BioAmp v1.5

Upside Down Labs

Apr 09, 2024

CONTENTS

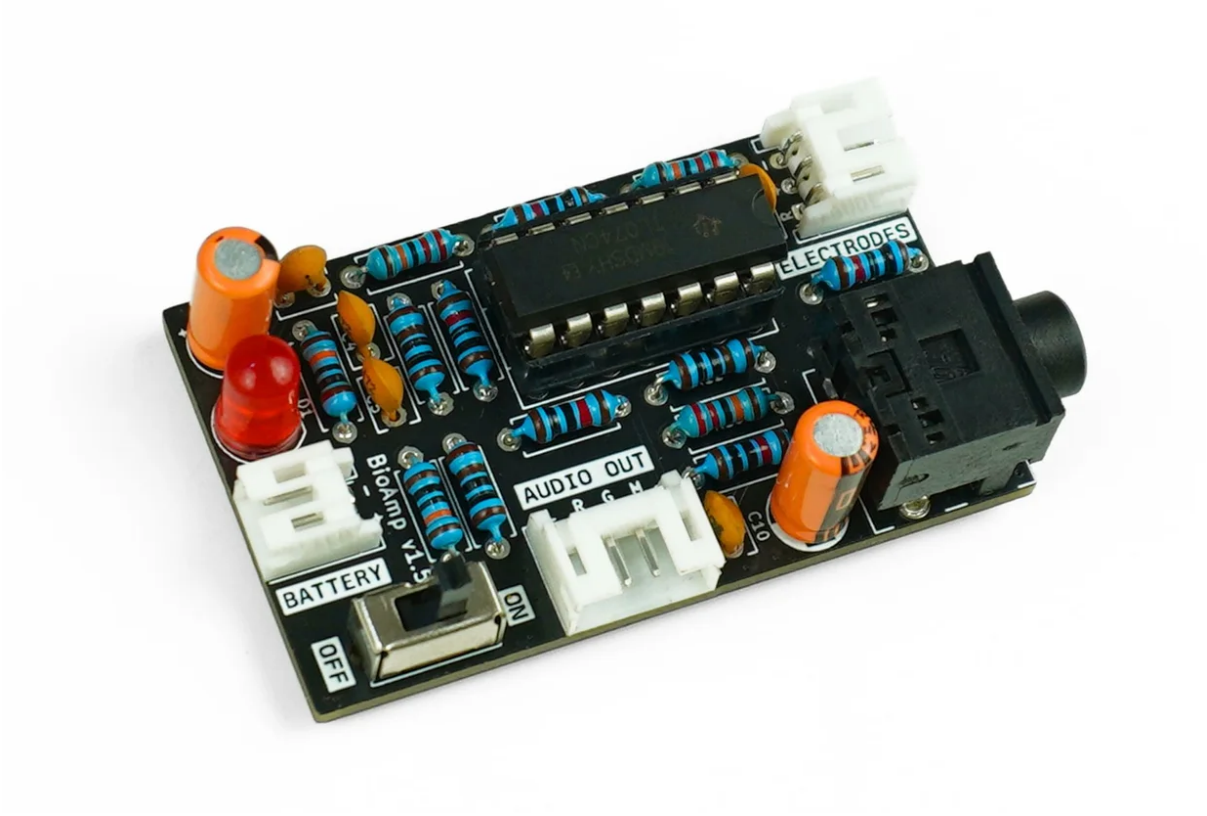
Small-size portable biopotential amplifier with a no code setup for non-invasive EMG recording!

CHAPTER

ONE

OVERVIEW

It is a small size portable biopotential amplifier with a no code setup to record and listen to your muscle signals (EMG) non invasively. The best part is that it doesn't require any microcontroller (like Arduino) to sample the signal. You just plug a 9V battery into the board, electrodes to the body, and an audio jack to a mobile/laptop, and you are ready to record signals from muscles (EMG) using audacity or Backyard Brain's spike recorder app.



CHAPTER

TWO

FEATURES & SPECIFICATIONS

Minimum Input Voltage	7-9 V
Input Impedance	10^7 ohm
Fixed Gain	~200x
BioPotentials	EMG (Electromyography)
No. of channels	1
Electrodes	3 (Positive, Negative, and Reference)
Dimensions	5.0 x 3.0 cm
Open Source	Hardware + Software

