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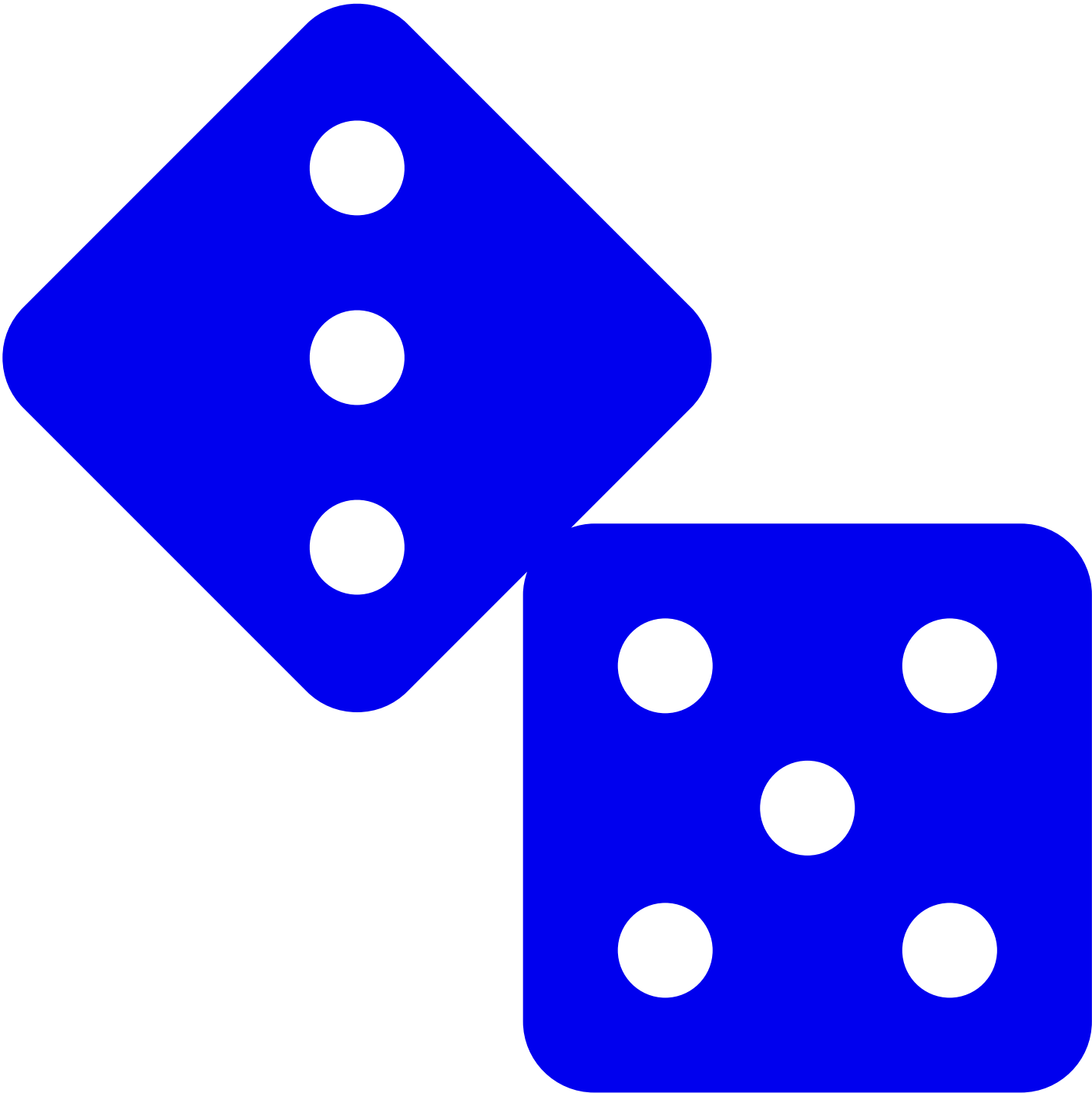
