ht controls

cooling & heating

NIC300 online toxie and harmful gas detector

I.online type gas detector

NIC300online type gas detector can be used in 24 hours continuous online monitoring of field gas concentration, with field sound & light alarm (optional) when exceeding the standard, and remote signal transmission. The gas sensors of internationally known brands are adopted, and the main detection principles include: the gas sensors under the principle of electrochemical, infrared, catalytic combustion, thermal conductivity, PID photoionization, and so on.

is suitable for detecting the concentrations of gases in the atmosphere environment in the pipeline or confined space; and the purity of the gas leakage and various high concentration **single gases** with the background gas as nitrogen gas or oxygen gas. The types for detection are more than 500 types. Strong, durable and explosion-proof shell is suitable for the use at a variety of hazardous places and harsh industrial environments, is widely used in the industries such as petroleum, chemical, metallurgy, refining, gas transmission and distribution, biochemical and pharmaceutical, and so on.

II.Product Characteristics of NIC300 Online Toxic and Harmful Gas Detector

★Multiple communication modes

Real-time monitoring can be achieved through wired or wireless remote transmission and network transmission; three-wire 4-20mA standard signal and standard bus RS485 (modbus-RTU) output simultaneously; compatible with secondary instruments, data acquisition module, PLC, DCS system, and can drive related equipment.

- Data recovery function, in case of misoperation, partial or total recovery can be selected
- Various alarm modes, multi-directional stereo indication of alarm status when alarming
  Includes: 2 sets of relay switch output, sound and light alarm (optional).
  The types of alarm include concentration alarm and fault alarm.

- Identification function of misoperation: automatic identification and prevention of misoperation in concentration calibration to avoid adverse human factors
- Zero automatic tracking, long-term use is not affected by zero drift
- Multi-level calibration of target points to ensure the linearity and accuracy of measurement
- Wide operating temperature: - 40 ~+70 C, supporting temperature compensation
- Intrinsically safe circuit design, explosion-proof, with secondary lightning protection, anti-static ability. It meets the national standard and resists high-intensity impulse surge current impact. It has anti-back connection function. Complying with EMI and EMC standards

III. Technical parameters of online type gas detector:

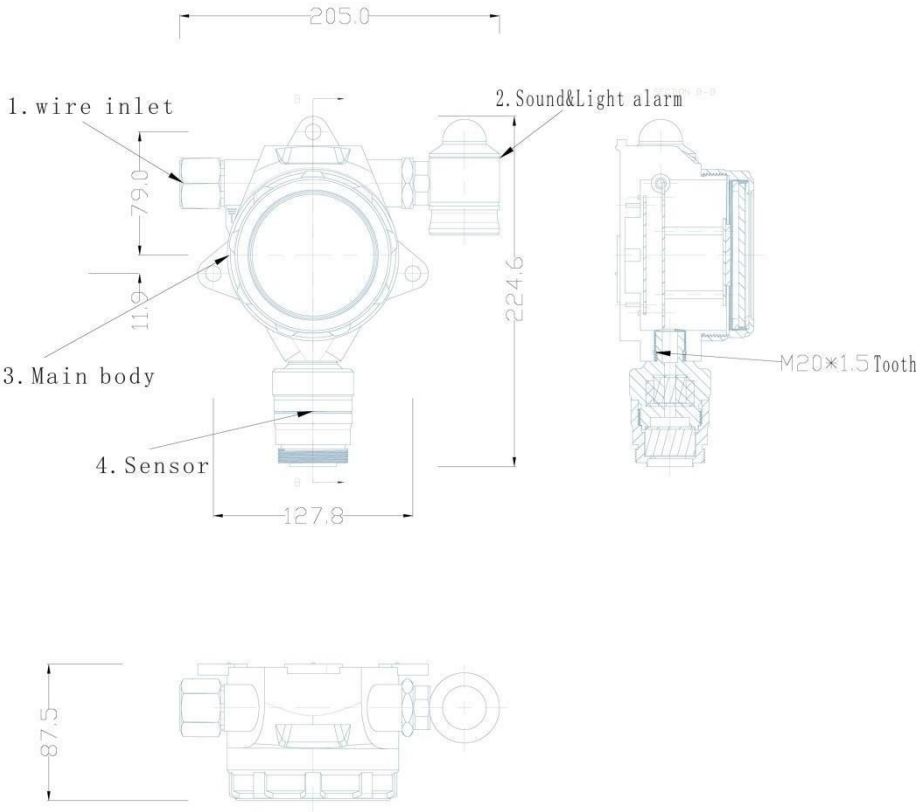
Gases to be detected	Toxic gases, oxygen gas, carbon dioxide, inflammable and explosive gases, TVOC, and so on.
Application scenarios	All the cases which requires the fixed installation, and online detection of gas concentrations such as petroleum, chemical, pharmaceutical, environmental protection, combustion gas distribution, warehousing, smoke gas analysis, air governance, and so on.
Detection range	0 ~ 1, 10, 100, 1000, 5000, 50000, 100000ppm, 200 mg/L, 100%LEL, 20%, 50%, 100%Vol, can be selected; and other ranges can be customized.
Resolution	0.01ppm or 0.001ppm (0 ~ 10 ppm); 0.01ppm (0 ~ 100 ppm), 0.1ppm (0 ~ 1000 ppm), 1ppm (0 ~ 10000 ppm or more),0.01 mg/l (0 ~ 200 mg/l), 0.1% LEL, 0.01%, 0.001% Vol
Detection principle	Electrochemical, catalytic combustion, infrared, thermal conductivity, PID photoionization, and so on, depending on the type of gas, range, field environment and user demand.

