Winsen

Professional Gas Sensing Solution

Zhengzhou Winsen Electronics Technology Co., Ltd

About Winsen

Zhengzhou Winsen Electronics Technology Co., Ltd. is a hi-tech enterprise, specialized in developing, manufacturing and marketing various types of sensors such as gas sensors, flow sensors, pressure sensors, humidity sensors and PIR sensors and related solutions for customers in different fields. We go into the lead in the field of sensor and relative solutions, relying on the long period searching, rich production experience and our own advanced technology.
Winsen does not only pay attention to quality control, but also research and design. Our company is ISO9001:2000 certified enterprise which ensures our products under strict quality control. Besides, Winsen products also gained RoHS, CE and UL(USA) certifications.
Currently, Winsen has gained over 60% gas sensor market share in China and exported products to over 80 countries worldwide. Our goal is "to become your first choice in the gas sensing field, to supply favorable gas sensing solutions to you."

Our products include:

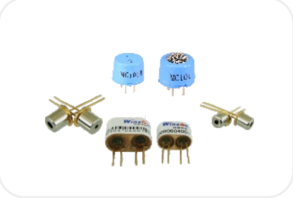
- Gas sensor and module for
  - *Oxygen (O_2)
  - *Carbon Dioxide (CO_2)
  - *Toxic gases such as CO, H_2S, NH_3, HCL, SO_2, NO_2, CL_2, ETO ...etc.
  - *Combustible gases such as methane, propane, butane, hydrogen
  - *Air Quality: VOC, alcohol, smoke, formaldehyde, toluene, acetone, benzene ...etc.
- Flow sensor
- PIR sensor
- Humidity sensor

Directory

MH-NDIR

ME-Electrochemical

MP-Flat Surfaced



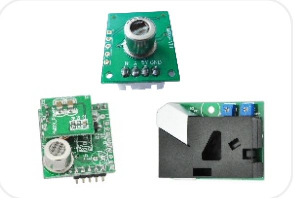
MC-Catalytic

MQ-Semiconductor

MD-Thermal Conductor

MG-Solid Electrolyte

MR-Hot Wire

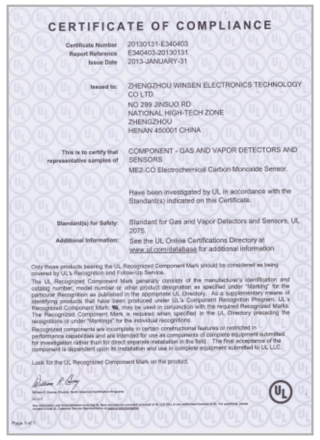


Module

ZHENGZHOU WINSEN ELECTRONICS TECHNOLOGY CO.,LTD. Winsen

CULTURE

HONOR



Semiconductor Gas Sensor

MQ series gas sensor's sensitized material is metal oxide with very high activitly,usually S_nO_2. When MOS is heated to definite temperature in air, oxygen atom is adsorbed on the surface of semiconductor carried negative electric charge, the electron on the surface of semiconductor shall be transfer to adsorbed oxygen, and oxygen atom is changed to oxygen negative ion, at the same time, form a plus space charge on the semiconductor' s surface, and result in potential barrier rised, thereby block electron flow (as Fig 1).

In the sensitized material inside, free electron must drill through MOS crystallite 's binding site(crystal boundary) to form current. The potential barrier procreant by adsorbed oxygen consist in the surface of crystal boundary and that block electrorn's free flow, resistance of sensor comes from this potential barrier. In work condition, when sensor meets with reductive gas, oxygen negative ion results in concentration reduced because of reductive gas occurred redox reaction, along with potential barrier reduced. (as Fig 2). And result in sensors' resistance value is reduced.

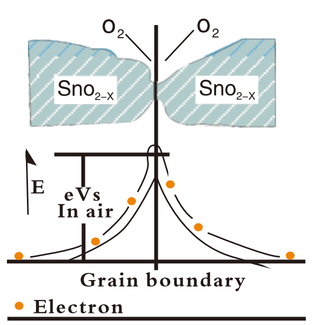


Fig 1

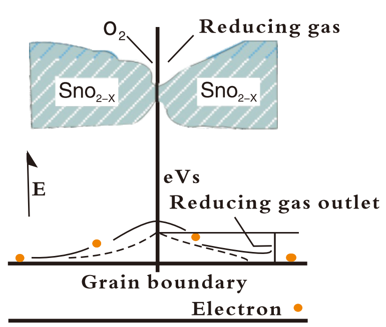
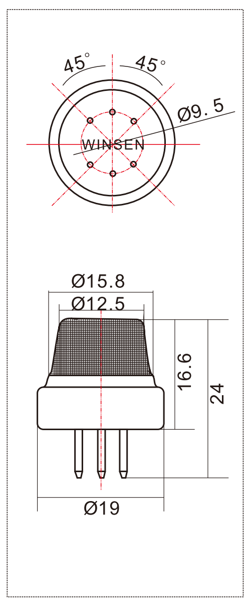
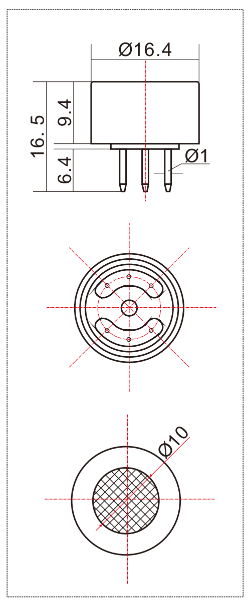
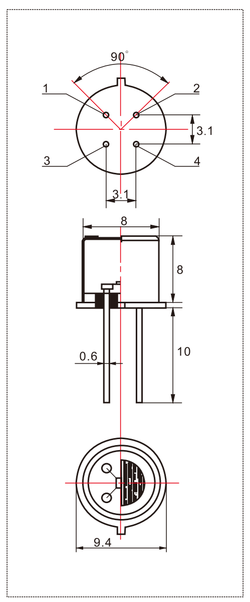
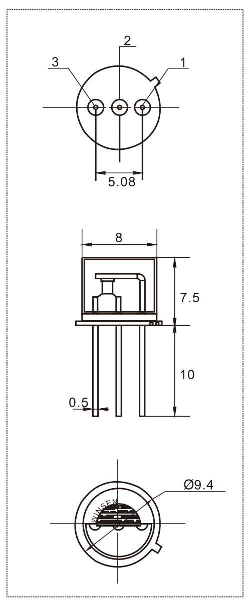


Fig 2





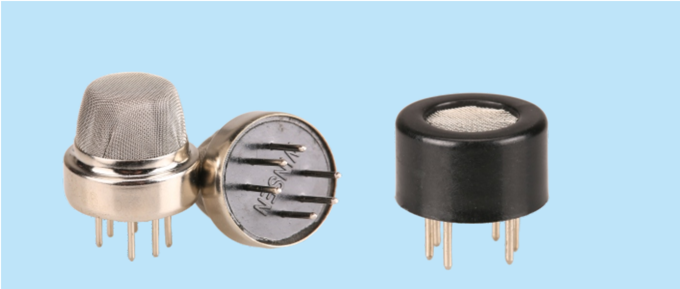




Semiconductor Sensor for Flammable Gas

Application

- Gas leak detection for houses/workshops/commercail building, fire/safety detection system
- Gas leak alarm, gas detector.