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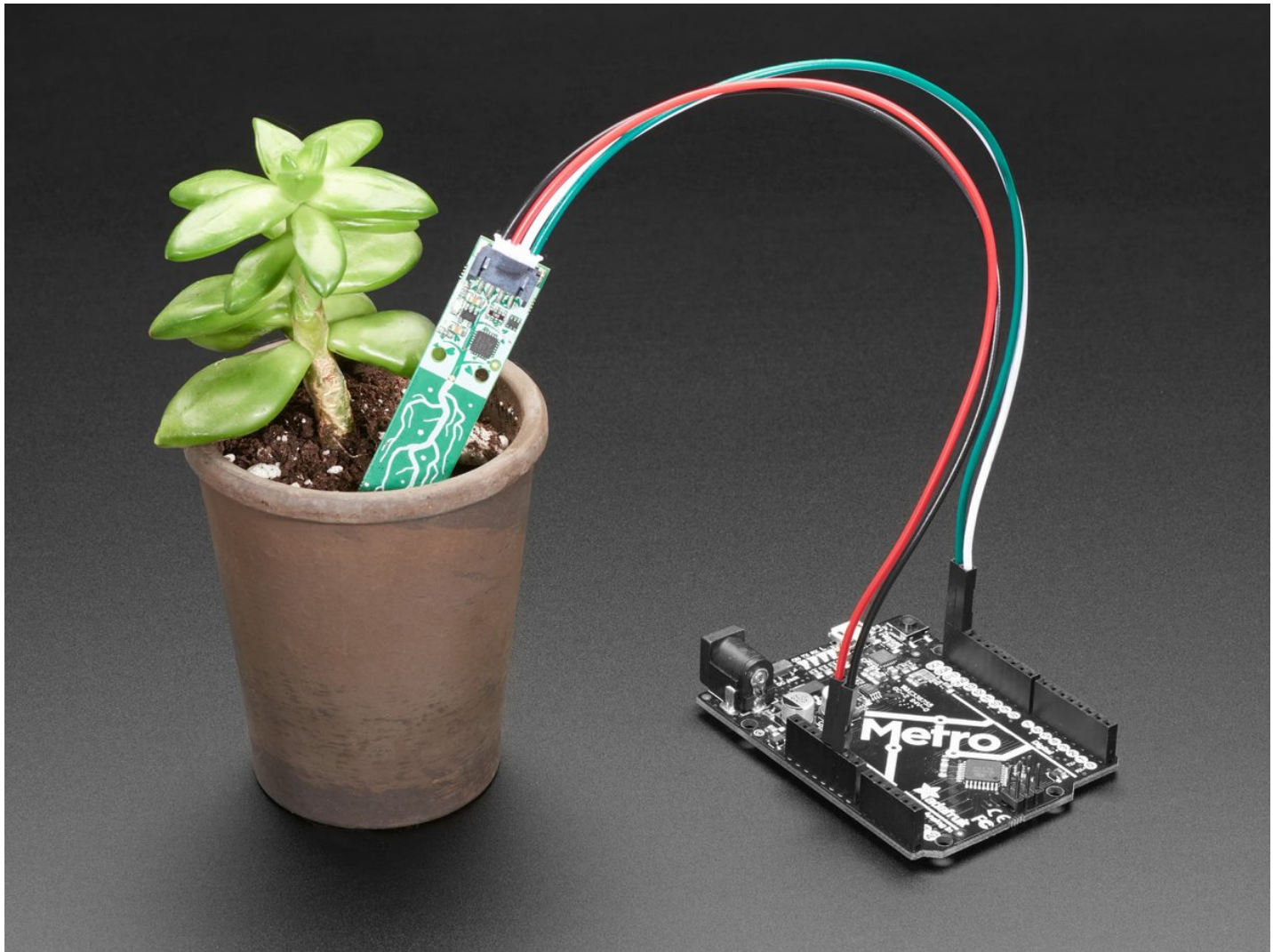


