MICROPHONE TUTORIAL ASSEMBLY

English – v1.0

Abstract

This guide details the complete assembly process of the OCTAVie open-source microphone, from PCB preparation to final enclosure mounting. It provides clear, reproducible instructions for soldering, wiring, and testing the system. All related design files and resources are available in the OCTAVie Zenodo repository.

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1. Introduction

This tutorial provides detailed step-by-step instructions for assembling the OCTAVie microphone module. It guides users through the complete process from unpacking the PCB to the final enclosure assembly. All the full CAD models, PCB design files, and supporting materials can be found in the Zenodo repository.

2. Required Materials and Tools

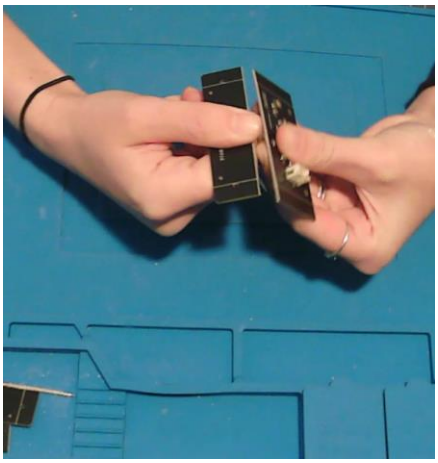
Before beginning the assembly, prepare the following materials and tools:

Microphone PCB (v1.0, from JLCPCB)
3D-printed enclosure (microphone box and lid)
XLR connector (male)
JST-PH female connector (3-pin)
3-pin cable shielded (approximately 2 m)
Wire stripper and precision pliers
Soldering iron
Solder wire (0.5 mm)
Small screwdriver
Multimeter for continuity testing

3. Step-by-Step Assembly

Step 1 — Separate the PCB

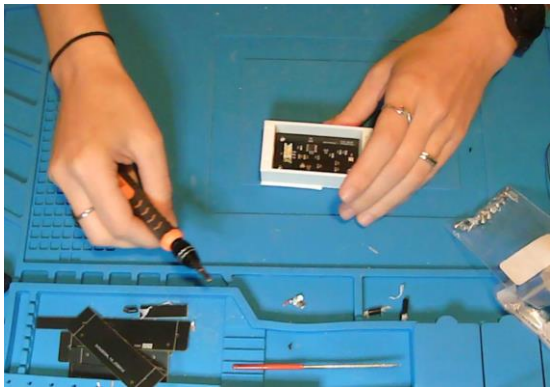
When the microphone PCB arrives from JLCPCB, it usually comes attached to a panel with V-cuts along the edges. Carefully break the board free along these cuts to obtain the individual PCB.



Step 2 — Place the PCB in the 3D-Printed Enclosure

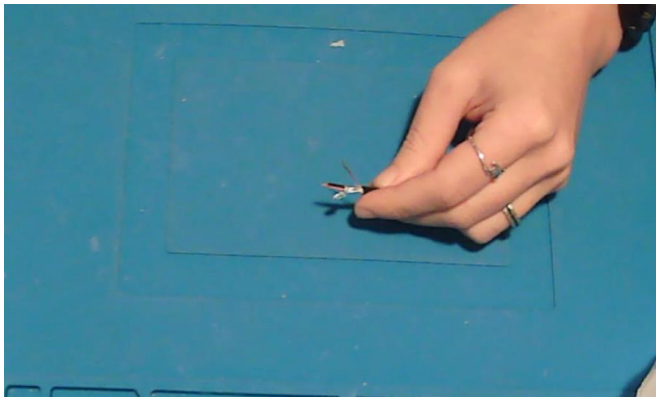
Insert the PCB into the dedicated 3D-printed base. Make sure that the microphone opening is perfectly aligned with the hole in the enclosure. Secure the PCB using small M2 screws at

each corner.



Step 3 — Prepare the XLR Cable

Cut approximately 2 meters of the XLR cable and strip around 3 cm of the outer insulation. Expose the three internal wires (red, white, and bare shield) and strip about 2–3 mm of each conductor.



