Joy-IT® Ultrasonic Distance Sensor

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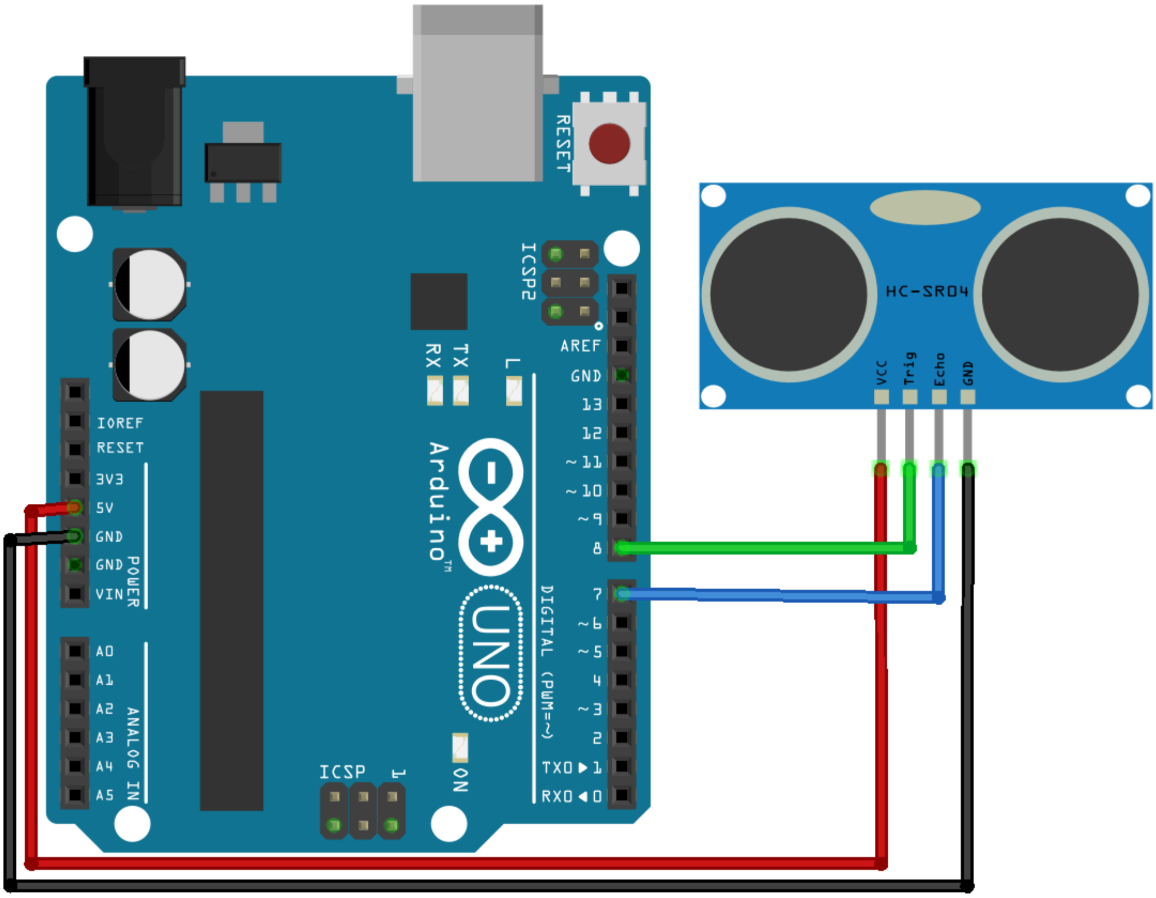
3. Support

Dear customer,
thank you for purchasing our product.
Please find our instructions below.

1. Using with an Arduino

1.1 Connecting the Module

Connect the ultrasonic module, as seen image, and in the table, to your Arduino.



Arduino	Ultrasonic Distance Sensor
5V	VCC
GND	GND
7	Echo
8	Trig

1.2 Code-Example

You can find a code example next which can be used to demonstrate the functionality of the sensor. Please transfer the code completely to your Arduino.