Sensor service life	Electrochemical principle: 2 ~ 3 years; Oxygen gas: 2 years or 6 years can be selected; infrared principle: 5 ~ 10 years; catalytic combustion: 3 years; thermal conductivity: 5 years.				
Detection accuracy	≤±3%F.S (Higher accuracy level can be customized)				
Linearity	≤±2%	**Repeatability**	≤±2%	**Uncertainty**	≤±2%
Response time	T90≤20 seconds			**Recovery time**	≤30 seconds
Signal output	Bus system RS485 (RTU), three (four) wire system 4 ~ 20mA, optional configuration: 0 ~ 20mA, 1 ~ 5V, 0 ~ 5V, 0 ~ 10V, wireless transmission, network transmission, and SMS alarms.				
Working environment	Temperature: -40 ℃ ~ + 70 ℃, humidity: ≤10 ~ 95% RH (regular) non-condensing case It should be customized in the case of use in the condensing case, or the use environment should be specified at the time of ordering				
Display method	1.7-inch high-definition color screen for field display, it is possible to select no field display,				
Working voltage	12 ~ 30VDC direct current, the standard power supply for a single equipment is 24V, DC stabilized voltage switching power supply of 1A or greater than 1A				
Power supply reference	The switching power supply of 24V, 2.1A is possible to drive 40 units of toxic gas detector, or 15 units of flammable, infrared gas detector				
Working method	Fixed type installation, online detection, diffusion type measurement; and it is possible to select the measurement of pipeline type, flow-through type, and pump-suction type.				
Installation method	Pipeline type, and wall mounting type. The working pressure of the pipeline type is ± 30% of atmospheric pressure, and when exceeded this range, it is necessary for the depressurization treatment.				
Alarm	The default option is 1-way, and it is possible to select 2-way				

method	passive contact (dry contact) output, level III alarm, and the alarm point can be set. Field sound & light alarm (optional configuration).
Connecting cable	Adopted 4 ~ 20mA three-core shielding cable, adopted four-core for RS485, when the distance exceeded 100 meters, the single wire diameter ≥1.5mm; and the shielding layer will be connected to the earth.
Protection level	IP65
Explosion-proof type	Explosion suppression type
Explosion-proof mark	Exd Ⅱ CT6, certificate number: CNEx15.1283
Exterior dimensions	210×170×85mm (L×H×W)
Weight	1.8Kg
Standard accessories	Manual, qualification certificate, warranty card, outer packaging box
Optional items	Integrated sound & light alarming device, split-type sound & light alarming device, 24V DC stabilized voltage power supply, **accessory for connection with computer for monitoring**: free upper-level host software, RS485 / RS232 converter, For laptop without RS232 interface, USB / RS232 converting and connecting cable is needed, if the network transmission is needed, TCP / IP converter will be further needed.
Wireless transmission	Optional function is possible to transfer data wirelessly to the cell phone, remote monitoring center, monitoring computers and other monitoring equipment, which will utilize the upper-level host to realize the functions of data analysis, storage, printing or the like on the computer

Pretreatment system	Optional configuration: room temperature and high humidity pretreatment system, high temperature and high humidity pretreatment system, high temperature and high humidity and high dust pretreatment system
Installation type accessories	Optional configuration: wall mounting bracket, mounting clips for fixation on the pipes (1/2", 3/4" pipe), stainless steel threaded welding seat or flange to be installed on the pipeline (it is necessary to mark the flange or pipe size, such as DN50, DN15 ...), rain cover, 24VDC or 220AC sampling pump (sampling distance is 10 m), vacuum pump (sampling distance is greater than 40 m), 24V switching power supply, pressure reducing valve, flow meters.

