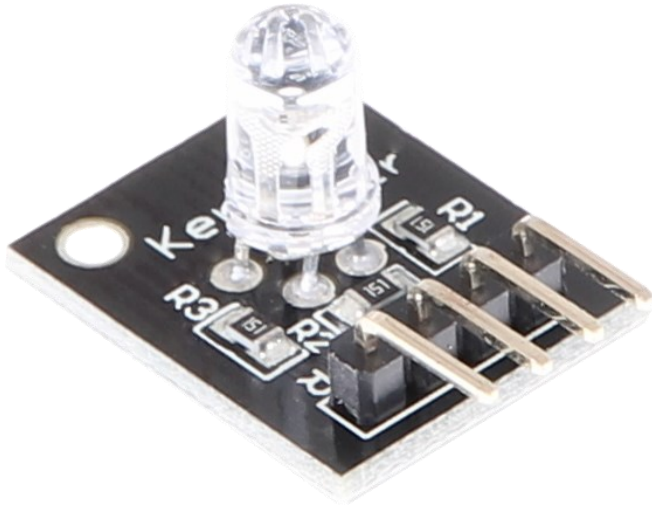


KY-016

RGB LED module



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.

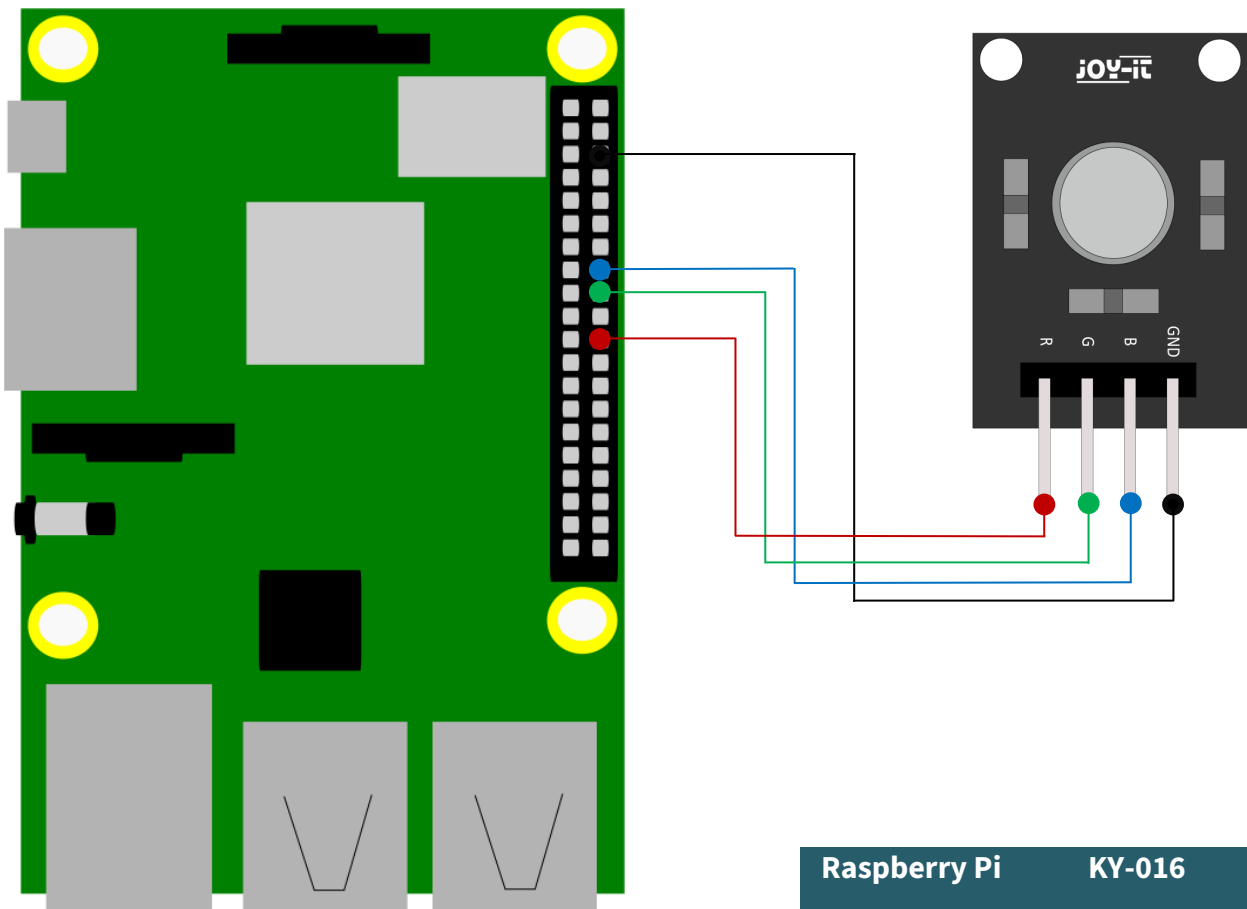
Should you encounter any unexpected problems during use, please do not hesitate to contact us.

