Project 11 Dangerous Gas Alarm

1. Description

This gas sensor is used for household gas leak alarms, industrial combustible gas alarms and portable gas detection instruments. Also, it is suitable for the detection of liquefied gas, benzene, alkane, alcohol, hydrogen, etc.
MQ-2 gas sensor accurately detects multiple gases. It enjoys high sensitivity, fast response, good stability, long life, and simple drive circuit.

It can detect the concentration of flammable gas and smoke in the range of 300~10000ppm. Meanwhile, it has high sensitivity to natural gas, liquefied petroleum gas and other smoke, especially to alkanes smoke.
It must be heated for a period of time before using, otherwise the output resistance and voltage are not accurate. However, the heating voltage should not be too high, or it will cause internal signal line to blow.

This sensor employs tin dioxide semiconductor gas-sensitive material. At a certain temperature, tin dioxide adsorbs oxygen in the air and forms negative ion adsorption of oxygen, reducing the electron density in the semiconductor, thereby increasing its resistance value.

When in contact with flammable gas in the air and smog, if the potential barrier at the grain boundary is adjusted by the smog, it will change the surface conductivity. As a result, we will know whether smoke or flammable gas is in presence.
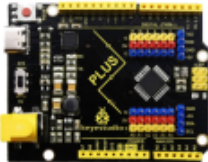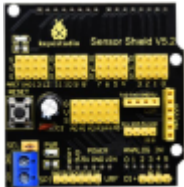The greater the concentration of smoke or flammable gas is, the greater the conductivity and the analog signal output will be, and the lower the output resistance will be.
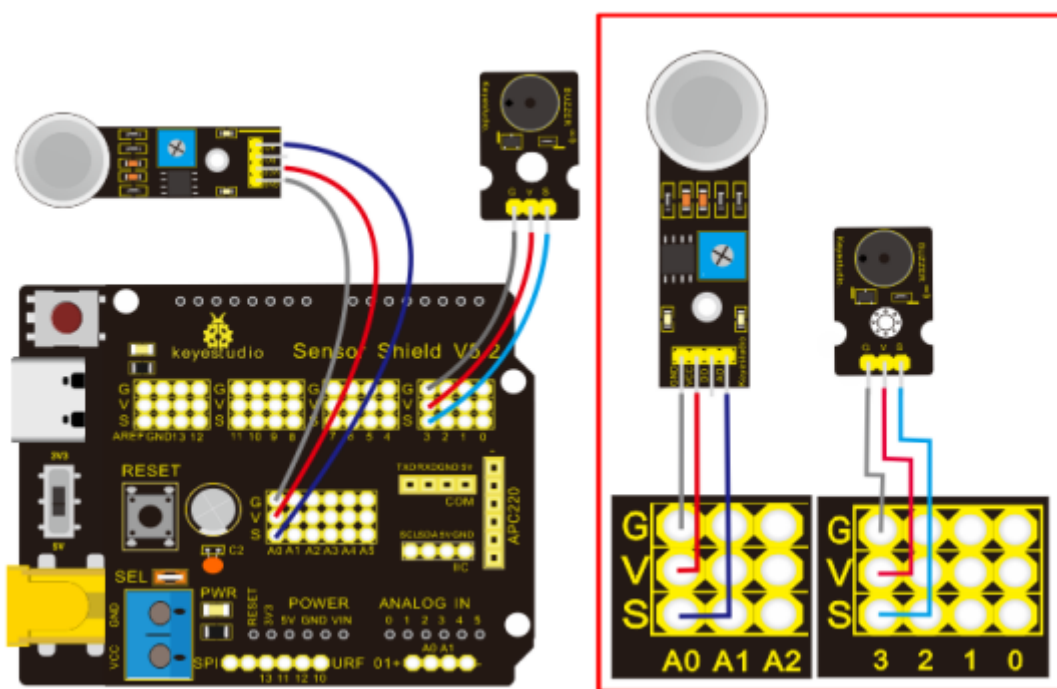In addition, the sensitivity can be adjusted via the potentiometer.

2. Parameters

- Working voltage: 3.3 ~ 5V (DC)
- Interface: 4pin (VCC, GND, D0, A0)
- Output signal: digital signal and analog signal
- Weight: 7.5g

3. Needed Components

PLUS control board*1	Expansion board*1	MQ-2 gas sensor*1		Passive buzzer*1
USB cable*1	3Pin F-F Dupont wire*1	F-F Dupont*3		

4. Wiring Diagram

Note: On the expansion board, the pin GND, VCC and A0 of gas sensor are linked with pin G, V and A0. The pin G,V and S of passive buzzer are connected to G,V and 3.

5. Test Code

6. Test Result

Upload test code, wire components up and power on.
When the detected analog value of flammable gas(lighter gas is included) is greater than 450, the passive buzzer emits sound. However, when there is no flammable gas, the passive buzzer keeps

quiet.