IV. Exterior dimensions and installation method



Unit: mm

V. Electrical connection and load characteristics

4-20 mA output: terminal J1 is at the upper left corner of the display screen, marked as "G S V", V and G are the positive and negative poles of 24V DC power supply, S and G are 4-20 mA output

RS485 output: J8 is RS485 output (terminal J7 can also be used)

Level I alarm output: J4 is marked as "AL Alarm", NC is normally closed terminal, NO is normally open terminal, COM is the common terminal

Level II alarm output: (optional configuration) J6 is marked as "AH Alarm"

Terminal of sound & light alarming device: if the sound & light alarming device is selected for use, it will be directly inserted into the terminal J5

Connecting terminal of sensor: J2, at the lower left corner of the screen

Remark:

General alarm method: ≥AL alarm &≥AH alarm (default setting, O2 and N2 are excluded)

Interval alarm method: ≤AL alarm &≥AH alarm (default setting of O2 and N2)

Linkage alarm mode: when AH alarms, AL will also have the alarm output (default setting)

Independent alarm mode: when AH alarms, AL will have no alarm output

AL alarm output: default terminal J4 (common terminal COM, normally open NO, normally closed NC)

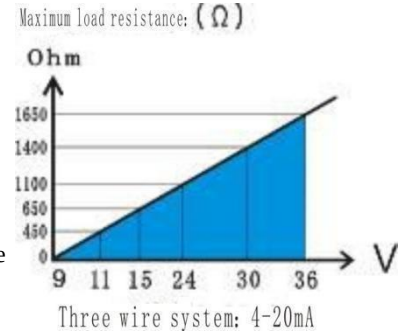
AH alarm output: default terminal J6 (common terminal COM, normally open NO)

Sound & light alarm output: terminal J5, the default alarm values are same as AL, AH alarm values.

(Common terminal COM, normally open NO)

For the specific setting method of alarm values, alarm method, alarm mode, and alarm output, please refer to: alarm setting of the Section 9.5 (page No. 14)

Load capacity: as shown in the right figure Based on the load capacity in the right figure, the impedance of the transmission line will be calculated, so as to determine the specification of the wire material. General case: based on 1000 m as the transmission distance, for the toxic gases, it will be necessary to use three-core shielding cable with the diameter at 1.0 mm², and for the combustible gases, it will be necessary to use three-core shielding cable with the diameter at 1.5 mm².

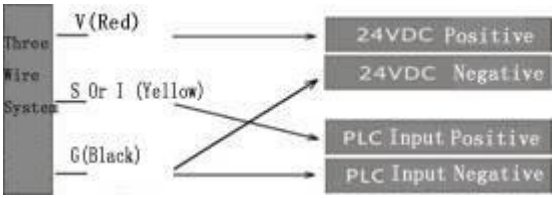


Wiring Mode and Wire Material Selection

Pipeline Installation: Tester with external threads.

If 4-20 mA output is not needed, the 24V power supply can be directly connected to V and G.

If 4-20mA output is required: When 24VDC is provided separately, the connection mode is as follows:



The relationship between wire selection and transmission distance:

For example, with 24V power supply, the total resistance of a single transmission line should be less than 1100 ohms.

