

1. DESCRIPTION:

This sensor module utilizes an MQ-6 as the sensitive component and has a protection resistor and an adjustable resistor on board. The MQ-6 gas sensor is highly sensitive to LPG, iso-butane, propane and less sensitive to alcohol, cooking fume and cigarette smoke. It could be used in gas leakage detecting equipments in Domestic and Industrial applications. The resistance of the sensitive component changes as the concentration of the target gas changes.

2. Reference Source:

/* Testing MQ-6 GAS sensor with serial monitor

Suitable for detecting of LPG, Iso-butane, Propane, Alcohol, Cooking fume and Cigarette smoke.*/*

```
const int gasPin = A0; //GAS sensor output pin to Arduino analog A0 pin
```

```
void setup()
```

```
{  
  Serial.begin(9600); //Initialize serial port - 9600 bps  
}
```

```
void loop()
```

```
{  
  Serial.println(analogRead(gasPin));  
  delay(1000); // Print value every 1 sec.  
}
```

TECHNICAL DATA

MQ-6 GAS SENSOR

FEATURES

- * High sensitivity to LPG, iso-butane, propane
- * Small sensitivity to alcohol, smoke.
- * Fast response . * Stable and long life * Simple drive circuit

APPLICATION

They are used in gas leakage detecting equipments in family and industry, are suitable for detecting of LPG, iso-butane, propane, LNG, avoid the noise of alcohol and cooking fumes and cigarette smoke.

SPECIFICATIONS

A. Standard work condition

Symbol	Parameter name	Technical condition	Remarks
V _c	Circuit voltage	5V±0.1	AC OR DC
V _H	Heating voltage	5V±0.1	ACOR DC
P _L	Load resistance	20KΩ	
R _H	Heater resistance	33Ω ±5%	Room Tem
P _H	Heating consumption	less than 750mw	

B. Environment condition

Symbol	Parameter name	Technical condition	Remarks
T _{ao}	Using Tem	-10°C -50°C	
T _{as}	Storage Tem	-20°C -70°C	
R _H	Related humidity	less than 95%Rh	
O ₂	Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	minimum value is over 2%

C. Sensitivity characteristic

Symbol	Parameter name	Technical parameter	Remarks
R _s	Sensing Resistance	10KΩ - 60KΩ (1000ppm LPG)	Detecting concentration scope: 200-10000ppm LPG , iso-butane, propane, LNG
α (1000ppm/ 4000ppm LPG)	Concentration slope rate	≤0.6	
Standard detecting condition	Temp: 20°C ±2°C Humidity: 65%±5%	V _c :5V±0.1 V _H : 5V±0.1	
Preheat time	Over 24 hour		

D. Strucyure and configuration, basic measuring circuit

Parts	Materials
1 Gas sensing layer	SnO ₂
2 Electrode	Au
3 Electrode line	Pt
4 Heater coil	Ni-Cr alloy
5 Tubular ceramic	Al ₂ O ₃
6 Anti-explosion network	Stainless steel gauze (SUS316 100-mesh)
7 Clamp ring	Copper plating Ni
8 Resin base	Bakelite
9 Tube Pin	Copper plating Ni

Configuration A

Configuration B

Structure and configuration of MQ-6 gas sensor is shown as Fig. 1 (Configuration A or B), sensor composed by micro Al_2O_3 ceramic tube, Tin Dioxide (SnO_2) sensitive layer, measuring electrode and heater are fixed into a crust made by plastic and stainless steel net. The heater provides necessary work conditions for work of sensitive components. The enveloped MQ-6 have 6 pin ,4 of them are used to fetch signals, and other 2 are used for providing heating current.