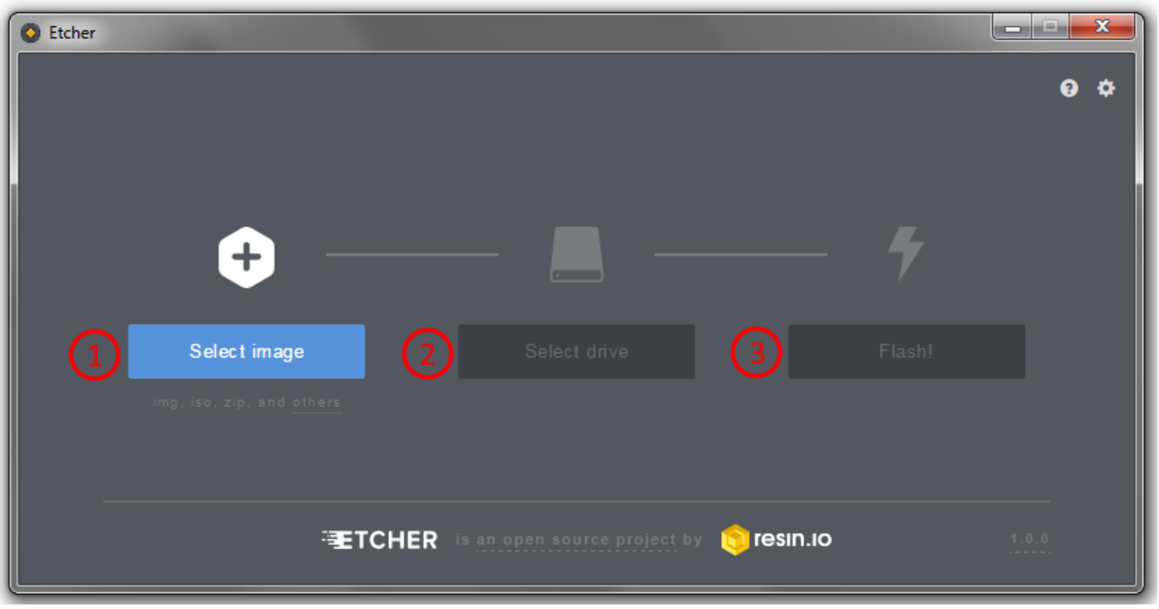
```
#define Echo_EingangsPin 7 // Echo Input-Pin
#define Trigger_AusgangsPin 8 // Trigger Output-Pin

// Defining the needed variables
int maximumRange = 300;
int minimumRange = 2;
long Abstand;
long Dauer;

void setup() {
 pinMode(Trigger_AusgangsPin, OUTPUT);
 pinMode(Echo_EingangsPin, INPUT);
 Serial.begin (9600);
}

void loop() {
 // starting the measurement with the 10us long trigger signal
 digitalWrite(Trigger_AusgangsPin, HIGH);
 delayMicroseconds(10);
 digitalWrite(Trigger_AusgangsPin, LOW);

 // waiting on the Echo-Input until the signal is active
 // and measuring how long the signal stays active
 Dauer = pulseIn(Echo_EingangsPin, HIGH);

 // calculating the distance with the measured time
 Abstand = Dauer/58.2;
 // checking if the value is within the range
 if (Abstand >= maximumRange || Abstand <= minimumRange) {
    // Printing error if not
      Serial.println("Abstand ausserhalb des Messbereichs");
      Serial.println("-----------------------------------");
 }

 else {
    // Printing the calculated distance
      Serial.print("Der Abstand betraegt:");
      Serial.print(Abstand);
      Serial.println("cm");
      Serial.println("-----------------------------------");
 }
  // break between the measurements
 delay(500);
}
```

2. Using with a Raspberry Pi

2.1 Installing the System

You can skip this step if you are already using the latest Raspbian software on your Raspberry Pi.
If not, please follow the instructions.

Install the latest Raspbian System-Image on your SD-Card.
You can download the image here.
You can trasnfer the image with a suitable program (e.g. Etcher) to your card.


Etcher
1
Select image
img, iso, zip, and others
2
Select drive
3
Flash!
ETCHER is an open source project by resin.io
1.0.0

You can insert the SD-Card into your Raspberry Pi after finishing the transfer.