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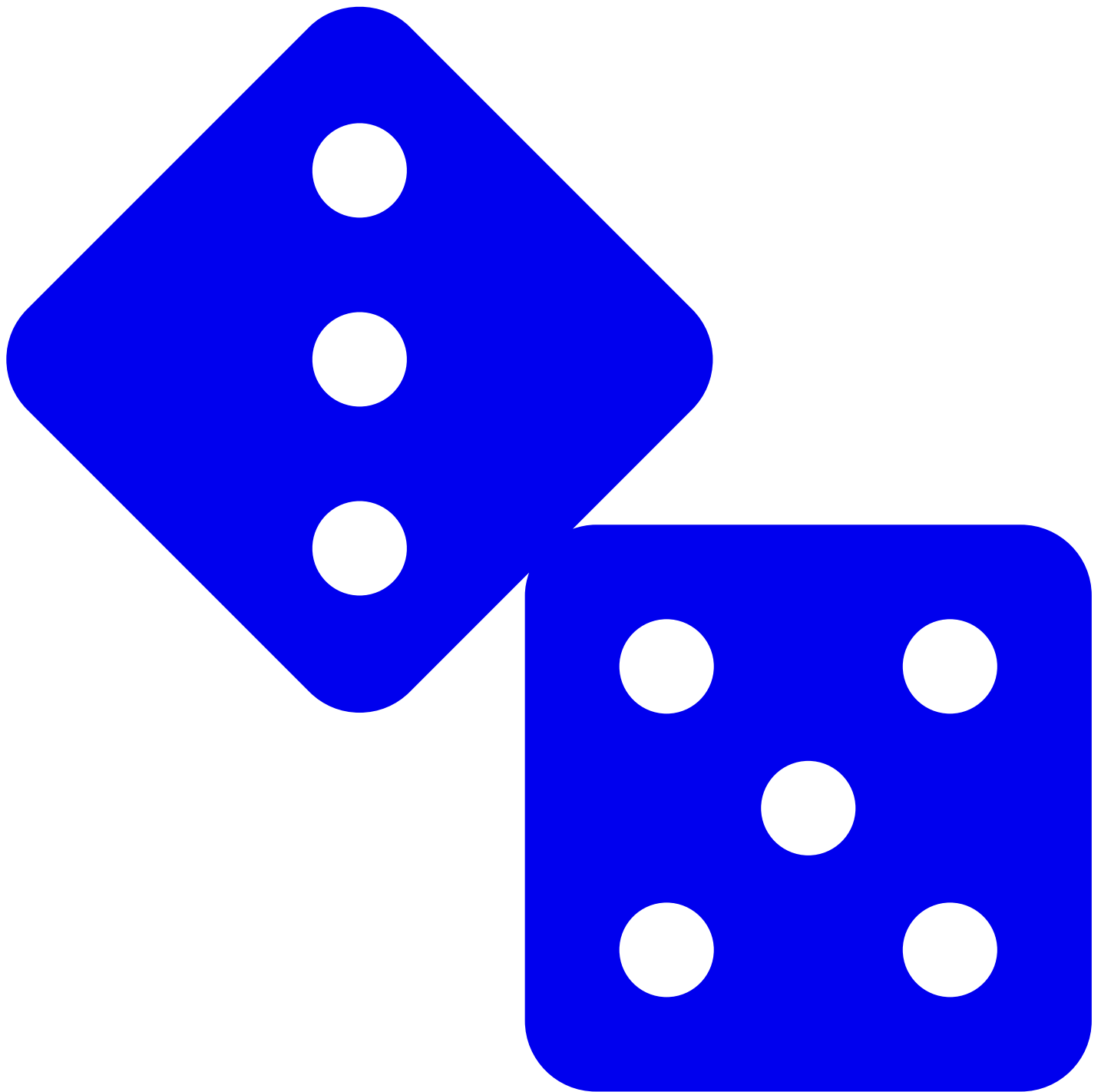


