digital;

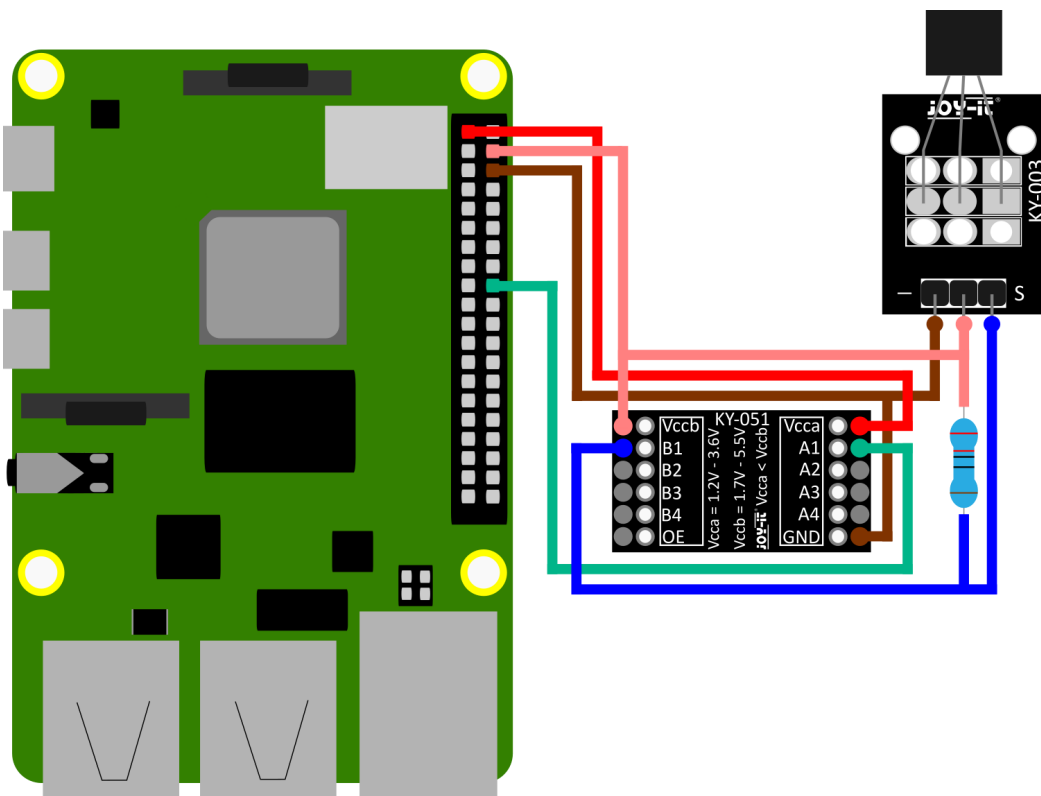
  //read current value
  Digital = digitalRead (Digital_Input);
  Serial.print ("Magnetic field");
  if(Digital==1)
  {
    Serial.println (" not detected");
  }
  else
  {
    Serial.println (" detected");
  }
  Serial.println ("-----");
  delay (1000);
}
```

3. USAGE WITH THE RASPBERRY PI



This guide was written under Raspberry Pi OS Bookworm for the Raspberry Pi 4 and 5. It has not been checked with newer operating systems or hardware.

Connect your sensor to a voltage translator and your Raspberry Pi as shown in the diagram and the table. We recommend the [KY-051 Voltage Translator from Joy-it](#). For best results, use a pullup resistor (approx. 10 k Ω) between the signal line of the sensor and the 5V line.



Raspberry Pi	Sensor	Voltage Translator
-	Signal	B1
5V (Pin 4)	+V	
GND (Pin 6)	GND	GND
3,3V (Pin 1)	-	Vcca
5V (Pin 4)	-	Vccb
GPIO 24 (Pin 18)	-	A1

Code example

Create a new file with the following command:

```
sudo nano SEN-KY003HMS.py
```

Copy the following code example to your Raspberry Pi. Save the file by pressing **CTRL+O** and **Enter**, confirm with enter and exit the file by pressing **CTRL+X**.

