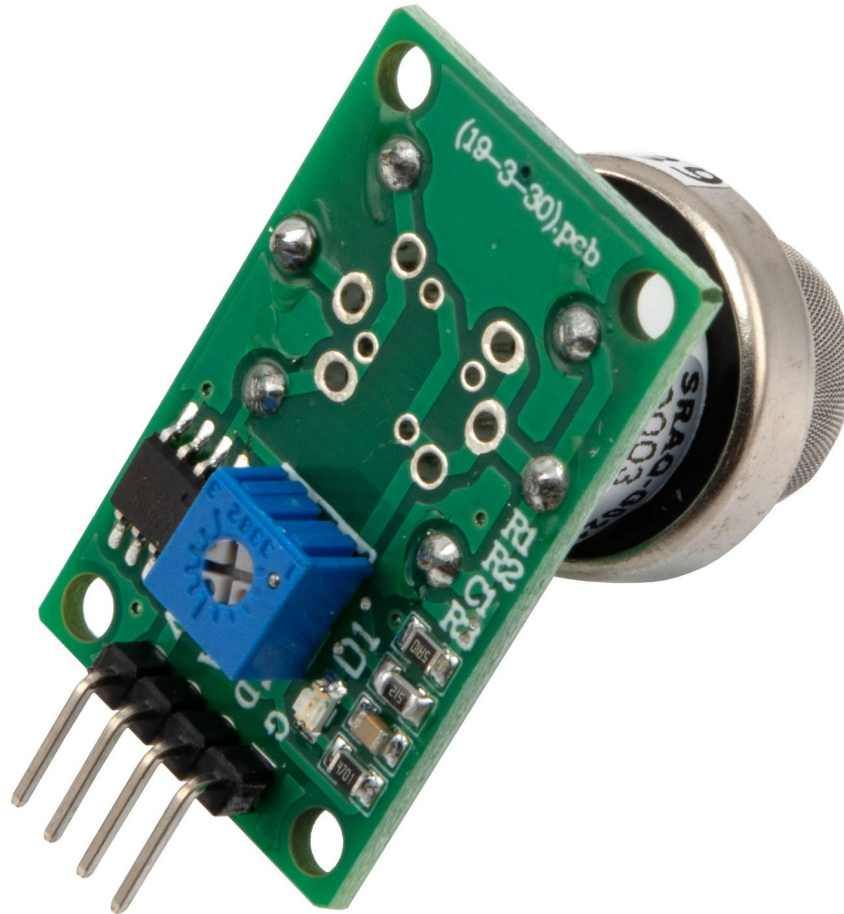


FREON GAS SENSOR MODULE

User Guide for SRAQ-G021



Product Description >>

The SRAQ-G021 gas sensor module detects the presence and concentration of various refrigerants including R11, R22, R113, R134, R409A, R410A etc. Integrated circuitry produces a non-linear voltage signal corresponding to the freon gas concentration. With a detection range of 10 to 1000 ppm, the SRAQ-G021 is a low-cost, long service life sensor module well suited for use in freon gas detection devices for commercial and residential applications.

Features >>

- Features MQ139 sensing element
- Highly sensitivity to freon
- Indication light
- Analog and TTL level outputs
- Fast response
- 4 pin male header

Applications >>

- Freon gas detectors
- Gas leakage
- Refrigeration units
- Air conditioning systems

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.

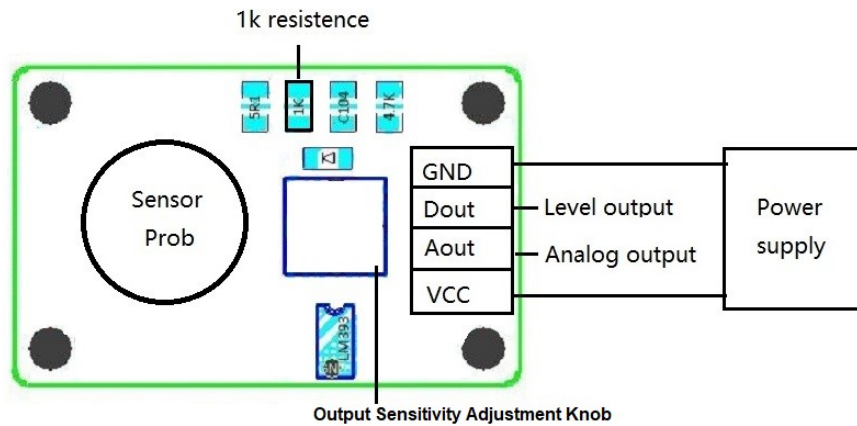
Reach out to us at customerservice@l-com.com and visit our website at www.l-com.com

