OCEANUS

OC-F08

Fixed gas detector

Operating Manual

Henan Oceanus

Notice：

1、The personnel for operating and testing the gas detector should firstly read the Operating manual. Only when according to our company operating manual to use the gas detector, the device could normally work.

2、If repair the gas detector or replace the parts, should be operated by the professional guidance.

3、If users repair the gas detector or replace some parts not according to our manual, our company will not be responsible for the maintenance.

4、Explosion proof film and the Waterproof breathable film should be cleaned or replaced regularly, or will affect the measuring sensitivity.

5、The usage of our company gas detector also should be according to the rules of related department.

6、Fixed gas detector should be calibrated 6 months; but for some sensor, we suggest calibrate every 3 months.

7、The sensor is the core parts of gas detector, if the detecting environment with heavy smoke, humidity, dust, etc, please firstly do the filtering pretreatment, then connect the gas detector , or will damage the sensor.

8、For the Electrochemical sensor gas detector, please not expose it in high gas concentration environment, this will reduce the sensor working life or make the sensor poisoning.

9、If testing the gas in pipeline, please control the flow rate between 160~250ml/min, or the measurement will not stable.

一、**Description：**

OC-F08 fixed gas detector designed with the original imported sensor, Catalytic combustion sensor for combustible gas,

Electrochemical sensor for the Oxygen and Toxic gas, NDIR infrared sensor for the Carbon Dioxide gas and Methane, PID sensor for the VOCs. Designed with the dashboard display interface and three color backlight; Data, fault, alarm display directly; Circuit board with four layer wiring, also with the explosion proof design; Signal output optional of the 4~20mA, RS485, 0~5V, 0~10V, 200~1000Hz, relay output; Available for the DCS, PLC, or our control system; With high sensitivity, quick response, high anti-interference, stable signal.

OC-F08 series fixed gas detector could be used for many applications, including of the petroleum refinery, chemical plants, LPG station, boiler room, gas station, paint spray booth, and other place need to inspection safety.
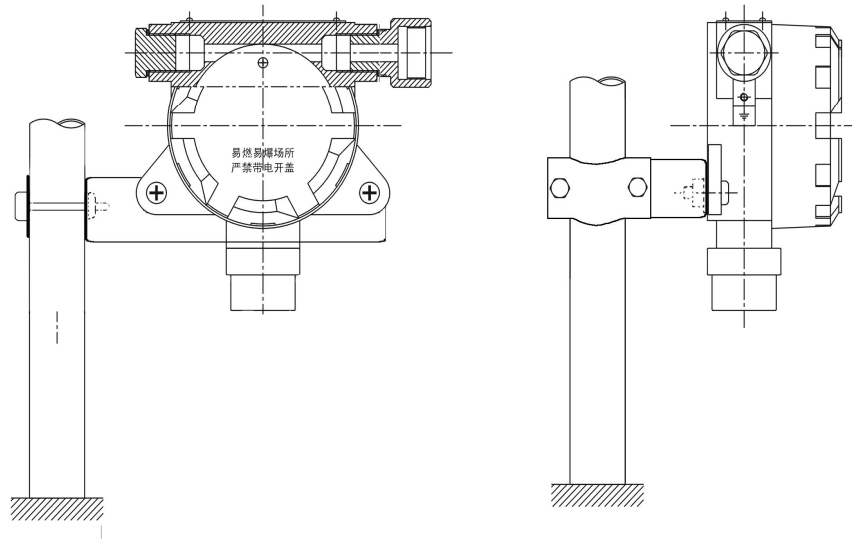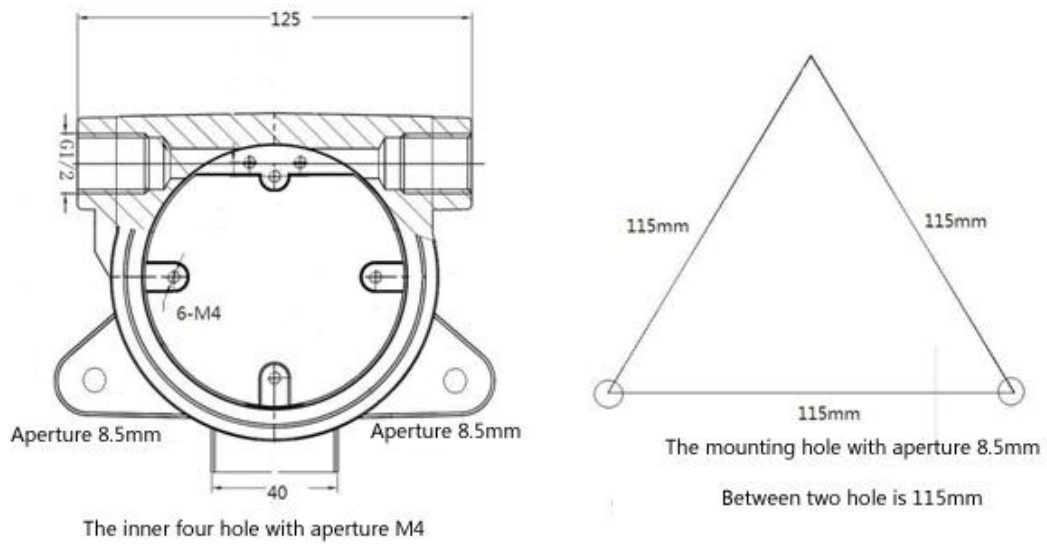
1.1、Structural

