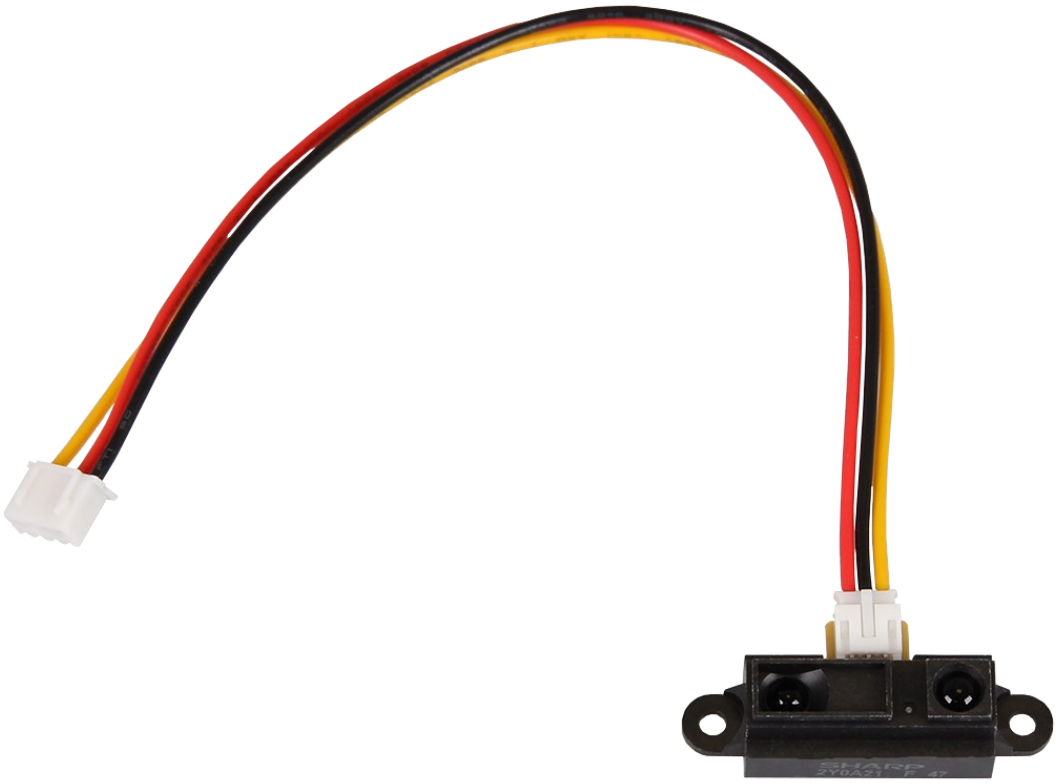
INFRARED DISTANCE SENSOR

SEN-IR01



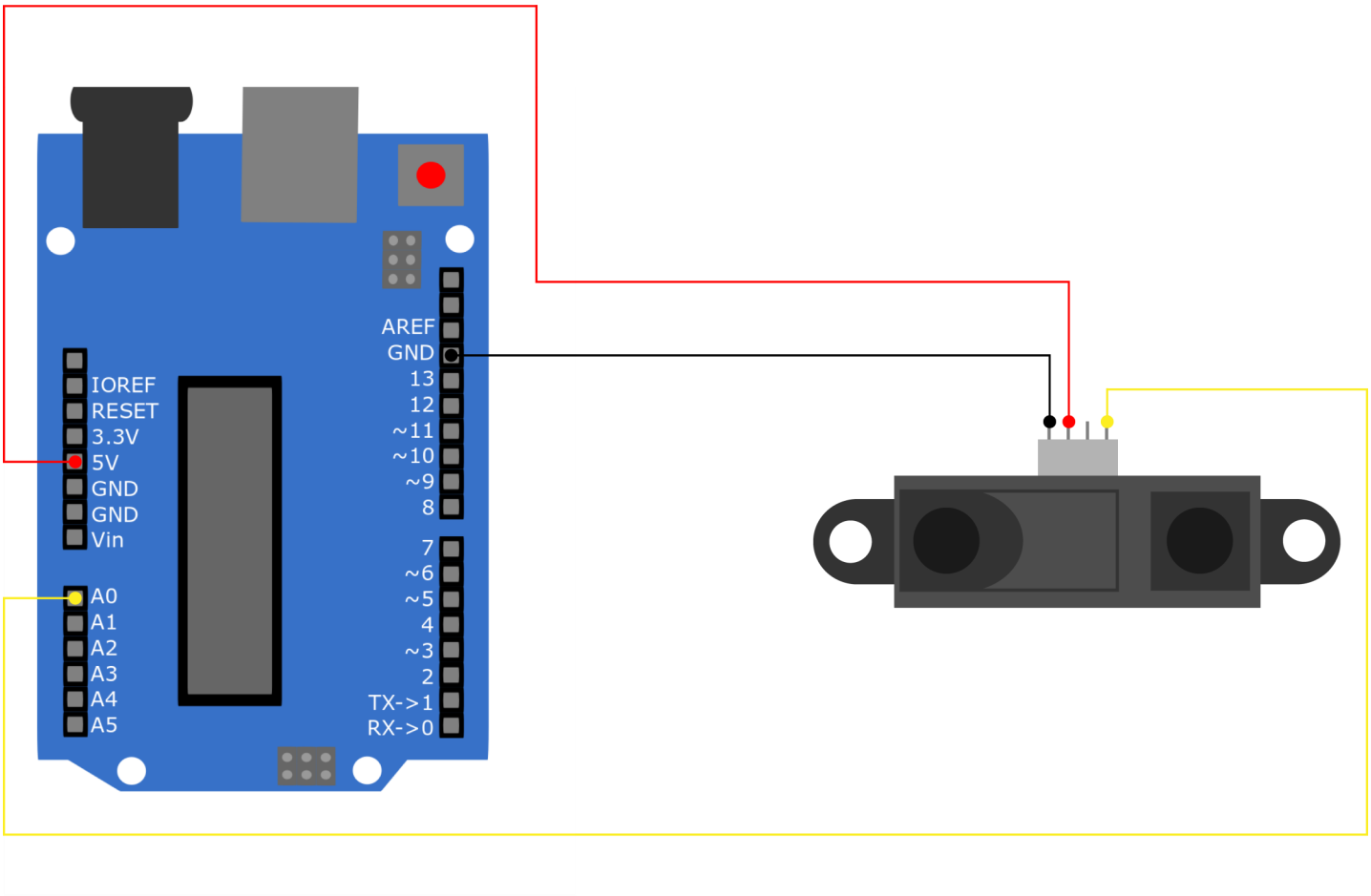
1. GENERAL INFORMATION

Dear customer,
thank you very much for choosing our product.
In 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.

Note that for the full range of the sensor, it can only be measured accurately with a reflective object, such as white paper.

