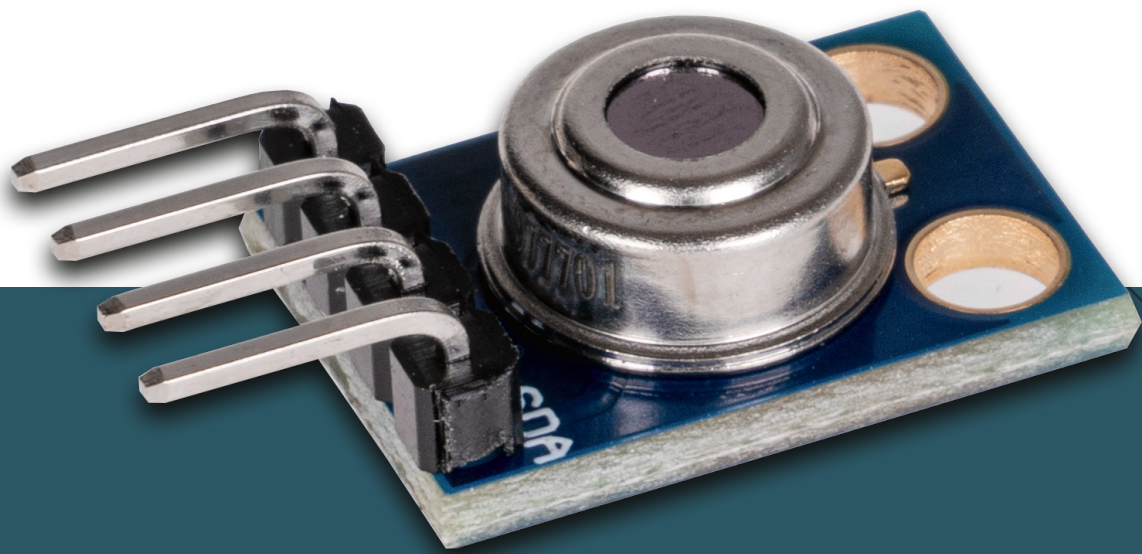




INFRARED THERMOMETER

Infrared sensor module for non-contact temperature measurements

1. GENERAL INFORMATION

Dear customer, thank you for choosing our product. In the following, we will show you what you need to bear in mind during commissioning and use.

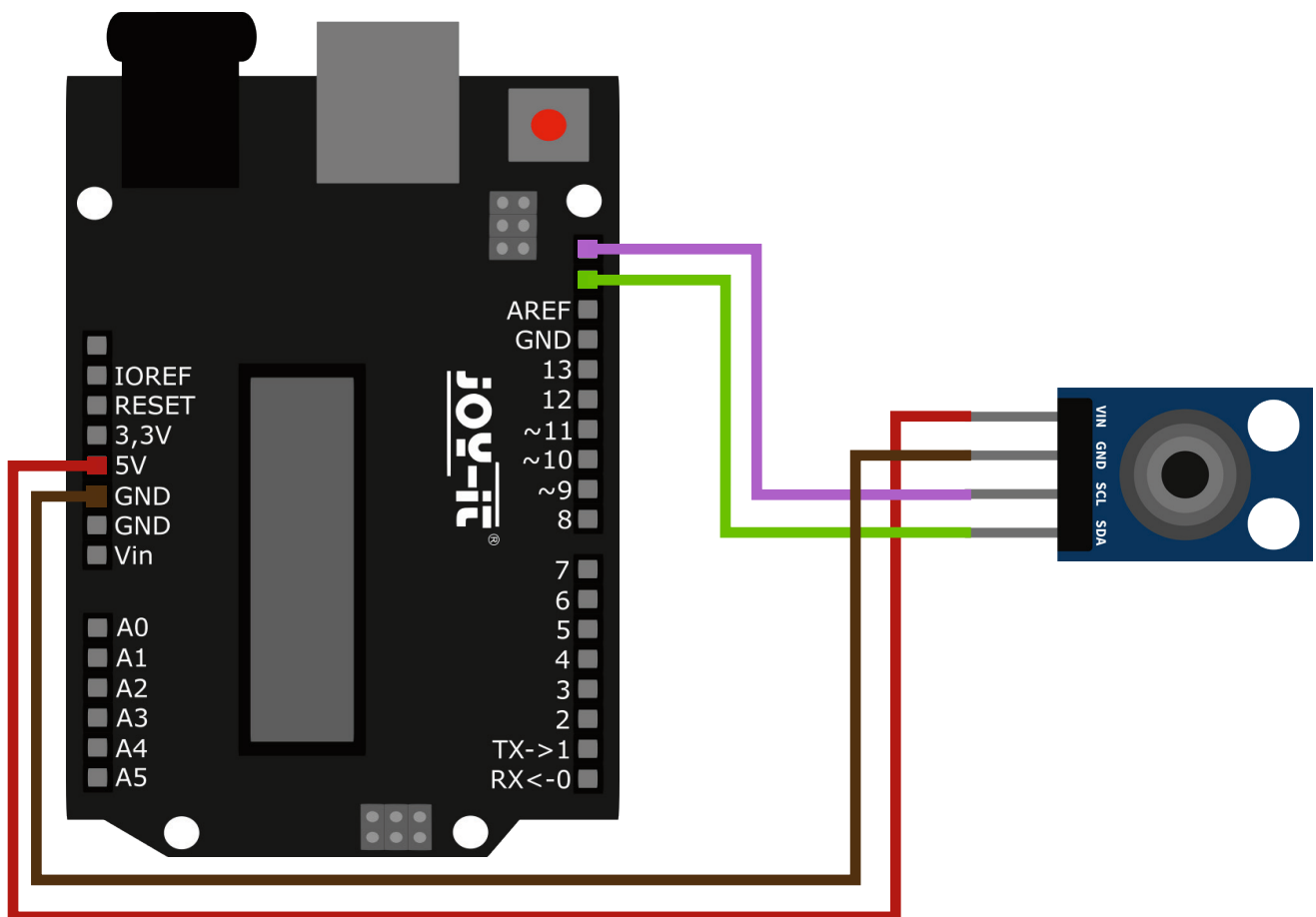
Should you encounter any unexpected problems during use, please feel free to contact us.