Technical Parameters >>

Working Voltage	5 VDC \pm 0.2 V	
Working Current	<150 mA	
Gas Detection	Freon	
Detection Concentration	10 – 1000 PPM	
Response Time	>3 sec	
Recovery Time	\leq 30 sec	
Output Mode	Aout (Analog signal)	0 – 5 V, Non-linear
	Dout (Level signal)	Low level: 0V; High level: 3.7V
Work environment	Temperature	-10~50 °C
	Humidity	<95% RH

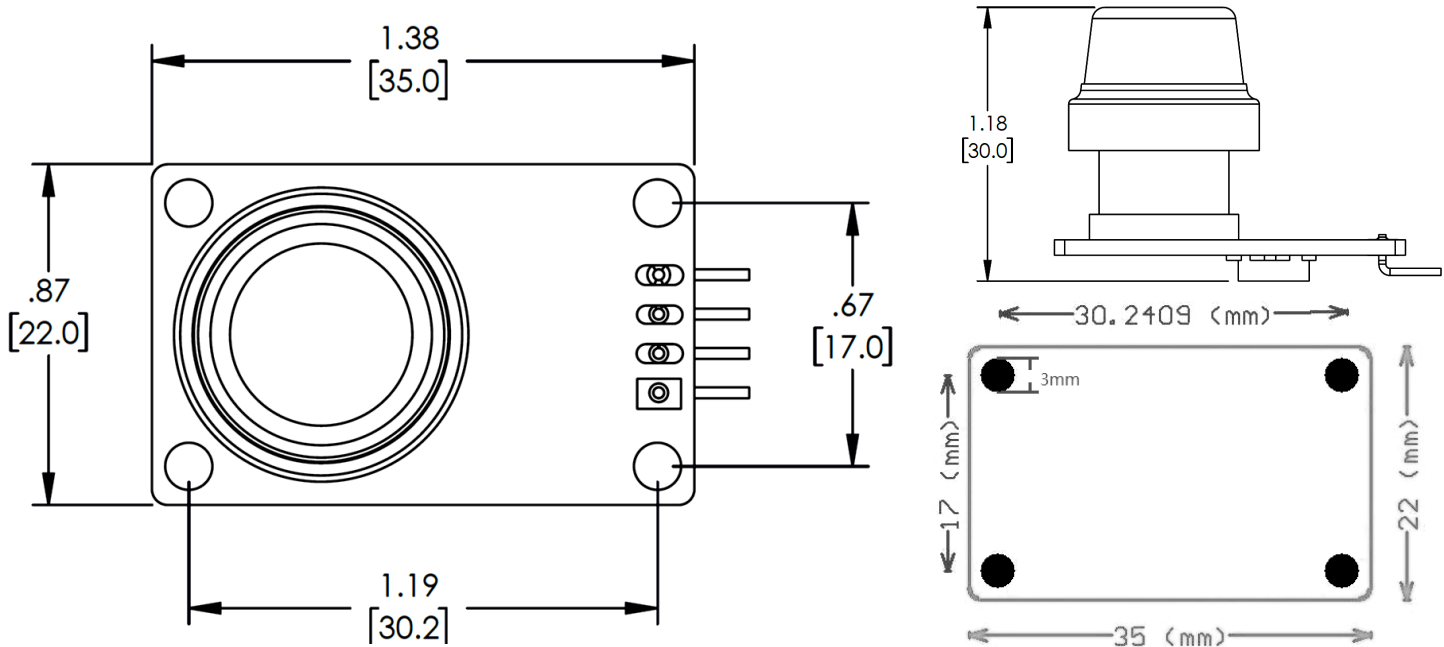
Electrical Diagram >>

- 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 MQ139 Probe on internet.

Typical Sensitivity Curve >>

Temperature: 20 °C

Humidity: 65%

Oxygen: 21%

RL = 20 kΩ

Rs: Resistance in various concentration value of gas

R0: Resistance in 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.

$$R_0 = \frac{VCC \times RL}{VRL} - RL$$

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.

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

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.