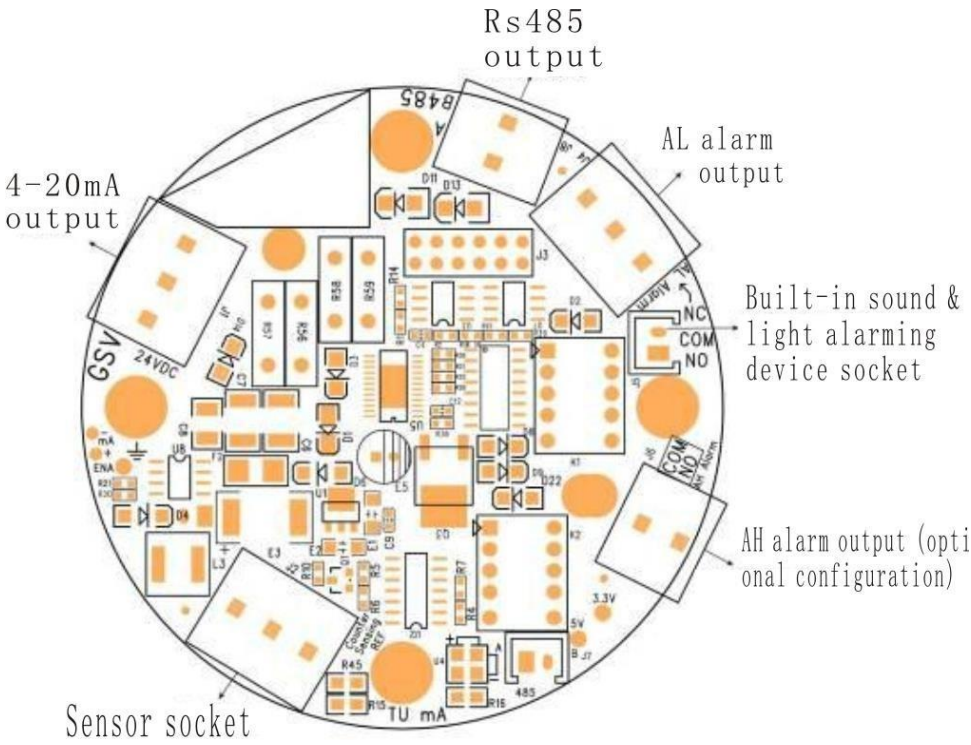
The thicker the wire, the smaller the resistance. Take the transmission distance of 1000 meters as an example.

A.For poisonous gas and oxygen (with acousto-optic alarm), shielded cables of more than 1.0 square millimeters should be selected. If there is no acousto-optic alarm, shielded cables of 0.75 square millimeters can be selected.

B. For combustible gas and infrared gas sensors (with acoustooptic alarm), more than 2.0 square millimeters of shielded cables should be selected. If there is no acoustooptic alarm, 1.5 square millimeters of shielded cables can be selected. If the transmission distance is relatively close, the shielded cable of 1.5 or 1.0 square millimeter can be selected.

Tip: To ensure that the voltage drop during transmission is removed, the voltage to the detector should be above 17 volts.

VI. Product position reference diagram:



VII. Illustration of Indicator Lamp and Definition and Operation of Key

Green indicator: working normally

Red indicator: in alarm state

Orange indicator: If long bright orange cannot be switched to green indicator when starting, it represents failure. Press any key to return to the working status indicator, or wait 3 minutes to automatically exit to the working status indicator.

Zero key: Press 3 seconds long, the indicator light is bright orange, zero point calibration operation is successful

Span Key: When the standard gas is introduced, press this key to enlarge the measurement value, and light the indicator to indicate the success of the operation.

Span key: When entering standard gas, pressing this key will reduce the measurement value, and the indicator light will light up to indicate the operation is successful.

Default key: Press for 3 seconds, light up orange, resume factory settings successfully

4mA key: Press for 3 seconds, the indicator light is bright orange, 4mA output is set successfully, only 4-20mA output function is valid.

20mA key: Press for 3 seconds, the indicator lights up orange, 20mA output settings are successful, only 4-20mA output function is valid.

Dial-up switch: dial up for binary 1, down for binary 0, right for low, left for high (the leftmost must be high)

VIII. Common failures and countermeasure solutions

Failure 1: it is not possible to detect when the concentration is low

Countermeasure solutions:

1.Introduce the nitrogen gas for the zero-point calibration or carry out the zero-point calibration in the clean air, and after the calibration is finished, carry out the detection immediately.

2. If it was still impossible to detect out the gas to be measured after the zero-point calibration, then it is necessary to conduct the operation of **Restoring the factory setting**.

3.If it is still impossible to detect out after restored the factory setting, then it will be necessary to introduce the nitrogen gas again, or carry out the zero-point calibration in clean air again, after the calibration is finished, carry out the detection immediately.

4.Check whether the connection cable of the sensor has been damaged by human factors or there was poor contact.