```
import time
from gpiozero import DigitalInputDevice

delayTime = 1      # time between measurements
Digital_PIN = 24   # Digital-Pin (BCM)
sensor = DigitalInputDevice(Digital_PIN)

while True:
    # Output
    if sensor.value == 0:
        print("Magnetic field detected!!")
    else:
        print("No magnetic field detected")
    print("-----")

    time.sleep(delayTime)
```

```
sudo python3 SEN-KY003HMS.py
```

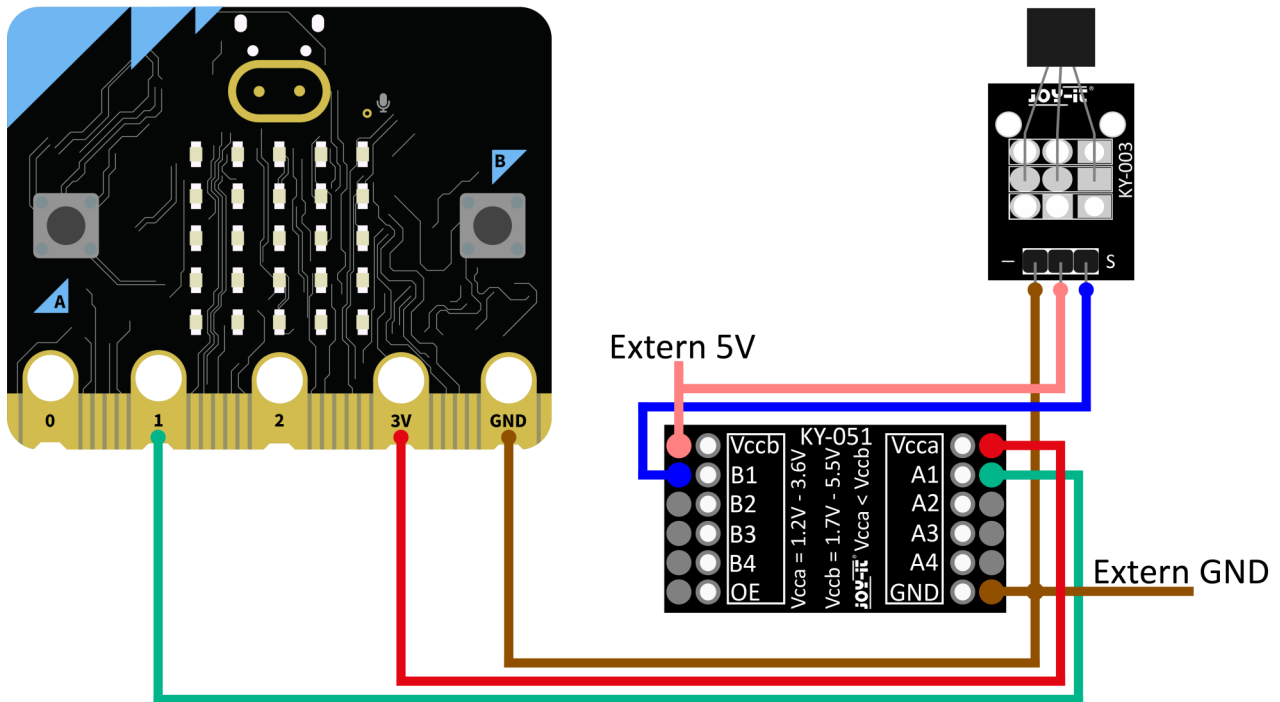
Now start the programme with the following command:

The programme will show you in the console whether or not a magnetic field is detected.

4. USAGE WITH MICRO:BIT