MQ-2/MQ-4/MQ-5/MQ-6/MQ-8

Feature

- High sensitivity
- Fast response
- Stable and long life
- Simple drive circuit

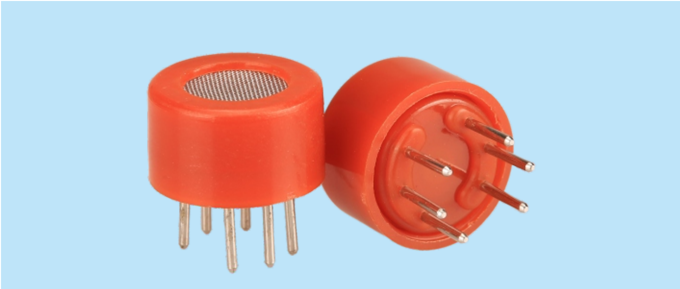
Specification

Model	MQ-2	MQ-4	MQ-5	MQ-6	MQ-8
Target Gas	Flammable Gas, Smoke	Methane	LPG, Methane	LPG	Hydrogen
Detection Range	300～10000ppm (flammable gas)	300～10000ppm (CH_4)	300～10000ppm (CH_4,C_3H_8)	300～10000ppm (C_3H_8)	100～1000ppm (H_2)
Standard Circuit Conditions	Vc(Loop Voltage) ≤24V DC V_H(Heater Voltage) 5.0V±0.1V AC or DC R_L (Load Resistance) Adjustable				
P_H (Heater Consumption)	≤950mW				≤900mW
S(Sensitivity)	Rs(in air)/Rs(2000ppm C_3H_8)≥5	Rs(in air)/Rs(in 5000ppm CH_4)≥5	Rs(in air)/Rs(in 2000ppm C_3H_8)≥5	Rs(in air)/Rs(in 2000ppm C_3H_8)≥5	Rs(in air)/Rs(in 1000ppm H_2)≥5
Vs (Output Voltage)	2.5V～4.0V (in 2000ppmC_3H_8)	2.5V～4.0V (in 5000ppm CH_4)	2.5V～4.0V (in 2000ppm C_3H_8)	2.5V～4.0V (in 2000ppm C_3H_8)	2.5V～4.0V (in 1000ppm H_2)
Standard Test Conditions	20℃ ±2℃ ; 55%±5%RH				
Preheat Time	No less than 48 hours				

Semiconductor Sensor for Carbon Monoxide Gas

Application

- Coal gas,CO etc gas detection for houses/workshops/commercial building



MQ-7B/MQ-9B

Feature

- High sensitivity to CO
- Good selectivity
- Stable and long life
- Simple drive circuit

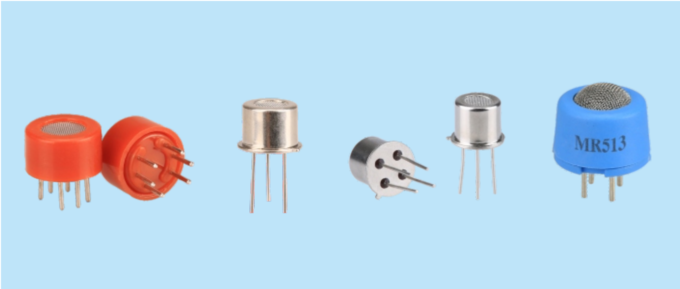
Specification

Model	MQ-7B	MQ-9B
Target Gas	Carbon Monoxide(CO)	Carbon Monoxide(CO) & Methane(CH_4)
Detection Range	10～500ppm CO	10～500ppm CO,300～10000ppm CH_4
Vc(Loop Voltage)	≤10V DC	
V_H(Heater Voltage)	5.0V±0.1V AC or DC(High temp); 1.5V±0.1V AC or DC(Low temp)	
R_L (Load Resistance)	Adjustable	
T_L(Heater Time)	60s±1s(High Temp); 90s±1s(Low Temp)	
P_H (Heater Consumption)	≤900mW	
S(Sensitivity)	Rs(in air)/Rs(in 150ppm CO)≥5	Rs(in air)/Rs(in 150ppm CO)≥5 Rs(in air)/Rs(in 5000ppm CH_4)≥3
Vs (Output Voltage)	2.5V～4.3V (in 150ppm CO)	2.5V～4.3V(in 150ppm CO) 2.0V～4.0V(in 5000ppm CH_4)
Standard Test Conditions	20℃ ±2℃；55%±5%RH	
Standard Test Circuit	Vc:5.0V±0.1V; V_H(High Temp):5.0V±0.1V; V_H (Low Temp):1.5V±0.1V	
Preheat time	No less than 48 hours	
Configuration	B means plastic shell.	

Alcohol Gas Sensor

Application

- Suitable for alcohol testers aimed to dangerous intoxicated drivers and others after drinking, also it can sense alcohol vapors in other places.



MQ-3B MQ303B MP-3B MR513

Feature

- High sensitivity
- Fast response
- Stable and long life
- Simple drive circuit
- Good selectivity

Specification

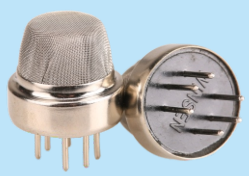
Model	MQ-3B	MQ-303B	MP-3B	MR513
Working Principle	Semiconductor	Semiconductor	Flat Surfaced	Hot Wire
Target Gas	Alcohol(C_2H_5OH)	Alcohol(C_2H_5OH)	Alcohol(C_2H_5OH)	Alcohol(C_2H_5OH)
Detection Range	25~500ppm	20~ 500ppm alcohol	0~500ppm alcohol	0~500ppm
Standard Circuit Conditions	Vc(Loop Voltage)≤24V DC V_H(Heater Voltage): 5.0V±0.1V AC or DC R_L(Load Resistance) Adjustable	Vc(Loop Voltage)≤6V DC V_H(Heater Voltage): 0.9V±0.1V AC or DC R_L(Load Resistance) Adjustable	Vc(Loop Voltage)≤24V DC V_H(Heater Voltage): 2.5V±0.1V AC or DC R_L(Load Resistance) Adjustable	Working Voltage 3.0±0.1V Working Current 110±20mA
P_H(Heater Consumption)	≤900mW	≤140mW	≤350mW	≤390mW
S(Sensitivity)	R_S(in air)/R_S(125ppm C_2H_5OH)≥5	R_S(in air)/R_S(125ppm C_2H_5OH)≥3	R_S(in air)/R_S(50ppm C_2H_5OH)≥3	≥60mV (100ppm C_2H_5OH)
Standard Test Conditions	20℃±2℃；55%±5%RH			20℃±2℃ 65±5%RH 21%O_2
Preheat Time	No less than 48 hours			
Configuration	Plastic Shell	Metal Shell	Metal Shell	Plastic Shell

Semiconductor Sensor for Toxic Gas

Application

- Suitable for polluted gas detection in home and other environment, auto-ventilation equipment
- Gas leak detection for toxic gas in houses/workshops/commercial building

MQ131(ppb)



MQ131(ppm)/MQ135/
MQ136/MQ137/MQ138

Feature

- High sensitivity
- Good selectivity
- Stable and long life
- Simple drive circuit
- Fast response

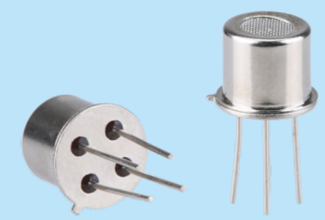
Specification

Model	MQ131		MQ135	MQ136	MQ137	MQ138
Target Gas	Ozone		Ammonia, Sulfide, Benzene series steam	Hydrogen Sulfide	Ammonia	Toluene, Acetone, Alcohol, Hydrogen
Detection Range	10~1000ppm(O_3)	10~1000ppb(O_3)	10~1000ppm (NH_3, C_7H_8, H_2, Smoke)	1~200ppm(H_2S)	5~500ppm(NH_3)	5~500ppm
Standard Circuit Conditions	Vc(Loop Voltage) ≤24V DC V_H(Heater Voltage) 5.0V±0.1V AC or DC R_L (Load Resistance) Adjustable					
P_H (Heater Consumption)	≤900mW		≤950mW	≤900mW	≤900mW	≤900mW
S(Sensitivity)	Rs(in 200ppm O_3)/ Rs(in air)≥2	Rs(in 200ppb O_3)/ Rs(in air)≥2	Rs(in air)/Rs(in 400ppm H2)≥5	Rs(in air)/ Rs(50ppm H_2S)≥3	Rs(in air)/ Rs(50ppmNH_3)≥2	Rs(in air)/Rs(in 50ppm C_7H_8)≥2
Vs (Output Voltage)	≥1.0V (in 200ppm O_3)	≥1.0V (in 200ppb O_3)	2.0V~4.0V (in 400ppm H_2)	≥0.5V (in 50ppm H_2S)	≥0.5V (in 50ppm NH_3)	0.5V (in 50ppm C_7H_8)
Standard Test Conditions	20℃ ±2℃ ; 55%±5%RH					
Preheat Time	No less than 48 hours					
Configuration	Metal shell	Plastic shell	Metal shell	Metal shell	Metal shell	Metal shell

Flat Surfaced Semiconductor Flammable Gas Sensor

Application

- Gas leak detection for houses/workshops/commercail buliding, fire/safety detection system
- Gas leak alarm, gas detector.