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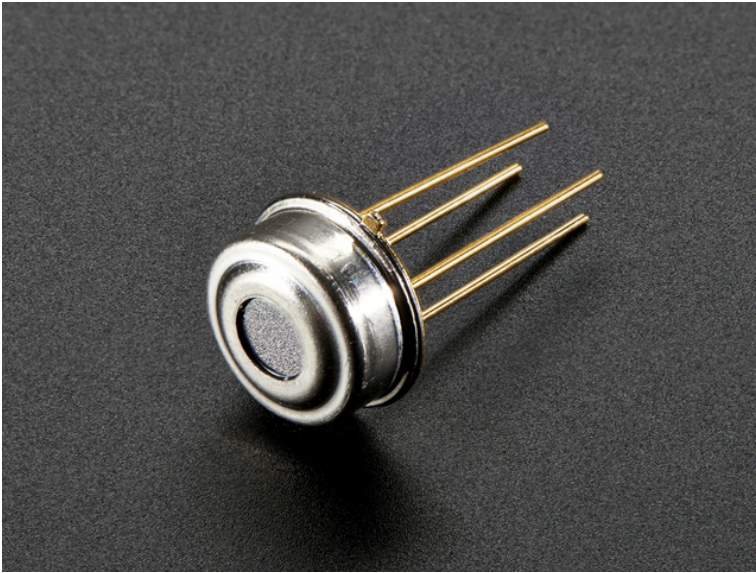
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Using Melexis MLX90614 Non-Contact Sensors



## Using Melexis MLX90614 Non-Contact Sensors

By [lady\\_ada](#)

Tell temps without touching!

