

Combustible Gas Sensor – Analog Out

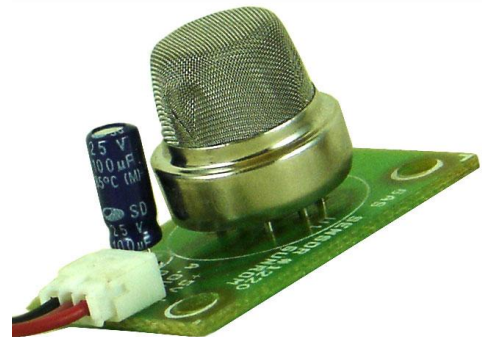
Used in gas leakage detecting equipments for detecting of LPG, iso-butane, propane, LNG combustible gases. The sensor does not get trigger with the noise of alcohol, cooking fumes and cigarette smoke.

Applications

- Gas leak detection system
- Fire/Safety detection system
- Gas leak alarm / Gas detector

Features

- Simple analog output
- High sensitivity to LPG, iso-butane, propane
- Small sensitivity to alcohol, smoke
- Fast response
- Wide detection range
- Stable performance and long life



Specification

| Parameter | Value | Unit |
|----------------------------|---|-------------------------|
| Target Gas | iso-butane, Propane, LPG | |
| Detection Range | 100 to 10000 PPM | PPM (part per millions) |
| Output Voltage Range | 0 to 5 | VDC |
| Working Voltage | 5 | VDC |
| Current Consumption | ≤180 | mA |
| Warmup Time | 10 | Minutes |
| Calibrated Gas | 1000ppm iso-butane | |
| Response Time | ≤10s | Seconds |
| Resume Time | ≤30s | Seconds |
| Standard Working Condition | Temperature:-10 to 65 deg C. Humidity: ≤95%RH | |
| Storage Condition | Temperature: -20-70 deg C Hum: ≤ 70%RH | |

Pin outs

| # | Pin | Details |
|---|-------|---------------------------------|
| 1 | GND | Power Supply Ground |
| 2 | A.OUT | Analog Voltage Out |
| 3 | +5V | Supply voltage DC +5V regulated |

Warm up Time

The sensor needs 10 minutes of warm up time after first power is applied. After 10 minutes you can take its readings. During warm up time the output analog voltage would go up from 4.5V to 0.5V in variation down gradually. During this warm up time the sensor reading should be ignored.

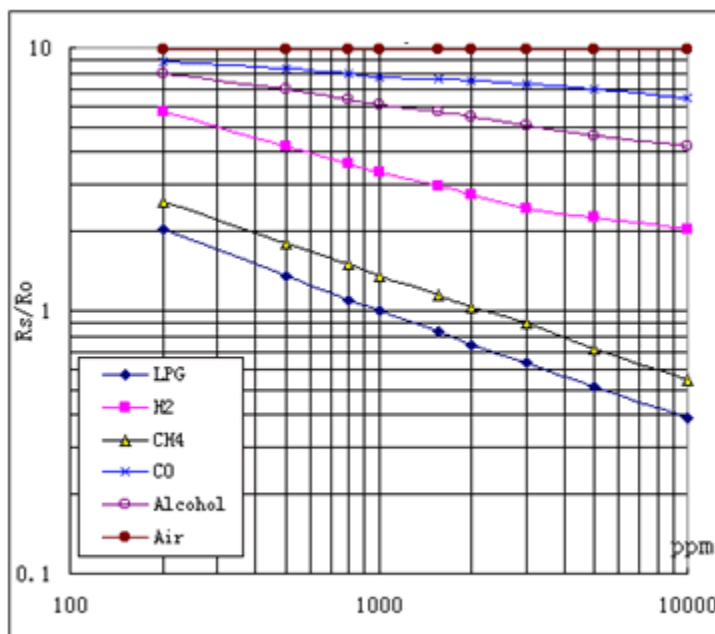
Using the Sensor

The sensor needs 5V to operate, Give regulated +5V DC supply, The sensor will take around 180mA supply. The sensor will heat a little bit since it has internal heater that heats the sensing element.

Testing the sensor

Measure the output voltage through multi-meter between A.OUT and Ground pins or Use a microcontroller to measure the voltage output. Take the sensor near combustibile gas place like cooking gas stove with flame off or near bottle of after shave liquid or cigarette light with flame off. You will notice sudden jump in analog voltage output since the gas concentration will increase.

Sensitivity



Typical Sensitivity Characteristics of sensor for several gases in their

Temp: 20 deg C

Humidity: 65%

Oxygen concentration: 21%

RL = 10K Ohm

Ro = Sensor resistance at 1000 ppm of LPG in clean air

Rs = Sensor resistance at various concentrations of gases

Deriving Gas concentration from Output Voltage

Here is a the equation which convert analog output to PPM gas concentration

$\text{PPM} = \text{Analog Voltage in mV} \times 2$

Example: Gas sensor voltage is giving output as

2500mV(2.5V) So the gas contentration in PPM = $2500 \times 2 = 5000$ PPM

Here is the table for your reference

| PPM: | 200 | 300 | 500 | 1000 | 2000 | 3000 | 5000 | 9000 | 10000 |
|--------------|-----|-----|-----|------|------|------|------|------|-------|
| Voltage(mV) | 100 | 150 | 250 | 500 | 1000 | 1500 | 2500 | 4500 | 5000 |