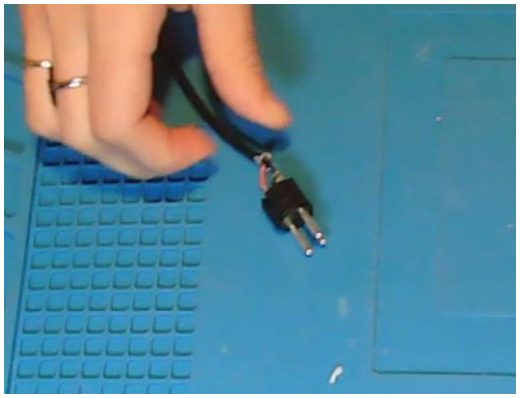
Step 4 — Solder the XLR Connector

Looking at the male XLR connector from the front (forming a 'V' shape), solder the wires as follows:

- Left pin → GND (shield wire)
- Middle pin (down) → Signal
- Right pin → Power (red wire)

After soldering, reassemble the connector housing and ensure all mechanical parts are

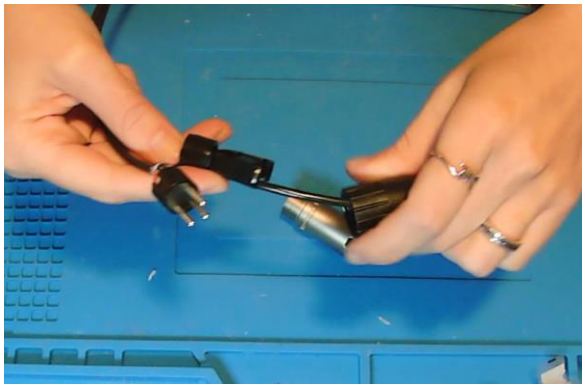
properly secured.

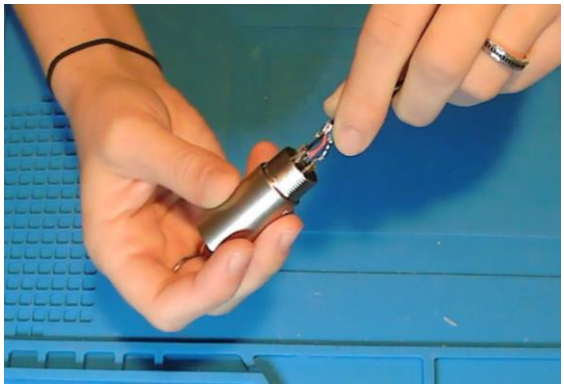


Using a multimeter, check the continuity between each pin of the XLR connector and the other end of the cable. Ensure there are no short circuits or open connections. This step guarantees reliable signal and power delivery.

Step 5 — XLR assembly

Assemble de XRL connector





Step 6 — Crimp the JST Connectors

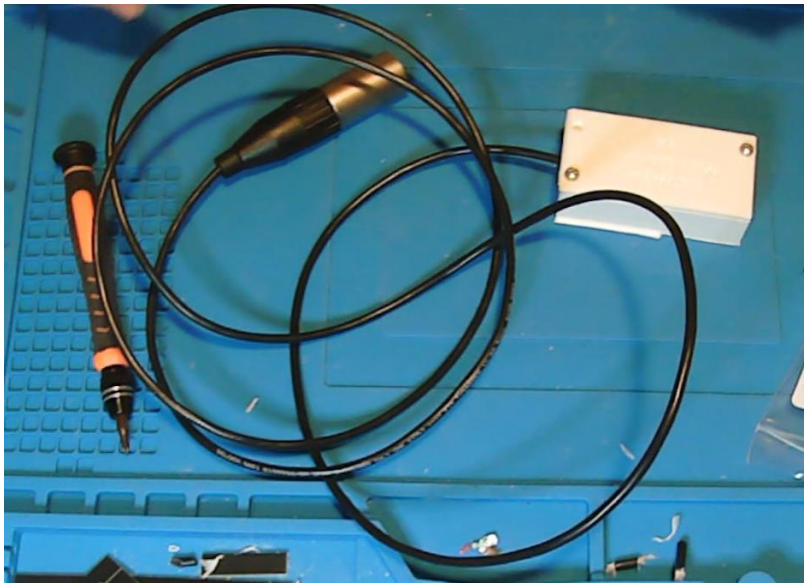
At the other end of the cable, crimp the three wires with JST-PH terminals and insert them into a 3-pin JST-PH female connector. The pinout must match the corresponding connector on the microphone PCB:

• Pin 1 → Power (red wire)

• Pin 2 → GND (shield wire)
• Pin 3 → Signal

Step 7 — Connect and Close the Enclosure

Insert the cable through the side opening of the 3D-printed box and plug the JST connector into the microphone PCB. Ensure the cable is properly routed without tension. Then, close the lid of the enclosure and secure it with four screws.



Step 8 — Final Verification

Before using the microphone, perform a quick functional test by connecting it to the acquisition unit via the XLR connector. Check that the signal is detected correctly and that no noise or instability appears.
If everything is working properly, the microphone assembly is complete.

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Versioning

AUTHORS	VERSION	DATE	COMMENT
L. DURIEUX	V1.0	12.10.2025	Document first release