Muscle BioAmp Patchy

Upside Down Labs

Mar 29, 2024

CONTENTS

Wearable ElectroMyoGraphy (EMG) sensor

CHAPTER

ONE

OVERVIEW

Muscle BioAmp Patchy is a wearable ElectroMyoGraphy or EMG sensor that snaps directly to gel electrodes and connects to your muscle like a patch. It comes with reverse polarity projection, power indicator, onboard snap connectors, and Upside Down Labs'power ful BioAmp sensing technology for precise muscle signal recording. This enables you to easily integrate this sensor in your EMG- based Human-Computer Interface (HCI).

CHAPTER

TWO

FEATURES & SPECIFICATIONS

Minimum Input Voltage	4.5 V
Input Impedance	10^12 ohm
Fixed Gain	x2420
Bandpass filter	72 – 720 Hz
Wearable	Yes
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	47 x 14 mm
Open Source	Hardware + Software

https://youtu.be/qRKU_HvapDE

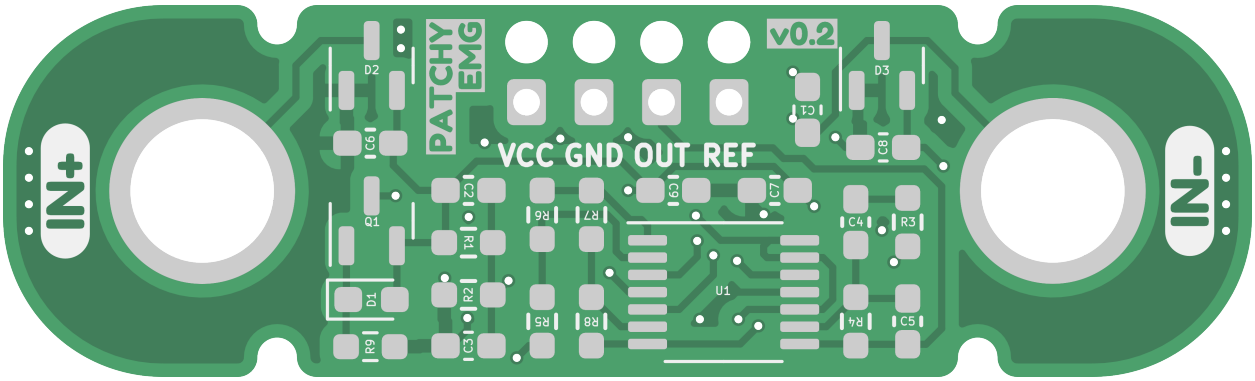
CHAPTER

THREE

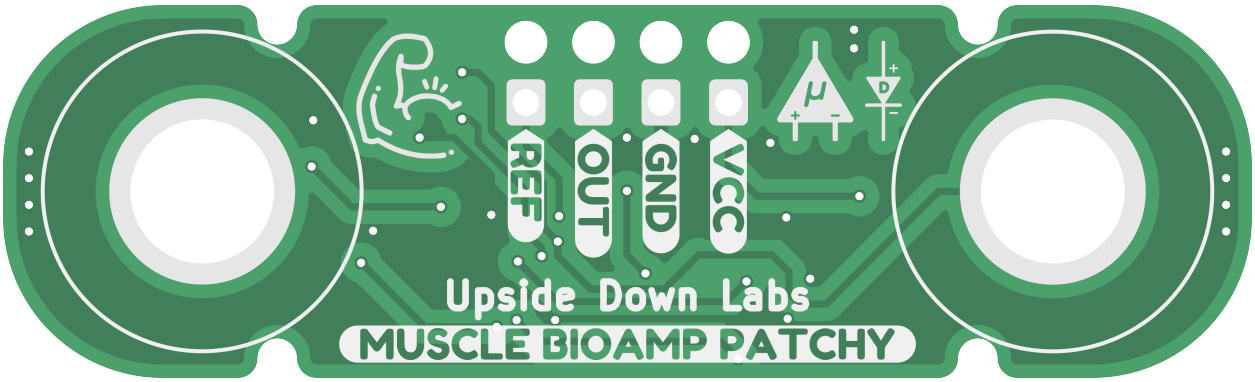
HARDWARE

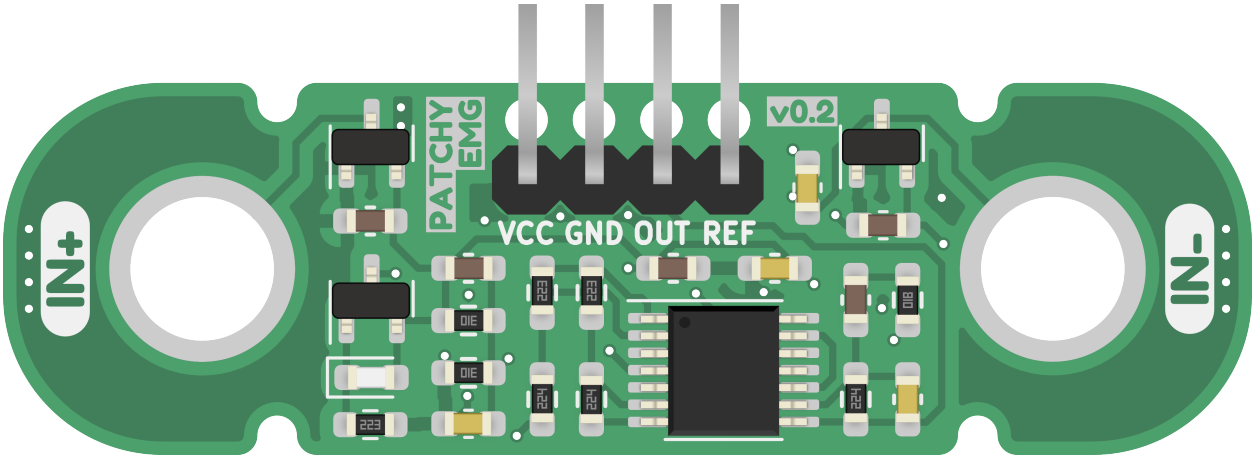
Images below shows a quick overview of the hardware design.