MP-4/MP-5

Feature

- High sensitivity
- Fast response
- Stable and long life
- Simple drive circuit
- Good shock resistance

Specification

Model	MP-4	MP-5
Target Gas	Natural Gas(CH_4)	LPG(C_3H_8)
Detection Range	300~10000ppm	300~10000ppm
Vc(Loop Voltage)	≤24V DC	
V_H(Heater Voltage)	5.0V±0.1V AC or DC	
R_L (Load Resistance)	Adjustable	
R_H (Heater Resistance)	85Ω±15Ω (room temp.)	
P_H (Heater Consumption)	≤350mW	≤300mW
S(Sensitivity)	R_S(in air)/R_S(5000ppm CH_4)≥5	R_S(in air)/R_S(2000ppm C_3H_8)≥5
Rs (Sensitive Resistance)	1KΩ~20KΩ(in 5000ppm CH_4)	1KΩ~20KΩ(in 2000ppm C_3H_8)
Standard Test Conditions	20℃ ±2℃; 55%±5%RH	
Preheat time	No less than 48 hours	

Flat Surfaced Semiconductor Air Quality Gas Sensor

Application

- It is usually used in occasions such as household and office for harmful gas detection, automatic exhaust device, air cleaner&etc.

MP135/MP503/WSP2110 MP901

Feature

- High sensitivity
- Fast response
- Stable and long life
- Simple drive circuit
- Good shock resistance

Specification

Model	MP135	MP503	WSP2110	MP901
Target Gas	Hydrogen,Alcohol, Carbon Monoxide	Alcohol,Smoke, Iso-butane,Methanal	Toluene,Methanal, Benzene,Alcohol, Acetone &etc.	Alcohol, Smoke,Formaldehyde, Toluene,Acetone,Benzene, Lighter gas,Paint &etc.
Detection Range	10~500ppm H_2 5~500ppm C_2H_5OH 10~500ppm CO	10~1000ppm C_2H_5OH	1～50ppm	1~50ppm
R_H(Heater Resistance)	95Ω±10Ω(Room Temp.)	95Ω±10Ω(Room Temp.)	90Ω±10Ω(Room Temp.)	95Ω±10Ω(Room Temp.)
Standard Circuit Conditions	V_C(Loop Voltage)≤24V DC V_H(Heater Voltage): 5.0V±0.1V AC or DC R_L(Load Resistance) Adjustable			V_C(Loop Voltage)/ V_H(Heater Voltage): 5.0V±0.1V AC or DC R_L(Load Resistance) Adjustable
P_H(Heater Consumption)	≤300mW	≤300mW	≤300mW	≤300mW
S(Sensitivity)	10KΩ~100KΩ (in 50ppm H_2)	1KΩ~30KΩ (in 50ppm Alcohol)	10KΩ~100KΩ (in 10ppm Toluene)	5KΩ~60KΩ (in 10ppm Alcohol)
Rs(Sensitive Resistance)	R_S(in air)/R_S(50ppm H_2)≥3	R_S(in air)/R_S(50ppm Alcohol)≥5	R_S(in air)/R_S(10ppm Toluene)≥3	R_S(in air)/R_S(10ppm Alcohol)≥3
Standard Test Conditions	20℃ ±2℃；65%±5%RH			
Preheat Time	No less than 48 hours		120 hours	No less than 48 hours

Catalytic Gas Sensor

When sensors meet flammable gas, due to catalytic activity, flammable gas is burning on the sensors' surface without flame to release a lot of heat which leads to the resistance change of detecting elements. The gas concentration can be known through detecting the resistance change of detecting elements. (Please see Fig1 and 2 for detection process). When the temperature, humidity and pressure altered in sensors' ambience, the resistance of detecting element and compensating element almost altered at the same time, which counteracts impact by environment factor availably. Comparing with semiconductor gas sensor, the reason that catalytic gas sensor can realize to the flammable gas concentration mainly based on direct ratio of gas concentration and heat produced when combustible gas burning. The resistance change for detecting elements made of high-purity platinum and the temperature change is proportional and the catalytic detecting element has the compensatory function working pattern.

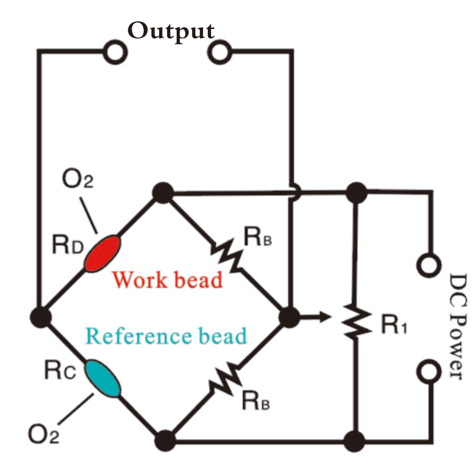


Fig 1

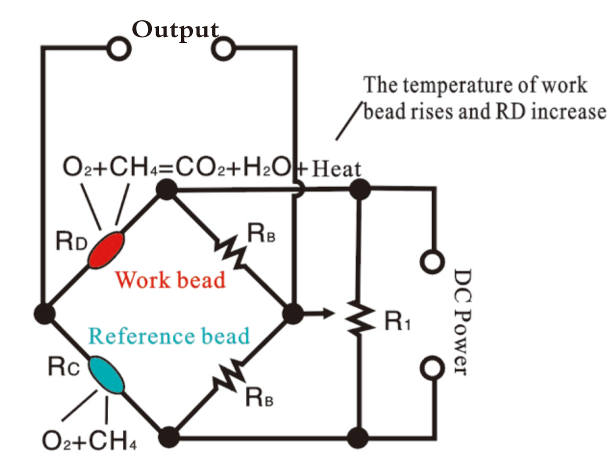
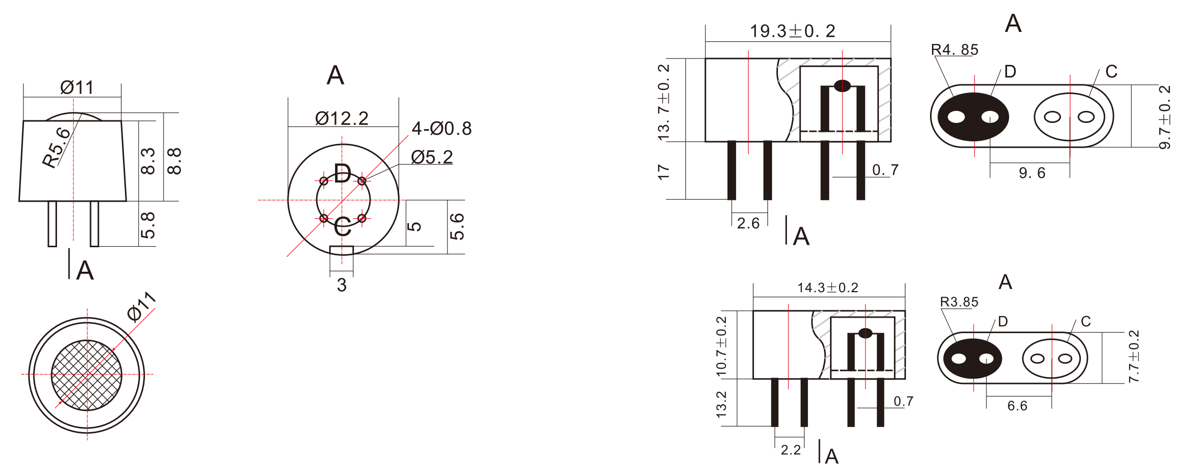