Connect your sensor to a Voltage Translator and your Micro:Bit as shown in the diagram and the table. We recommend the [KY-051 Voltage Translator by Joy-IT](#). For best results you should use a pullup resistor (approx. 10 k Ω) between the signal line of the sensor and the 5V line.

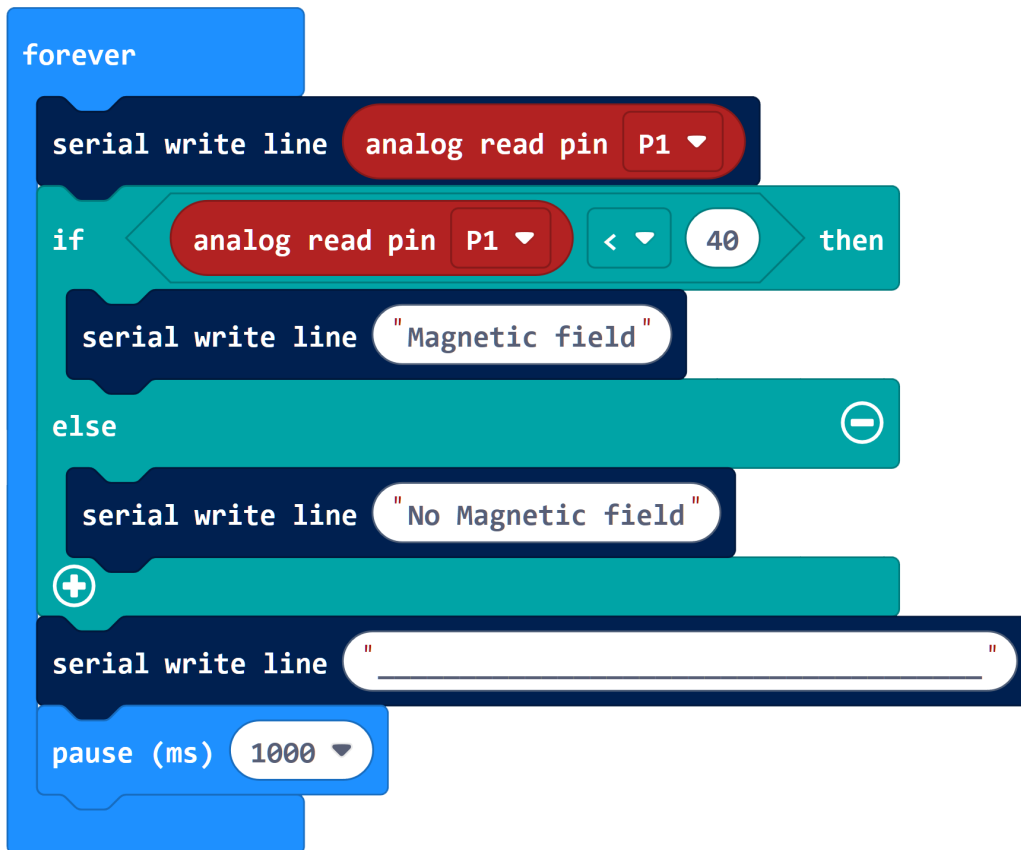
An additional 5V power supply unit is also required for use with the micro:bit.



KY-003	Voltage translator	Micro:bit	5 V power supply
GND	Extern GND	GND	GND
+	VCCb		5 V
Signal (S)	B1		
	VCCa	3 V	
	A1	Pin 1	

Codeexample

In the following code example, every second the serial monitor indicates whether a magnetic field has been detected. You can either rebuild the code example in your MakeCode sketch, or download the [.hex-file](#) and import it as a MakeCode project.

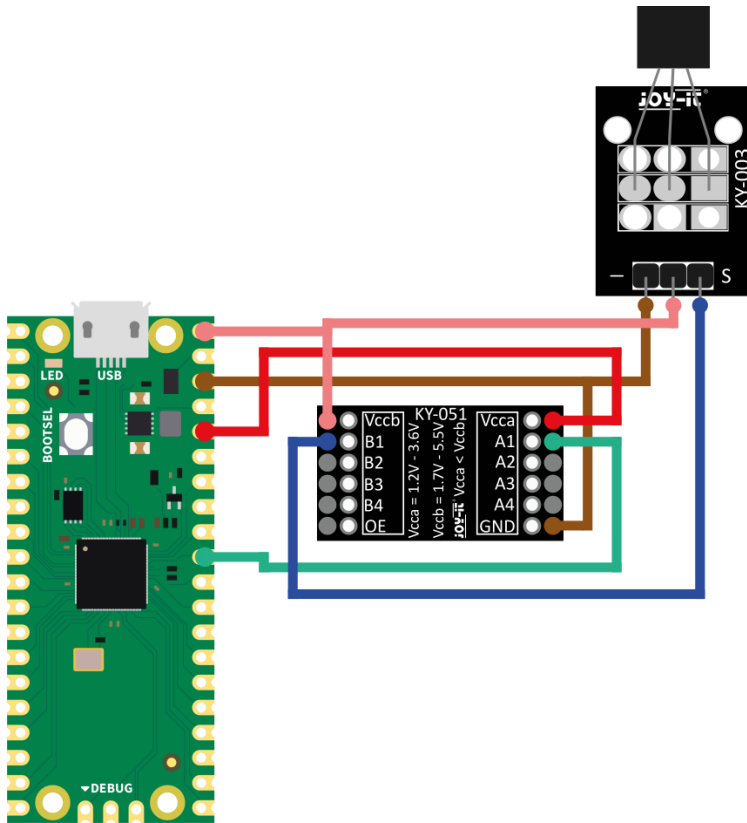


