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# **Muscle BioAmp Candy**

**Upside Down Labs**

**Apr 13, 2024**

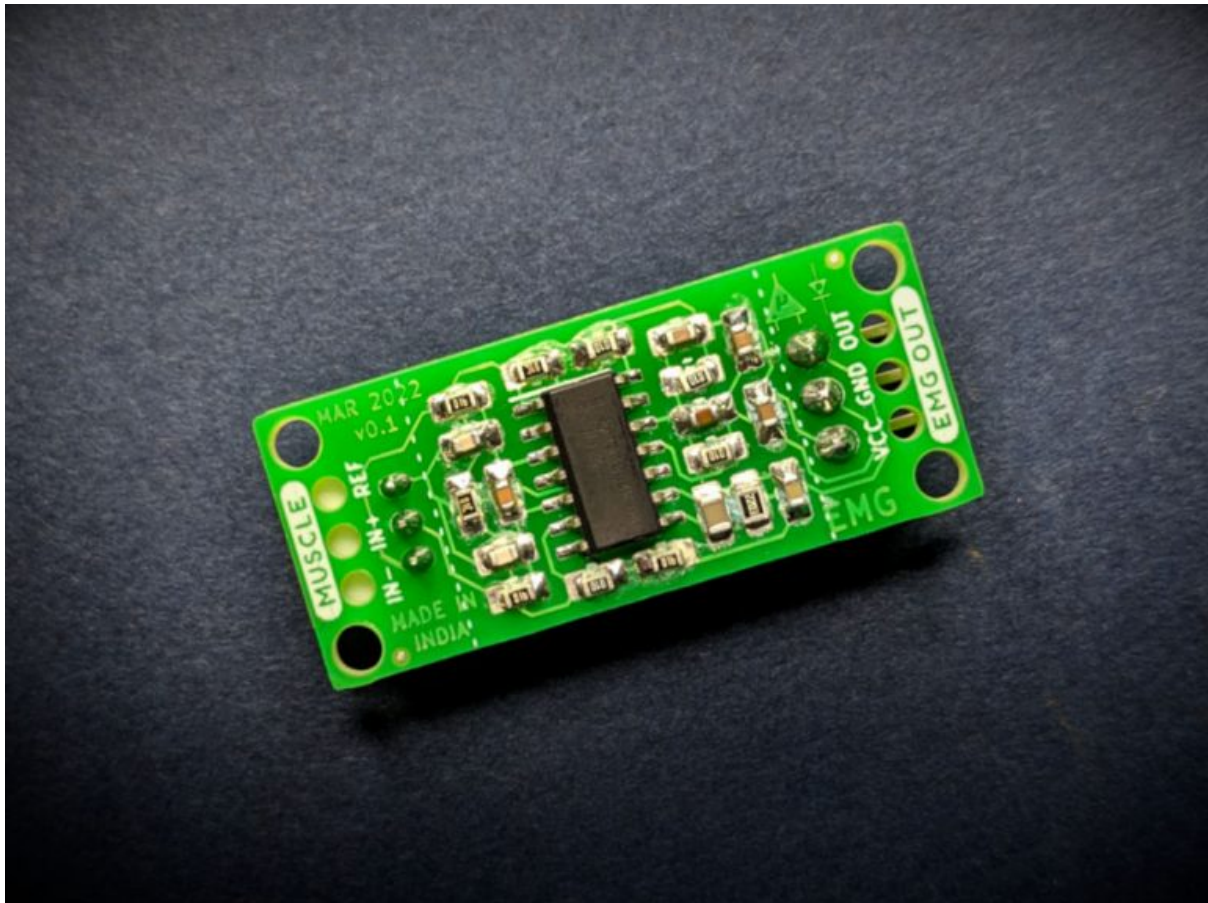
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Candy-size affordable muscle sensor for precise EMG sensing.

## OVERVIEW

A candy-size single-channel ElectroMyography (EMG) sensor for precise recording of muscle signals at an affordable cost. It is an SMD version of Muscle BioAmp BisCute that can be used to make amazing Human-Computer Interface (HCI) projects. To record the EMG signals you can use any standalone ADC like ADS1115 or any microcontroller development board with an ADC of your choice like Arduino UNO/Nano.