1.2、 Safety notice

● Higher or lower Oxygen concentration both will affect the combustible gas inspection data.

● The atmospheric pressure mutation will affect the O2 gas detector data.

● The vapor of silicone compound will damage the Catalytic combustion sensor, so please the detecting environment no this compounds.

● In the process of usage, please keep the air inlet clean, or will display lower data.

● Please do not disassemble.

● Please not put gas detector under the high temperature and humidity, also the strong static electric place.

● Please not use any corrosive liquid to clean the parts of gas detector.

● The shell should be earthed reliably

● If need to replace any parts, please contact manufacturer to solve the fault.

● The installation, operation and maintenance should be according to the manual, GB3836.13-1997, GB3836.15-2000, GB3836.16-2006, GB50257:1996.
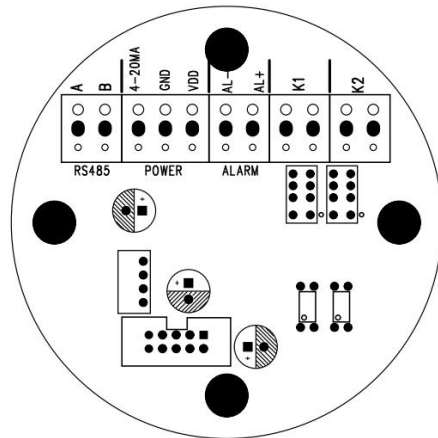
二、 **Installation**

易燃易爆场所
严禁带电开盖

A. Site installation

125

G1/2

6-M4

Aperture 8.5mm   Aperture 8.5mm

40

The inner four hole with aperture M4

115mm   115mm

115mm

The mounting hole with aperture 8.5mm

Between two hole is 115mm

B . Installation and size

2.0、Internal connection：

C. Internal connection

From left to right the terminal is:

1、 "RS485" is RS-485 interface："A" "B" are RS-485signal A and signal B。

2、 "POWER" and 4~20mA output interface："4~20mA" is 4~20mA signal output，"VDD" is 24V positive terminal, "GND" is 24V negative terminal；

3、 "ALARM"： connect with 24V audible-visual alarm，if choose the 200~1000Hz frequency signal, it could be frequency output interface.

4、 "K1" is relay output：Grade-I alarm interface, when the signal up to Grade-I value, relay K1 will act and control fan or other equipments.