2. BASICS

This infrared sensor module uses the MLX90614 sensor and enables non-contact temperature measurements. The control is particularly simple via the I2C interface and is thus possible with a wide variety of microcontrollers and single board computers.

3. APPLICATION EXAMPLE ARDUINO

First, connect the module to your Arduino as follows:



ARDUINO	INFRARED THERMOMETER
5 V	VIN
GND	GND
SCL (D19)	SCL
SDA (D18)	SDA

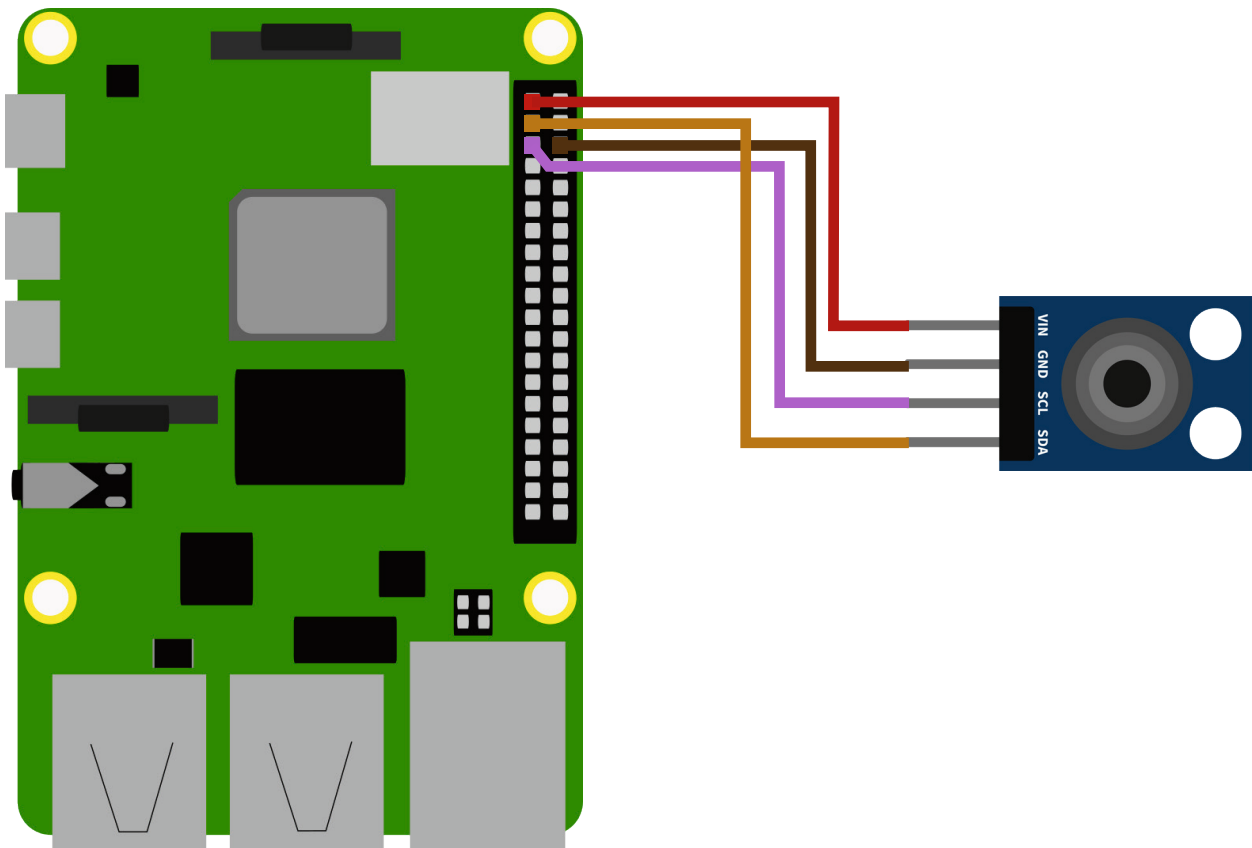
For usage, we recommend to use the [MLX90614 Library from Adafruit](#). To install this, first open the library manager in your Arduino IDE under **Sketch** → **Include Library** → **Manage Libraries**.

