

AZDelivery KY-037 High Sensitivity Microphone Module

Model: 35in1

Brand: AZDelivery

1. Introduction

The AZDelivery KY-037 High Sensitivity Microphone Module is designed for sound detection and intensity measurement in various electronic projects. It is fully compatible with popular microcontrollers such as Arduino and Raspberry Pi, making it an ideal component for hobbyists and professionals alike. This module features an LM393 comparator chip and a potentiometer for adjustable sensitivity, allowing precise control over sound detection thresholds.

This manual provides detailed instructions for setting up, operating, and maintaining your KY-037 module, along with troubleshooting tips and technical specifications.

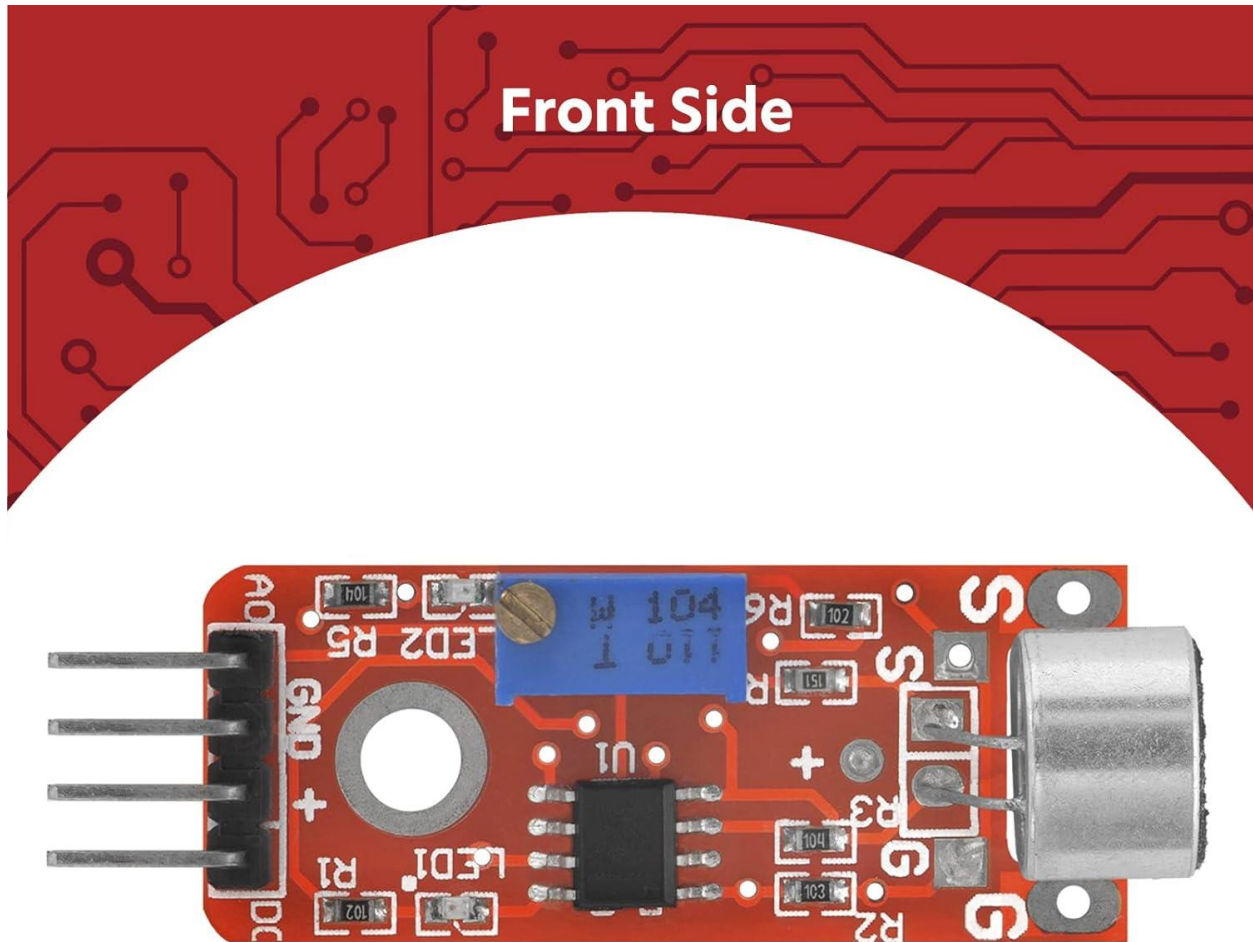
2. Product Overview

The KY-037 module is a compact and versatile sound sensor. It provides both digital and analog output, enabling a wide range of applications from simple sound detection to more nuanced sound level monitoring.