2. USAGE WITH 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.

1. Connection



Raspberry Pi	KY-016
Pin 6 (GND)	GND
GPIO 23 (Pin 16)	LED Blue
GPIO 24 (Pin 18)	LED Green
GPIO 25 (Pin 22)	LED Red

2. Code example

We provide you with two sample codes to test your RGB LED. One code which sets the LED to a color and then holds it each for 3 seconds (*led.py*) and one code which sets the LED to a pulsating mode in different colors (*pwm.py*).

The following example code is the one named *led.py*. First, you create a file with the following command and copy the following code inside of it.

```
sudo nano led.py
```

```
# -*- coding: utf-8 -*-
from gpiozero import LED
import time

# Initialize the LEDs at the specified BCM pins
led_red = LED(25)
led_green = LED(24)
led_blue = LED(23)

print("LED Test [press CTRL+C to end the test]")

# Main program loop
try:
    while True:
        print("LED RED on for 3 seconds")
        led_red.on()
        led_green.off()
        led_blue.off()
        time.sleep(3) # Lights up for 3 seconds

        print("LED GREEN on for 3 seconds")
        led_red.off()
        led_green.on()
        led_blue.off()
        time.sleep(3) # Lights up for 3 seconds

        print("LED BLUE on for 3 seconds")
        led_red.off()
        led_green.off()
        led_blue.on()
        time.sleep(3) # Lights up for 3 seconds

# Cleanup after the program has ended
except KeyboardInterrupt:
    print("Program was terminated by the user")
```

With the following command you can now run the program:

```
sudo python3 led.py
```