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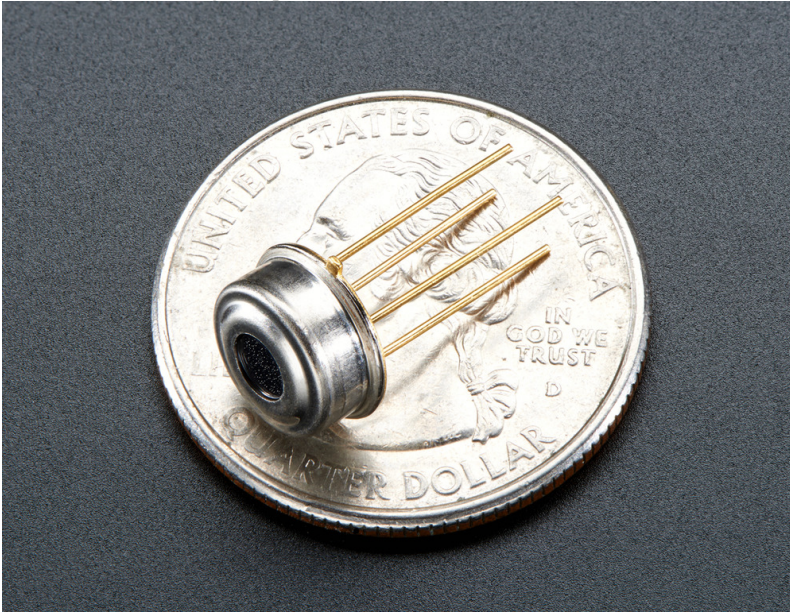
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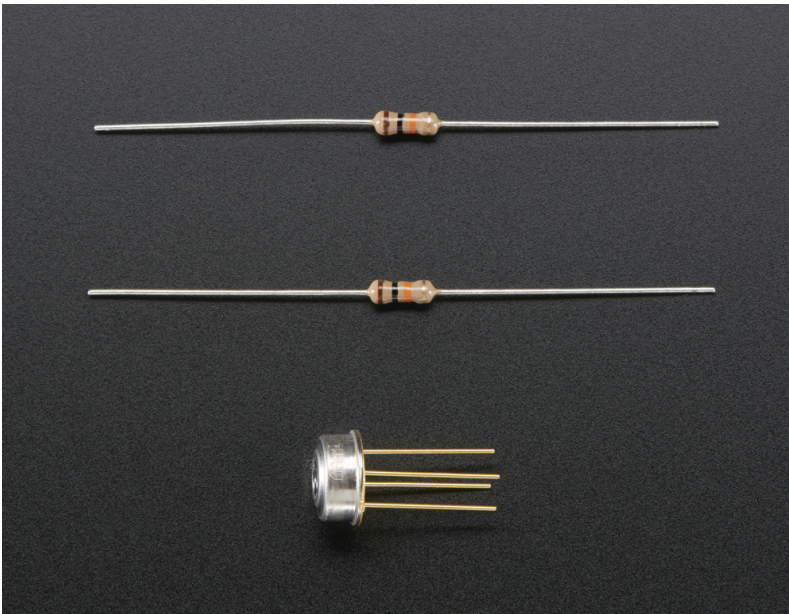




This cyber-tronic looking sensor hides a secret behind its glimmering eye. Unlike most temperature sensors, this sensor measures infrared light bouncing off of remote objects so it can sense temperature *without* having to touch them physically. Simply point the sensor towards what you want to measure and it will detect the temperature by absorbing IR waves emitted. Because it doesn't have to touch the object it's measuring, it can sense a wider range of temperatures than most digital sensors: from  $-70^{\circ}\text{C}$  to  $+380^{\circ}\text{C}$ ! It takes the measurement over an 90-degree field of view so it can be handy for determining the average temperature of an area.