```
forever
  serial write line analog read pin P1
  if analog read pin P1 < 40 then
    serial write line "Magnetic field"
  else
    serial write line "No Magnetic field"
  serial write line ""
  pause (ms) 1000
```

The image shows a sequence of code blocks in a Scratch-style environment. It starts with a blue 'forever' loop block. Inside the loop, there is a dark blue 'serial write line' block with a red 'analog read pin P1' block. This is followed by a teal 'if' block with a red 'analog read pin P1' block, a teal '<' block, a white '40' block, and a teal 'then' block. Inside the 'if' block, there is a dark blue 'serial write line' block with a white 'Magnetic field' block. Below the 'if' block is a teal 'else' block with a white minus sign icon. Inside the 'else' block, there is a dark blue 'serial write line' block with a white 'No Magnetic field' block. Below the 'else' block is a teal block with a white plus sign icon. Inside this block, there is a dark blue 'serial write line' block with a white empty string block. Finally, there is a blue 'pause (ms)' block with a white '1000' block.

5. USAGE WITH RASPBERRY PI PICO

Connect your sensor to a Voltage Translator and your Raspberry Pi Pico as shown in the diagram and table. Here we recommend the [KY-051 Voltage Translator by Joy-IT](#). For best results you should use a pullup resistor (approx. 10 k Ω) between the signal line of the sensor and the 5V line.



KY-003	Voltage translator	Raspberry Pi Pico
GND	GND	GND
+	VCCb	VBUS
Signal (S)	B1	
	VCCa	3V3
	A1	GP26

Code example

In the following code example, every 0.5 seconds the console will indicate whether a magnetic field has been detected. Copy the sample code and download it to your Raspberry Pi. Alternatively you can download the sample code [here](#).

```
# Load libraries

from machine import Pin, Timer
from time import sleep

# Initialization of GPIO as input
sensor = Pin(26, Pin.IN, Pin.PULL_DOWN)

# Continuous loop for continuous serial output
while True:
    if sensor.value() == 0:
        print("No magnetic field")
    else:
        print("Magnetic field")

    print("-----")
    sleep(0.5)
```

6. ADDITIONAL INFORMATION

Our information and take-back obligations according to the Electrical and Electronic Equipment Act (ElektroG)



Symbol on electrical and electronic equipment:

This crossed-out dustbin means that electrical and electronic appliances do not belong in the household waste. You must return the old appliances to a collection point. Before handing over waste batteries and accumulators that are not enclosed by waste equipment must be separated from it.

Return options:

As an end user, you can return your old device (which essentially fulfils the same function as the new device purchased from us) free of charge for disposal when you purchase a new device. Small appliances with no external dimensions greater than 25 cm can be disposed of in normal household quantities independently of the purchase of a new appliance.

Possibility of return at our company location during opening hours:

SIMAC Electronics GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn, Germany

Possibility of return in your area:

We will send you a parcel stamp with which you can return the device to us free of charge. Please contact us by email at Service@joy-it.net or by telephone.

Information on packaging:

you do not have suitable packaging material or do not wish to use your own, please contact us and we will send you suitable packaging.

7. SUPPORT

If there are still any issues pending or problems arising after your purchase, we will support you by e-mail, telephone and with our ticket support system.

Email: service@joy-it.net

Ticket system: <https://support.joy-it.net>

Telephone: +49 (0)2845 9360-50 (Mon - Thur: 09:00 - 17:00 o'clock CET,
Fri: 09:00 - 14:30 o'clock CET)

For further information please visit our website:

www.joy-it.net