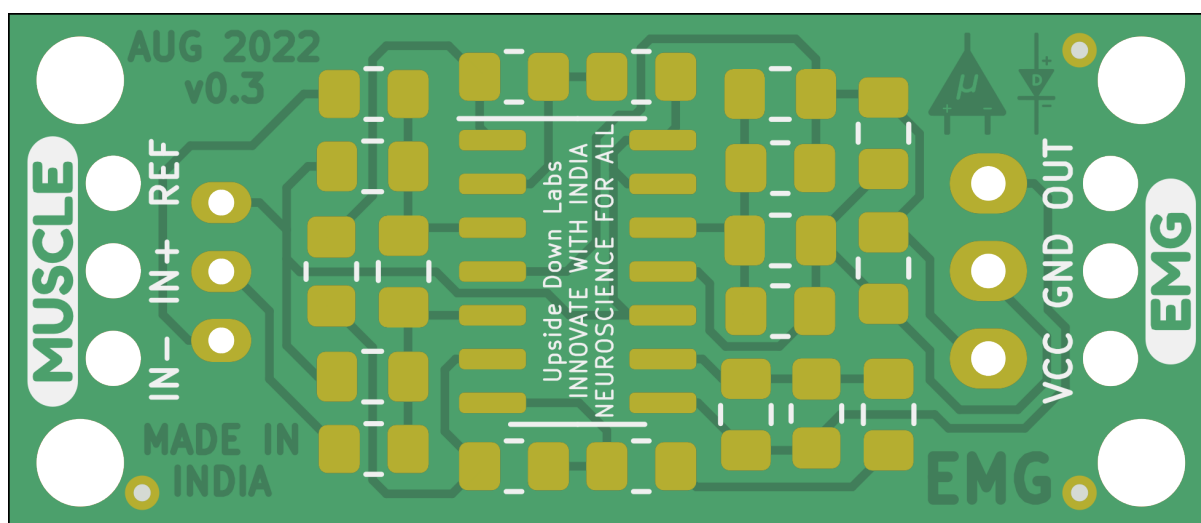
## FEATURES & SPECIFICATIONS

Minimum Input Voltage	3.3-30 V
Input Impedance	$10^{11}$ ohm
Fixed Gain	x2420
Bandpass filter	72 – 720 Hz
Compatible Hardware	Any development board with an ADC (Arduino UNO & Nano, Espressif ESP32, Adafruit QtPy, STM32 Blue Pill, BeagleBone Black, Raspberry Pi Pico, to name just a few)
BioPotentials	EMG (Electromyography)
No. of channels	1
Electrodes	3 (Positive, Negative, and Reference)
Dimensions	3.5 x 1.5 cm
Open Source	Hardware + Software