5、 "K2" is relay output：Grade-II alarm interface, when the signal up to Grade-II value, relay K2 will act and control fan or other equipments.
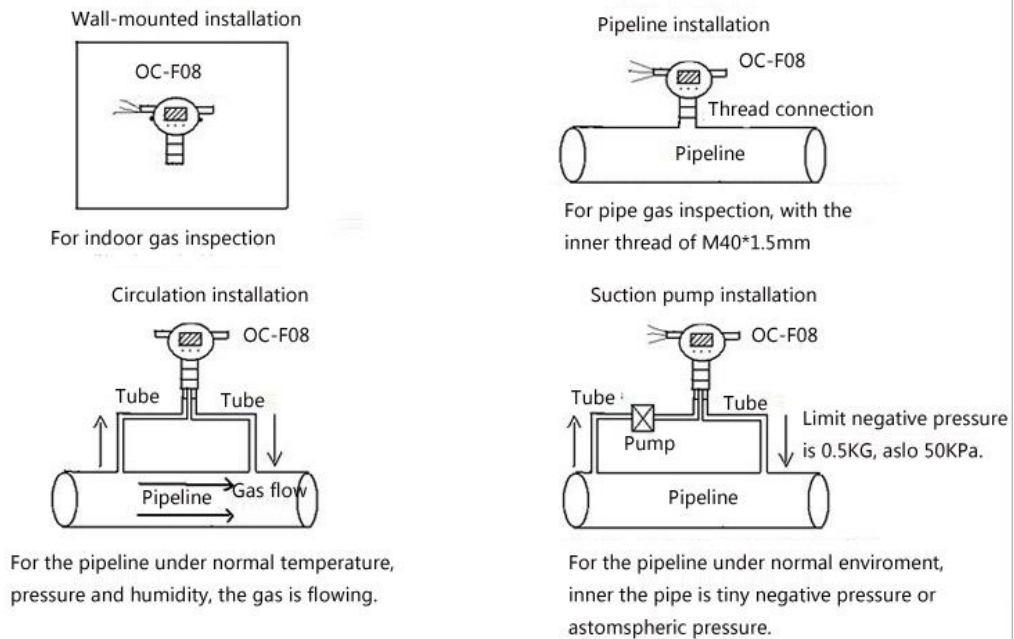
2.1、Choose the installation position：

The installation position is very important, this should consider the following factors: the leakage gas density, gas proportion, surrounding buildings, wind direction, if indoor, also the position of the door and window.

Our engineer offer the following suggestion:

- If the detected gas heavy than air, the position should from ground about 0.3~0.6m, if light than air, should higher the leakage source than 0.5~2m.

- The gas detector should keep right distance from leakage source, if too close, when the leakage frequency, will get too many alarm data, if too far, the gas detector will respond slowly.

- When installed indoor, if the leakage source outdoor, the gas detector should be installed in the air inlet position.

- The gas detector quantity should be according to the detecting environment.

- The gas detector will be effected by the excessive temperature and too low temperature.

2.2、Different installation mode：

OC-F08 fixed gas detector different installation modes

Wall-mounted installation
OC-F08
For indoor gas inspection

Pipeline installation
OC-F08
Thread connection
Pipeline
For pipe gas inspection, with the inner thread of M40*1.5mm

Circulation installation
OC-F08
Tube   Tube
Pipeline   Gas flow
For the pipeline under normal temperature, pressure and humidity, the gas is flowing.

Suction pump installation
OC-F08
Tube   Tube
Pump   Limit negative pressure is 0.5KG, aslo 50KPa.
Pipeline
For the pipeline under normal enviroment, inner the pipe is tiny negative pressure or astomspheric pressure.

2.3、Connection description

All wire should be in line with the relevant national standards and industry standards. The DC signal and AC power supply line should not in one shielding cable. Gas detector should be connected with the earth through pipeline, holder, or the cable. For the RS485 signal output with two signal lines, please ensure A and B both use a single shielded twisted pair line for good signal.

Wiring method：

- Anti-clockwise rotate the upper cap and open it.

- Pull out the top level circuit module, it connected with the bottom module by 10pin wire.

- When display the bottom control board, according to the picture C to connect the wire.

- Put the power line and signal line insert into the shell from the bottom cap left hole.

- If need, after insert into the accordingly terminal and then fixed the power line and signal line.
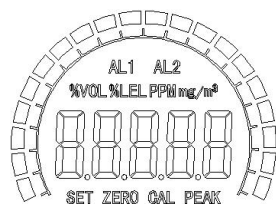
⚠ Remark：

In the explosive dangerous place, the user must cooperate with the national requirements cable to introduce the device.

In order to assure the gas detector safety, please ensure the detector shell connected with the earth reliably.

三、Function introduction：

3.1、Normal working mode

Picture 3.1、Opening Display screen

After power on, firstly display the each parameter, then begin to the self-test program as the following steps：

1. LCD display all fields, the white backlight is lit;

2. LCD display full range value, the white backlight is lit;

3. LCD display low alarm value, the orange backlight is lit;；

4. LCD display high alarm value, the red backlight is lit;；

5. Enter into pre-heat interface;

6. After preheat, enter into the normal inspection mode.
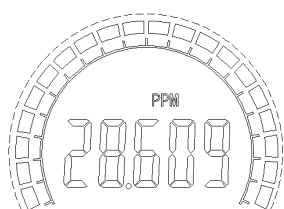
 Picture 3.2、Normal inspection interface

In the process of inspection, when the gas concentration exceed the set level, AL1 and AL2 will display, meanwhile the red backlight will light, means it alarm. When the gas detector occur obstacle will display ERR.01, the orange backlight will light, then please check and repair timely.