This sensor comes in an easy-to-use metal can. You can easily solder it or plug it into a breadboard. The four pins are used for power, ground, i2c clock and i2c data. There are two versions, one for 3V power and logic levels and one for 5V power and logic levels. You'll also want two 10K pull-up resistors for the I2C data lines, which we thoughtfully include.

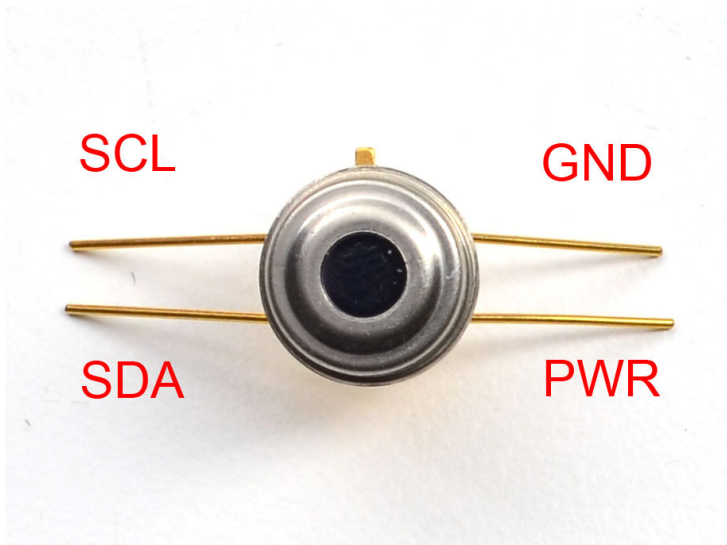


Some specifications

- Factory calibrated
- -40°C to +125°C for sensor temperature
- -70°C to +380°C for object temperature
- $\pm 0.5^\circ\text{C}$  accuracy around room temperatures
- High accuracy of  $0.5^\circ\text{C}$  over wide temperature
- 90° Field of view
- 5V version: 4.5 to 5.5V power
- 3V version: 2.6 to 3.6V power
- I2C interface, 0x5A is the fixed 7-bit address

## Wiring and Test

### Pinout



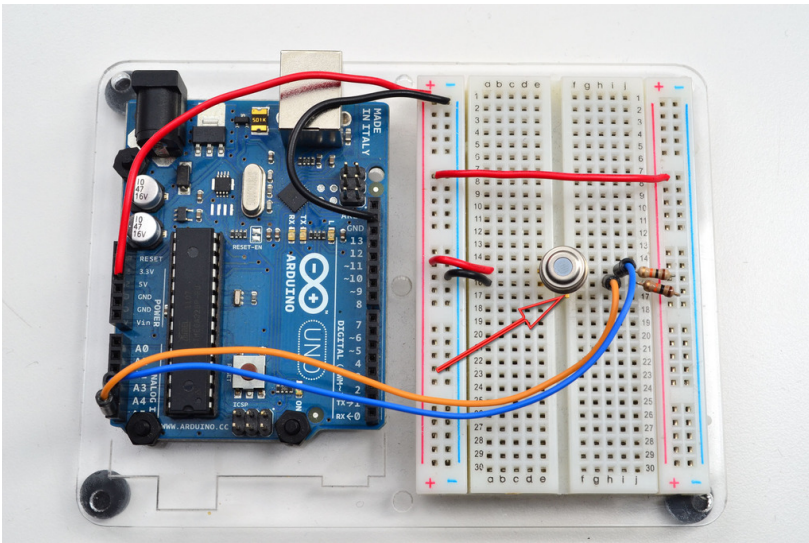
Despite being in an odd casing, the sensor is a lot like a simple sensor in a 'classic' integrated circuit shape. There are four pins. The datasheet has a diagram from the **bottom view** of the sensor which is a little annoying to refer to when wiring so use this image above.

### Arduino Wiring

You can easily wire this sensor to any microcontroller, we'll be using an Arduino

This sensor uses a slightly non-standard type of I2C called "repeated-start". If you are not using an Arduino, make sure your microcontroller can support "repeated start I2C requests"!





