Lesson 25 Microphone Sensor

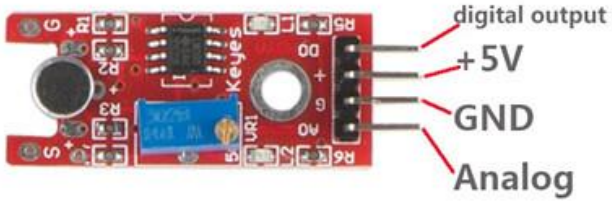
Introduction

There are two kinds of microphone sensors in this kit (as shown below). One, we call it microphone sensor. The other, we call it high-sensitive voice sensor. The only difference between them is their sensitivity. The latter has higher sensitivity. In this experiment, we will take the microphone sensor as an example.

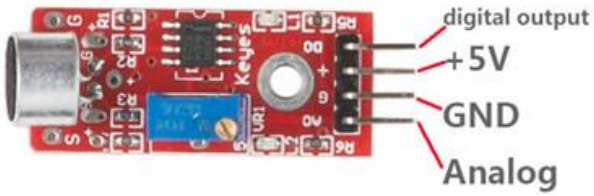
They both have two outputs:

AO: analog output, used to output voltage signals from microphone in real-time

DO: When sound intensity reaches a certain threshold, the sensor outputs high or low level (threshold can be adjusted by potentiometer)



Microphone sensor



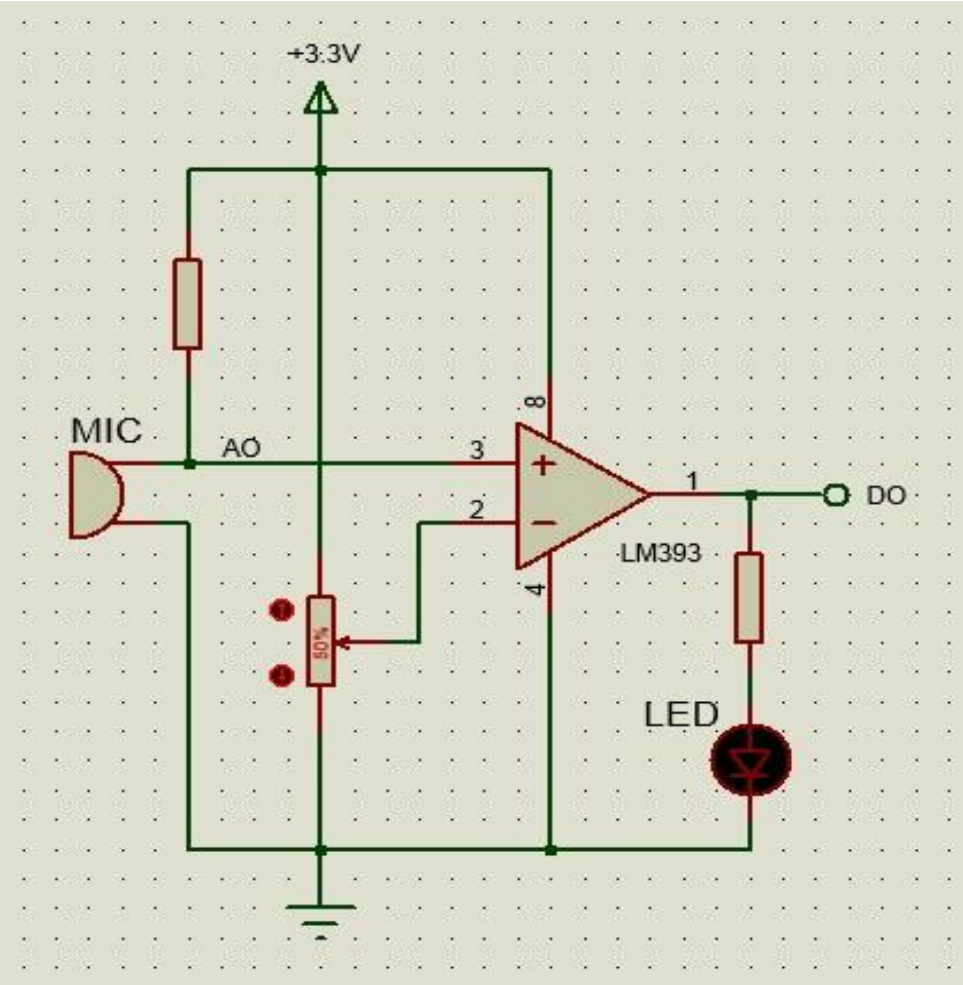
High-sensitive voice sensor

Components

- 1*SUNFOUNDER UNO board (or SUNFOUNDER MEGA2560 board)
- 1*Breadboard
- 1*USB data cable
- 1*Microphone sensor module (or High-Sensitive voice sensor module)
- Several jumper wires

Experimental Principle

Microphone can convert audio signal into electrical signal (analog quantity), then convert analog quantity into digital quantity by ADC and transfer it to MCU to process. The schematic diagram of microphone sensor module is shown as follow:



LM393 is a voltage comparator. When the voltage of in-phase terminal (pin 3) is higher than that of the inverting terminal (pin 2), output terminal (pin 1) will output high. Otherwise, it outputs low. First, adjust potentiometer to make the voltage for pin 2 of LM393 less than 5V. When there is no voice input, the resistance of the microphone is very large. The voltage for pin 3 of LM393 is close to power supply voltage (5V), pin 1 outputs high and the LED is turned on; when there is voice input, the resistance of the microphone decrease, pin 1 outputs low and the LED is turned off. We connect pin 1 to IO of SUNFOUNDER to detect whether a sound is made by programming.

Experimental Procedures

Step 1: Connect the circuit according to the following method

Microphone sensor module **SUNFOUNDER UNO**

AO ---------- A0

G ---------- GND

\+ ---------- 5V

DO ----------Digital 8

Step 2: Program (Please refer to example code in CD provided by us)
Step 3: Compile the program
Step 4: Burn the program into SUNFOUNDER UNO board

Now, when you speak or blow to the microphone, the LED attached to pin 13 on SUNFOUNDER board will light up.