Remark：

Before the inspection interface, if you want to skip the preheat, then press "ok". But our engineer suggest not do this, if skip the preheat time will cause the unstable data.

3.2、Setting interface

Setting interface with the following item: Grade-I (AL1) alarm

setting --Grade II (AL2) alarm setting—Device address setting—Restore factory setting—Zero Calibration setting—Gas concentration setting—Span calibration setting.

Long press the "M" will enter into the Setting interface, then press the up or down key to adjust the interface; if set the data or function, press "M", set the flashing parameter, after the set press "OK" to save the change, if want to cancel, press the "M" again; long press the "M", will back to the normal inspection interface.

3.2.1、AL1 setting：

When the gas concentration data exceed the set level, the red backlight will be lit, meanwhile the K1 relay will act.

Press "M", the AL1 flashing, the set digit also flashing, press the ▲ could change the position. Press ▼ could adjust the data, from 0~9, press "OK" will save the setting. If cancel, press the "M".
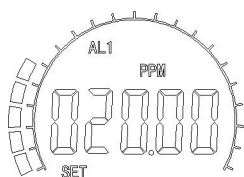
 Picture 3.3、AL1 setting interface

3.2.2、AL2 setting：

When the gas concentration data exceed the set level, the red backlight will be lit, meanwhile the K2 relay will act.

Press "M", the AL2 flashing, the set digit also flashing, press the ▲

could change the position. Press ▼ could adjust the data, from 0~9, press "OK" will save the setting. If cancel, press the "M".
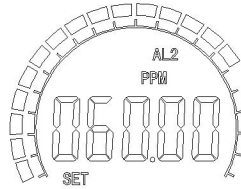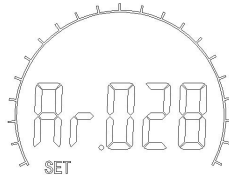

Picture 3.4、AL2 setting interface

3.2.3、Device address setting：

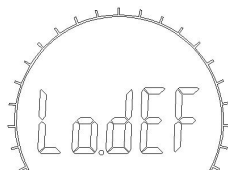

Picture 3.5、setting the device address interface

Users can set the device address through this interface, the range of the address is 1---247. Among the RS485 bus system, every device is only.

The function is only useful to this type device which has the RS485 function output.

3.2.4、Restore factory setting：

Picture 3.6、Loading the factory setting interface

If you want to recover the setting parameters as before, press the M button, then begin to flash, if need to cancel this, you can press M button, if you want to confirm the recovering factory settings, you can press the OK button, and if the recovering setting is ok, then it will turn back the standard interface automatically, if not, it will stay the primary interface.

3.2.5、Zero calibration setting：

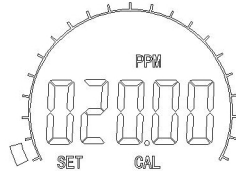Enter into the Zero Calibration interface, you can press the M button under this interface.

Picture 3.7、Zero calibration interface

The SET ZERO character flickers and the interface display the relevant number at the same time, after the number is stable, you can press the OK button, then the zero demarcated can be finished.

3.2.6、Calibrate gas concentration setting：

After entering the setting interface, you can press the ▼ to change this interface. If you press M button, the character SET CAL and the relevant setting digits will flicker, meanwhile, you can input the calibrated gas concentration. The ▲ has the function of removing the setting digits, press the ▲ to change the digits you want to set, and press

the ▼ can change the number of the relevant digits. The number can be cyclic changed from 0~9, after this, you can press the OK button to finish the demarcated gas concentration setting, the interface of the standard gas concentration as below:

Picture 3.8、Calibration gas concentration interface

3.2.7、Span calibrations setting:

It refers to that the users can adjust the instrument by using the calibration gas. After entering this interface, press the M button to calibrate, then the SET PEAK becomes flickering. After that, pass through the standard gas(control the flow as 200ml/min), when the data stable, press the "OK" to save the setting.
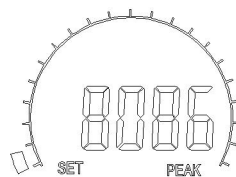
Picture 3.9、Span calibration setting

四、Calibration methods

Before the gas detector leave our factory, we have calibrated it. If the users have the calibration device, they can calibrate it regularly as the

instruction. If they don't have the equipment, they can go to the relevant measure departments for help or send it to our company, then we can calibrate it with costs.

