

The **KY-037** is a sound sensor module commonly used in electronic projects to detect sound intensity or detect clapping or other loud noises. It uses a microphone and supporting electronics to convert sound waves into electrical signals.

KY-037 Module Overview

The KY-037 is based on an **electret condenser microphone** and an amplifier circuit using the LM393 comparator. It has **two output modes**:

1. **Analog Output (AO)**: Outputs a continuous analog voltage proportional to the detected sound intensity.
2. **Digital Output (DO)**: Outputs a high or low digital signal depending on whether the sound intensity crosses a threshold.

KY-037 Pin Description

1. **VCC (Power)**:
 - Supplies power to the module (typically **3.3V to 5V**).
 - Ensure you provide the correct voltage for your microcontroller (e.g., Arduino or ESP32).
2. **GND (Ground)**:
 - Ground pin for the module, connected to the ground of your microcontroller.
3. **AO (Analog Output)**:
 - Provides an **analog voltage** corresponding to the sound intensity.
 - Can be connected to an **analog input pin** (e.g., **A0** on Arduino).
 - The analog signal varies in real-time, so you can measure the exact sound level.
4. **DO (Digital Output)**:
 - Outputs a **digital HIGH or LOW** signal based on whether the sound exceeds a user-defined threshold.
 - The threshold is adjusted using the potentiometer on the module.
 - Can be connected to a **digital input pin** (e.g., **D2** on Arduino).

How the KY-037 Works

1. **Sound Detection:**
The electret microphone captures sound waves and converts them into weak electrical signals.
2. **Amplification:**
The LM393 comparator amplifies the microphone signal for further processing.
3. **Analog Output:**
The module provides an analog voltage at the **AO** pin. The voltage corresponds to the sound intensity detected by the microphone. You can use this signal for detailed sound intensity measurements or sound wave analysis.
4. **Digital Output:**
The module compares the amplified sound signal against a threshold set by the onboard potentiometer.
 - If the sound exceeds the threshold, the **DO** pin goes HIGH (logic 1).
 - Otherwise, the **DO** pin remains LOW (logic 0).This feature is commonly used for sound-triggered events like clapping to turn on lights.

Why Use Both AO and DO?

- **Analog Output (AO):**
For precise sound intensity measurement or real-time sound waveform analysis.
- **Digital Output (DO):**
For simple sound event detection (e.g., clapping to trigger an action).

Adjusting the Potentiometer

- The potentiometer on the KY-037 module sets the threshold for the digital output (DO).
- Turning the potentiometer clockwise usually increases the sensitivity, meaning quieter sounds will trigger the DO pin. Turning it counterclockwise decreases sensitivity.

KY-037 Pin Summary Table

Pin	Name	Description
VCC	Power	Connect to 3.3V or 5V
GND	Ground	Connect to ground (GND)
A0	Analog	Analog voltage proportional to sound level
D0	Digital	HIGH/LOW based on threshold

This module is versatile and can be used for sound-activated projects like voice-activated lights, sound meters, or noise detection systems.

[KY-037 Microphone sound sensor \(high sensitivity\)](#)

[Design of a Classroom Noise Monitoring Tool Using a KY-037 Sound Sensor Based on Wemos D1R1](#)

[Arduino Sensors: Big and Small sound sensor \(sound triggered switch\)](#)