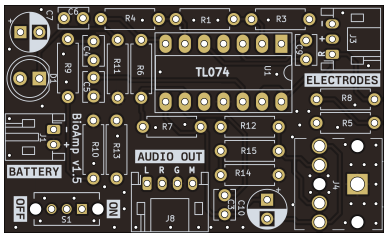
CHAPTER

THREE

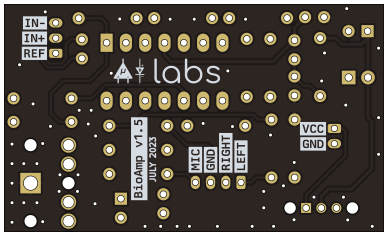
HARDWARE

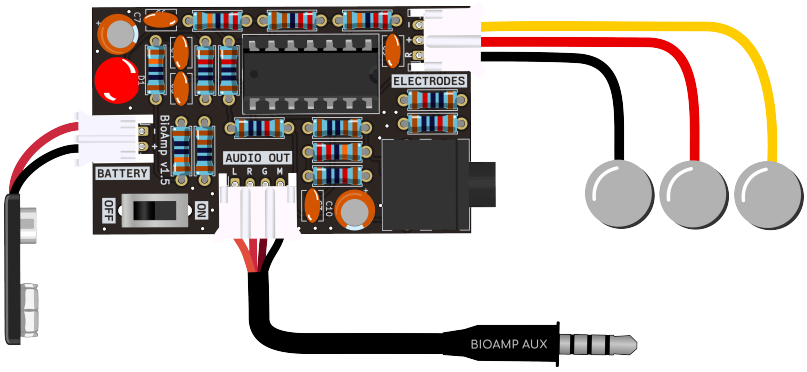
Images below shows a quick overview of the hardware design.

PCB Front



PCB Back





CHAPTER

FOUR

ASSEMBLYING THE KIT

You can get your own Bioamp v1.5 bag of parts from our store or Tindie or the step by step guide below.

