

PORTABLE MULTI-GAS DETECTOR

GT200-3G/2G is suitable to measure Carbon Monoxide, Methane and Oxygen.

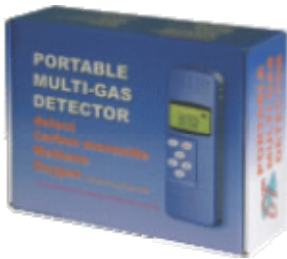



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GASTECH is a professional manufacturer in various gas detectors, carbon monoxide detector, carbon dioxide detector, methane detector, oxygen detector, odor detector, VOC detector, hydrogen sulfide detector and various gas analyzer, carbon monoxide analyzer, carbon dioxide analyzer, methane analyzer, oxygen analyzer, odor analyzer, VOC analyzer, hydrogen sulfide analyzer also. GT200-3G, GT200-2G, GT300-AQ, GT300-VOC and Portadetector are our product and brand name. Welcome tour our website www.portadetector.com

Specifications

Features \ Model	GT200-2G	GT200-3G
Sensor	Semiconductor	Semiconductor
Carbon monoxide	Available	Available
Methane	Available	Available
Oxygen	N/A	Available
Carbon monoxide measure range Resolution & Accuracy	0 ppm to 600 ppm 1 ppm / +/-15 %	0 ppm to 600 ppm 1 ppm & +/-15 %
Methane measure range Resolution & Accuracy	0 ppm to 700 1 ppm / +/-15 %	0 ppm to 700 1 ppm & +/-15 %
Oxygen measure range Resolution & Accuracy	N/A	3.0 vol % to 25.0 vol % 0.1 vol % & +/-0.5 vol %
Carbon monoxide alarm	Meet to UL2034 High alarm (Resetting available)	Meet to UL2034 High alarm (Resetting available)
Methane alarm	High alarm (Resetting available)	High alarm (Resetting available)
Oxygen alarm	N/A	High alarm 23.5 vol % Low alarm (Resetting available)
Audible alarm / Alarm message	Available	Available
Backlight alphanumeric LCD	Available	Available
Standard language	English	English
System clock	Year, month, day, hour, minute	Year, month, day, hour, minute
Battery management	Available	Available
Dimensions	131mm x 46mm x 25.5mm	131mm x 46mm x 25.5mm
Weight	130g	135g
Battery	Built-in 2000mAH rechargeable lithium-ion battery	Built-in 2000mAH rechargeable lithium-ion battery
Standard accessory	Adaptor	Adaptor
International standard met	CE	CE
Package size	208 mm x 156 mm x 68 mm	208 mm x 156 mm x 68 mm
Package outline		

(Specification maybe changed without notice)

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Applications

1. Security Management of building

The gas detector is suitably used as a routine inspection tool in security management of building. The concentration of carbon monoxide and oxygen can be viewed as the omen of fire, due to an incomplete combustion produce carbon monoxide and consume plenty of oxygen before fire. The concentration of oxygen is suitably used as an index for air conditioning. The measuring value of methane (swage-sludge gas, natural gas) is suitably used as a criterion for judging the leakage of natural gas.

2. Carbon monoxide poisoning vs. Oxygen detection

Combustion (use fireplace and water heater, cooking) and operate engine (drive a car, use engine generator) will produce carbon monoxide that increase multiple at oxygen-deficient especially. To monitor the oxygen will know the air ventilated condition and/or be an early warning to avoid carbon monoxide poisoning.

3. before fire vs. Carbon monoxide detection

Smolder is an incomplete combustion, a typical omen of fire. In the case, carbon monoxide detector may earlier detection than traditional fire alarms, due to an incomplete combustion produce carbon monoxide and smoke before fire.

4. Fires recurred detection

After put out a fire, rescue and keep clean should be done, watch the possible fires recurred is very important also. It would be one of efficient methods to apply a detector to measure the gases, if carbon monoxide keep getting high and oxygen keep getting low that meaning is fires recurred back soon.

