Product Name	**GAOTek Combustible Gas Detector**
Product SKU	**GAOTek-CGD-150**
Product URL	https://gaotek.com/product/gaotek-combustible-gas-detector-10/

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GAOTek Combustible Gas Detector

1. INTRODUCTION:

GAO Tek Gas Monitor adopts high-quality gas sensors, which display safety and reliability with accurate measurement and stable performance. It has excellent sensitivity and repeatability, is easy to use and maintain, and meets the requirements of safety monitoring in industrial sites for high reliability of the equipment. The shell is made of high-strength engineering plastics and compound non-slip rubber, dust and explosion-proof, with high strength and smooth hand feel.

GAO Tek Gas Monitor is widely used in petroleum, chemical, environmental protection, metallurgy, refining, gas transmission and distribution, biochemical medicine, agricultural research, etc.

This instrument conforms with the following procedures and calibration standards:

Explosive Atmospheres Part 1: General Requirements. for Equipment.

**Explosive Atmospheres Part 4**: Equipment with Intrinsically Safe "I" Protection.

Portable Combustible Gas Detectors Part 3: Portable Combustible Gas Detectors with a Measurement Range of (0-100) %LEL.

Verification Standards for Combustible Gas Detection Alarm.

Verification Procedures for Electrochemical Oxygen Tester

Verification Procedure for Hydrogen Sulfide Gas Detector

Verification Procedures for Carbon Monoxide Detection Alarm
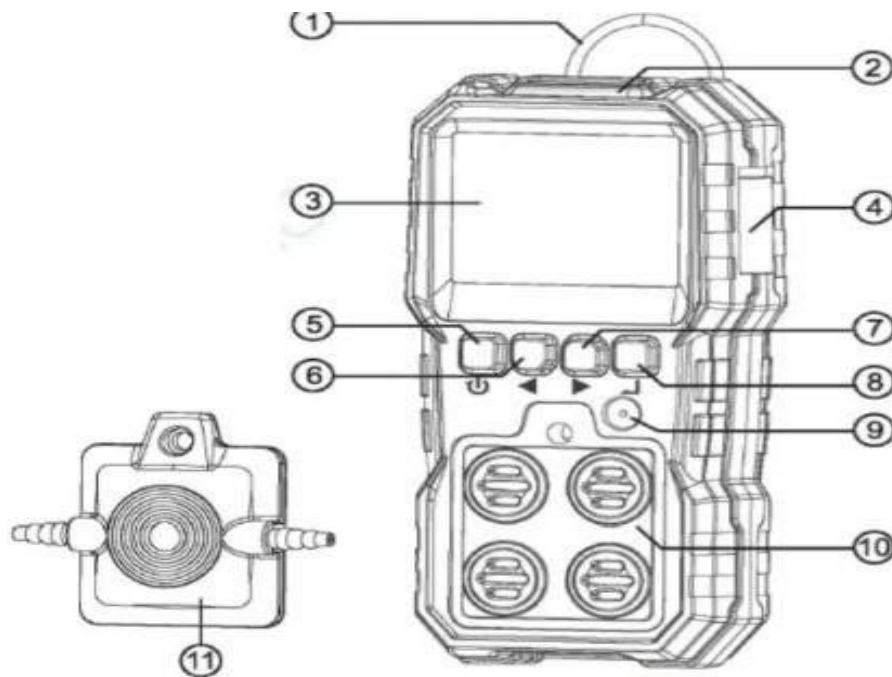
1. Alligator clips on the back.

2. Transparent window for alarm indicator.

3. LCD display.

4. DC adaptor socket.

5. Return button: long press on/off button, short press to return.

6. Left button: left forward, upward, decrease.

7. Right button: right forward, downward, increase.

8. Confirm button: confirmation.

2.TECHNICAL SPECIFICATIONS

GAO Tek Gas Monitor range			
Measuring item	Unit	Range	Resolution
Combustible gas LEL	%LEL	0~100	0.1
Oxygen O_2	%VOL	0~30	0.1
Hydrogen sulfide H_2S	μmol/mol	0~100	0.1
Carbon monoxide CO	μmol/mol	0~1000	1
Accuracy	≤±5%FS		
Response time (90%)	Less than 30 seconds		
Indication mode	LCD displays real-time data and system state, LED, sound, vibration indication alarm		
Storage Conditions	Temperature:-10~55℃; Humidity:＜85%RH		
Operation Conditions	Temperature:- 20~50℃; Humidity:＜ 95%RH non-condensing		
Working voltage	DC 3.7V (Lithium battery capacity 1800mAh)		
Charging time	71*153*49mm		
Weight	218.7g With battery		

3.FEATURES

1. Color-screen display, user-friendly interface.
2. Bilingual choices: Chinese/English.

3. Measurement of four gas concentrations: Combustible gas (LEL), Oxygen (02), Hydrogen sulfide (H2S), Carbon monoxide (CO).
4. Three alarm forms: sound/light/vibration.
5. Data recording and review function, continuously record 120,000 data 0 Charging function.

