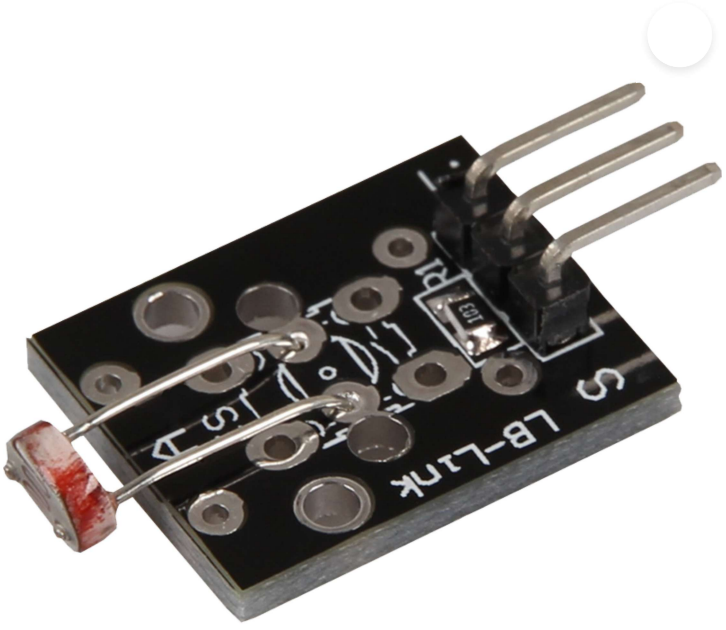
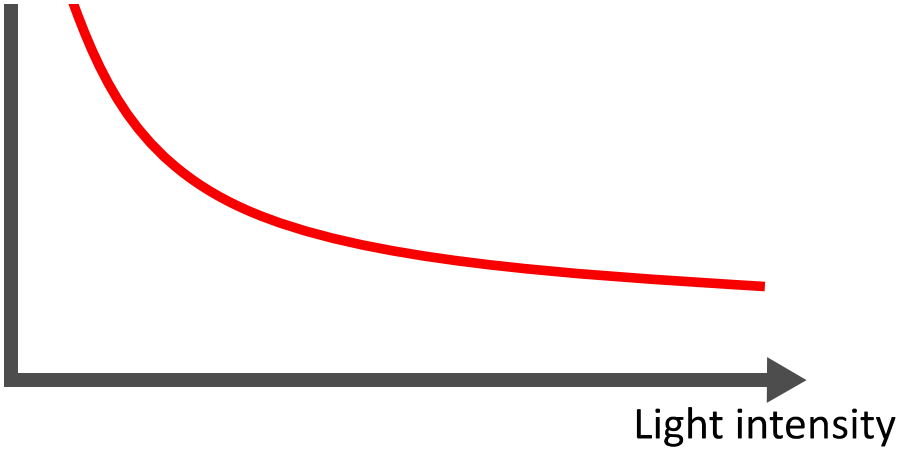
KY-018 PHOTORESISTOR

Contains an LDR resistor whose resistance value decreases with brighter environment.