5. In basement or confined space

The methane (swage-sludge gas) usually exists in some places, such as gallery, basement, tunnel, sewer, sewage works, and dumping ground. The methane (swage-sludge gas) is generated from organic substance decomposed by anaerobic bacteria in dark, enclosed environment mainly. Staying in those places has some potential risks, such as explosion of methane (swage-sludge gas) and oxygen-deficient. If you use engine generator or cutting torch in these places, it will consume plenty of oxygen and cause you to face some potential dangers, such as carbon monoxide poisoning, explosion of methane, and oxygen-deficient. In these places, using gas detector is the best way for operator safety.

6. In parking lot or garage

Generally speaking, there is around 6% of carbon monoxide in the exhaust gas from car or motorcycle. In the parking lot or garage, the carbon monoxide from running engine will produce plenty of carbon monoxide it may have negative effect on physiological even cause dizzy or headache, severe exposure may result in death. Bring a carbon monoxide detector can warning you in the damage of carbon monoxide, especially the car drivers, parking lot managers, or those who are accommodated in motel.

7. Security in winter

We usually close windows and use fireplace, water heater in cold winter but ignore some potential
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risk, such as carbon monoxide poisoning, or oxygen-deficient. It's a chain reaction to use combustion equipment under closed windows such as a confined space that cause oxygen-deficient in the initial stage, make incomplete combustion and produces carbon monoxide in the second stage, make die of those combustion equipment and result the leakage of natural gas in the final stage. In fact, it is serious fatal risk to produces carbon monoxide in the second stage that causes carbon monoxide poisoning. The GT200-3G provides user the oxygen detection that can warn user oxygen-deficient in the first stage before produces carbon monoxide in the second stage. It's more advanced than other gas detectors and provides user earlier warning.

8. Professional measuring

The GT200-3G/2G gas detector is also suitably used as a gas analyzer that can provides accurate value of carbon monoxide, methane (swage-sludge gas, natural gas), and oxygen to professional users who need to collect numeric figure of gas's concentration.

The part of Operating Guide of GT200-3G/2G

GT200-3G/2G is designed to detect the oxygen, carbon monoxide and methane (swage-sludge gas and natural gas) in the air. These gases are related to our living and working closely.

Oxygen concentration in the air

Fresh air consists of oxygen, nitrogen, argon, and carbon dioxide. In the fresh air contain about 21 vol % oxygen. For a healthy person, the tissue level of the body is not less than 18.5 vol %. If the tissue level is lower than 18.5 vol %, some anoxic symptoms will appear. The physiological effects of anoxia are listed in the table.

Concentration of oxygen	Physiological effects
12 -16%	Breathing increases, pulse rate up and impaired coordination.
10 -14%	Breathing further increases in rate and depth, poor coordination and judgment, lips slightly blue.
6 -10%	Mental failure, fainting, unconsciousness, ashen face, blueness of lips, nausea and vomiting.
Under 6%	Coma in 40 seconds, followed by convulsions, breathing failure and death.

Setting the alarm of oxygen

It is our suggestion to set the low level of oxygen alarm at 19.5vol% for early warning of carbon monoxide poisoning. This value is suitable user who stays or works in confined space and uses fireplace, water heater, engine generator or any combustion activities. In such cases, the oxygen will be consumed and made oxygen-deficient that the carbon monoxide will be generated more than normal. The oxygen alarm of this level can warn user to watch the ventilation and avoid the carbon monoxide poisoning.

In a confined space without combustion activities such as using fireplace, water heater, and engine generator. The 18.5 vol % will be the lowest level of oxygen to avoid oxygen-deficient.

In other places, such as laboratory or gas (e.g. nitrogen) storage yard, the leakage of asphyxia gas will reduce the content of oxygen and cause oxygen-deficient also. User should set the low alarm according to the kind of stored gas.

The GT200-3G also provides high alarm of oxygen in 23.5 vol %. The high alarm has various

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meanings such as leakage of oxygen or other dangerous that depend on the detecting place. In case of high alarm occurring, it may leakage of oxygen storage tank or other unknown dangers. User should not enter such place where occurs oxygen alarm before recognizing the status.

