

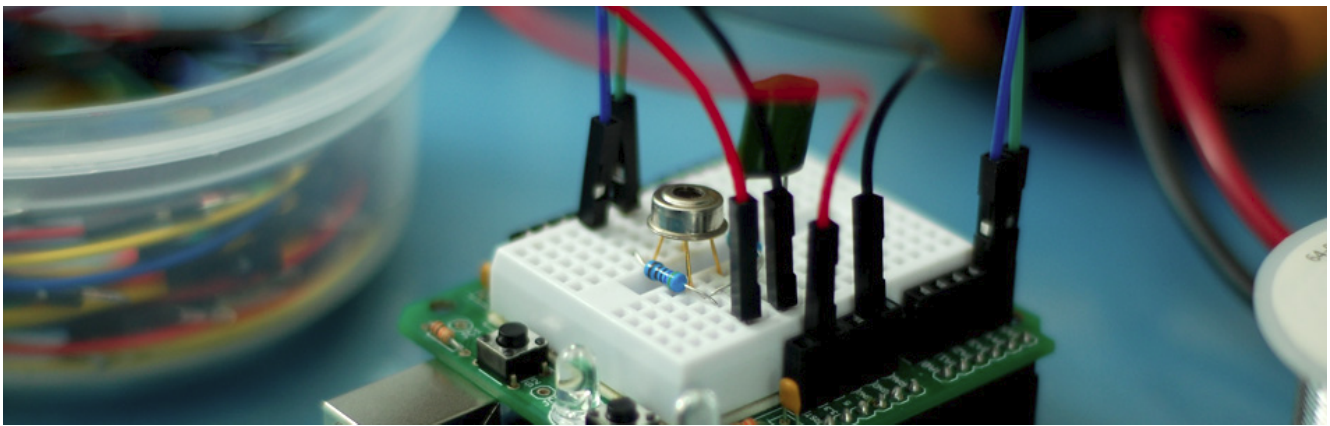
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[Is it hot? Arduino + MLX90614 IR Thermometer](#)

Tuesday, February 15th, 2011

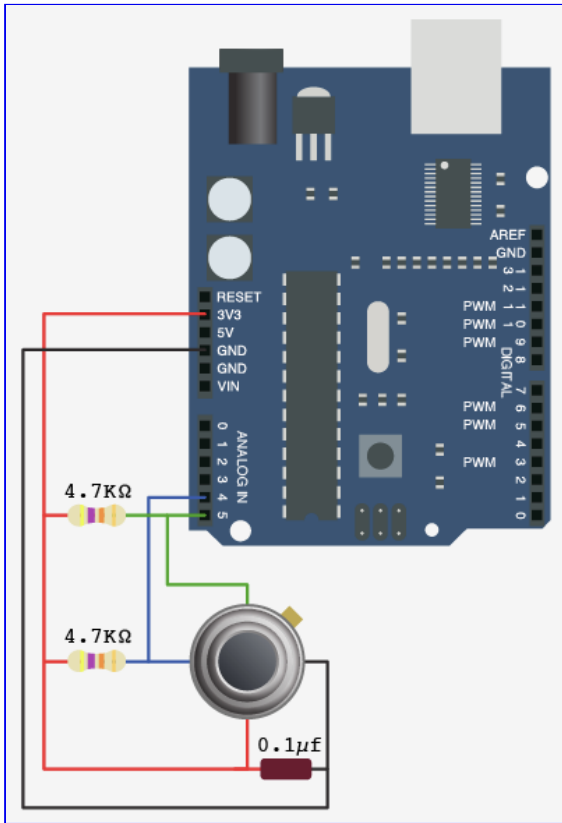
Being able to sense temperature is cool... But being able to read the temperature of an object without even touching it is simply awesome. The [MLX90614](#) is a sensor that can do just that. By reading the [infrared](#) light coming off an object, this guy can sense between -95 and 720°F (-70 to 382.2°C) with 17-bit resolution. That's 128X more precise than the Arduino's [ADC](#), and means this little guy can tell the difference between 25°C and 25.02°C without even coming in contact. (Though 17bits split between -70 and 382 should give us 0.0034°C resolution).