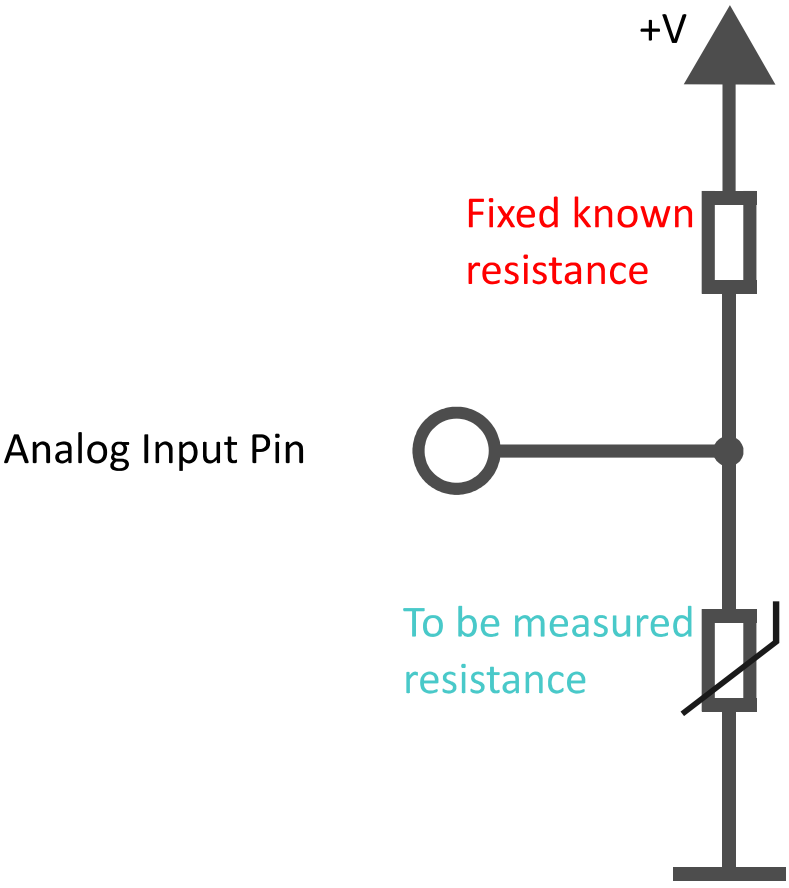
Arduino **Raspberry Pi** **Micro:Bit**



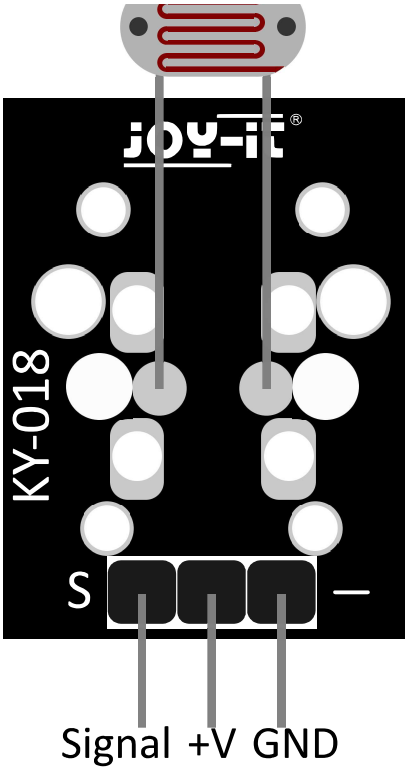
This module contains an LDR resistor whose resistance value decreases with brighter surroundings.



This resistance can be determined using a voltage divider, where a known voltage is divided across a known (10 kΩ) and an unknown (variable) resistance. Using this measured voltage, the resistance can then be calculated - the exact calculation is included in the code examples below.