5.If it is still not possible to detect out after the above mentioned four steps are done, then, it will be necessary to check whether the gas to be measured exist or not on the spot, or whether the concentration of the detected gas is very low indeed; if it is lower than the minimum detection limit value of the instrument, it will not be possible for the detection.

Failure 2: there is no gas to be detected in the air, but the value fluctuates greatly or bounces wildly

Countermeasure solutions:

1. In general, it belongs to the normal range if the short-term fluctuation range of zero point is less than 1% of the maximum range; under the situation without the presence of the gas to be measured, it belongs to the normal range if the long-term drift is less than 2% of the maximum range; if exceeded this range, it is necessary to check whether the gas to be measured exists or not on the spot, or the great fluctuations of air temperature and humidity resulted in the instability of the numerical values, and in

general cases, the great fluctuations in temperature and humidity may cause the great fluctuations of the numerical values of the measurement by the instrument in a short period of time; after the air the temperature and humidity became constant, the numerical values will become relatively stable too.

2.Verify whether the zero-point calibration or target point calibration was carried out for the instrument or not; if the zero-point calibration was carried out in the case when the gas to be measured existed, it might be impossible to detect out the gases at low concentrations; if the target point calibration was carried out in the case when the gas to be measured existed, but the concentration value after calibrated did not match the actual concentration value, it might cause that the fluctuation of the numerical values of the instrument is very great, or the numerical values which are measured is relatively small; for these 2 cases, it is possible to be solved through the operation of **Restoring the factory setting**.

3.If the problem still could not be solved after restored the factory setting, it will be necessary to check whether the power of the detector power supply is enough or not; never use a transformer to supply power to the instrument, and it is the best to use DC stabilized voltage power supply or switching power supply as the power supply, and the power should be greater than 24V, 1A (power supply to a single equipment), and multiple units of equipment will require greater power; pay attention to that the power wire diameter should not be too small, the wire diameter for the short-range power supply to a single equipment is best to be greater than 0.75 mm^2.

4.Check whether the wiring of the signal transmission line passed the places that may cause the electromagnetic field changes or not, such as powerful fans, motors, inverters, and so on; try best to avoid strong electrical and electromagnetic fields, adopt shielding wire as the signal transmission line; one end of the shielding layer should be connected to the shell of the instrument, and the other end should be connected to the earth, and ensure that the electrical grounding is good.

5.If the problem still could not be solved, it will be necessary to verify whether the gases of high concentrations had been introduced or the gases of high concentrations had impacted the sensor; if the sensor had been impacted, after 24 hours of aging through connecting the power supply to the instrument, the numerical values are till

instable, the sensor may be damaged due to the impact.

Failure 3: detection result is inaccurate

Countermeasure solutions:

1.Check whether the gas concentration on the spot is accurate or not; sometimes the difference between the theoretical value and the actual value is great, the best method is to verify the accuracy of the instrument by the introduction of the standard gases, or send to a third party metrology authority for checking.

2.If the use time of the sensor was too long, there might be some errors of the measurement values, and it will be necessary to check with the manufacturer whether it is still possible or not to continue using the sensor; if the sensor itself has almost been close to the service life, even at the moment after the calibration, it can be used normally, soon, it will become not possible to work properly again, so, it is recommended to replace the sensor.

Failure 4: the alarm is activated even when the numerical value was 0 or the alarm value in the air had not been reached

Countermeasure solutions:

1.Check whether the alarm has been modified or not.

2.Check whether the alarm method, alarm mode had been modified or not.

3.Check whether the alarm status is the concentration alarm or the failure alarm, the concentration alarm will display the words of AL or AH, and the red indicator light may flash, the failure alarm will light yellow.

4.If the alarm is caused by the man-made modifications, it can be resolved by restoring to the factory settings; and the failure alarm requires further checking about whether it is caused by the short circuit, open circuit, poor contact, sensor failure, and so on or not, or, deliver it back to the manufacturer for checking.

Failure 5: it is not possible to communicate with the computer

Countermeasure solutions:

1. Check the equipment address, the address which was set in the communication software must be same as the equipment address of the instrument.

2.Check the wiring of RS485 / RS232 converter; in general, TR+ should be connected to terminal A of RS485, TR- should be connected to terminal B of RS485; meanwhile, at computer hardware - Device Manager - Ports, check whether the serial port corresponding to RS485 / RS232 converter is connected or not. For device with USB interface, it is also required to check whether the serial port is connected or not.
3.Check whether there is any duplicate address number for the device address of the upper level computer software or instrument or not, and there should be no duplicate address number.

