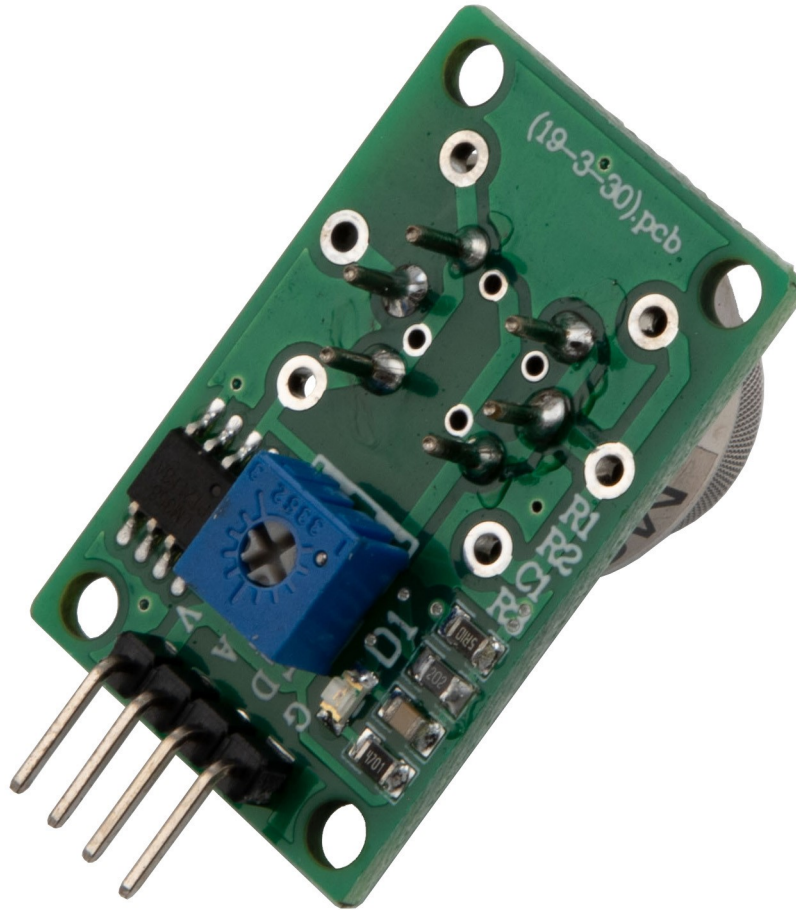


SMOKE AND FLAMMABLE GAS SENSOR MODULE

User Guide for SRAQ-G004



Product Description >>

The SRAQ-G004 gas sensor module detects the presence and concentration of smoke and other flammable gases such as butane, propane, methane and hydrogen. Integrated circuitry produces a non-linear voltage signal corresponding to the smoke and gas concentrations. With high sensitivity, the SRAQ-G004 sensor module can detect smoke in the range of 100-1000 ppm and flammable gases in the range of 300 to 10,000 ppm.

Features >>

- Features Mq2 sensing element
- Highly sensitive to smoke and flammable gas
- Wide detection range 0 – 10000 ppm
- Analog and TTL level outputs
- 2.54 mm 4 pin male header

Applications >>

- Smoke alarms
- Combustible gas alarms
- Chemical manufacturing
- Portable gas detectors
- Other areas calling for smoke and combustible gas detection

Thank you for choosing L-com product. To ensure safe, accurate performance and product longevity, please take a moment to familiarize yourself with this manual before powering the device. Please keep it handy for future reference. In case of any questions regarding the installation or use of product, please call us at 800.341.5266.

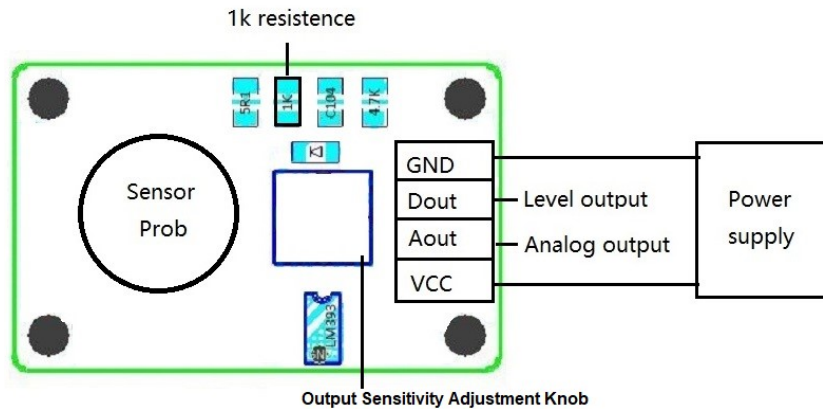
Reach out to us at customerservice@l-com.com and visit our website at www.l-com.com

Technical Parameters >>

Supply Voltage	5 VDC \pm 0.2 V	
Working Current	<150 mA	
Detects Gases	Flammable gases, smoke	
Detection Concentration	300 – 10000 ppm (Combustible gas)	
	100 – 10000 ppm (Smoke)	
Output Method	Aout (Analog Signal)	Vair \sim 4.8 V (Non linear)
	Dout (Level Signal)	Low level
Preheat Time	> 30 mins	
Response Time	\leq 1 sec	
Recovery Time	\leq 30 sec	
Working Environment	Temperature	-10~50 $^{\circ}$ C
	Humidity	< 95% RH