Carbon monoxide

General sources of carbon monoxide:

Household: The incomplete combustion generates carbon monoxide easily while using water heater, stove, or fireplace.

Parking lot or garage: The exhaust gas from vehicle or engine usually contains carbon monoxide.

Smolder or fire: Smolder is an incomplete combustion that usually occurs before fire, in fire, or after fire. It will generate plenty of carbon monoxide.

Carbon monoxide is a colorless, odorless, and poisonous gas. It can cause inhaling damage and fatal risk depends on exposed concentration and time. The physiological effects of carbon monoxide are listed in the table.

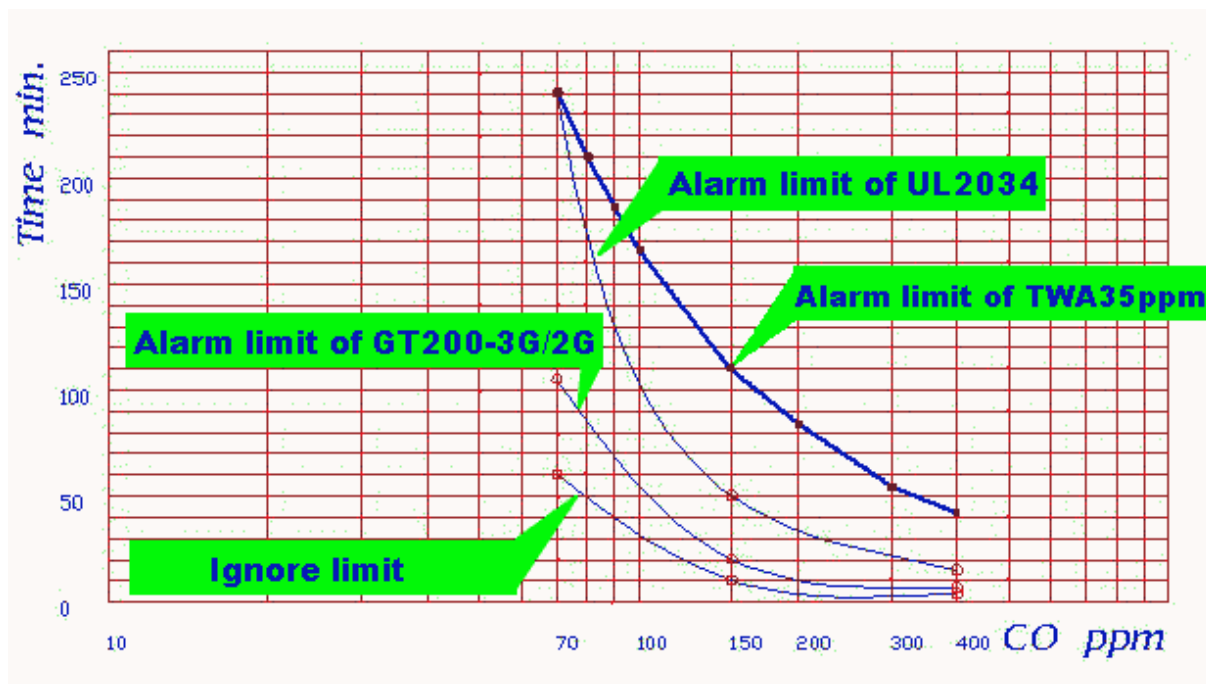
Concentration of carbon monoxide	Physiological effects
35 ppm	Maximum exposure allowed by OSHA in the workplace within an eight hours period.
200 ppm	Mild headache, fatigue, nausea and dizziness within 2-3 hours.
400 ppm	Frontal headaches within 1-2 hours. Life threatening after 3 hours.
1,200 ppm	Headache, dizziness and nausea within 20 minutes. Death within 1 hour.
2,000 ppm	Headache, dizziness and nausea within 5~10 minutes. Death within 1 hour.
5,000 ppm	Headache, dizziness and nausea within 1~2 minutes. Death within 25-30 minutes.