The second sample code is `pwm.py`. With the following command you can create a file in which you can copy the following code.

```
sudo nano pwm.py
```

```
# -*- coding: utf-8 -*-
from gpiozero import PWMLED
import time

# Initialize the PWM LEDs for each color
led_red = PWMLED(25)
led_green = PWMLED(24)
led_blue = PWMLED(23)

# This function generates the actual color
# The color intensity can be adjusted using the respective color variable
# After the color is set, "time.sleep" is used to define the duration
# for which the said color will be displayed
def led_color(red, green, blue, pause):
    led_red.value = red
    led_green.value = green
    led_blue.value = blue
    time.sleep(pause)

    # Turn off LEDs after the pause
    led_red.value = 0
    led_green.value = 0
    led_blue.value = 0

print("LED Test [press CTRL+C to end the test]")

# Main program loop:
# This has the task of creating a variable for each individual color
# and running through the color intensity of each color from 0-100%
# using a for loop
# The mix of different brightness levels of the respective colors
# thus creates a color gradient
try:
    while True:
        for x in range(0, 2):
            for y in range(0, 2):
                for z in range(0, 2):
                    print(x, y, z)
                    for i in range(0, 101):
                        # Scale the intensity values from 0 to 1 for PWMLED
                        led_color(x * i / 100, y * i / 100, z * i / 100, 0.02)

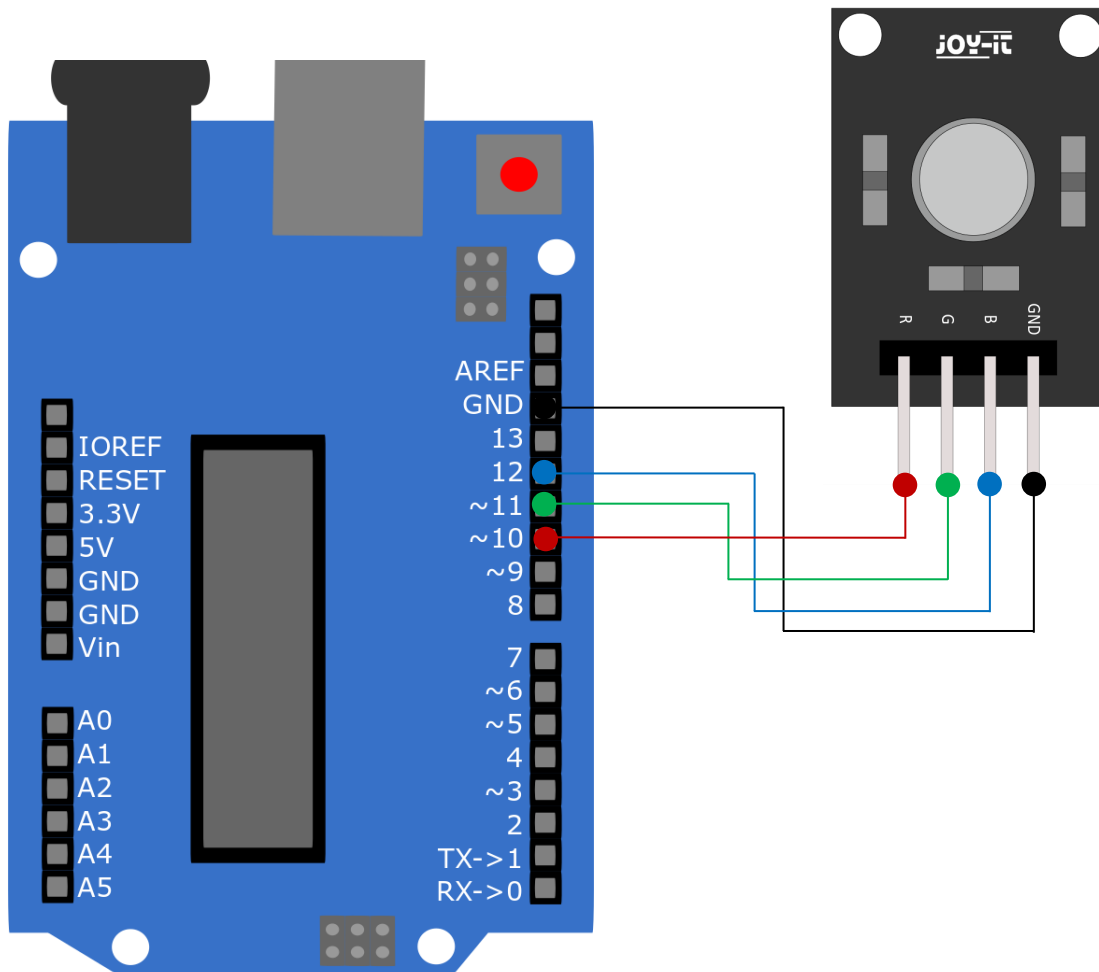
# Cleanup after the program has ended
except KeyboardInterrupt:
    print("Program was terminated by the user")
```

With the following command you can now run the program:

```
sudo python3 pwm.py
```

3. USAGE WITH THE ARDUINO

1. Connection



Arduino	KY-016
GND	GND
Pin 12	LED Blue
Pin 11	LED Green
Pin 10	LED Red

2. Code example

We provide you with two sample codes to test your RGB LED. To use them, make sure that port and board are selected correctly in your Arduino IDE.