I have had my eye on this guy ever since I saw it at [Sparkfun](#), but never had a reason to get one. Then, looking around, the [MLX90614](#) seemed to be giving some people a hard time when trying to connect it to their Arduino. So... we at bildr did what we do best, we bought one, and took some time to make your lives easier and get this running. This is an [I2C](#) device like many sensors we have talked about before, but unlike all the [I2C](#) sensors we have written about before this, the [MLX90614](#) can't use the wire library to communicate with it, so we will be using another library, also, unlike what we typically deal with, the MLX90614 is not on a [breakout board](#), so it requires some [pull-up resistors](#) on both the data and clock lines (Typically, these are included on the board, we just don't notice them.)

The standard wire library wasn't working for people, so we will be using the i2cmaster library instead. To complicate things even more, the i2cmaster won't run on the Arduino out of the box, some files need to be renamed and changed, and an extra txt file is needed to get it working. But... because it is open-sourced I can make those changes, and redistribute it. So that's what I'm going to do, I'm just giving it to you here in its working version to save you some time and headache. You will need to drop the library into your Arduino library folder for it to work, but we will get there.

As for hooking this up, on your Arduino (everything but the mega) SDA is on analog input pin 4, and SCL is on analog pin 5. On an [Arduino mega](#), SDA is digital 20, and SCL is digital 21. Look at the picture to see how it

should be connected, but a 4.7KΩ resistor needs to be connected from SDA to 3.3V, and another one from SCL to 3.3V. I also have a .1uf capacitor between power and ground as stated in the data sheet, but I have seen others not use it, and I have tested it without and it still worked.



Code

So, here is the code. Because it consists of many files, I am using bildr’s fancy bildrCode wrapper. This allows us to have wiki like control over many files for a single project - just like this. All this code does is output the temperature in both Celsius and Fahrenheit via serial. So open your serial monitor!

To make this code work, **before you load the code, or even open the Arduino program**, we need to place the “I2Cmaster” in your Arduino Library. If you don’t know where that is by default, Look to the right.

Once the I2Cmaster folder is in there, you can just go ahead and open MLX90614.pde in your Arduino software, and upload it.

Default Library Folder Location

On your Mac:: In (home directory)/Documents/Arduino/libraries

On your PC: My Documents -> Arduino -> libraries

On your Linux box: (home directory)/sketchbook/libraries

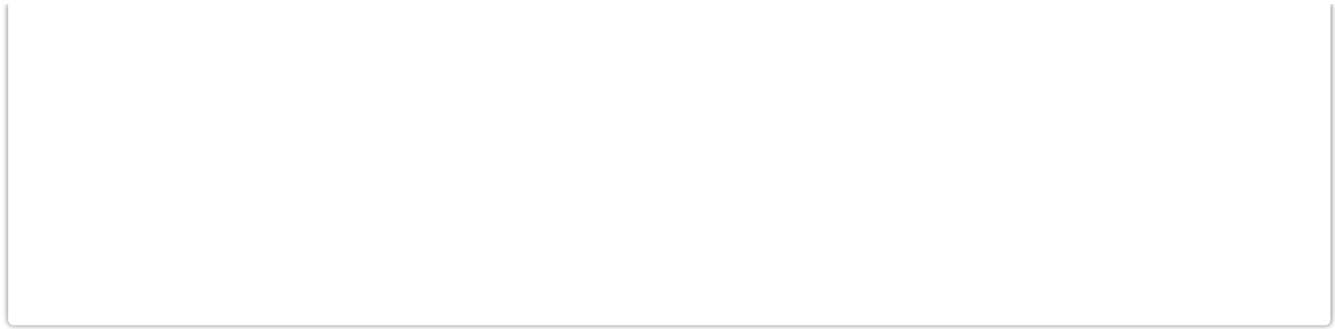
Download

If you click the download button to the right of “Arduino” you can download the whole thing as a zip, so you dont need to copy all the files.

MLX90614 Infrared Thermometer

uino	download		
I2Cmaster	1	2	I2Cmaster - Other

code inserted by bildrCode



Conclusion

This is just such a cool sensor, and hopefully we saved you some time with is one. Let us know if you do anything with this guy, we would love to see it, and possible feature it on this very blog!

We want you to blog with us

bildr is looking for anyone interested in writing any sort of blog post for bildr. If you think you would like to help bildr by writing something, or have an idea for a post you think should be written, please contact us at blog@bildr.org or let us know in the forum.

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