The alarm of carbon monoxide and UL2034

There are two sets alarms of carbon monoxide in GT200-3G/2G gas detector, one is UL2034 alarm, and the other one is high alarm. The carbon monoxide high alarm can set by users but the UL2034 is default alarm, which cannot cancel or adjust it. The actions of UL2034 carbon monoxide alarm are illustrated in the table.

Concentration of carbon monoxide	Actions of alarm
30 +/- 3 ppm	To ignore the alarm at least 30 days.
70 +/- 5 ppm	To alarm only after 60 minutes.
70 +/- 5 ppm	To alarm after 60 minutes before 240 minutes.
150 +/- 5 ppm	To alarm after 10 minutes before 50 minutes.
400 +/- 10 ppm	To alarm after 4 minutes before 15 minutes.

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The tolerance range allowed by the UL2034 is very wide. But the GT200-3G/2G is an accurate digital carbon monoxide detector, which is set the alarm limit near 1/4 of UL2034 alarm limit. It can improve the accuracy of alarm.

The UL2034 alarm limit is an index for healthy persons does normal activities in living. For those people such as healthy person do heavy activities, unhealthy or weaker in heart/lung, elder and children, who have to get the doctor advice value of carbon monoxide, e.g. 35ppm or other suitable values. The GT200-3G/2G will alarm while the concentration of carbon monoxide is over user setting and/or conformity the UL2034 alarm limit.

Methane (swage-sludge gas, natural gas)

The swage-sludge gas or natural gas would be detected by GT200-3G/2G also. The measuring of swage-sludge gas and natural gas both are an approximate value, because the major content of swage-sludge gas or natural gas is methane.

Setting the alarm of methane (swage-sludge gas, natural gas)

The methane (swage-sludge gas) usually exists in some places such as gallery, basement, tunnel, sewer, sewage works, and dumping ground. The methane (swage-sludge gas) is generated from organic substance decomposed by anaerobic bacteria in dark, damp and enclosed environment mainly. Besides, the broken natural gas pipe usually leakage of natural gas, this is also another source of methane in sewer, gallery, or subways. The methane is inflammable and can be mixed with air to be explosive, so it causes the explosion in confined space often while leakage. The safety level of methane (swage-sludge gas) in air should be kept under the 1/10 of LEL (Low Explosive Level = 5.0 vol %) or equal 5000 ppm. The GT200-3G/2G gas detector measuring range of methane (swage-sludge gas) is 0~700ppm that equal to 0~1.4% LEL (Low Explosive Level). This measuring range is far away the 1/10 of LEL (Low Explosive Level) that provide excellent early warning.

The swage-sludge gas mainly consists of methane and carbon dioxide with some hydrogen sulfide (the max. rate of methane and hydrogen sulfide is about 30:1). The hydrogen sulfide is a colorless; toxin gas and smell like the rotten egg. If the concentration of hydrogen sulfide is between 0.13 to 30

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ppm, it will produce strong smell and make human uncomfortable. The GT200-3G/2G gas detector measuring range of methane (swage-sludge gas) is 0~700 ppm. If the concentration of methane reaches 700ppm, it may exist about 30 ppm hydrogen sulfide. Therefore, if user detects the methane (swage-sludge gas) in sewer, gallery and tunnel, please be careful to prevent the damage of hydrogen sulfide.

The damage of hydrogen sulfide to eyes and the inhaling damage of hydrogen sulfide:

If the concentration of hydrogen sulfide is lower than 10 ppm, it may cause irritation of eyes. Prolonged exposure may result in symptoms such as scratchiness, irritation, tearing and burning. Higher concentrations (50 ppm) cause intense tearing, blurring of vision, pain when looking at lights and the perception of ring around lights. Most symptoms disappear when exposure stop but, in severe cases, permanent damage may result.

There is also 25vol% of carbon dioxide in swage-sludge gas. The methane of swage-sludge gas is lighter than air while the carbon dioxide is heavier than air. Therefore, the carbon dioxide usually exists in lower place, sewer, gallery or tunnel. Stay in these places, the users has to pay attention to some dangerous such as the explosion of methane, hydrogen sulfide poisoning and oxygen-deficient. The GT200-3G include the oxygen detection is best choice than GT200-2G.