4. OPERATING INSTRUCTIONS

Main Menu Interface

1. Long press on/off button (back button) for about 2 seconds.
2. After powering on, the instrument enters into the countdown interface (for the sensor takes about 20 seconds to stabilize).
3. After the countdown is over, the main menu screen will appear, as shown in picture 2.
4. The current date and time are displayed on the upper left corner. If the time is incorrect, enter the settings interface to set.
5. The battery level is displayed on the upper right corner. When the remaining power is low, the battery indicator will turn red. When the power level is detected to be too low, the instrument will start 10s countdown for automatic shutdown.
6. The countdown second will be displayed on the left side of the battery indicator. After the countdown is over, the instrument will automatically shut down.

7. There are five icon options in the main menu, namely, real-time measurement, checking record, alarm setting, system setting, and calibration;
8. Functions of Buttons:- Back button : When the icon is selected, touch the icon and it will turn unselected, touch it again to go back to the first icon (unselected).

9. Left/right button: If an icon is not selected, touch the icon and it will become selected. Touch it again to select the next icon by pressing left/ right button.

10. Confirm button : If an icon is not selected, touch it once and the icon will turn selected; when the icon is selected, press confirm button to enter the corresponding interface of the icon.

SINGLE MEASUREMENT INTERFACE

- This interface only displays Real-time measurement values; the left side shows the maximum minimum, and average value, where the average value is the value measured in the last 4 minutes; the right side shows the high and low alarm values, and the middle shows real-time values.
- When checking concentration, if the concentration value is lower than the low alarm value, the instrument will trigger low alarm state. If the concentration is greater than the high alarm value, the instrument will trigger high alarm state.
- In an alarm state, the Danger icon shows up; otherwise, Safety icon is displayed.
- In the alarm state, if the alarm is triggered, an alarm will be issued and the alarm will be issued when the alarm is high.

- The alarm in high alarm state shows more urgency and faster frequency than that of low alarm state.

■ The alarm has three forms, light flashing alarm, a sound alarm and a vibration alarm, which can be turned on/off in the alarm setting.

■ The lower left corner of the screen shows the lower limit of the range, the lower right corner shows the upper limit of the range, and the lowermost triangle indicates the color of the real-time value.

- The function of buttons:
- Back button : back to main menu interface.
- Left/right button: Switch measurement items (oxygen, carbon monoxide, hydrogen sulfide, combustible gases).
- Confirm button : No use

MULTIPLE MEASUREMENT INTERFERANCE

- The interface displays the real-time values of four items simultaneously, when the value exceeds the range, the number will flash; if alarm is on, an alarm will be triggered.
- Button function:
  ♦ Back button : Back to main menu interface.
  ♦ Left/right buttons : no use
- Confirm button Button function: no use

6. CALLIBRATION INTERFACE

Sensor Calibration Selection Interface
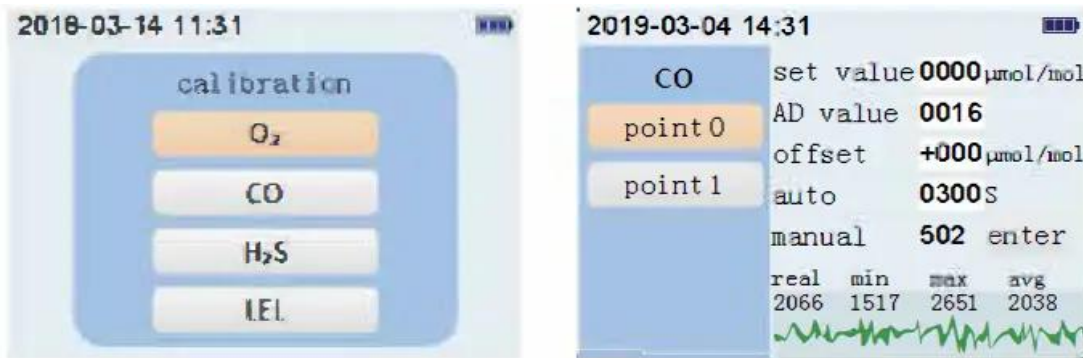
1. First enter the sensor calibration selection interface shown in Figure 8.1. Press Button function / Button functionbutton to select a sensor; then press ·Button function· to enter the single sensor calibration interface