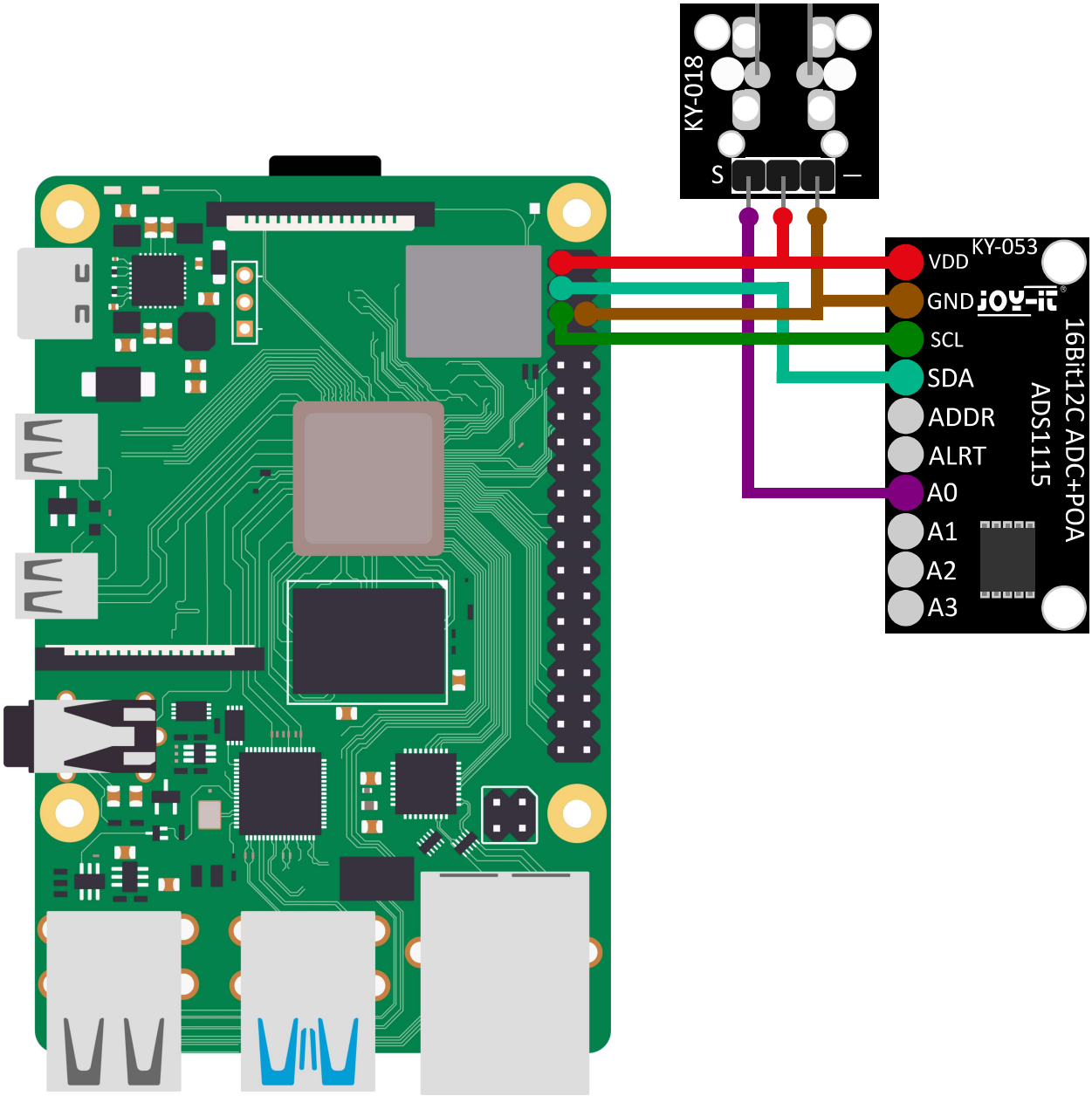


Operating voltage	3,3 V - 5 V
Fixed known resistance	10 kΩ
Dimensions	21 x 15 x 6 mm



CODE EXAMPLE RASPBERRY PI

PIN ASSIGNMENT RASPBERRY PI



RASPBERRY PI	SENSOR
-	Signal
3,3 V [Pin 1]	+V
GND [Pin 6]	GND

SENSOR	KY-053
Signal	A0
+V	-

RASPBERRY PI	KY-053
3,3 V [Pin 1]	+V
GND [Pin 6]	GND
GPIO 3 [Pin 5]	SCL
GPIO 2 [Pin 3]	SDA

Analog sensor, therefore the following must be considered: In contrast to the Arduino, the Raspberry Pi does not have any analog inputs or there is no ADC (analog digital converter) integrated in the chip of the Raspberry Pi. This limits the Raspberry Pi, if you want to use sensors, which do not output digital values, but a continuously changing value (example: potentiometer -> different position = different voltage value).

To avoid this problem, our sensor kit X40 contains the KY-053, a module with a 16-bit ADC, which you can use on the Raspberry to expand it with 4 analog inputs. This module is connected to the Raspberry Pi via I2C, takes over the analog measurement and transfers the value digitally to the Raspberry Pi.

Thus we recommend to connect the KY-053 module with the said ADC in between for analog sensors of this set. More information can be found on the **KY-053 Analog Digital Converter information page**.

The program uses the corresponding ADS1x15 and I2C Python libraries from Adafruit to control the ADS1115 ADC. These have been published at the following link **https://github.com/adafruit/Adafruit_CircuitPython_ADS1x15** under the **MIT license**. The required libraries are **not** included in the download package below.

Please note that you need to enable I2C on your Raspberry Pi before using this example.

```
#!/usr/bin/python
# coding=utf-8

import time
import board
import busio
import adafruit_ads1x15.ads1115 as ADS
from adafruit_ads1x15.analog_in import AnalogIn
```