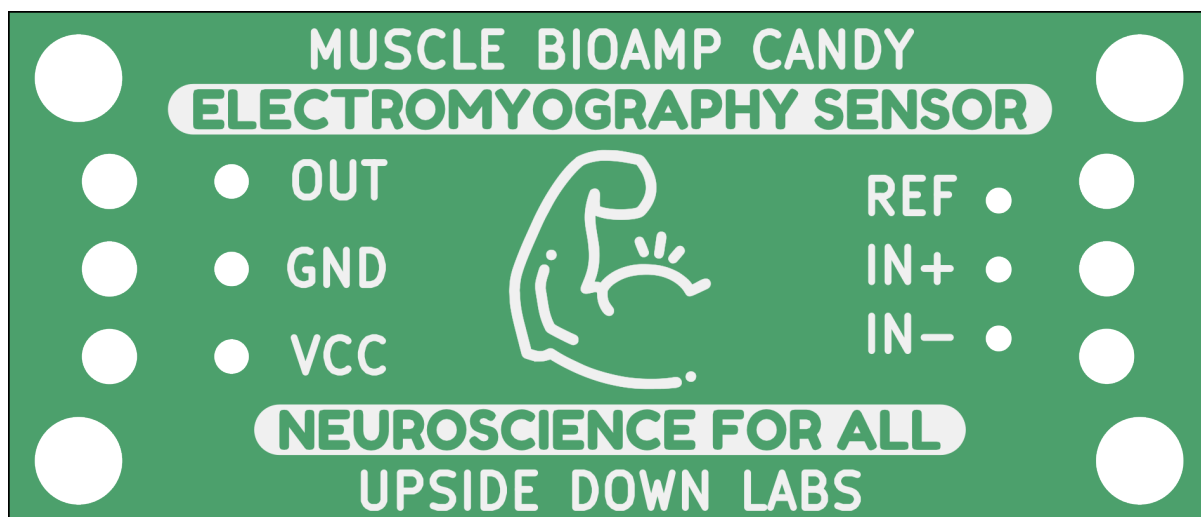
## HARDWARE

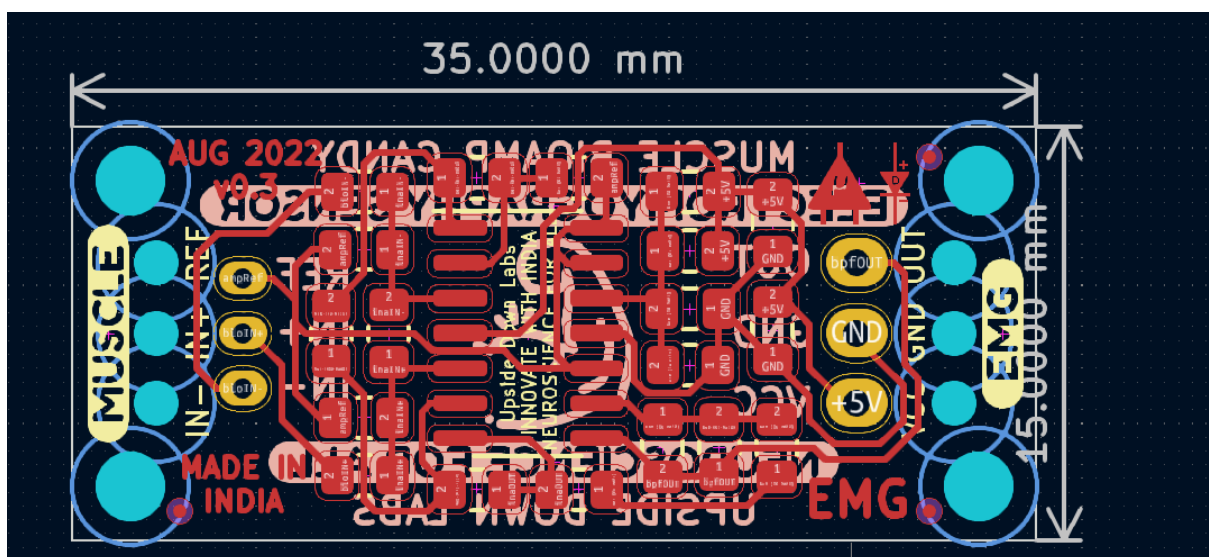
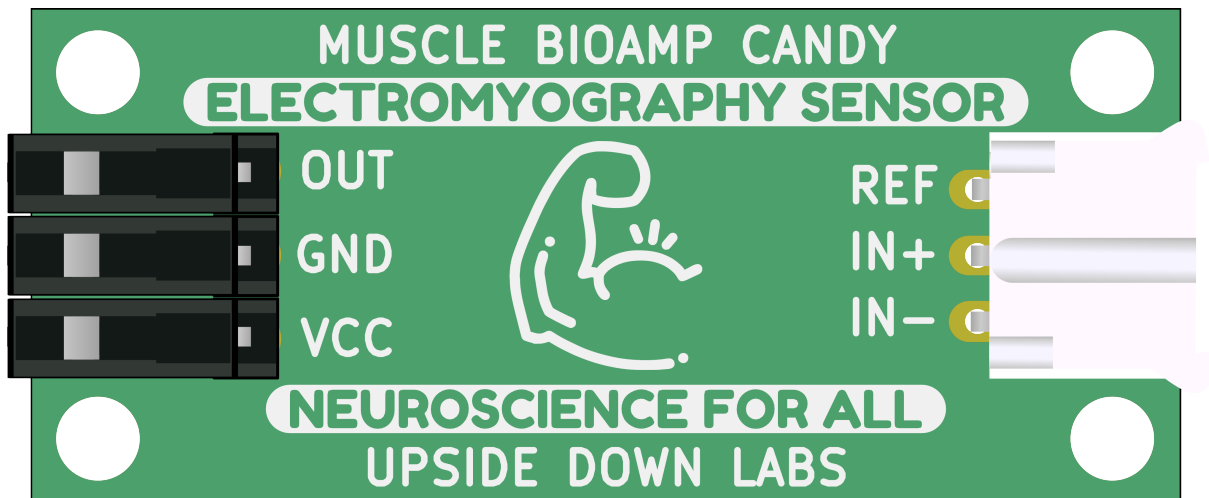