IX. Equipment maintenance

During the normal use of the detector, the valid service life of the most sensors is 24-36 months. Within the valid service life, one time of periodic sensor calibration should be performed every 6 months or 1 year, so as to ensure the accuracy and effectiveness of the gas detection function. The sensors which exceeded the valid service life and had failures must be replaced.

1. Sensor replacement

After the sensor failure appears, please deliver the instrument back to the manufacturer for replacement and recalibration.

2. Sensor calibration

Please refer to the detailed description in 9.1 and 9.2 of the Section 9 for details. Never operate when the standard gas is not ready. **At the time of mis-operation, it is necessary to restore the factory setting through the operations of the section 9.3.**

X. Precautions

- It is prohibited for the live operation with the cover opened in the field.
- It is prohibited for the live replacement of the sensor without disconnecting the power supply.
- The operations such as installation, debugging, setting up and so on must

be conducted by professionals.

- The calibration checking of the detector should be carried out regularly.
- The sensors which exceeded the valid service life and had failures must be replaced timely.
- Avoid using the gases higher than the measurement range to impact the sensor.

XI. Technical performance and parameters

Main technical specifications

Gases to be detected	Range	Accuracy	Minimum reading	Response time T90
Combustible gas (EX)	0-100%LEL	＜±2%(F.S)	0.1%LEL	≤10 seconds
Combustible gas (EX)	0-100%Vol	＜±2%(F.S)	0.1%Vol	≤10 seconds
Methane (CH_4)	0-100%LEL	＜±2%(F.S)	0.1%LEL	≤10 seconds
Methane (CH_4)	0-100%Vol	＜±2%(F.S)	0.1%Vol	≤10 seconds
Oxygen gas (O_2)	0-30%Vol	＜±2%(F.S)	0.01%Vol	≤10 seconds
Oxygen gas (O_2)	0-100%Vol	＜±2%(F.S)	0.01%Vol	≤10 seconds
Oxygen gas (O_2)	0-5000ppm	＜±2%(F.S)	1ppm	≤30 seconds
Nitrogen gas (N_2)	0-100%Vol	＜±2%(F.S)	0.01%Vol	≤10 seconds
Carbon monoxide (CO)	0-100ppm	＜±2%(F.S)	0.1ppm	≤25 seconds
Carbon monoxide (CO)	0-1000ppm	＜±2%(F.S)	0.1ppm	≤25 seconds
Carbon monoxide (CO)	0-2000ppm	＜±2%(F.S)	0.1ppm	≤25 seconds
Carbon monoxide (CO)	0-20000ppm	＜±2%(F.S)	1ppm	≤25 seconds
Carbon monoxide (CO)	0-100000ppm	＜±2%(F.S)	1ppm	≤25 seconds
Carbon dioxide (CO_2)	0-500ppm	＜±2%(F.S)	1ppm	≤20 seconds

Carbon dioxide (CO_2)	0-2000ppm	<±2%(F.S)	1ppm	≤20 seconds
Carbon dioxide (CO_2)	0-5000ppm	<±2%(F.S)	1ppm	≤20 seconds
Carbon dioxide (CO_2)	0-50000ppm	<±2%(F.S)	1ppm	≤30 seconds
Carbon dioxide (CO_2)	0-20%Vol	<±2%(F.S)	0.01%Vol	≤30 seconds
Carbon dioxide (CO_2)	0-100%Vol	<±2%(F.S)	0.01%Vol	≤30 seconds
Formaldehyde (CH_2O)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Formaldehyde (CH_2O)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Formaldehyde (CH_2O)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Formaldehyde (CH_2O)	0-5000ppm	<±2%(F.S)	1ppm	≤50 seconds
Ozone (O_3)	0-1ppm	<±2%(F.S)	0.001ppm	≤20 seconds
Ozone (O_3)	0-5ppm	<±2%(F.S)	0.001ppm	≤20 seconds
Ozone (O_3)	0-50ppm	<±2%(F.S)	0.01ppm	≤20 seconds
Ozone (O_3)	0-100ppm	<±2%(F.S)	0.01ppm	≤20 seconds
Ozone (O_3)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Ozone (O_3)	0-30000ppm	<±2%(F.S)	1ppm	≤30 seconds
Ozone (O_3)	0-20mg/L	<±2%(F.S)	0.01mg/L	≤30 seconds
Ozone water (O_3)	0-20mg/L	<±2%(F.S)	0.01mg/L	≤30 seconds
Hydrogen sulfide (H_2S)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Hydrogen sulfide (H_2S)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrogen sulfide (H_2S)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrogen sulfide (H_2S)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Hydrogen sulfide (H_2S)	0-10000ppm	<±2%(F.S)	1ppm	≤45 seconds
Sulfur dioxide (SO_2)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Sulfur dioxide (SO_2)	0-20ppm	<±2%(F.S)	0.01ppm	≤30 seconds