Key Features:

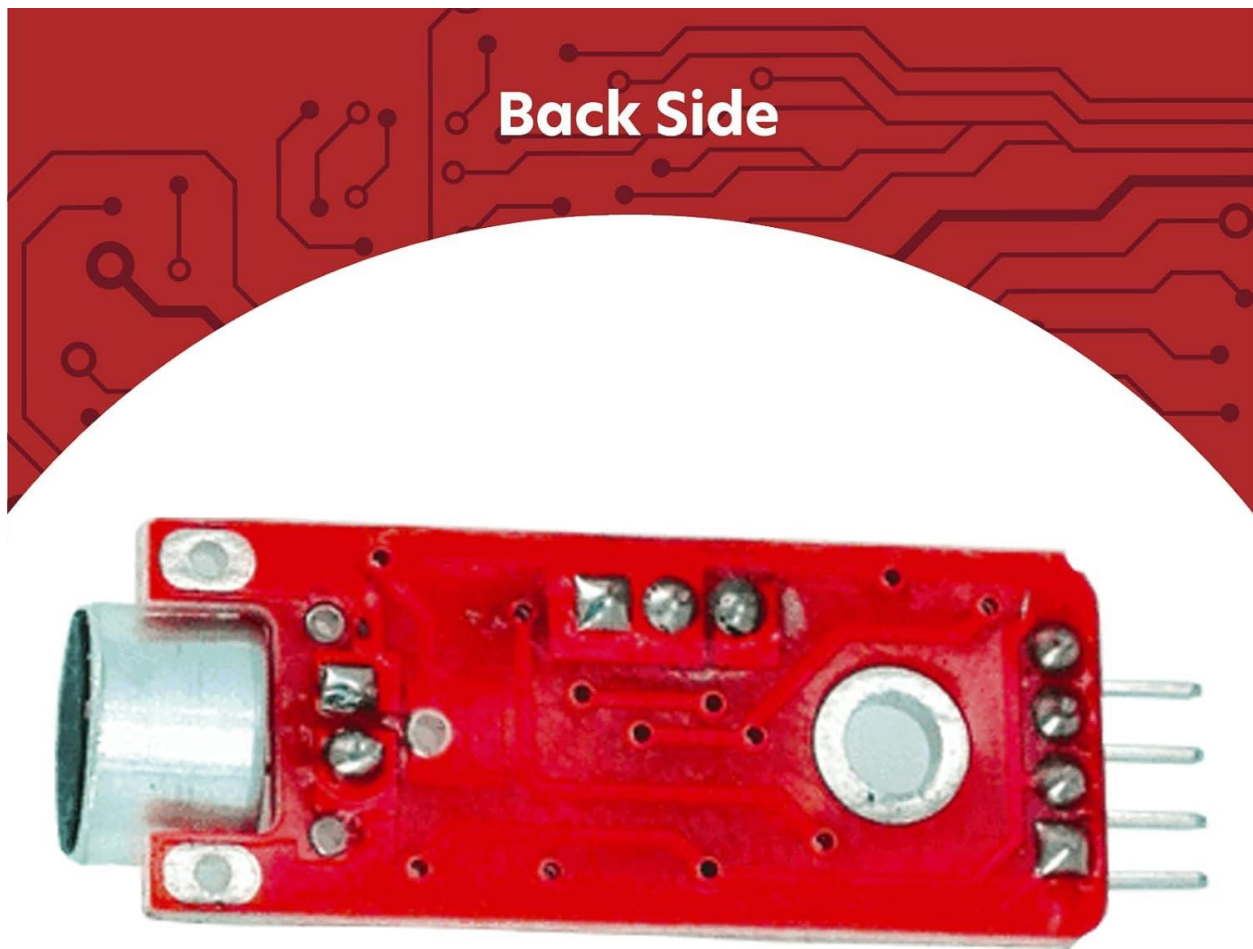
- Integrated LM393 comparator chip for stable digital output.
- Adjustable potentiometer for fine-tuning detection sensitivity.
- Operating voltage range: 3.3V to 5V.
- Equipped with a high-sensitivity microphone for noise detection.
- Includes a useful e-book with application examples and installation guides.

Module Components:



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Figure 1: Front Side of KY-037 Module. This image displays the front of the KY-037 module, highlighting the omnidirectional microphone, the LM393 comparator chip, the blue potentiometer for sensitivity adjustment, and the four pin headers (AO, GND, VCC, DO).