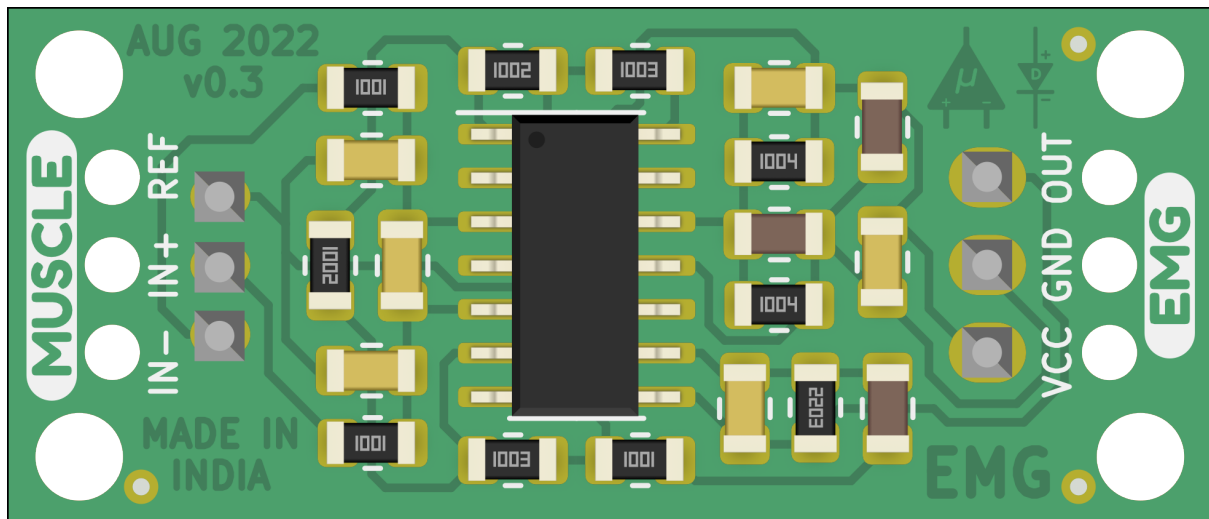
Images below shows a quick overview of the hardware design.