Sulfur dioxide (SO_2)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Sulfur dioxide (SO_2)	0-500ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Sulfur dioxide (SO_2)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Sulfur dioxide (SO_2)	0-10000ppm	<±2%(F.S)	1ppm	≤30 seconds
Nitric oxide (NO)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Nitric oxide (NO)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Nitric oxide (NO)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Nitric oxide (NO)	0-5000ppm	<±2%(F.S)	1ppm	≤30 seconds
Nitrogen dioxide (NO_2)	0-10ppm	<±2%(F.S)	0.001ppm	≤25 seconds
Nitrogen dioxide (NO_2)	0-100ppm	<±2%(F.S)	0.01ppm	≤25 seconds
Nitrogen dioxide (NO_2)	0-1000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Nitrogen dioxide (NO_2)	0-5000ppm	<±2%(F.S)	1ppm	≤30 seconds
Nitrogen oxide (NO_X)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Nitrogen oxide (NO_X)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Nitrogen oxide (NO_X)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Nitrogen oxide (NO_X)	0-5000ppm	<±2%(F.S)	1ppm	≤30 seconds
Chlorine gas (CL_2)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Chlorine gas (CL_2)	0-20ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Chlorine gas (CL_2)	0-200ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Chlorine gas (CL_2)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Ammonia gas (NH_3)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Ammonia gas (NH_3)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Ammonia gas (NH_3)	0-1000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Ammonia gas (NH_3)	0-5000ppm	<±2%(F.S)	1ppm	≤30 seconds

Ammonia gas (NH_3)	0-100%LEL	<±2%(F.S)	0.1%LEL	≤10 seconds
Hydrogen gas (H_2)	0-100%LEL	<±2%(F.S)	0.1%LEL	≤10 seconds
Hydrogen gas (H_2)	0-1000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Hydrogen gas (H_2)	0-20000ppm	<±2%(F.S)	1ppm	≤30 seconds
Hydrogen gas (H_2)	0-40000ppm	<±2%(F.S)	1ppm	≤30 seconds
Hydrogen gas (H_2)	0-100%Vol	<±2%(F.S)	0.01%Vol	≤20 seconds
Helium gas (He)	0-100%Vol	<±2%(F.S)	0.01%Vol	≤20 seconds
Argon gas (Ar)	0-100%Vol	<±2%(F.S)	0.01%Vol	≤20 seconds
Xenon gas (Xe)	0-100%Vol	<±2%(F.S)	0.01%Vol	≤20 seconds
Hydrogen cyanide (HCN)	0-30ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrogen cyanide (HCN)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrogen chloride (HCL)	0-20ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrogen chloride (HCL)	0-200ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Phosphorus hydride (PH_3)	0-5 ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Phosphorus hydride (PH_3)	0-25 ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Phosphorus hydride (PH_3)	0-2000 ppm	<±2%(F.S)	1ppm	≤30 seconds
Chlorine dioxide (CL O_2)	0-1ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Chlorine dioxide (CL O_2)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Chlorine dioxide (CL O_2)	0-200ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Ethylene oxide (ETO)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Ethylene oxide (ETO)	0-1000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Ethylene oxide (ETO)	0-100%LEL	<±2%(F.S)	1%LEL	≤30 seconds
Phosgene ($COCL_2$)	0-1ppm	<±2%(F.S)	0.001ppm	≤20 seconds

