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L. Durieux

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.

Microphone tutorial assembly

English – v1.0

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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.  
A person holding a small rectangular object

AI-generated content may be incorrect.

## 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.  
A person holding a screwdriver

AI-generated content may be incorrect.

## 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.  
A hand holding a small wire

AI-generated content may be incorrect.

## 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.  
A hand holding a black cord

AI-generated content may be incorrect.

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

A person holding a black wire

AI-generated content may be incorrect. A person holding a small silver object

AI-generated content may be incorrect.

A person holding a small metal object

AI-generated content may be incorrect.

## 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.  
A close-up of a cable

AI-generated content may be incorrect.

## 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.

# License Information

**Hardware license**: CERN Open Hardware License v2 (Strongly Reciprocal – OHL-S).

**Software license**: GNU General Public License v3 (GPLv3), ensuring that all modifications remain open-source.

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# Versioning

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