2. In the interface of Figure 8.2, the left side is the calibration point option, the right side is the calibration parameter corresponding to each calibration point, and the lower right area shows real-time value, minimum value, maximum value, average value and curve of the sensor signal; the concentration setting refers to setting the concentration value to be calibrated; calibration AD value refers to the signal value output by the sensor corresponding to the set concentration value; offset adjustment refers to the reading plus or minus the set deviation on the basis of the calibration point; liming calibration means that after the timing calibration is on, the countdown of the set timing starts. When the countdown reaches 0, the measured signal value is automatically stored in the calibration AD value. Manual calibration means that when the manual calibration is on, the real-time signal value is stored in the calibration AD value by pressing button; the value between manual calibration icon and ENTER icon is the real-time measured concentration value.

Three Sensor Calibration Method

There are three kinds of calibration methods:

1. Input the calibration AD value directly:
   a. Set concentration value.
   b. Open to calibration gas which has set concentration value; Wait for the signal curve at the lower right of screen to be stable;
   c. After the signal is stable,input the real-time signal value to calibrate AD value.

2. **Manual Calibration:**

a. Set concentration value;
b. Open to the calibration gas which has set the concentration value;
c. Wait for the signal curve at the lower right of screen to be stable;
d. After the signal is stable, select manual calibration.
   Press button to confirm that the icon will be selected.
e. Press button again and the real-ti me signal value will be added to the calibration AD value.

3. **Timing calibration:**
   a. Set the concentration value;
   b. Open to the calibration gas with the set concentration value;
   c. Select timing calibration, pre button, input the timing, then the countdown starts, when the countdown reaches 0, the real-time signal value will be added to the calibration AD value.

4. If the calibration is wrong, you can recalibrate or restore to factory settings in the system settings.
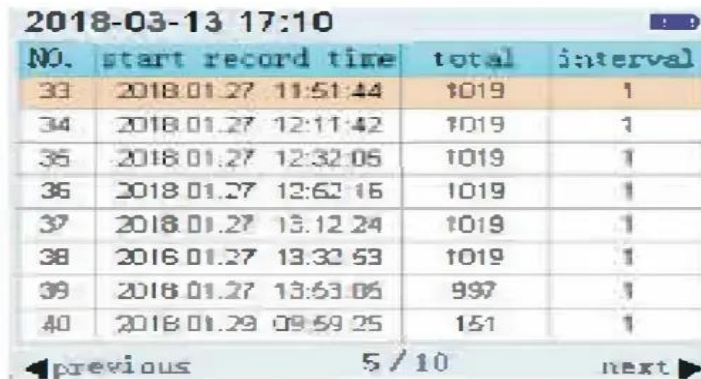
7. RECORD CALLIBRATION/RECORD CHECKING

1. After entering record checking interface, as shown in Figure 4, the screen shows the number of each record, start time of record, number of record groups, record interval (seconds) from left to right ; each record can store 1019 pieces of data, and a total of 125 groups of records can be stored.
   When the stored data is full, "FULL" will appear at the top of screen. The bottom shows the selected page number and total page number; which is page selection interface. Press button to return to main menu,and press button to choose previous or next page. After selecting page number, press button to choose one record and enter into record selection interface.

| NO.	start record time	total	interval
1	2018.01 25 17 56.40	91	1
2	2018 01 25 17 58 37	200	1
3	2018.01 25 18:04 08	3	1
4	2018 01 25 18 04 39	1	1
5	2018 01 25 18 22 23	1019	1
6	2018 01 25 18 40 47	1019	1
7	2018 01 25 18 59 20	1019	1
8	2013.01 25 19 17 54	449	1

2018-03-13 17:06

1 / 10   next ▶

2. In record selection interface , press button to return to page selection interface.Press button to choose previous or next page .Press button to check, delete, and choose which data to be delete.