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Figure 2: Back Side of KY-037 Module. This image shows the reverse side of the KY-037 module, revealing the solder joints and the clean circuit board layout.

The module typically includes a small electret microphone, an LM393 voltage comparator, a potentiometer (often blue) for adjusting the digital output threshold, power and status LEDs, and four pins for connection: Analog Output (AO), Ground (GND), Power (VCC), and Digital Output (DO).

3. Setup Instructions

Follow these steps to connect your AZDelivery KY-037 microphone module to your microcontroller (e.g., Arduino, Raspberry Pi).

3.1 Pinout:

- **VCC:** Power supply (3.3V - 5V DC)
- **GND:** Ground
- **DO (Digital Output):** Provides a digital signal (HIGH/LOW) when sound exceeds a set threshold.
- **AO (Analog Output):** Provides a real-time analog voltage signal proportional to the sound intensity.

3.2 Wiring Example (Arduino):

1. Connect the **VCC** pin of the module to the **5V** pin on your Arduino.
2. Connect the **GND** pin of the module to the **GND** pin on your Arduino.
3. Connect the **DO** pin of the module to a digital input pin on your Arduino (e.g., Digital Pin 2).
4. Connect the **AO** pin of the module to an analog input pin on your Arduino (e.g., Analog Pin A0).

Ensure all connections are secure before powering on your microcontroller.

4. Operating Instructions

The KY-037 module offers two primary modes of operation: digital sound detection and analog sound intensity measurement.

4.1 Digital Output (DO):

The DO pin provides a binary output: HIGH when sound is detected above a certain threshold, and LOW otherwise. This is useful for applications requiring simple event triggering, such as turning on an LED when a loud noise occurs.

- **Adjusting Sensitivity:** Use the onboard potentiometer (the small blue component) to adjust the threshold for digital output. Turning the potentiometer clockwise typically increases sensitivity (detects quieter sounds), while turning it counter-clockwise decreases sensitivity (requires louder sounds).
- **Output LED:** The module usually has an LED that illuminates when the digital output goes HIGH, indicating sound detection.

4.2 Analog Output (AO):

The AO pin provides a continuous analog voltage signal that varies with the intensity of the sound. This is suitable for applications requiring more detailed sound level analysis, such as creating a sound meter or visualizing sound waves.

- The analog output voltage will fluctuate in response to sound pressure levels. You can read this value using an analog-to-digital converter (ADC) on your microcontroller.
- The range of the analog output depends on the supply voltage (VCC). For a 5V supply, the output will typically range from 0V to 5V.

5. Maintenance

To ensure the longevity and optimal performance of your KY-037 module, follow these simple maintenance guidelines:

- **Handle with Care:** Avoid dropping the module or subjecting it to excessive physical shock.
- **Keep Dry:** Protect the module from moisture and liquids, as these can cause short circuits and damage.
- **Cleanliness:** Keep the module free from dust and debris. Use a soft, dry brush or compressed air for cleaning if necessary.
- **Power Supply:** Always use a stable power supply within the specified voltage range (3.3V - 5V).
- **Storage:** When not in use, store the module in an anti-static bag in a cool, dry place.

6. Troubleshooting

If you encounter issues with your KY-037 module, refer to the following troubleshooting tips:

6.1 No Sound Detected (Digital Output):

- **Check Connections:** Ensure VCC, GND, and DO pins are correctly wired to your microcontroller.
- **Verify Power:** Confirm that the module is receiving power (3.3V-5V). The power LED on the module should be lit.
- **Adjust Potentiometer:** Turn the blue potentiometer clockwise to increase sensitivity. The module might be set to a very low sensitivity threshold.
- **Test Environment:** Ensure there is actual sound present for the microphone to detect.

6.2 Constant Sound Detection (Digital Output Always HIGH):

- **Adjust Potentiometer:** Turn the blue potentiometer counter-clockwise to decrease sensitivity. The module might be too sensitive and picking up ambient noise.
- **Check Ambient Noise:** Ensure the environment is not excessively noisy, causing continuous detection.

6.3 Inaccurate Analog Readings:

- **Verify Power Supply:** An unstable or incorrect power supply can affect analog readings.
- **Check Connections:** Ensure the AO pin is securely connected to an analog input pin on your microcontroller.
- **Microcontroller ADC:** Ensure your microcontroller's Analog-to-Digital Converter (ADC) is configured correctly in your code.