In order to assure device measure accuracy, the normal calibrated cycle of the instrument is 3---6 months. If the inspection place long term with the higher concentration gas, then the calibrated cycle will be shortened. So in order to ensure the instrument's measure accuracy, should timely calibrate it and save the calibration record.

4.1、Zero calibration

Pass the 0ppm concentration standard gas through the gas detector, usually as the normal air as the zero, some gas(such as the O_2, CO_2), take the N_2 as the Zero; then enter into the Zero Calibration interface, press the "M", then the SET ZERO flashing, then display the data, when the data stable, press the "ok" to save the setting and finish the Zero Calibration.

Remark: Zero calibration must be operated in clean air, do not operate in the normal working environment.

4.2、Span calibration

Firstly, make the standard gas with set concentration through the flow meter, and control the flow between 160---300ml/min, then link the conduit into the instrument tube, then choose the menu and enter the

span calibration interface. Press the "M", the SET PEAK flashing, after the value is stable(don't rise or descend any more), press the OK button to save and exit.

Gas Detector

Flow Meter

Calibration Gas
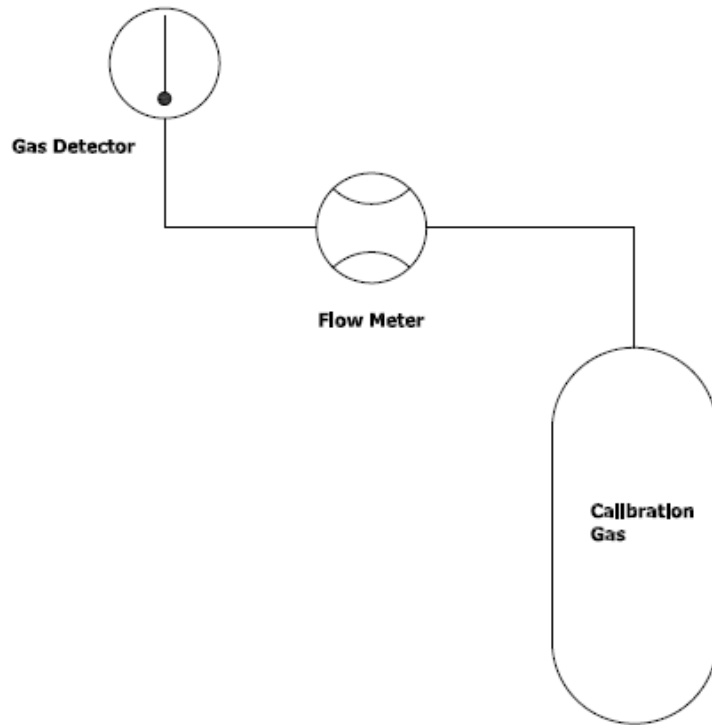
五、Remote controller

气体检测仪

Remote controller mainly for the working place with heavy dust or other place inconvenient for open the cap. This could avoid the danger.

Enter the "Menu" enter into the setting interface, then use the "<" ">"to adjust the parameter interface, press the "Set" to adjust the parameter. Press the "∧""∨"to adjust the data, press "ok" to save the setting, if only press "Menu" will not save, press "ESC" will be back to normal working mode.

六、 Notice and maintenance for sensor

Keep the gas detector away from corrosive gas, lampblack, dust and rain when it working. Avoid the dropping from height or severe vibrations.

Do not regular contact the device with high concentration gas which has higher concentration than the detecting range, or the sensor life will reduce.

For mixed combustible gas or liquid vapor, there may be errors in the detect results, due to the operating environment is different from the calibration environment.

Recommend sensor life: Catalytic combustion sensor of 3 years, Electrochemical sensor of 2 years. PID sensor of 3~5 years.

七、 Warranty

OC-F08 gas detector with the warranty of 12 month(from the day leave

factory). During this period, we will be responsible for providing the free maintain to quality problems of breakdown under normal usage.

Our company disclaim all responsibility for the damage caused by misuse, manmade damage or natural disaster.

If the sensor life is end, please contact us for replacement.

For the failures which can not be solved locally, please return the device to distributor or manufacturer for maintenance. Our company will send back to you as soon as possible.