3. In record selection interface below, press button to return to record selection state Press button to check, delete, and choose which data to be deleted. Press button to enter into interface for checking , deleting and selected deletion
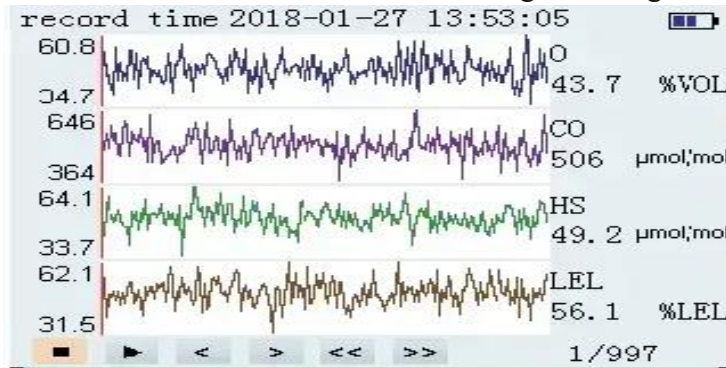
4. The interface shown below is a reviewing recorded data interface, and the box above shows the number of recorded data in different numerical ranges. For example, the green bar graph with 62 in the figure indicates that 62 values in the recorded data are between 22.4 and 24.8. he maximum, minimum and average value of recorded data are displayed on the right side. The concentration value 20.7 displayed in the middle is the value of the data point pointed out by red line; the lower right corner reads 1/232, where is the data point number, and 232 is the group number of the recorded data; an icon back to the start point, select the icon and press the button, the data point number will return to 1, and the red line goes back to the beginning an icon for starting, after selecting it, the recorded data will automatically start reviewing, and the icon will turn into after selecting it, the automatic review will stop, the icon will turn into an icon for moving leftwards, after selecting it and confirming, the red line will move to the left; > is an icon

for moving rightwards, after selecting it, the red line will move to the right; is an icon for fast moving leftwards; is an icon for fast moving rightwards.

5. Figures shows deletion interface. After selecting "Yes " and confirm, the recorded data will be deleted.
6. Figures shows selected deletion interface. Pressing "I" button and button to input the serial number to be deleted, select "OK" and press" "button.
After that, the data within the range of serial number will be deleted.

Alarm Setting Interface

1. The alarm settings for each sensor can be set separately under this interface.
2. There are three alarm modes: Iight,sound, and vibration, which can be respectively set to be on or off. When the realtime measured value is greater than the set high alarm value or low alarm value , the alarm which is on will be triggered.

System settings interface

1. There are six setting items under the interface: language, date and time, auto storage, auto power off, backlight setting, and reset default.
2. The language can be Chinese or English; date and time can be set as year, month, day, hour, minute; if auto storage is on, the measured data will be automatically saved accord ing to the set recording interval. If not, it will not be stored automatically; if the auto off is on, if there is no button operation within the set shutdown time, it will automatically shut down. If auto off is not on,it will not automatically shut down; in the backlight setting, there are three levels of backlight brightness; restoring factory setting can restore all para meters except for date and time (including calibration parameters)in the instrument to factory state.

7. OTHERS

Charging function description

When the power is insufficient or the voltage cannot be turned on due to Undervoltage, please charge in time and charge it.During the charging process, the alarm light will flash and the meter will no longer detect the gas concentration and display the number of battery packs dynamically. When the number of battery packs is full and no longer changes dynamically, charging is completed.Then you can unplug the charger, the meter can be used normally.To speed up charging process, the screen will turn black after 1 Os of no operation.At this time, the charging interface can be resumed by pressing any

button. When the power reaches 80% and there is no operation in 2 mins, the instrument will automatically shut down for charging.

Warnings and Precautions

Improper operation or environment may cause accidents.

1. The instrument is strictly prohibited from collision, falling from high places or violent vibration.
2. If there is gas of high concentration, the instrument may not work properly.
3. Please operate and use strictly in accordance with the instructions, otherwise, it may result in inaccurate test results or damage to the instrument.
4. Do not store the instrument in the following environments:
    1. Places that may have water or heavy dust.
    2. The instrument must not be stored and used in environments that contain corrosive gases (such as salt or sulfur in high concentrations, etc.).
    3. Air with other gases or chemicals.
    4. Places of high temperature, high humidity or direct sunlight, including environments of too high and low temperatures, high humidity, electromagnetic fields, and strong sunlight.
5. Cleaning of the instrument's surface:
    1. The window of the sensor must be kept clean. If it is dirty, the measurement will be inaccurate.
    2. Please wipe ii gently with a clean, soft cloth dampened with water (do not use alcohol, diluent, etc. to clean the case, especially for the LCD window.).
6. 6. In order to ensure accuracy, the instrument should be calibrated regularly, and the period can not exceed one year.
7. If the instrument breaks down, please contact our professional personnel to repair ii. Other people shall not change components and wiring.

Warning: prohibit charging or disassembling batteries in an explosive environment.

TIPS: This device is equipped with a rechargeable battery. If you receive the product and cannot start up, please connect with the adapter for charging before use