

FREON GAS SENSOR

User Guide for SRAQ-G218



Product Description >>

The SRAQ-G218 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-G218 is a low-cost, long service life device well suited for detecting freon and other CFC related gas leaks.

Features >>

- High sensitivity to freon
- 24 VDC supply
- Analog output
- Fast response
- Wall or DIN rail mountable

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.

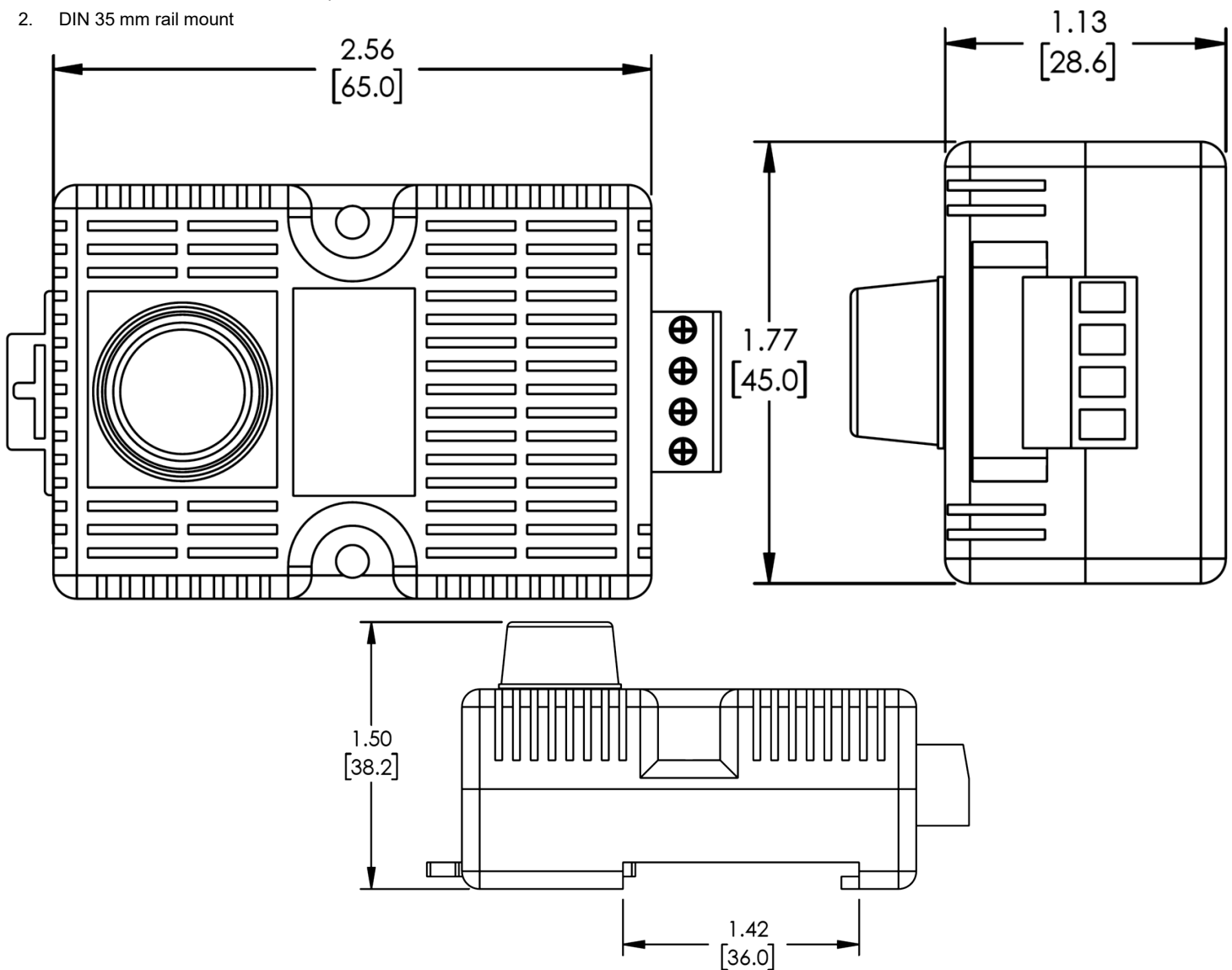
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Technical Parameters >>

Detection Range	10 – 1000 PPM
Measured Gas	Freon (R143a)
Working Voltage	24 VDC \pm 0.2 V
Working Current	<150 mA
Output Method	0 – 10 V (Non-linear)
Response Time	\leq 1 sec
Recovery Time	\leq 60 sec
Working Temperature	-10~50 °C
Working Humidity	<95% RH (Non condensing)
Preheat Time	>30 mins

Mounting Diagram >>

1. Wall mount, hole diameter 4 mm, pitch 36 mm
2. DIN 35 mm rail mount

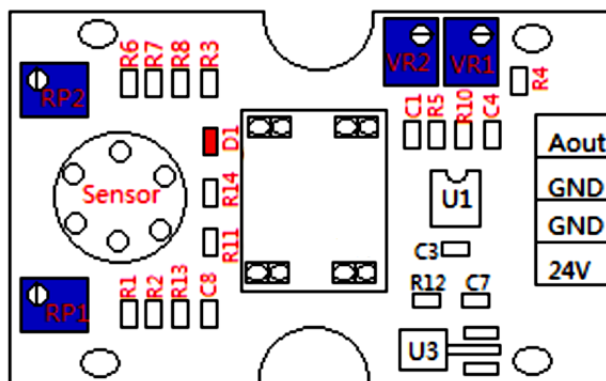


Notes >>

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.

Electrical Diagram >>

1. 24V and GND are the power interface, D1 is the power indicator.
2. Aout is the analog output interface, VR2 is the signal trimmer potentiometer.
3. VR1 is the magnification (the output of 0-5V and 0-10V can be adjusted freely through this potentiometer).
4. The load resistance of the sensor composed of R7 and RP2 potentiometer is in parallel relationship (can be changed by user).
5. Different sensors use different parameters. The parameters are based on the PCB board.



Typical Sensitivity Curve >>

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.

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

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 (To get 0-10V output, through 0-5V, the circuit is enlarged 2 times, so use the calculation method accordingly. VCC is based on 5V as the benchmark).

The ordinate in the figure is the resistance ratio of the sensor (Rs/R0). The abscissa is the gas concentration. Rs represents the resistance value of the sensor in different concentrations of gas, and R0 represents the resistance value of the sensor in clean air. All tests in the figures were done under standard test conditions.