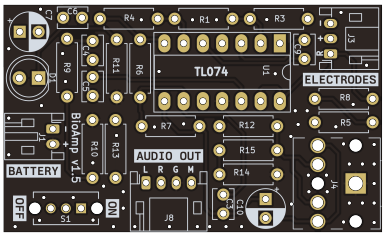


Fig. 1: **Step 1 - Bare Board**

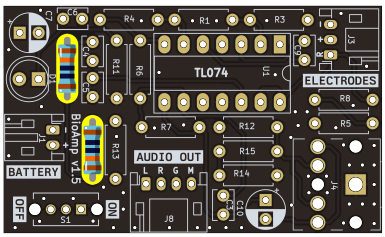


Fig. 2: **Step 2 - 100K Resistors**

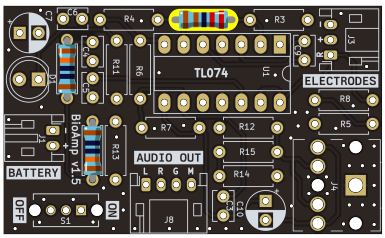


Fig. 3: **Step 3 - 2.2K Resistor**

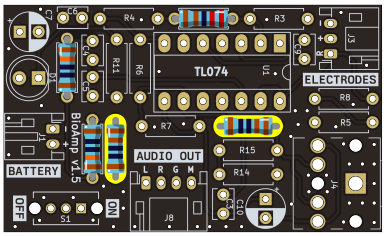


Fig. 4: **Step 4 - 1K Resistors**

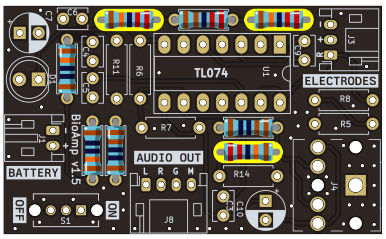


Fig. 5: **Step 5 - 220K Resistors**

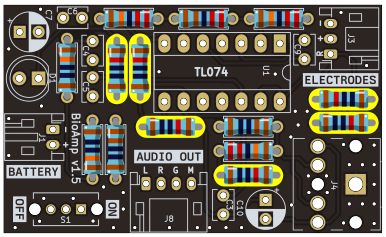


Fig. 6: **Step 6 - 10K Resistors**

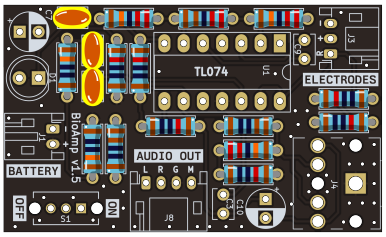


Fig. 7: **Step 7 - 100nF Capacitors**

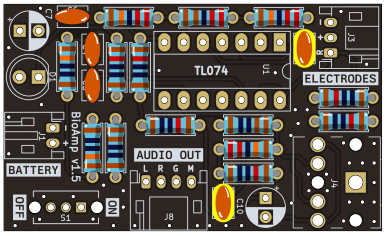


Fig. 8: **Step 8 - 1nF Capacitors**

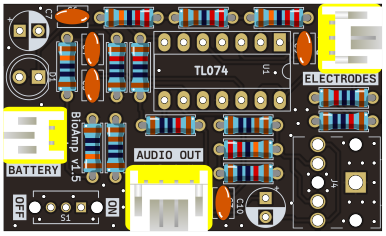


Fig. 9: **Step 9 - JST PH Connectors**

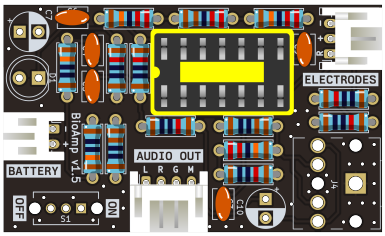


Fig. 10: **Step 10 - IC Socket**

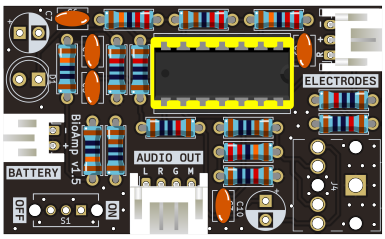


Fig. 11: **Step 11 - IC**

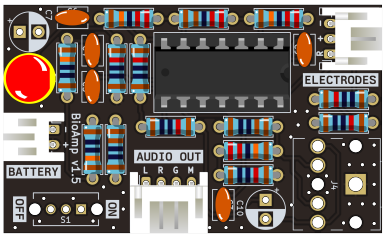


Fig. 12: **Step 12 - Power LED**

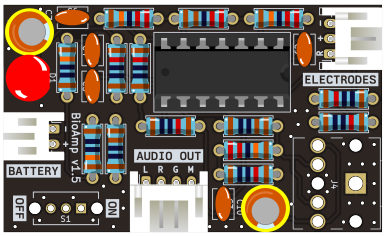


Fig. 13: **Step 13 - 47uF Capacitors**

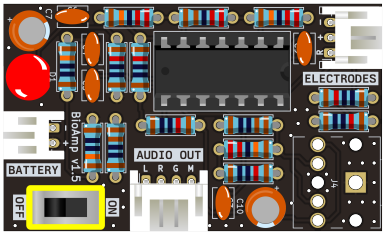


Fig. 14: **Step 14 - Switch**

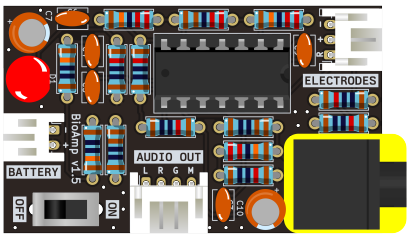


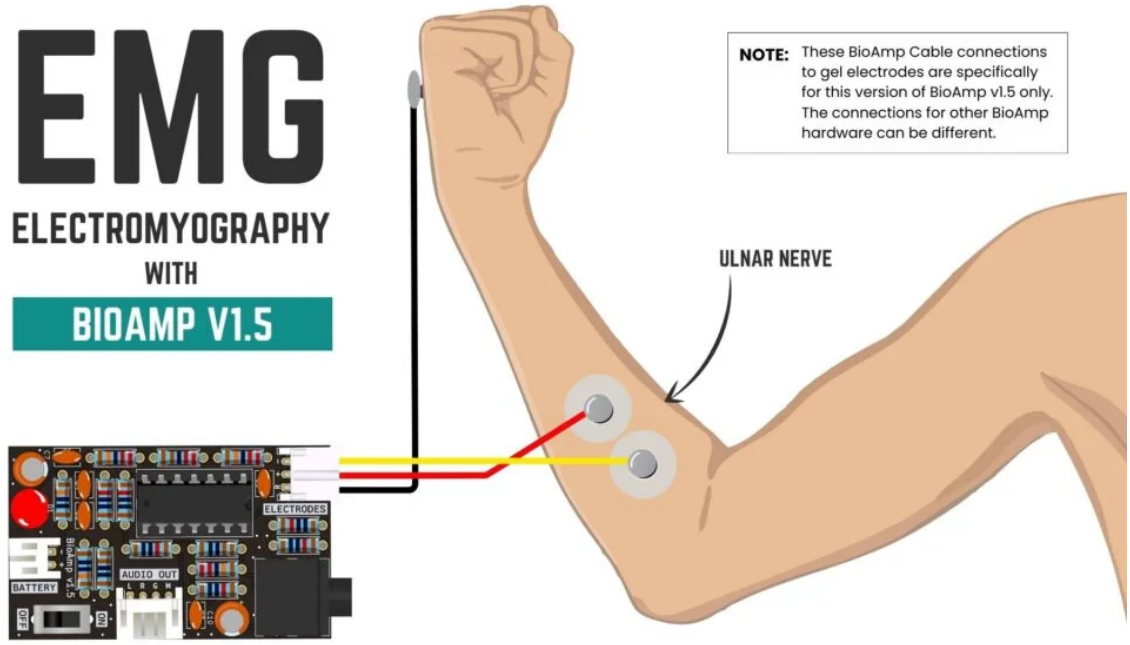
Fig. 15: **Step 15 - Headphone jack**

CHAPTER

FIVE

CONNECTIONS

To measure the EMG signals, just connect BioAmp Cable v3 with the hardware as shown in the image below, and get started.



CHAPTER

SIX

USING THE SENSOR

CHAPTER

SEVEN

SOME PROJECT IDEAS