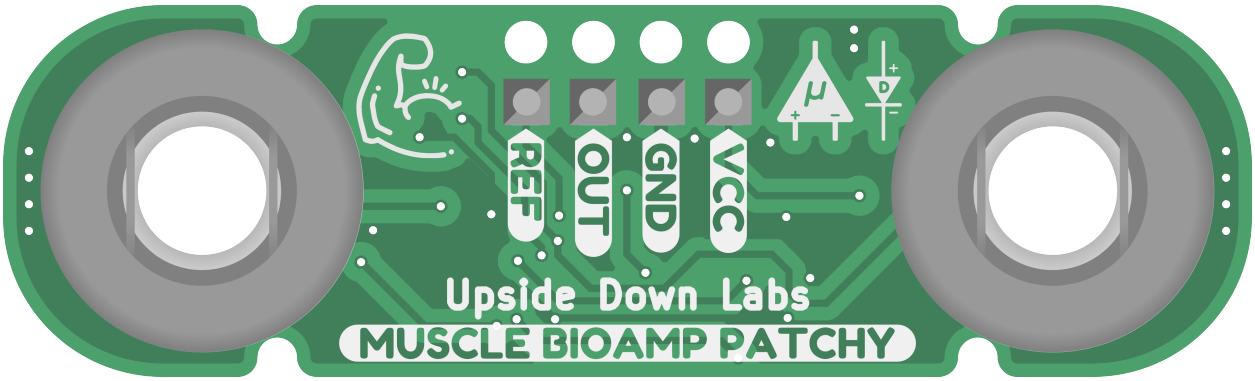
PCB Front



PCB Back




IN+
IN-
PATCHY EMG
v0.2
VCC GND OUT REF


REF
OUT
GND
VCC
Upside Down Labs
MUSCLE BIOAMP PATCHY

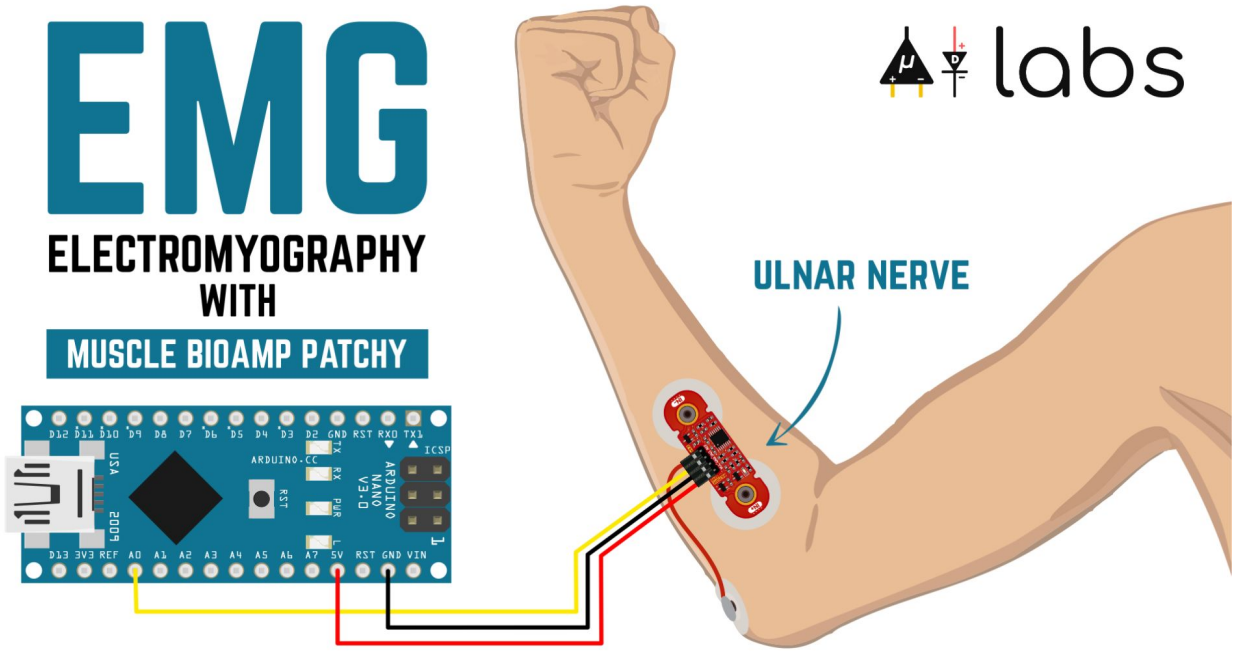
CHAPTER

FOUR

CONNECTING WITH ARDUINO

To get started, you can pair Muscle BioAmp Patchy 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.

For the connections and electrode placements, you can follow the diagram given below:



CHAPTER

FIVE

DEMONSTRATION

After snapping the Patchy onto gel electrodes(placed on our targeted muscle), you can connect your patchy to the arduino via jumper cables, arduino to your battery operated laptop, and start recording your EMG easily. Follow the steps shown in the video below for the demonstration.

https://youtu.be/4dnCX3U7LS8

CHAPTER

SIX

SOME PROJECT IDEAS

Recording and Visualizing Muscle Signals (EMG) Using Muscle BioAmp Patchy (wearable Muscle Sensor)

https://youtu.be/4dnCX3U7LS8