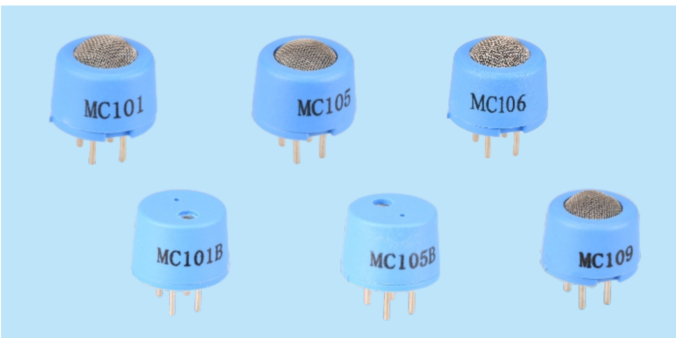
Fig 2



Catalytic Sensor for Combustible Gas

Application

- Combustible gas leak detection in houses/workshops/commercial building, fire safety detection system
- Gas leak alarm, gas detector



Feature

- Linear output signal for gas concentration
- Hardly affected by temp. and humidity
- Stable and reliable performance
- Fast response and resume

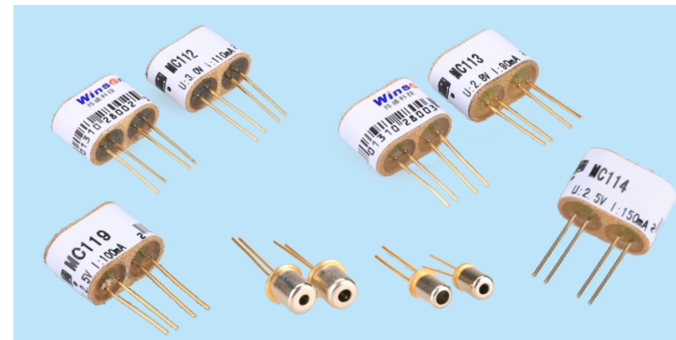
Specification

Model		MC101/MC101B	MC105/MC105B/MC106	MC107	MC109
Detection Gas		Combustible Gas (Methane, LPG, Propane etc)			
Measuring Range		0~100% LEL			
Sensitivity (mV)	1% CH_4	25~50mV	20~50mV	15~45mV	20~50mV
	1% C_3H_8	30~70mV	30~70mV		40~90mV
Working Voltage(V)		3.0±0.1	2.5±0.1		2.5±0.1
Working Current(mA)		110±10	150±10		100±10
Linearity		≤5%			
Response Time (90%)		≤10s			
Recovery Time (90%)		≤30s			
Working Environment		Temperature -40~70°C, Humidity <95%RH			
Storage Environment		Temperature -20~70°C, Humidity <95%RH			

Industrial Catalytic Sensor for Combustible Gas

Application

- Domestic and industrial gas detection for combusible gas, natural gas, LPG, coal gas, alkane etc and ganic solvent steam like gasoline, alcohol, ketone, benzene and so on.
- Combustible gas leak alarm, combustible gas detector.



Feature

- Linear output signal for gas concentration
- Hardly affected by the temp. and humidity
- Stable and reliable performance
- Fast response and resume

Specification

Model		MC112/ MC112C	MC113/ MC113C	MC114/ MC114C	MC115	MC116	MC119
Detection Gas		Combustible Gas (Methane, LPG, Propane etc)					
Measuring Range		0~100% LEL					
Sensitivity (mV)	1% CH_4	20~40mV/ 15~35mV	20~40mV/ 16~35mV	15~35mV	20~40mV	20~40mV	20~40mV at 1%H_2
	1% C_3H_8	30~60mV/ 30~55mV	30~60mV/ 25~55mV	20~50mV	/	30~60mV	40~90mV at 1%C_2H_2
Working Voltage(V)		3.0±0.1	2.8±0.1	2.5±0.1	3.0±0.1	2.5±0.1	2.5±0.1
Working Current(mA)		105±10/ 100±10	90±10/ 95±10	150±10/ 90±10	105±10	150±10	100±10
Linearity		≤5%					
Response Time (90%)		≤10s					
Recovery Time (90%)		≤30s					
Working Environment		Temperature -40~70°C, Humidity <95%RH					
Storage Environment		Temperature -20~70°C, Humidity <95%RH					

Electrochemical Gas Sensor

A complete electrochemical gas sensor consists of two or three electrodes for electrochemical catalytic and conductive electrolyte. In working condition, the target gas diffuses to the electrode reaction interface and takes place redox reaction on the sensor electrode to release the signal. The signal size has a direct ratio to the target gas concentration, so the target gas concentration can be known through detecting the signal released by gas detection of electrochemical gas sensors. The gas sensing process takes place on the three interface of gas, solid and liquid in the electrochemical catalytic electrode and it is decided by gas, the conductivity process of electric medium, electrochemical reaction procedure. The gas sensing process follows the law of Faraday. The common electrochemical gas sensors include: the electrolysis gas sensor in permanent electric (Fig 1), Galvanic cell 02 sensor (Fig2) , fuel cell breath alcohol sensor (Fig 3), dissolved oxygen sensor (Fig 4).

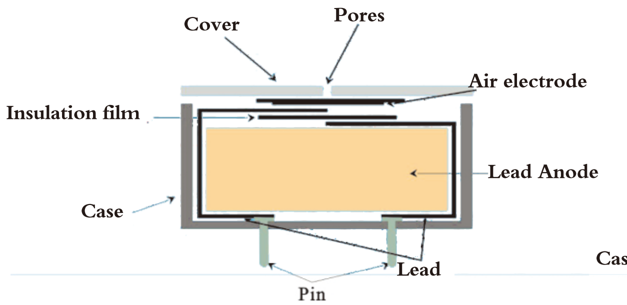


Fig 1

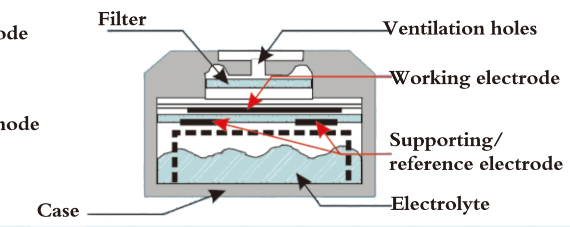


Fig 2

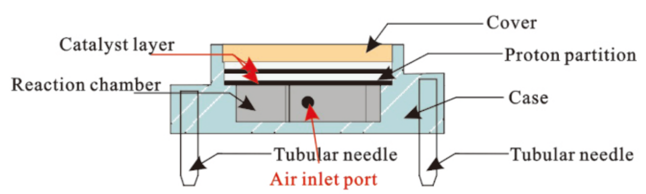


Fig 3

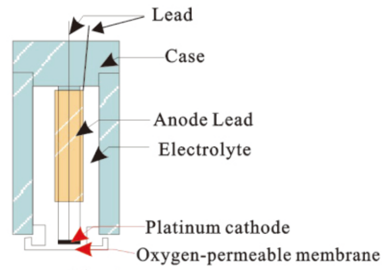


Fig 4

- For residential use: ME2–CO, ME2–CO–Ø14 , ME2–CH$_2$O–Ø16, ME2–CH$_2$O–16x15, ME3M–O$_3$.
- For industrial use: ME2-O$_2$-Ø20, ME2-O$_2$-Ø32, ME3 series, ME4 series.

Electrochemical Sensor for Toxic Gas

Application

- Toxic gas detection for residential and industrial application.