2. USAGE WITH ARDUINO

1. Connection



Arduino	SEN-IR01
5 V	Vcc
GND	GND
A0	Data

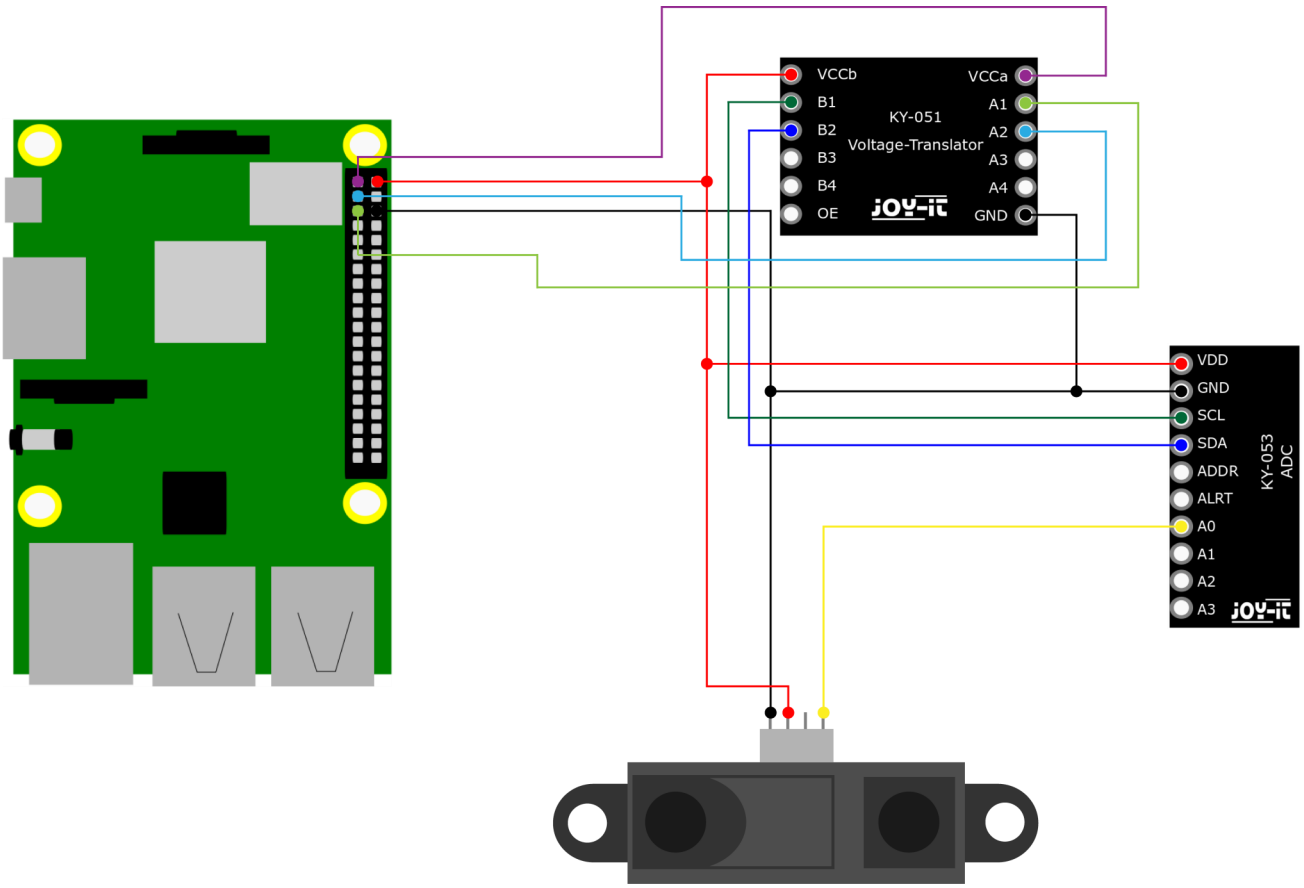
2. Code example

We provide the following code example to test your infrared distance sensor. In this code example the distance to the next object is displayed on the serial monitor. Note, that you have to set your serial monitor to a baud rate of 9600 to be able to see this output.
To run this code example, copy the following code into your Arduino IDE and upload it to your Arduino using the ***Upload*** button.

```ino
// Declaration of the variables
int IRPin = A0;   // Pin of the IR sensor
float IRDistance = 0;

void setup() {
  Serial.begin(9600);
}

float get_Distance(){
  // Calculation of the distance
  int value = analogRead(IRPin);
  float voltage = map(value, 0, 1024, 0, 5000) / 1000.0;
  IRDistance = 28.153 * pow(voltage, -1.175);
  return IRDistance;
}

void loop() {
  // Output of the distance
  Serial.print("Distance: ");
  Serial.print(get_Distance());   // Calling the get_Distance method
  Serial.println(" cm");
  Serial.println("----------------------");
  delay(1000);  // 1 second interruption
}
```

3. USAGE WITH RASPBERRY PI

1. Connection



Raspberry Pi	SEN-IR	ADC	Voltage translator
5V (Pin 2)	Vcc	VDD	VCCb
3,3 V (Pin 1)	-	-	VCCa
GND	GND	GND	GND
-	Data	A0	-
-	-	SCL	B1
-	-	SDA	B2
GPIO 2 (SDA)	-	-	A2
GPIO 3 (SCL)	-	-	A1

This infrared distance sensor is an analog sensor, which requires a voltage of 5 V. Therefore, it is essential to use an analog-to-digital converter and a voltage translator.