Here, type **MLX90614** in the search box and install the library titled **Adafruit MLX90614 Library**.

A suitable example program is already included in the library. Open this under **File** → **Examples** → **Adafruit MLX90614 Library** → **mlxtest**. Transfer the code sample to your Arduino and open the serial monitor to display the measurement outputs.

4. APPLICATION EXAMPLE RASPBERRY PI

First connect the module to your Raspberry Pi as follows:



RASPBERRY PI	INFRARED THERMOMETER
3,3 V	VIN
GND	GND
SCL (GPIO2)	SCL
SDA (GPIO3)	SDA

Before we can use the sensor we first need to enable the I2C interface on the Raspberry Pi. To do this, open a new terminal window and enter the following command to open the Raspberry Pi configuration menu:

```
sudo raspi-config
```

Navigate here to the menu **3 Interfacing Options** and activate here **I5 I2C**.

Now we can create our sample program. To make it as easy to use as possible, we are going to use a class from [Raspberry Pi Tutorials](#) for this. Create a new Python file by entering the following command:

```
sudo nano mlx90614.py
```

Insert the following content here:

```
import time
import smbus

class MLX90614():

    MLX90614_TA      = 0x06
    MLX90614_TOBJ1   = 0x07

    def __init__(self, address = 0x5a, bus = 1):
        self.address = address
        self.bus = smbus.SMBus(bus)

    def readValue(self, registerAddress):
        error = None
        for i in range(3):
            try:
                return self.bus.read_word_data(self.address, registerAddress)
            except IOError as e:
                error = e
                sleep(0.1)
        raise error

    def valueToCelcius(self, value):
        return -273.15 + (value * 0.02)

    def readObjectTemperature(self):
        value = self.readValue(self.MLX90614_TOBJ1)
        return self.valueToCelcius(value)
```

```
def readAmbientTemperature(self):
    value = self.readValue(self.MLX90614_TA)
    return self.valueToCelcius(value)

sensor = MLX90614()
while True:
    print("Object temperature: ", sensor.readObjectTemperature())
    print("Ambient temperature: ", sensor.readAmbientTemperature())
    print("-----")
    time.sleep(0.5)
```

Save the file with the key combination **CTRL + O**, confirm with **Enter** and exit the editor with the combination **CTRL+X**.

Alternatively, you can download the sample program directly to your Raspberry Pi with the following command:

```
wget https://www.joy-it.net/files/files/Produkte/SEN-IR-TEMP/SEN-IR-TEMP-RPi.zip
unzip SEN-IR-TEMP-RPi.zip
```

Now install the required dependencies with the following command:

```
sudo apt-get install python3-smbus i2c-tools -y
```

Now you can run the sample program:

```
sudo python3 mlx90614.py
```

5. INFORMATION & TAKE-BACK OBLIGATIONS

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



Symbol on electrical and electronic equipment

This crossed-out trash can means that electrical and electronic equipment does not belong in the household trash. You must hand in the old equipment at a collection point. Before handing in, you must separate used batteries and accumulators that are not enclosed in the old device from the old device.

Return options:

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

Possibility return to our company location during opening hours:

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

Possibility return in your area:

We will send you a parcel stamp with which you can return the device to us free of charge. To do this, please contact us by e-mail at Service@joy-it.net or by phone.

Packaging information:

Please pack your old device securely for transport. 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.

6. SUPPORT

We are also there for you after the purchase. If you have any questions or problems arise, we are also available by e-mail, telephone and ticket support system.

E-Mail: service@joy-it.net

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

Phone: +49 (0)2845 9360 – 50 (9:30 - 17:15 o'clock)

For more information, visit our website:

www.joy-it.net