Feature

- High sensitivity
- Excellent stability
- Steady performance
- Excellent selectivity
- Good sensitivity
- Linear signal output

Specification

Model	ME2-CO	ME2-CO-Φ14*14	ME2-CH$_2$O-Φ16	ME2-CH$_2$O-16x15	ME3M-O$_3$
Detection Gas	CO	CO	CH$_2$O	CH$_2$O	O$_3$
Measurement Range	0～1000ppm	0～1000ppm	0～10ppm	0～5ppm	0~20ppm
Max Range	2000ppm	2000ppm	50ppm	20ppm	100ppm
Sensitivity	(0.023±0.008)μA/ppm	(4~10)nA/ppm	(0.55±0.25)μA/ppm	(0.45±0.15)μA/ppm	(0.60±0.15)μA/ppm
Resolution	0.5ppm	1ppm	0.02ppm	≤0.02ppm	0.02ppm
Response Time(T90)	≤50S	≤30S	≤60S	≤60S	≤120S
R$_L$(Recommended)	200Ω	1000Ω	100Ω	100Ω	10Ω
Repeatability	<3%output value	<3%output value	<2%output value	<2%output value	<5%output value
Stability(/Month)	<10%	<10%	-	-	<2%
Output Linearity	linear	linear	linear	linear	linear
Zero Drift(-20~40°C)	≤10ppm	≤10ppm	≤0. 2ppm	≤0. 2ppm	≤0. 2ppm
Storage Humidity	15-90%RH (no condensation)				
Storage Temperature	-20~50°C				
Pressure Range(kPa)	Standard Atmospheric Pressure±10%				
Lifespan	5 years	3 years	2 years(in air)	2 years(in air)	2 years(in air)

Electrochemical Gas Sensor

Model	ME2-O_2-Φ20	ME2-O_2-Φ32	ME3-CO	ME4-CO
Detection Gas	O_2	O_2	CO	CO
Measurement Range	0～25%Vol	0～25%Vol	0~1000ppm	0~1000ppm
Max Range	30%Vol	30%Vol	2000ppm	1500ppm
Sensitivity	0.1~0.3mA (In air)	0.1~0.3mA (In air)	0.07±0.015(μA/ppm)	0.08±0.02(μA/ppm)
Resolution	–	–	0.5ppm	1ppm
Response Time(T90)	≤15S	≤15S	<20S	<25S
RL(recommended)	100Ω	100Ω	10Ω	10Ω
Repeatability	<2%output value	<2%output value	<2% output value	<2% output value
Stability(/month)	<2%	<5%	<5%	<5%
Zero Drift(-20~40°C)	≤0.1%VOL	≤0.1%VOL	10ppm	9ppm
Storage Humidity	0-99%RH (no condensation)	0-99%RH (no condensation)	15-90%RH (no condensation)	
Storage Temperature	-20~50°C			
Pressure Range(kPa)	Standard Atmospheric Pressure±10%			
Lifespan	2 years	2 years	3 years(in air)	2 years(in air)

Model	ME3-H_2S	ME4-H_2S	ME3-NH_3	ME4-NH_3
Detection Gas	H_2S	H_2S	NH_3	NH_3
Measurement Range	0~100ppm	0~100ppm	0~50/100ppm	0~50ppm
Max Range	500ppm	500ppm	200ppm	200ppm
Sensitivity(μA/ppm)	0.8±0.15	0.8±0.15	0.10±0.05	0.12±0.03
Resolution	0.1ppm	0.1ppm	0.5ppm	0.1ppm
Response Time(T90)	<30S	<30S	≤90S	≤90S
RL(recommended)	10Ω	10Ω	10Ω	10Ω
Repeatability	<2% output value	<2% output value	<10% output value	<10% output value
Stability(/Month)	<2%	<2%	<10%	<10%
Zero Drift(-20~40°C)	≤0.2ppm	≤0.2ppm	-3～10ppm	-3～10ppm
Storage Humidity	15-90%RH (no condensation)			
Storage Temperature	-20~50°C			
Pressure Range(kPa)	Standard Atmospheric Pressure±10%			
Lifespan	2 years(in air)	2 years(in air)	2 years(in 2ppm NH_3)	2 years(in 2ppm NH_3)
Size	Φ20mm	Φ32mm	Φ20mm	Φ32mm

Model	ME3-SO_2	ME4-SO_2	ME3-H_2	ME4-H_2
Detection Gas	SO_2	SO_2	H_2	H_2
Measurement Range	0~20ppm	0~20ppm	0～1000ppm	0～1000ppm
Max Range	150ppm	200ppm	2000ppm	2000ppm
Sensitivity(μA/ppm)	0.55±0.15	0.8±0.2	0.010±0.005	0.03±0.01
Resolution	0.1ppm	0.1ppm	2ppm	1ppm
Response Time(T90)	<30S	<30S	≤90S	≤30S
RL(recommended)	10Ω	10Ω	10Ω	10Ω
Repeatability	<2% output value	<2% output value	<2% output value	<2% output value
Stability(/Month)	<2%	<2%	<2%	<2%
Zero Drift(-20~40°C)	≤0.2ppm	≤0.2ppm	≤20ppm	≤10ppm
Storage Humidity	15-90%RH (no condensation)			
Storage Temperature	-20~50°C			
Pressure Range(kPa)	Standard Atmospheric Pressure±10%			
Lifespan	2 years(in air)	2 years(in air)	2 years(in air)	2 years
Size	Φ20mm	Φ32mm	Φ20mm	Φ32mm

Electrochemical Gas Sensor

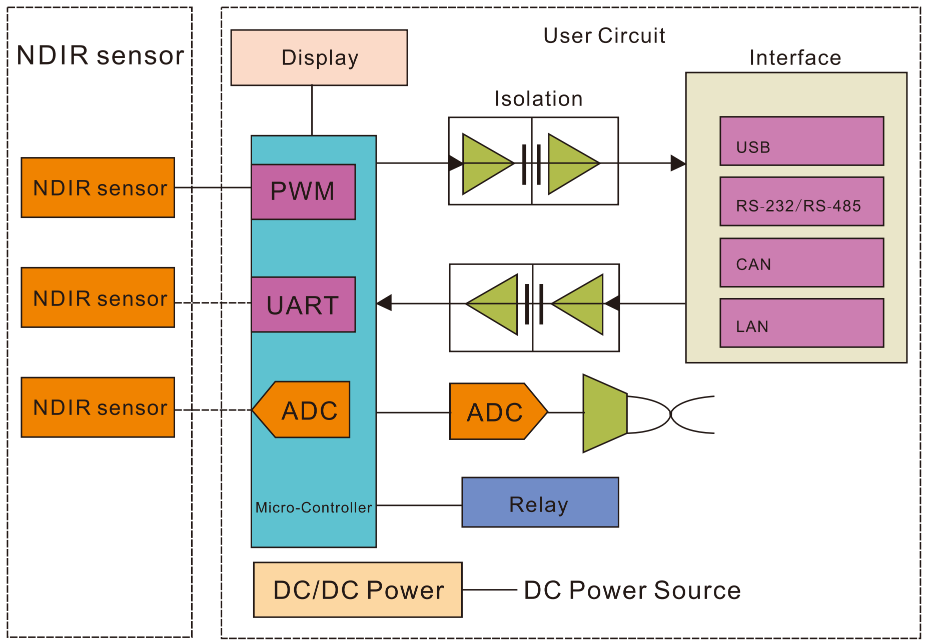
Model	ME3-CL_2	ME4-CL_2	ME3-NO_2	ME4-NO_2
Detection Gas	CL_2	CL_2	NO_2	NO_2
Measurement Range	0~10ppm	0~20ppm	0~20ppm	0~20ppm
Max Measurement Rang	100ppm	250ppm	150ppm	150ppm
Sensitivity(μA/ppm)	0.6±0.15	1±0.25	0.78±0.42	1.2±0.3
Resolution	0.1ppm	0.1ppm	0.1ppm	0.1ppm
Response Time(T90)	<60S	<60S	<25S	<30S
RL(recommended)	10Ω	10Ω	10Ω	10Ω
Repeatability	<2% output value	<2% output value	<2% output value	<2% output value
Stability(/month)	<2%	<2%	<2%	<2%
Zero Drift(-20~40°C)	≤0.2ppm	≤0.2ppm	0.2ppm	0.2ppm
Storage Humidity	15-90%RH, no condensation			
Storage Temperature	-20~50°C			
Pressure Range(kPa)	Standard Atmospheric Pressure±10%			
Lifespan	2 years	2 years	2 years(in air)	2 years(in air)
Size	Φ20mm	Φ32mm	Φ20mm	Φ32mm