Technical Specification

Applicable Gas	Oxygen, Combustible gas, toxic gas, etc
Detecting Range	According to the detected gas
Resolution	According to the detected gas
Sampling	Diffusion or pump-suction, circulation selectable
Accuracy	≤±3%F.S
Repeatability	≤±1%
Zero drift	≤±1%(F.S/year)
Sensor Type	Catalytic combustion , Electrochemical, PID, Infrared sensor
Sensor Life	2~3 years(Catalytic combustion , Electrochemical) 3~5 years(PID, Infrared)
Response Time (T90)	≤20s
Alarming mode	Audible-visual alarm（Optional）
Operating Environment	Temperature: -30℃~60℃ (Customized for special demands) Humidity: ≤95%RH (non-condensing); if >90%RH, should add the filter Pressure: 86kPa~106kPa
Working Voltage	24V DC(16~30VDC)
Output Signals	(Standard)Three-wire system 4~20mA standard signals output, available for PLC, DCS, etc; (Optional) Four-wire system RS485 digital signal output;

	(Optional) Frequency signal 200~1000Hz output; Two-level passive contact output:220VAC 0.5A, 5VDC 0.5A
Installation Means	Wall mounted, Pipe type (Thread:M40*1.5)
Material of Body	Cast aluminum
Explosion-proof Index	Ex d IIC T6
Protection Grade	IP66
Electrical Interface	3/4″NPT(Female Screw)、1/2″NPT(Female Screw)
Transmit Distance	≤2000m
Dimension	210 mm×140 mm×92 mm（L×W×H）
Weight	About 1.5Kg
Standards	GB15322.1-2003，GB3836.1-2010，GB3836.2-2010，GB3836.4-2010

Detecting gas list:

Gas	Detecting Range	Alarm Threshold	Sensor Type
NH_3	0-100 PPM	25 PPM / 50 PPM	Electrochemical sensor
Cl_2	0-50.0 PPM	10 PPM / 20 PPM	
H_2	0-1000 PPM	50 PPM / 100 PPM	
CH_2O	0-100 PPM	25 PPM / 50 PPM	
O_2	0-30.0%vol	18.5%vol / 23.5%vol	
H_2S	0-100 PPM	10 PPM / 20 PPM	
HCl	0-30.0 PPM	5.0 PPM / 10.0 PPM	
HCN	0-50.0 PPM	5.0 PPM / 10.0 PPM	
PH_3	0-20.0 PPM	0.3 PPM / 0.6 PPM	
HF	0-10.0 PPM	3.0 PPM / 6.0 PPM	
NO	0-250 PPM	25 PPM / 50 PPM	
CO	0-500 PPM	35 PPM / 70 PPM	
SO_2	0-20.0 PPM	2.0 PPM / 10.0 PPM	
ClO_2	0-50.0 PPM	0.3 PPM / 0.5 PPM	
NO_2	0-20.0 PPM	1.0 PPM / 2.0 PPM	
C_2H_4O	0-100 PPM	10 PPM / 20 PPM	
O_3	0-20.0 PPM	5.0 PPM / 10.0 PPM	
CH_4	0-100%LEL	25%LEL / 50%LEL	Catalytic combustion sensor
C_3H_8	0-100%LEL	25%LEL / 50%LEL	
H_2	0-100%LEL	25%LEL / 50%LEL	
NH_3	0-100%LEL	25%LEL / 50%LEL	
C_2H_4O	0-100%LEL	25%LEL / 50%LEL	
CH_3CH_3	0-100%LEL	25%LEL / 50%LEL	
C_2H_4	0-100%LEL	25%LEL / 50%LEL	
C_4H_{10}	0-100%LEL	25%LEL / 50%LEL	
C_4H_8	0-100%LEL	25%LEL / 50%LEL	
C_7H_8	0-100%LEL	25%LEL / 50%LEL	

C_8H_{10}	0-100%LEL	25%LEL / 50%LEL	
CH_4O	0-100%LEL	25%LEL / 50%LEL	
C_2H_6O	0-100%LEL	25%LEL / 50%LEL	
C_3H_4O	0-100%LEL	25%LEL / 50%LEL	
C_2H_3Cl	0-100%LEL	25%LEL / 50%LEL	
C_3H_9N	0-100%LEL	25%LEL / 50%LEL	
CH_3Br	0-100%LEL	25%LEL / 50%LEL	
CO_2	0-5.0%vol	1.0%vol / 3.0%vol	NDIR infrared sensor
	0-5000ppm	800 PPM / 1500 PPM	
CH_4	0-5.0%vol	1.0%vol / 3.0%vol	
	0-100%vol	5%vol / 10%vol	

Remark: if not listed gas type or measuring range, please contact our company.

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