The first code makes the RGB LED light up in red, green and blue 3 seconds each. To do this, copy the following code into your Arduino IDE.

```
int Led_Rot = 10;
int Led_Gruen = 11;
int Led_Blau = 12;

void setup ()
{
  // Initialization of the output pins for the LEDs
  pinMode (Led_Rot, OUTPUT);
  pinMode (Led_Gruen, OUTPUT);
  pinMode (Led_Blau, OUTPUT);
}

void loop () //Main program loop
{
  digitalWrite (Led_Rot, HIGH); // LED red is switched on
  digitalWrite (Led_Gruen, LOW); // LED green stays off
  digitalWrite (Led_Blau, LOW); // LED blue stays off
  delay (3000); // Waiting mode for 3 seconds

  digitalWrite (Led_Rot, LOW); // LED red stays off
  digitalWrite (Led_Gruen, HIGH); // LED green is switched on
  digitalWrite (Led_Blau, LOW); // LED blue stays off
  delay (3000);
  // Wait mode for another three seconds in which the LEDs are then switched

  digitalWrite (Led_Rot, LOW); // LED red stays off
  digitalWrite (Led_Gruen, LOW); // LED green stays off
  digitalWrite (Led_Blau, HIGH); // LED blue is switched on
  delay (3000);
  // Wait mode for another three seconds in which the LEDs are then switched
}
```

The second example code lets the RGB LED pulsate in different colors and creates a gradient. Here, you copy again the following code into your Arduino IDE.

```
int Led_Rot = 10;
int Led_Gruen = 11;
int Led_Blau = 12;

int val;

void setup () {
  // Initialization of the output pins for the LEDs
  pinMode (Led_Rot, OUTPUT);
  pinMode (Led_Gruen, OUTPUT);
  pinMode (Led_Blau, OUTPUT);
}
void loop () {
  // Within a For-loop the three LEDs are given different PWM values
  // This creates a colour gradient in which the mixing of different
  // Brightness levels of the two integrated LEDs so that different colours are created
  for (val = 255; val > 0; val--)
  {
    analogWrite (Led_Blau, val);
    analogWrite (Led_Gruen, 255-val);
    analogWrite (Led_Rot, 128-val);
    delay (1);
  }
  // In the second For loop, the gradient is passed backwards
  for (val = 0; val < 255; val++)
  {
    analogWrite (Led_Blau, val);
    analogWrite (Led_Gruen, 255-val);
    analogWrite (Led_Rot, 128-val);
    delay (1);
  }
}
```

You can execute both codes by clicking on the "Upload" button.

4. FURTHER INFORMATION

Our Information and Take-back Obligations according to the Electrical and Electronic Equipment Act (ElektroG)



Symbol on Electrical and Electronic Products:

This crossed-out bin means that electrical and electronic products do not belong into the household waste. You must hand over your old appliance to a registration place. Before you can hand over the old appliance, you must remove used batteries and replacement batteries which are not enclosed by the device.

Return Options:

As the end user, you can hand over your old appliance (which has essentially the same functions as the new one bought with us) free of charge for disposal with the purchase of a new device.

Small devices, which do not have outer dimensions bigger than 25 cm can be handed in for disposal independently of the purchase of a new product in normal household quantities.

1. Possibility of return at our company location during our opening hours

Simac Electronics Handel GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn

2. Possibility of return nearby

We will send you a parcel stamp with which you can send us your old appliance free of charge. For this possibility, please contact us via e-mail at pickup@joy-it.net or via telephone, then please dial 02845 93 60 -23

Information about Package:

Please package your old appliance safe for transport. Should you not have suitable packaging material or you do not want to use your own material, you can contact us and we will send you an appropriate package.

5. SUPPORT

If any questions remained open or problems may arise after your purchase, we are available by e-mail, telephone and ticket support system to answer these.

E-Mail: 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 visit our website:

www.joy-it.net