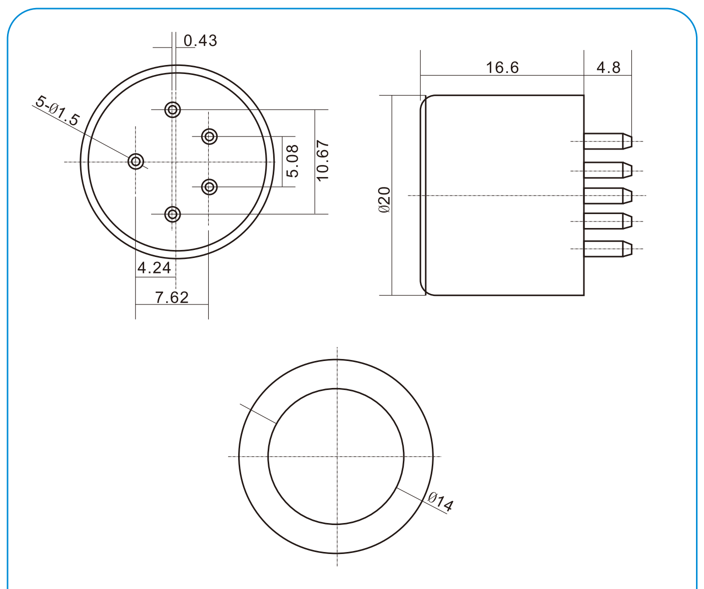
Model	ME3-CH_2O	ME3-C_2H_4	ME3-O_3	ME2-C_2H_5OH-Φ16
Detection Gas	CH_2O	C_2H_4	O_3	C_2H_5OH
Measurement Range	0~10ppm	0~100ppm	0~20ppm	0～1.0mg/L
Max Measurement Rang	100ppm	200ppm	100ppm	2.0 mg/L
Sensitivity(μA/ppm)	11.8±6	0. 04±0. 012	0.60±0.15	6±2μA/(mg/L)
Resolution	0.1ppm	0.5ppm	0.02ppm	–
Response Time(T90)	≤90S	≤30S	≤120S	≤20S
RL(recommended)	300Ω	–	10Ω	10Ω
Repeatability	<2% output value	1% output value	<5% output value	±0.006mg/L
Stability(/month)	<2%	–	<2%	<2%
Zero Drift(-20~40°C)	-0.03~0.03ppm	–	≤0.2ppm	-0.01 mV~0.01mV
Storage Humidity	15-90%RH, no condensation			
Storage Temperature	-20~50°C			
Pressure Range(kPa)	Standard Atmospheric Pressure±10%			
Lifespan	2 years(in air)	3 years(in air)	2 years(in air)	2 years(in air)
Size	Φ20mm	Φ20mm	Φ20mm	Φ32mm

Model	ME3-ETO	ME4-ETO	ME3-HCl	ME3-HF
Detection Gas	ETO	ETO	HCL	HF
Measurement Range	0~20ppm	0~20ppm	0~20ppm	0~10ppm
Max Measurement Rang	100ppm	100ppm	200ppm	100ppm
Sensitivity(μA/ppm)	1.8±0.3	1.8±0.3	0.8±0.4	0.4±0.15
Resolution	0.1ppm	0.1ppm	0.1ppm	0.1ppm
Response Time(T90)	<120S	<120S	≤30S	≤90S
RL(recommended)	10Ω	10Ω	10Ω	10Ω
Repeatability	<2% output value	<2% output value	<2% output value	<2% output value
Stability(/month)	<2%	<2%	<2%	<2%
Zero Drift(-20~40°C)	4ppm	4ppm	≤0.2ppm	≤0.2ppm
Storage Humidity	15-90%RH, no condensation			
Storage Temperature	-20~50°C			
Pressure Range(kPa)	Standard Atmospheric Pressure±10%			
Lifespan	2 years	2 years	2 years(in air)	2 years(in air)
Size	Φ20mm	Φ32mm	Φ20mm	Φ20mm

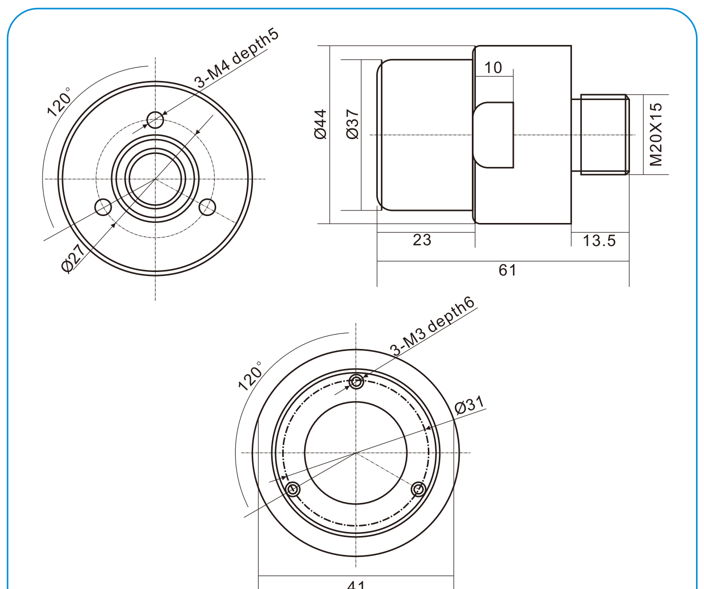
NDIR Gas Sensor and Module

Infrared gas sensor is a miniature universal intelligent sensor, which adopts NDIR theory to detect concentration of target gas in air and has good selectivity, stable performance, long life, also is independent of oxygen. The inside temperature sensor could be used for temperature compensation. This miniature infrared gas sensor is developed by the tight integration of mature infrared absorbing gas detection technology, micro machine workout and superior circuit design.





MH–741A/MH–711A



MH–440D / MH–410D

NDIR CO_2 Gas Sensor

Application

- HVAC, indoor air quality monitoring, industrial process and safety & protection monitoring, agriculture and animal husbandry production process monitoring.

Feature

- High sensitivity and high resolution
- Low power consumption
- Temperature compensation
- Excellent linear output
- Good stability
- Anti-water vapor interference
- No poisoning
- Long lifespan

Specification

Model	MH-Z14A	MH-Z16	MH-Z19	MH-Z19B
Optional Range	0~1%VOL(optional)	0~5%VOL(optional)	0~5000ppm(optional)	0~5000ppm(optional)
Accuracy	±(50ppm+3% reading)	±(50ppm+5% reading)	±(50ppm+5% reading)	±(50ppm+3% reading)
Working Voltage	4.5~5.5V DC	4.5~5.5V DC	3.6~5.5V DC	4.5~5.5V DC
Working Current	<60mA	<85mA	<18mA	<60mA
Output Signal	UART PWM 0.4~2V DC	UART PWM	UART PWM	UART PWM 0.4~2V DC
Preheat Time	3min	3min	3min	3min
Response Time	T90 <120s	T90 <30s	T90 <60s	T90 <120s
Operating Conditions	Temperature 0~50°C; Humidity 0~95% RH (no condensation)			
Dimension (L*W*H)	57.5*34.7*14.6mm	97*20*17mm	40.5*22.5*12.5mm	32.17*19.7*8.5mm

NDIR CO_2/CH_4 Gas Sensor

Application

- Industrial instruments, industrial-process control, safety protection monitor, explosive atmosphere occasions.