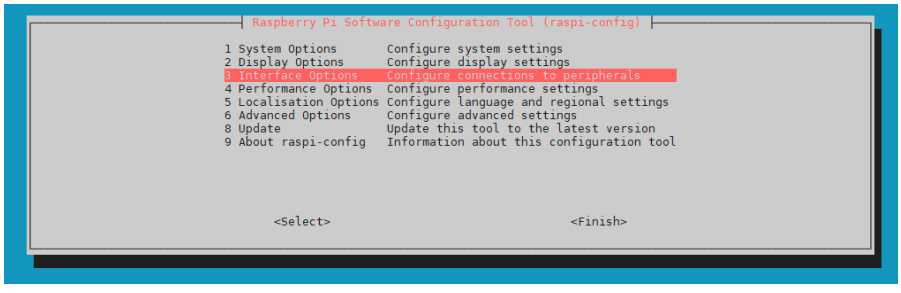
The analog-to-digital converter is required because the Raspberry Pi does not have one, but it is needed to read the data from the sensor. The voltage converter is needed because the Raspberry Pi can be damaged when receiving signals with a logic level of 5V.
We recommend **COM-KY053ADC** as analog-digital converter and **COM-KY051VT** as voltage translator.

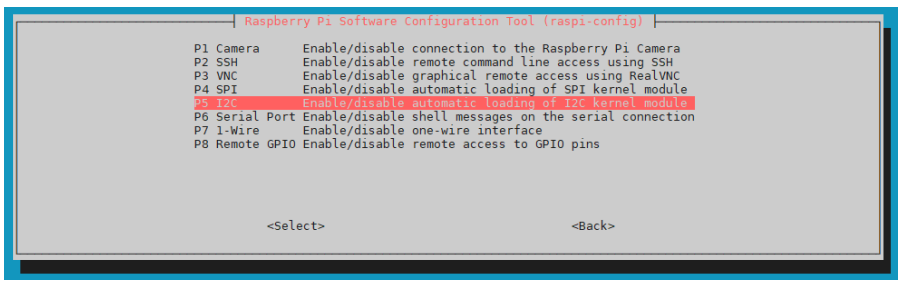
2. Installation

First, you need to enable I2C on your Raspberry Pi. To open the configuration, enter the following command:

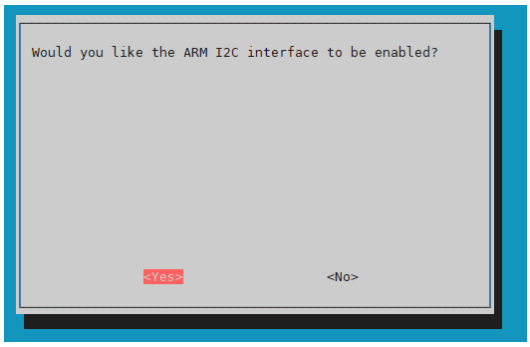
```
sudo raspi-config
```

Select ***3 Interface Options*** → ***P5 I2C*** .





There you will be asked the question ***Would you like the ARM I2C Interface to be enabled?***. Confirm with ***Yes***.



You have now successfully activated I2C.
For our code example we use the **Adafruit_Python_ADS1x15** library, which was published under the **MIT-License**. This library is necessary for the analog-to-digital converter.
With the following commands you download and install this library.

```
git clone https://github.com/adafruit/Adafruit_Python_ADS1x15.git
cd Adafruit_Python_ADS1x15/
sudo python3 setup.py install

cd ..
```

3. Code example

The following code example gives you the measured distance of the infrared sensor. For this purpose you must create a file first. You can do this with the following command:

```
nano ir-sensor.py
```

Copy the following code into the now opened editor.

```
import time
import Adafruit_ADS1x15

# Declaration of the ADC (more details under COM-KY053ADC)
adc = Adafruit_ADS1x15.ADS1115()
GAIN = 2/3

while True:
    # Calculation of the distance
    value = adc.read_adc(0, gain=GAIN)
    voltage = ((value/32767)*6144)/1000
    distance = 28.153*pow(voltage, -1.175);

    # Output of the distance (rounded up)
    print(round(distance,2))
    time.sleep(1)  # Stops 1 second
```

Press **CTRL+ O** to save the file and **CTRL + X** to exit the editor. With the following command you can now execute the code example:

```
sudo python3 ir-sensor.py
```

4. 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:
If 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.

5. 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: http://support.joy-it.net
Telephone: +49 (0)2845 98469-66 (10-17 o‘clock)

For further information please visit our website:
www.joy-it.net

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