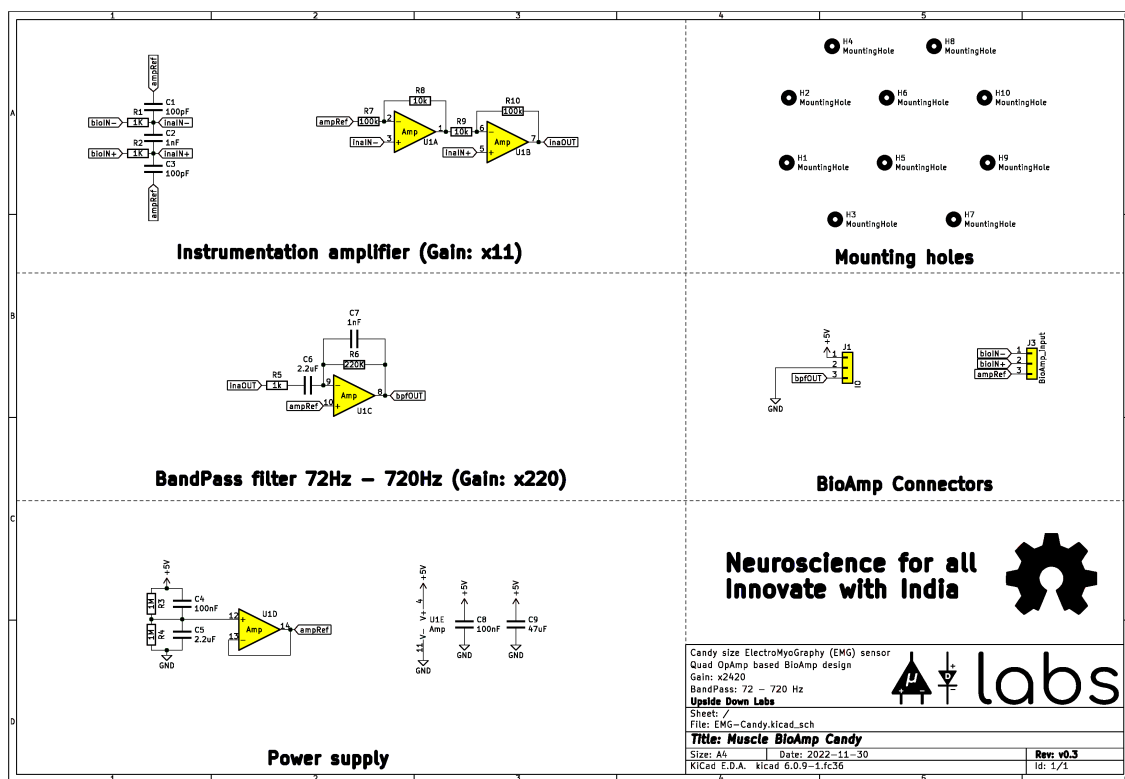
**PCB Front**



**PCB Back**





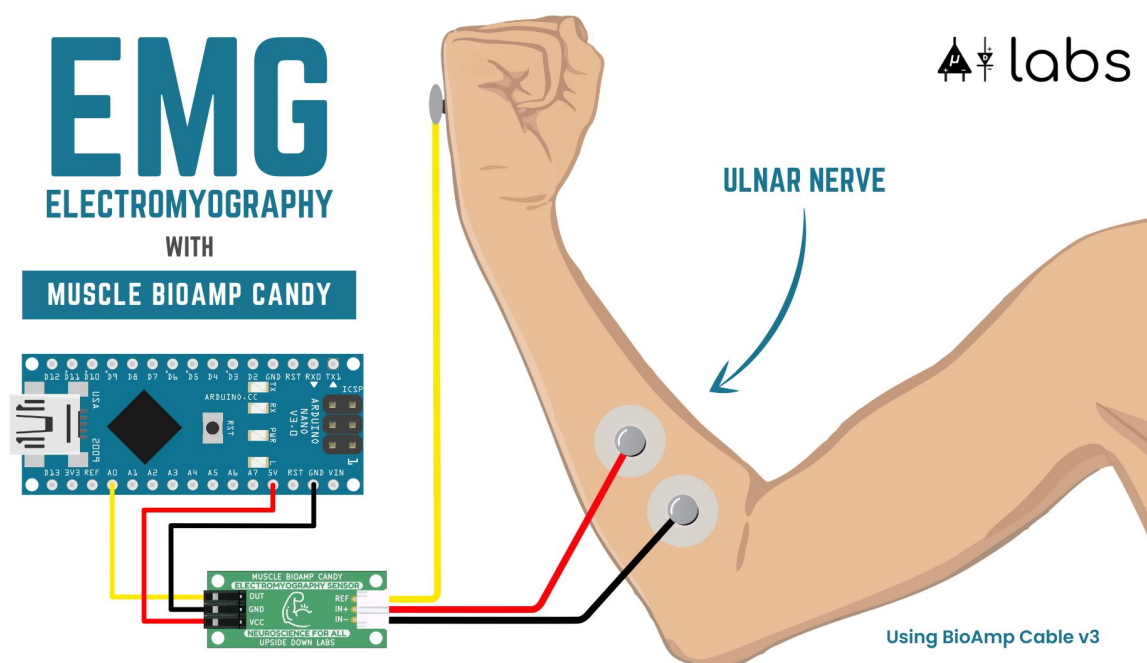




## CONNECTING WITH ARDUINO

To get started, you can pair Muscle BioAmp Candy with any development board with an ADC (Arduino UNO & Nano, Espressif ESP32, Adafruit QtPy, STM32 Blue Pill, BeagleBone Black, Raspberry Pi Pico, to name just a few) or any standalone ADC of your choice.

To measure the EMG signals, connect BioAmp Cable v3 with your muscle sensor as shown in the image below:



**CAUTION:** Make sure to follow the above diagram while making the connections between your Muscle BioAmp Candy & Arduino (or any other ADC of your choice), especially the GND and VCC else it may damage the muscle sensor.

## USING THE SENSOR

<https://youtu.be/IPX2TGBcHOA>

## **SOME PROJECT IDEAS**

We have curated a playlist for you which consists some awesome project ideas for you to get started with your next HCI project.