Feature

- High sensitivity and high resolution
- Low power consumption
- Temperature compensation
- Excellent linear output
- Good stability
- Anti-water vapor interference
- No poisoning
- Long lifespan

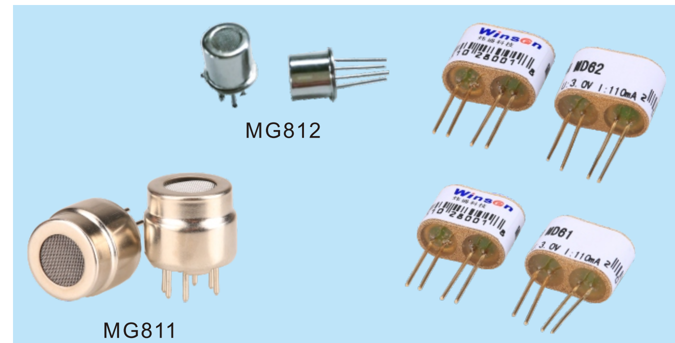
Specification

Model	MH-410D	MH-711A	MH-440D	MH-741A	MH-Z92
Detection Gas	CO_2		CH_4		CO_2 and CH_4
Optional Range	0~5%VOL (optional)	0~5%VOL (optional)	0~10%VOL (optional)	0~100%VOL (optional)	0~100%VOL CH_4 0~50%VOL CO_2
Accuracy	±(50ppm+5% reading)		0.05%VOL at 0~5%VOL 0.1%VOL at 0~100%VOL	±(50ppm+5% reading)	0.1%VOL
Working Voltage	3.6~5V DC	4.5~5.5V DC	3.6~5V DC	4.5~5.5V DC	4.5~5.5V DC
Working Current	<85mA	<100mA	<85mA	<100mA	<85mA
Output Signal	UART 0.4~2V	IIC 0.4~2V	UART 0.4~2V	IIC 0.4~2V	UART 0.4~2V
Preheat Time	3min				
Response Time	T90 <30s				
Operating Conditions	0~50°C 0~95% RH	-40~70°C 0~95% RH	0~50°C 0~95% RH	-40~70°C 0~95% RH	0~50°C 0~95% RH
Dimension (L*W*H)	Dia20*21.4mm	Dia44*61mm	Dia20*21.4mm	Dia44*61mm	81*17.3*20mm

Solid Electrolyte and Thermal Conductor Gas Sensors

Application

- Air quality control, ferment process control, also low concentration detection in green house.
- Domestic, industrial spot for natural gas, LPG, coal gas, alkyl etc and gasoline, pure, ketone, benzene and other organic solvent detection.



Feature

MG811
- High sensitivity
- Steady performance and low cost
- Good selectivity

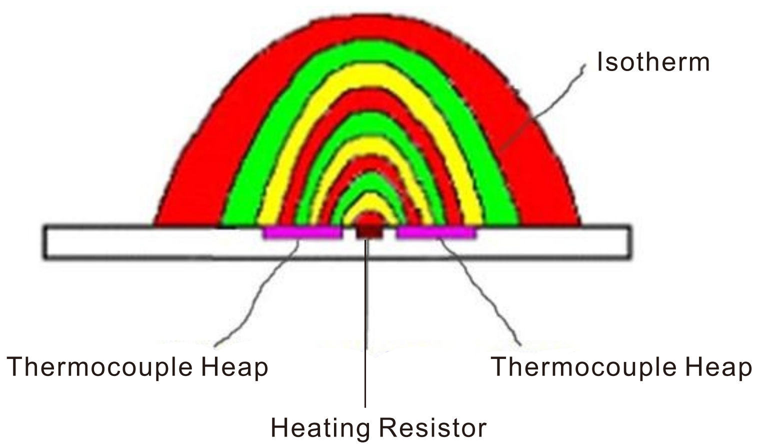
MD61 and MD62
- Wide detection range(0 - 100%VOL)
- Linear output voltage of bridge
- Good reproducibility and reliable performance
- Detecting without oxygen or oxygen-poor

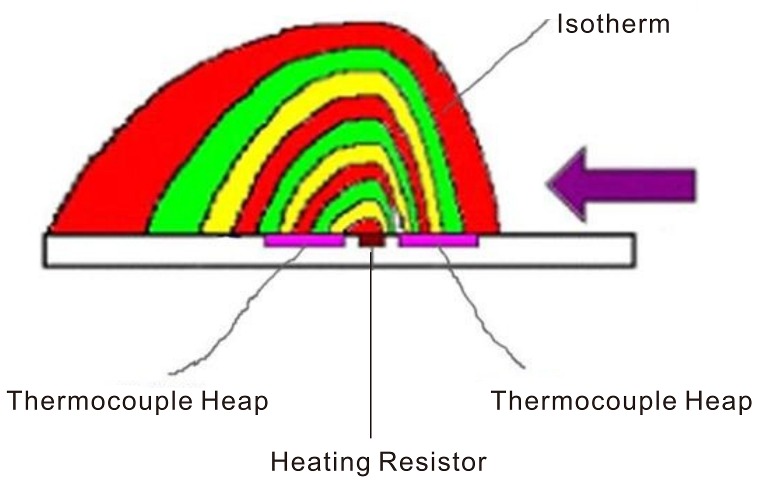
Specification

Model	MG811	MG812	MD61	MD62
Target Gas	CO_2		CH_4, H_2, Inert Gas	CO_2
Detection Range	350-10000ppm CO_2		0-100%VOL	0-100%VOL
Sensitivity	1000ppmCO_2:≥20mV	1000ppmCO_2:≥25mV	10%CH_4: ≥ 15mV	10%CO_2:≥5mV
Response Time	< 60s		≤15s	≤15s
Resume Time	< 90s		≤30s	≤30s
Rh(Heater Resistance)	35±3Ω	60±5Ω	/	/
Hc(Heater Current)	140±20mA	90±10mA	≤120mA	≤120mA
Vh(Heater Voltage)	6.0±0.1V	5.0±0.1V	3.0± 0.1V	3.0± 0.1V DC
Ph(Heater Consumption)	≤1000mW	450±50mW	≤360mW	≤360mW
Standard Working Condition	-20~ 50℃ under 95%RH			
Storage Condition	-20~70℃ under 70%RH			

Micro Flow Sensor

The chip consists of two thermopiles and one heating resistance.The thermopiles aresymmetrically positioned up and down on the heating resistor. The thermopilehot junctionand heatingresistance are based on a heat-shielding pedestal. Theheating resistance is supposed to heatthe hot junction ofthermopiles.The temperature gradient between hot junction and cold junction results in voltageoutput, which is the seebeck effect.Referto the right chart: there is the isotherm on both side of heating resistance.When the flow is static, the isotherms are symmetrical distributed along themiddle of heating resistance, the temperatures in the symmetric position of heatingresistance are the same. When the flow moves from right to right, the isothermwill incline to the left. The temperatures in the symmetric position are nolonger the same. The temperature difference can be measured by the thermopile.As the heat exchange is related to quantity and heat capacity of the flow, sothe sensor can measures the quantity of the flow directly.



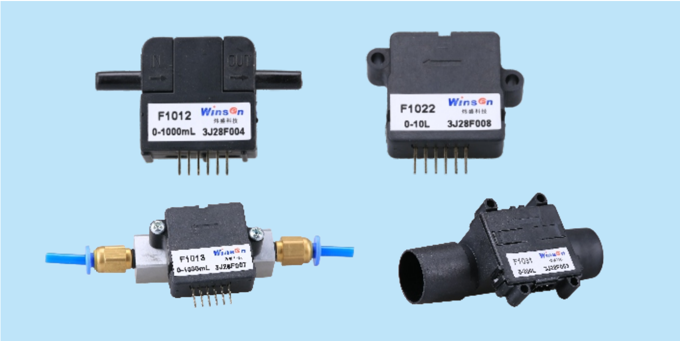


Micro Flow Sensor

Micro Flow Sensor

Application

- Industrial process control
- Air and environment protection
- Portable detector



Feature

- Latest MEMS sensor chip technology
- High accuracy
- Quick response
- Good repeatability
- Detection micro flow accurately
- Calibrated completely
- Temperature compensated

Specification

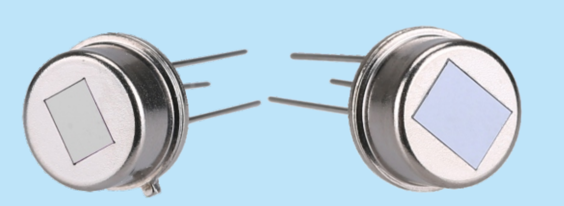
Model	Measuring Range		
F1012 / F1013	20, 30, 50, 100, 200, 500, 1000, 1200, 2000sccm		
F1022	2, 5, 6, 10, 12, 15, 20 SLM		
F1031	20, 35, 50, 100, 150, 200 SLM		
Parameters	Min	Typical	Max
Full Scale Output(V)	4. 9	5	5.1
Zero Output(V)	0. 96	1	1.04
Output Impedance(Ω)	–	200	-
Working Voltage(V)	7	10	14
Working Current(mA)	15	25	30
Accuracy(%F.S)	-	±1. 5	±2. 5
Repeatability(%F.S)	-	±0. 3	±0. 5
Annual Drift(%F.S)	-	±0. 1	±0. 5
Pressure Range(kPa)	-	–	200
Response Time(ms)	5	10	15
Working Temp.(℃)	-25	–	65
Storage Temp.(℃)	-40	–	90
NOTE	sccm =mL/min,SLM=L/min.		