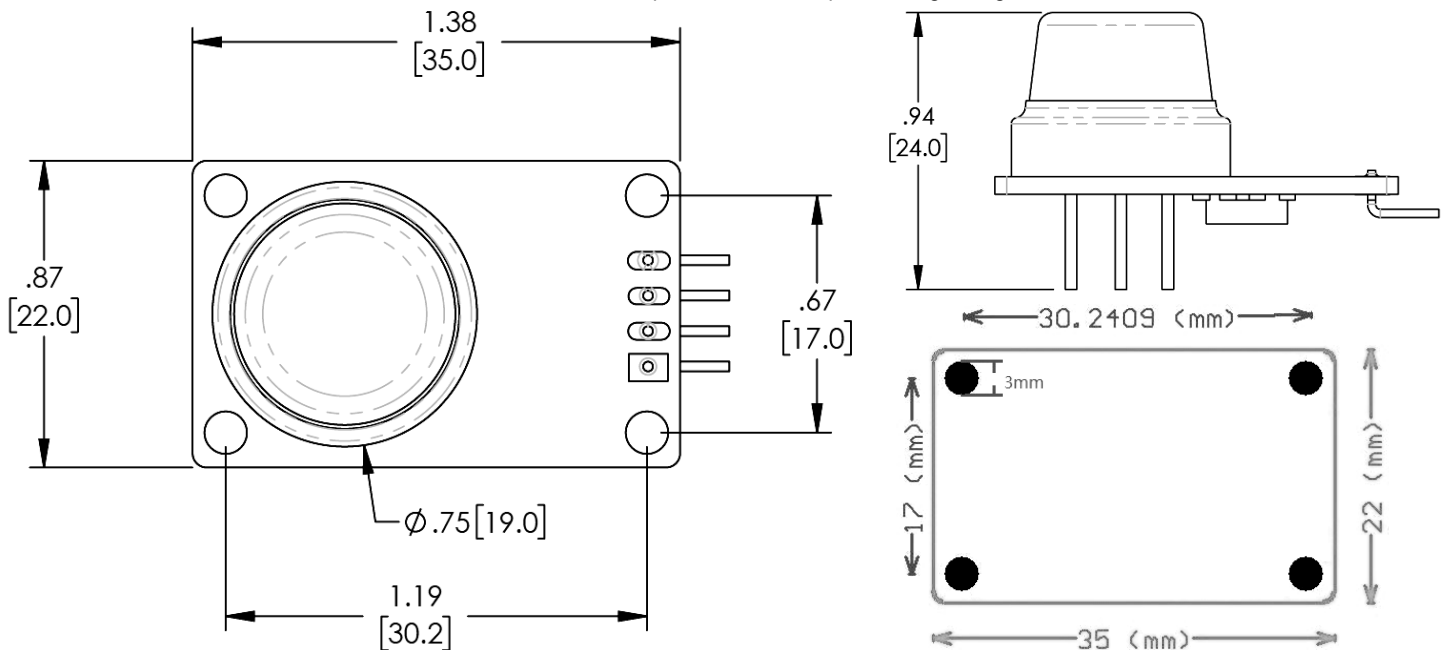
Electrical Diagram >>

- VCC is the 0 – 5 VDC power supply positive and negative; GND is the ground
- Aout is the analog output, Dout is the level output
- On the PCB, Indicator light on: Dout is low level. Indicator light off: Dout is high level
- The 1k resistor shown on the PCBA is the load resistance (RL), it can be changed by user.



Mounting Diagram >>

Mount the PCBA to the enclosure with screws. Hole diameter 3mm, pitch distances as per the diagrams given below.



Notes >>

1. Confirm the polarity and the voltage of the power supply before powering ON the sensor.
2. The analog output of this module is non-linear. When connect to microcontroller, it should be connected to ADC interface of the microcontroller.
3. The relationship between the resistance ratio and the concentration is a logarithmic relationship. For more info on typical sensitivity curve, check MQ2 Probe on internet.

Typical Sensitivity Curve >>

Temperature: 20 °C

Humidity: 65%

Oxygen: 21%

RL = 20 kΩ

Rs: Resistance on various concentration value of gas

R0: Resistance on clear air

The calculation of the resistance ratio according to the output voltage is as follows:

The sensor is energized in relatively clean air for more than half an hour and after measure the output voltage value of Aout.

$$R0 = \frac{VCC \times RL}{VRL} - RL$$

VCC is the power supply voltage, 5 VDC

RL is the load resistance

VRL = Aout = Vair value

When the sensor detects gas, the RS value can be calculated after measuring the value of Aout.

$$RS = \frac{VCC \times RL}{VRL} - RL$$

The VRL value at this time is the Aout value after gas is detected. It is different from the value of the above formula. The VCC value and the RL value are the same as above.

The R0 and RS values are obtained, and the specific concentration value of the gas is converted by the RS / R0 value of the Sensitivity Characteristic Curve.