Phosgene ($COCL_2$)	0-50ppm	<±2%(F.S)	0.01ppm	≤20 seconds
Silane (SiH_4)	0-1ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Silane (SiH_4)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Fluorine gas (F_2)	0-1ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Fluorine gas (F_2)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Fluorine gas (F_2)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrogen fluoride (HF)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrogen fluoride (HF)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrogen bromide (HBr)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Diborane (B_2H_6)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Arseniuretted hydrogen (AsH_3)	0-1ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Arseniuretted hydrogen (AsH_3)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Arseniuretted hydrogen (AsH_3)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Germane (GeH_4)	0-2ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Germane (GeH_4)	0-20ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Hydrazine (N_2H_4)	0-1ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Hydrazine (N_2H_4)	0-300ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Tetrahydrothiophene (THT)	0-100mg/m3	<±2%(F.S)	0.01 mg/m3	≤60 seconds
Bromine gas (Br_2)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Bromine gas (Br_2)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Bromine gas (Br_2)	0-2000ppm	<±2%(F.S)	1ppm	≤30 seconds
Ethyne ($C_2 H_2$)	0-100%LEL	<±2%(F.S)	0.1%LEL	≤30 seconds

Ethyne (C_2H_2)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Ethyne (C_2H_2)	0-1000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Ethylene (C_2H_4)	0-100%LEL	<±2%(F.S)	0.1%LEL	≤30 seconds
Ethylene (C_2H_4)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Ethylene (C_2H_4)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Acetaldehyde	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Ethanol (C_2H_6O)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Ethanol (C_2H_6O)	0-2000ppm	<±2%(F.S)	1ppm	≤30 seconds
Methanol (CH_6O)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Methanol (CH_6O)	0-2000ppm	<±2%(F.S)	1ppm	≤30 seconds
Carbon disulfide (CS_2)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Carbon disulfide (CS_2)	0-5000ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Acrylonitrile (C_3H_3N)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Acrylonitrile (C_3H_3N)	0-2000ppm	<±2%(F.S)	1ppm	≤30 seconds
Methylamine (CH_5N)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Iodine gas (I_2)	0-50ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Styrene (C_8H_8)	0-200ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Styrene (C_8H_8)	0-5000ppm	<±2%(F.S)	1ppm	≤30 seconds
Chloroethylene (C_2H_3CL)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Trichloroethylene (C_2HCL_3)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Tetrachlorethylene (C_2CL_4)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Laughing gas (N_2O)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Nitrogen trifluoride (NF_3)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds

Hydrogen peroxide (H_2O_2)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Methyl bromide (CH_3Br)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Methyl bromide (CH_3Br)	0-30000ppm	<±2%(F.S)	1ppm	≤30 seconds
Methyl bromide (CH_3Br)	0-200g/m3	<±2%(F.S)	0.1g/m3	≤30 seconds
Sulfuryl fluoride (SO_2F_2)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Sulfuryl fluoride (SO_2F_2)	0-5000ppm	<±2%(F.S)	1ppm	≤30 seconds
Sulfuryl fluoride (SO_2F_2)	0-10000ppm	<±2%(F.S)	1ppm	≤30 seconds
Benzene (C_6H_6)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Benzene (C_6H_6)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Benzene (C_6H_6)	0-2000ppm	<±2%(F.S)	1ppm	≤30 seconds
Benzene (C_6H_6)	0-20000ppm	<±2%(F.S)	1ppm	≤30 seconds
Methylbenzene (C_7H_8)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Methylbenzene (C_7H_8)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Methylbenzene (C_7H_8)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Methylbenzene (C_7H_8)	0-20000ppm	<±2%(F.S)	1ppm	≤30 seconds
Dimethylbenzene (C_8H_{10})	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Dimethylbenzene (C_8H_{10})	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Dimethylbenzene (C_8H_{10})	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Dimethylbenzene (C_8H_{10})	0-20000ppm	<±2%(F.S)	1ppm	≤30 seconds
Total Volatile Organic Compound gases (TVOC)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Total Volatile Organic Compound gases (TVOC)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Total Volatile Organic Compound gases (TVOC)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds

Total Volatile Organic Compound gases (TVOC)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Total Volatile Organic Compound gases (TVOC)	0-200000ppm	<±2%(F.S)	1ppm	≤30 seconds
Volatile gases (PID)	0-10ppm	<±2%(F.S)	0.001ppm	≤30 seconds
Volatile gases (PID)	0-10ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Volatile gases (PID)	0-100ppm	<±2%(F.S)	0.01ppm	≤30 seconds
Volatile gases (PID)	0-2000ppm	<±2%(F.S)	0.1ppm	≤30 seconds
Volatile gases (PID)	0-200000ppm	<±2%(F.S)	1ppm	≤30 seconds

Note: please call us to consult about other gases and other detection range which are not listed in the above table.