Note the tab is how we will keep track of pins, in this wiring image, the tab is on the south side of the sensor, there's a red arrow pointing to it

- Connect **GND** to common power/data ground
- Connect **PWR** to the power supply, for the 3V sensor this is about 3.3V. For the 5V version, use about 5VDC
- Connect the **SDA** pin to the I2C data **SDA** pin on your Arduino. On an UNO & '328 based Arduino, this is also known as **A4**, on a Mega it is also known as **digital 20** and on a Leonardo/Micro, **digital 2**
- Connect the **SCL** pin to the I2C clock **SCL** pin on your Arduino. On an UNO & '328 based Arduino, this is also known as **A5**, on a Mega it is also known as **digital 21** and on a Leonardo/Micro, **digital 3**

The MLX90614 has a fixed I2C address, you can only connect *one* sensor per microcontroller!

## Download Adafruit\_MLX90614

To begin reading sensor data, you will need to [download Adafruit\\_MLX90614 from our github repository](#). You can do that by visiting the github repo and manually downloading or, easier, just click this button to download the zip

[Download the Adafruit MLX90614 Library](#)

Rename the uncompressed folder **Adafruit\_MLX90614** and check that the **Adafruit\_MLX90614** folder contains **Adafruit\_MLX90614.cpp** and **Adafruit\_MLX90614.h**

Place the **Adafruit\_MLX90614** library folder your **arduinofolder/libraries/** folder. You may need to create the **libraries** subfolder if its your first library. Restart the IDE.

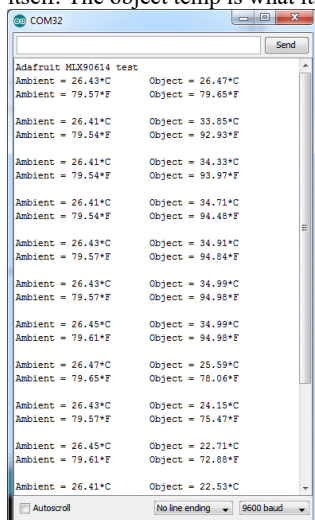
We also have a great tutorial on Arduino library installation at: <http://learn.adafruit.com/adafruit-all-about-arduino-libraries-install-use>

## Load Demo

Open up **File->Examples->Adafruit\_MLX90614->mlxtest** and upload to your Arduino wired up to the sensor



Now you can open up the serial console to see the ambient and object temperature printed out. Ambient temperature is the temperature of the sensor itself. The object temp is what its measuring in the 90-degree field of view.



## Downloads

[You can grab the datasheet here, it has a lot more details about the MLX90614](#)

This guide was first published on Feb 28, 2014. It was last updated on Feb 28, 2014.

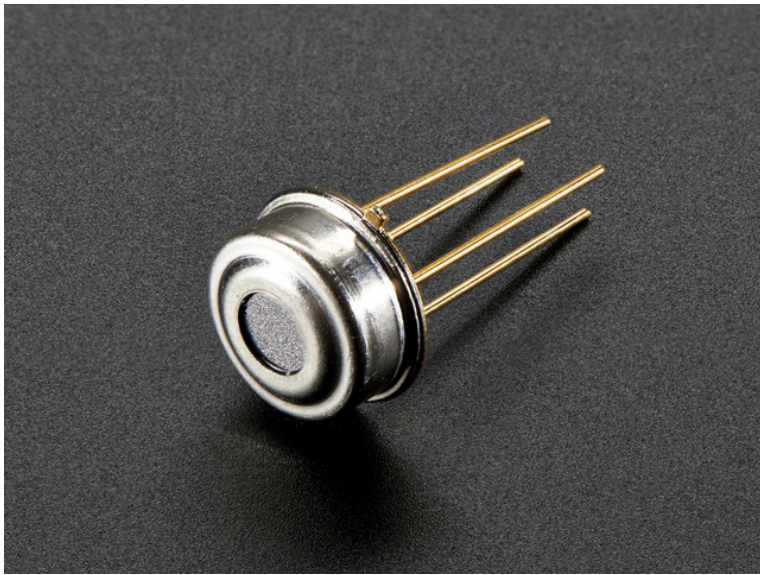
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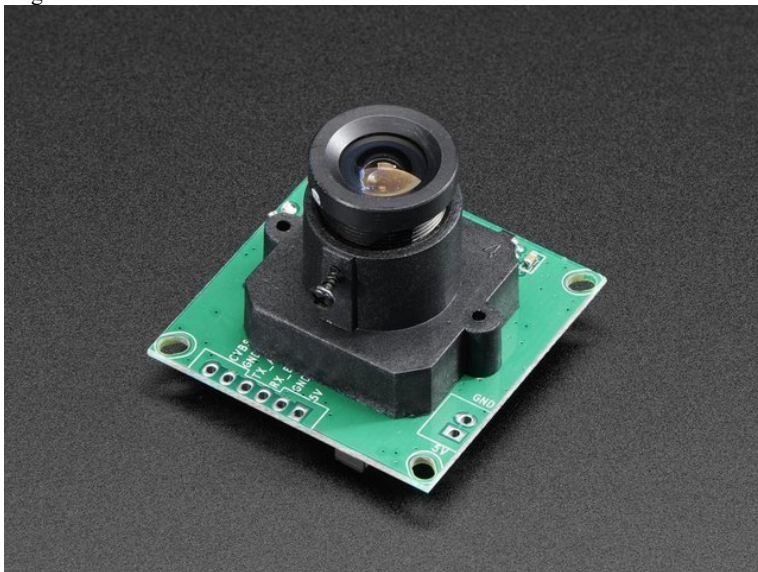