Electric parameter measurement circuit is shown as Fig.2
 E. Sensitivity characteristic curve

Fig.2 sensitivity characteristics of the MQ-6

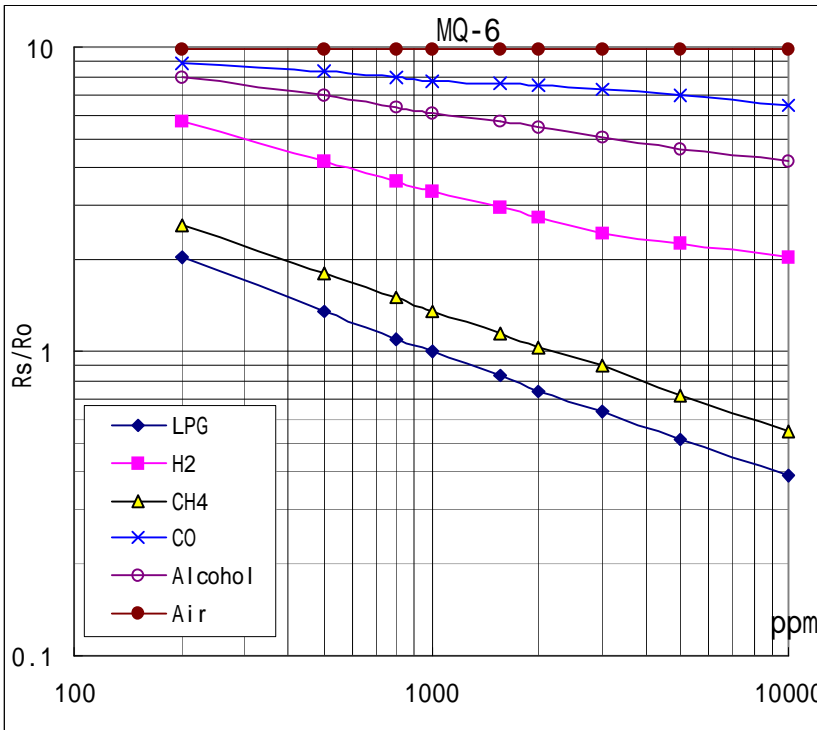


Fig.3 is shows the typical sensitivity characteristics of the MQ-6 for several gases. in their: Temp: 20°C, Humidity: 65%, O_2 concentration 21% $R_L=20k \Omega$

R_o : sensor resistance at 1000ppm of LPG in the clean air.
 R_s :sensor resistance at various concentrations of gases.

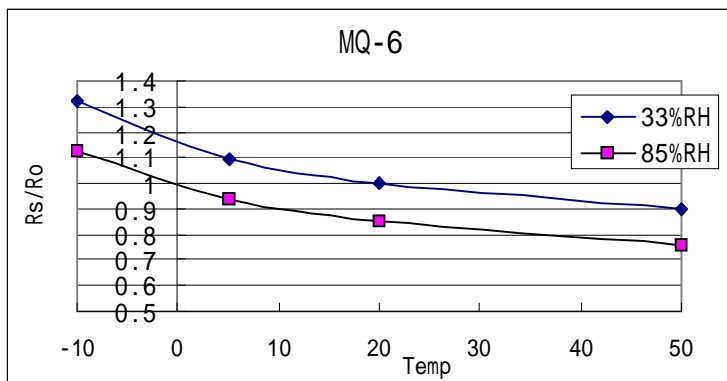


Fig.4 is shows the typical dependence of the MQ-6 on temperature and humidity. R_o : sensor resistance at 1000ppm of LPG in air at 33%RH and 20 degree.
 R_s : sensor resistance at 1000ppm of LPG in air at different temperatures and humidities.

SENSITIVITY ADJUSTMENT

Resistance value of MQ-6 is difference to various kinds and various concentration gases. So, When using this components, sensitivity adjustment is very necessary. we recommend that you calibrate the detector for 1000ppm of LPG concentration in air and use value of Load resistance (R_L) about $20K \Omega$ ($10K \Omega$ to $47K \Omega$).

When accurately measuring, the proper alarm point for the gas detector should be determined after considering the temperature and humidity influence.