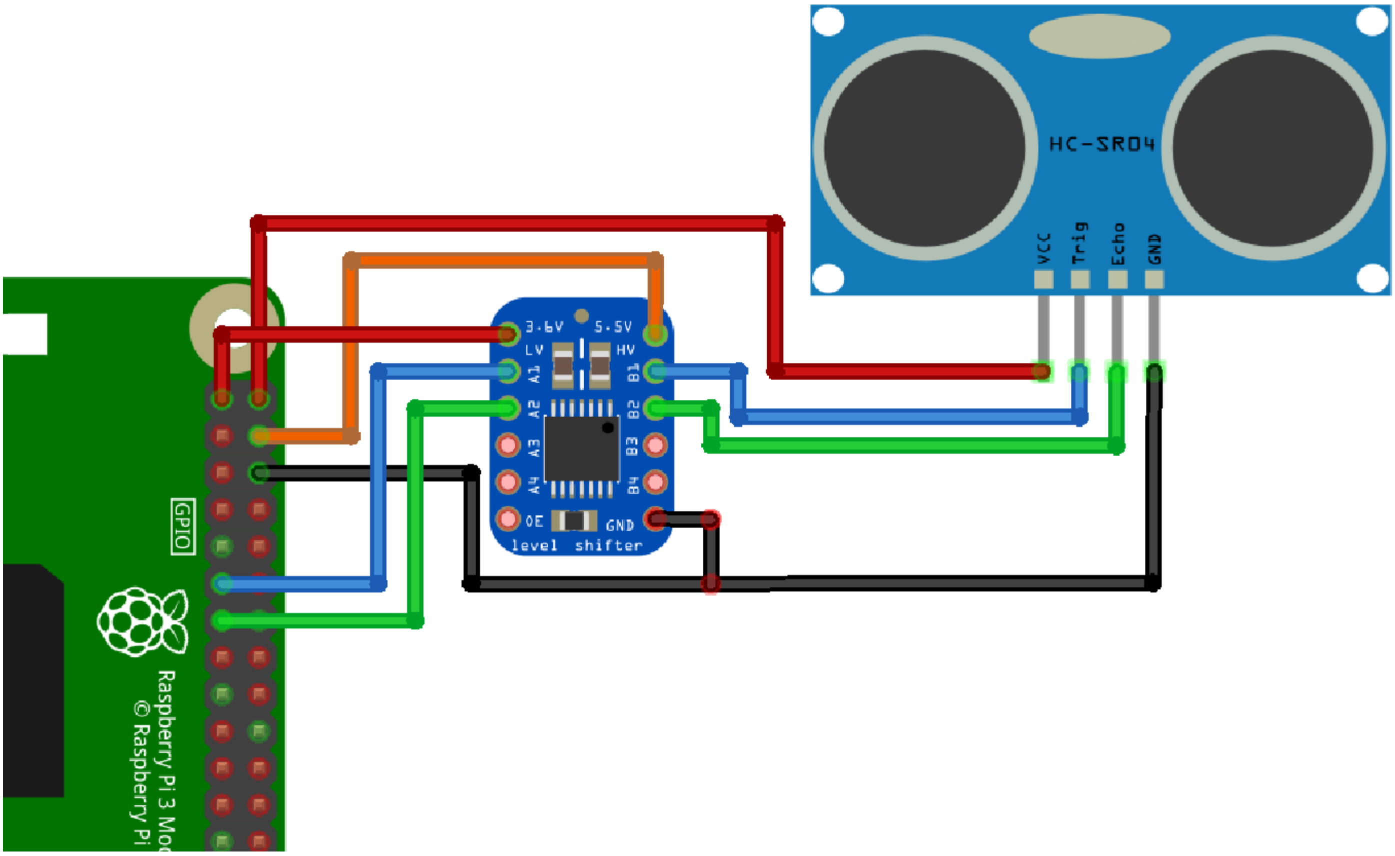
2.2 Connecting the module

Connect the ultrasonic module, as seen in the following image and in the following table, to your Raspberry Pi.

Warning! The Raspberry Pi is working, with its ARM processor core, on a voltage level of 3.3V.
But the ultrasonic distance sensor is working on a higher level.
If you are using the sensor on the Raspberry Pi without any protection, it can lead to serious damage.

To avoid any damage you can use a voltage translator to adjust the voltage level and ensure a safe operation.

Therefore you can use our KY-051 voltage translator from our SensorKit X40.
In the following, we will describe how to use the sensor with the voltage translator.



Distance Sensor	Voltage Translator
VCC	
Trig	B1
Echo	B2
GND	GND

Distance Sensor	Raspberry Pi
VCC	5V (Pin 2)

Voltage Translator	Raspberry Pi
5.5V	5V (Pin 3)
3.6V	3.3V (Pin 1)
A1	GPIO17 (Pin 11)
A2	GPIO27 (Pin 13)
GND	GND (Pin 6)

1.2 Code-Example

You can find a Code-Example next, which is demonstrating the sensors functionality.
Please completely transfer the code to your Raspberry Pi.

```
# coding=utf-8
import time
import RPi.GPIO as GPIO
GPIO.setmode(GPIO.BCM)

# defining the pins
Trigger_AusgangsPin = 17
Echo_EingangsPin    = 27

# break between the measurements
sleeptime = 0.8

GPIO.setup(Trigger_AusgangsPin, GPIO.OUT)
GPIO.setup(Echo_EingangsPin, GPIO.IN)
GPIO.output(Trigger_AusgangsPin, False)

# main program loop
try:
    while True:
        # distance measurement with 10us long trigger signal
        GPIO.output(Trigger_AusgangsPin, True)
        time.sleep(0.00001)
        GPIO.output(Trigger_AusgangsPin, False)

        EinschaltZeit = time.time()
        while GPIO.input(Echo_EingangsPin) == 0:
            EinschaltZeit = time.time()
        while GPIO.input(Echo_EingangsPin) == 1:
            AusschaltZeit = time.time()

        Dauer = AusschaltZeit - EinschaltZeit
        # calculating the distance
        Abstand = (Dauer * 34300) / 2

        # checking if value is within the possible distance
        if Abstand < 2 or (round(Abstand) > 300):
            # if not - print error
            print("Measurement out of range")
            print("------------------------------")
        else:
            # formating the result
            Abstand = format((Dauer * 34300) / 2, '.2f')
            # printing the distance
            print("The distance is:"), Abstand,("cm")
            print("------------------------------")

        # break between measurement
        time.sleep(sleeptime)

# cleanup after program is closed
except KeyboardInterrupt:
    GPIO.cleanup()
```

3. Support

We also support you after your purchase.
If there are any questions left or if you encounter any problems, please feel free to contact us by mail, phone or by our ticket-supportsystem on our website.

E-Mail: service@joy-it.net

Ticket-System: http://support.joy-it.net

Phone: +49 (0)2845 98469 – 66 (11- 18 Uhr)

Please visit our website for more informations:

www.joy-it.net