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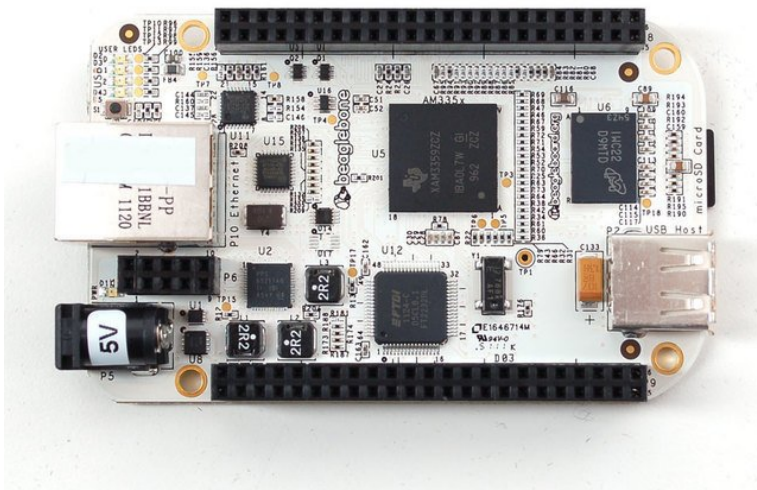
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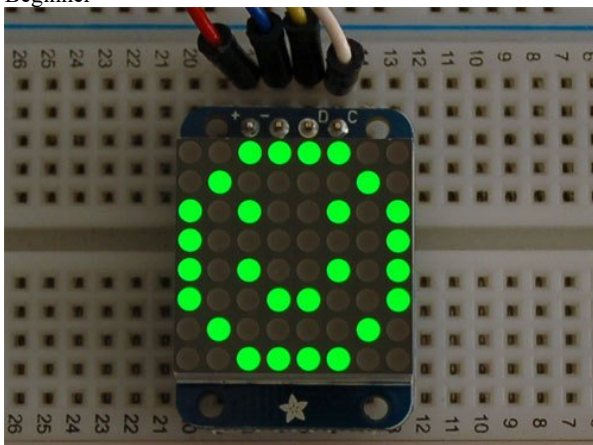
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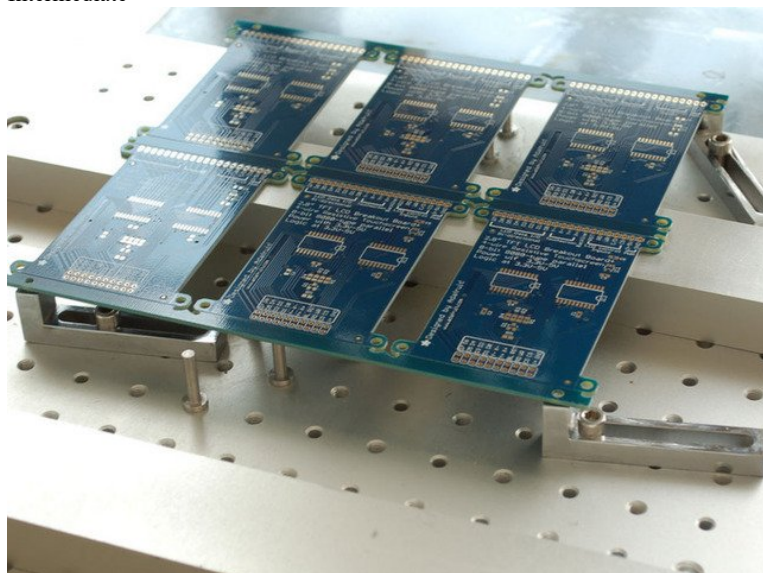
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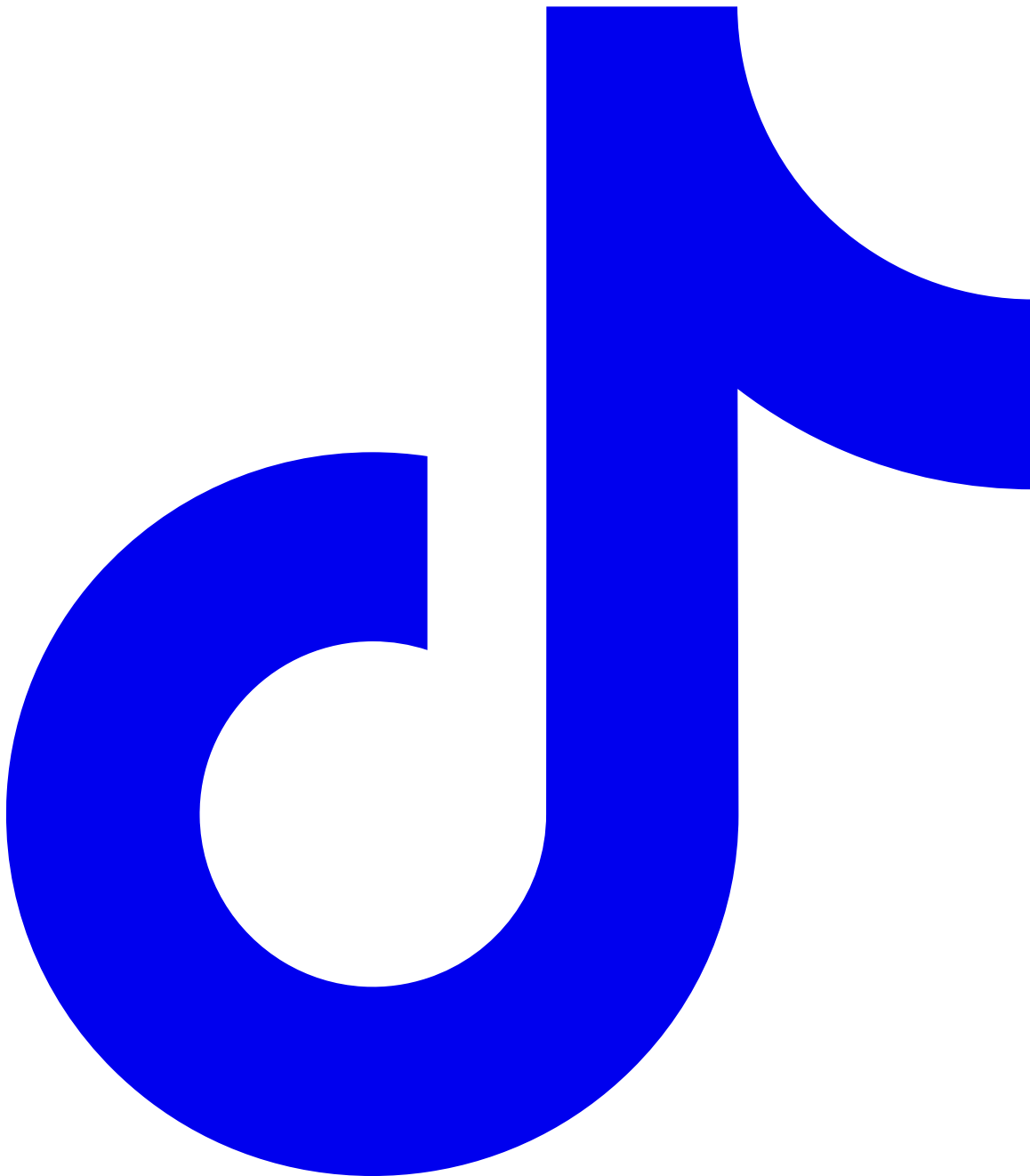
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"I long to accomplish a great and noble task, but it is my chief duty to accomplish humble tasks as though they were great and noble"

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