Micro Flow Sensor

Pyroelectric Infrared Sensor

Application

- Safety alarm
- Electricity lighting
- Industrial automatic controlling
- Body induction toys elamps



RD-624 RD-623

Feature

- High sensitivity and excellent signal to noise ratio
- High temperature-dependent stability
- Strong anti-jamming ability (e.g. vibration, radio-frequency interference etc.)
- High value with competitive price

Specification

Model No.	RD-624	RD-623
Standard Encapsulation	TO-5	TO-5
Infrared Receiving Electrode	2×1mm, 2 sensitive elements	2×1mm, 2 sensitive elements
Window Size	3×4mm	3.8×5mm
Receiving Wavelength	5～14μm	5～14μm
Transmittance	>75%	>75%
Output Signal Peak[Vp-p]	3500mV	3500mV
Sensitivity	3200V/W	3200V/W
Detection Rate (D*)	1.4 ×10^8 cmHz$^{1/2}$/W	1.4 ×10^8 cmHz$^{1/2}$/W
Noise Peak[Vp-p]	<70mV	<70mV
Output Balance Degree	<10%	<10%
Source Voltage	0.3～1.1V	0.3～1.1V
Working Voltage	3～15V	3～15V
Working Temperature	-30～70°C	-30～70°C
Storage Temperature	-40～80°C	-40～80°C
Incidence Angle Map	138° X-X 125° Y-Y	150° X-X 138° Y-Y

Air Quality Detection Module

Model	ZP01-MP503	ZP07-MP901
Sensor	Air quality sensor MP503	Air quality sensor MP901
Target Gas	Formaldehyde, Benzene, Carbon Monoxide, Hydrogen, Alcohol, Ammonia, Smoke of Cigarette, Essence &etc.	Formaldehyde, Benzene, Carbon Monoxide, Hydrogen, Alcohol, Ammonia, Smoke of cigarette, Essence &etc.
Physical Interface	XH2.54-4P terminal sockets	XH2.54-4P terminal sockets
Output Data	0—3 grade pollution signal	0—10 grade pollution signal
Working Voltage	5.0±0.2V DC (No voltage reverse connect protection)	5.0±0.2V DC (No voltage reverse connect protection)
Output Data	TTL level (200ohm protected resistance inside)	TTL level (200ohm protected resistance inside)
Working Current	≤60mA	≤60mA
Warm Up Time	≤3 min	≤3 min
Response Time	≤20s	≤20s
Recovery Time	≤60s	≤60s
Operating Temperature	0～50℃	0～50℃
Operating Humidity	≤95%RH	≤95%RH
Storage Temperature	−20～60℃	−20～60℃
Storage Humidity	≤60%RH	≤60%RH
Size	24*20*15mm (L*W*H)	24*20*15mm (L*W*H)
Weight	≤ 20g	≤ 20g
Sensitivity Attenuator	≤1%/year	≤1%/year
Life Span	≥5 years	≥10 years

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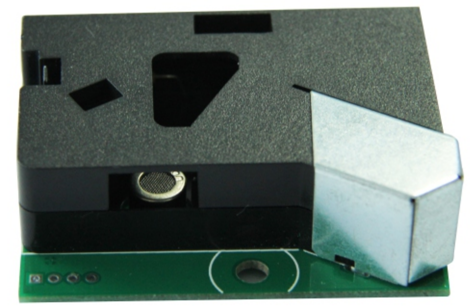
Formaldehyde Gas Detection Module

Mode	ZE07-CH₂O	ZE08-CH₂O
Target Gas	Formaldehyde (CH_2O)	
Interference Gas	Alcohol, Carbon Monoxide &etc.	
Output Data	DAC(0.4～2V standard voltage output)	
	UART Output (3V Electrical Level)	
Working Voltage	3.7V～9V	
Warm Up Time	≤3 minutes	
Response Time	≤ 60s	
Recovery Time	≤ 60s	
Detection Range	0～5ppm	
Resolution	0.01ppm	
Operating Temp.	0℃～50℃	
Operating Hum.	15%RH-90%RH (No condensation)	
Storage Temp.	0℃～50℃	
Working Life	2 years (in air)	

Air Quality & Particle(PM2.5) Detection Module



Model	ZPH01		ZH03A
Detection Gas	Formaldehyde, benzene, carbon monoxide, hydrogen, alcohol, ammonia, cigarette smoke, essence &etc.	PM2.5	PM1.0 PM2.5 PM10
Output	PWM		PWM
	UART		UART(3V TTI)
	/		DAC (0~2V is corresponding to 0~1000)
Working Voltage	5±0.2 V DC		4.5~5.5V
Working Current	≤150mA		70~140(mA)
Detection Range for Particles	15000 particles /283ml		/
Dormancy current	/		70mA
Response Time	≤90s		≤90s
Working Humidity	≤90%RH		15%~80%RH(no condensation)
Working Temperature	-20℃～50℃		-20℃～40℃
Storage Temperature	0℃～50℃		-40℃～60℃
Dimension	59.47×44.5×20mm		50×32.4×21mm

Gas Detection Module

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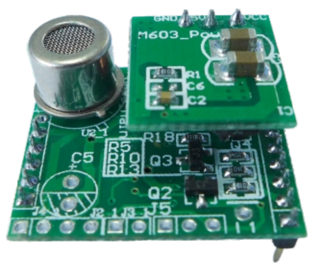
Flammable Gas Detection Module


Model	ZP04	ZP05	ZP06
Detection Gas	Natural gas	Natural gas	Natural Gas
Detection Range	1~25%LEL		
Sensor Type	Flat Surfaced Semiconductor		
Response time	＜30s		
Resume time	＜30s		
Working Voltage	9~12V	DC 9~32V	DC 9~32V
Working Current	＜80mA	＜80mA	＜80mA
Output	To be external connection with 4 LED, 2 buttons, 1 buzzer, 1 DC relay and 1 electromagnetic valve	To be external connection with 3 LED, 1 signal output	1 signal output
Accuracy	±3%LEL (At 25℃)	±4%LEL (At room temp.)	±4%LEL (At 25℃)
Operating Temperature	-10~55°C	-40~85°C	-40~85°C
Operating Humidity	0-95%RH	20~90%RH	20~90%RH
Storage Temperature	-20~70°C	-20~105°C	
Storage Humidity	20~95%RH	20~90%RH	20~90%RH
Dimension(L*W*H)	25.4*21.7*22.6mm	25.4*21.7*11mm	33*17.5mm
Expected Lifespan	＞2 years	＞2 years	＞2 years

Electrochemical Gas Module for Toxic Gas

Model	ZE03-ME3 Series	ZE05-ME4 Series
Detection Gas	CO, SO_2, NH_3, O_2, H_2S, CH_2O, C_2H_4, C_6H_6	CO, SO_2, NH_3, O_2, H_2S, CH_2O, C_2H_4, C_6H_6
Detection Range	Refer to ME3 series sensor	Refer to ME4 series sensor
Sensor Type	ME3 series electrochemical sensor	ME4 series electrochemical sensor
Working Voltage	3.5~9 V	3.7~9 V
Working Current	＜5mA	
Output	UART/Analog Voltage	
Operating Temperature	0~50°C	
Operating Humidity	20~90%RH	
Storage Temperature	0~60°C	0~55°C
Storage Humidity	20~90%RH	
Dimension(L×W×H)	23.3*23.3*24.7mm	33*33*23mm
Expected Lifespan	＞1 year	