

# ABH811 Portable Voice Gas Detector User's Manual



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Thank you for using our products, please be sure to read this manual first when you are ready to use this product, read this manual and follow the instructions provided so that you can be able to fully enjoy the products and services provided by our company while avoiding unnecessary behavioral damage or other accidents .

## I 、 Product description

SP100 portable voice type single gas detector (hereinafter referred to as detector) is a safety device that can continuously detect the concentration of leaked gas. Advanced integrated circuit technology, embedded microcomputer control, high quality imported gas sensor, excellent sensitivity and excellent repeatability; using dot matrix LCD monitor, support Chinese and English interface and voice prompts, users can quickly understand this product, easy to use and maintain; the casing is made of high-strength engineering plastic, good shock resistance, high strength, high-grade exterior, dustproof, waterproof and explosion-proof. This detector is widely used in petroleum, chemical, environmental protection, metallurgy, refining, gas, biochemical medicine, agriculture, fire protection, archaeology, etc. which is necessary to safely monitor toxic and harmful, anti-explosion industries. The detector can effectively predict of dangerous gas concentration and alarm, ensure the safety of the workers is not threatened, and the production equipment is not damaged.

This product is designed, manufactured and certified to comply with the following national standards:

Gb3836.1—2010“Explosive Environment Part 1: General requirements for equipment”

GB3836.4—2010“Explosive environment Part 4: Equipment protected by intrinsically safe “i”

GB15322.3—2003“Portable combustible gas detectors Part 3: Measuring range (0-100)%LEL Portable Combustible Gas Detector”

JJG693—2011“Verification Procedures for Combustible Gas Detection Alarms”

JJG365—2008 Calibration procedure for electrochemical oxygen analyzer

JJG695—2003 Verification procedure for hydrogen sulfide Gas Detector

JJG915—2008 Verification procedure for Carbon monoxide detection alarms

## II、 Structural function comparison table

### 2.1 Detector structure



### 2.2 Working principle

Electrochemical and catalytic combustion

### III、Technical characteristics

#### Conventional gas detection range

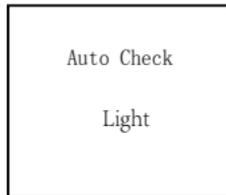
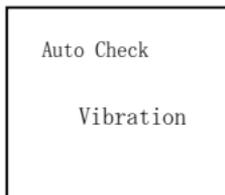
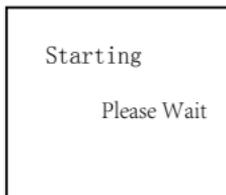
Gas type	Range	Low alarm point	High alarm point	Resolution
EX	(0-100) %LEL	20%LEL	50%LEL	1/0.1%LEL
H2S	0-1000) PPM	10PPM	35PPM	1/0.1PPM
CO	(0-1000) PPM	50PPM	150PPM	1PPM
O2	(0-30) %VOL	19.5%VOL	23.5%VOL	0.1%VOL
NH3	0-100PPM	20PPM	50PPM	1/0.1PPM
H2	0-1000PPM	200PPM	500PPM	1/0.1PPM
CL2	0-20PPM	5PPM	10PPM	1/0.1PPM
HCL	0-20PPM	5PPM	10PPM	1/0.1PPM
NO2	0-20PPM	5PPM	10PPM	1/0.1PPM
NO	0-250PPM	50PPM	125PPM	1/0.1PPM
SO2	0-20PPM	5PPM	10PPM	1/0.1PPM
Please contact the company for other combination gases.				
Display error :	≤ ±5%FS			
Response time :	T<30s			
Indicating method :	LCD displays real-time data and system status, lighting, vibration And human voice (Chinese and English) prompt			
Working environment :	Temperature -20° C -50° C ; Humidity <95%RH			
Working voltage :	DC3.7V (lithium battery capacity 1800mAh)			
Charging time£9	4h-6h			
Standby time£9	Continuous use for more than 10 hours at full charge			
Sensor life :	2 years			
Protection level	Ip65			
Appearance size :	114mm x60mm x26mm			
Weight :	120g			

## IV、 Setup and operation

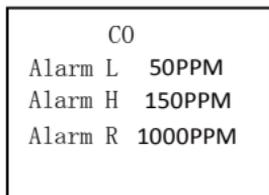
### 4.1 Power on/off and Charging

#### 4.1a Power on

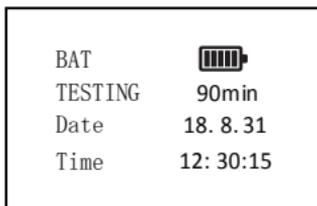
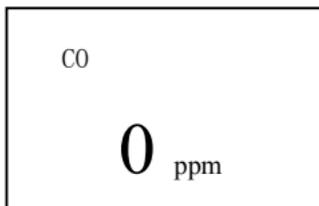
When the detector is off, press and hold the middle power button for about 3 seconds, release the button when the LCD screen displays the software version interface, and the indicator light flashes twice, at this time, the LCD screen displays the boot welcome page, and you can hear the voice prompt "Welcome to use multi-function voice gas detector"



Keep the air around the detector clean on the page waiting to be turned on. During the startup process, the detector will perform vibration and light self-test, please pay attention to observe whether it is normal. The above status is normal, indicating that the sound, display, light, and vibration self-test pass

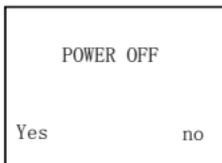


After the boot is completed, the gas main page of the normal standby is displayed, and the real-time gas concentration can be seen. For example, the carbon monoxide gas is as shown below, if other sensors will display the corresponding gas type information. Press the left button to view system status information



## 4.1 Power off

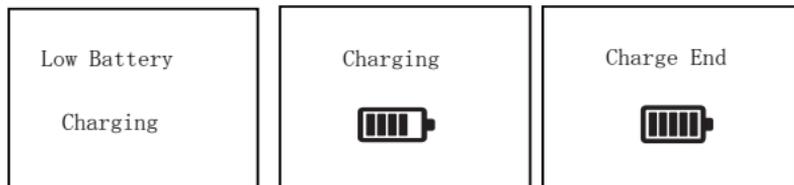
The detector is pressed for 3 seconds in the gas display main page state, and the screen display is ready to be turned off, the 3 second countdown is accompanied by vibration during the countdown every second. The screen clears when the countdown ends. The shutdown was successful.



### 4.1c Charging indication

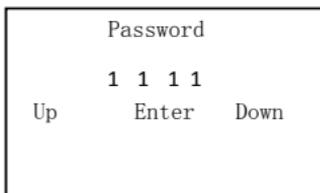
The USB charging cable is plugged in when the detector is in shutdown mode, the current power will be displayed on the screen, when there is only one grid left, the LCD will pop up a low battery page every 60 seconds, and there has a voice indicating "Low battery, please charge".

When the battery is less than 1 grid, the detector will automatically shut down to prevent data loss inside the detector and unpredictable damage caused by insufficient voltage on the internal sensitive components of the instrument.

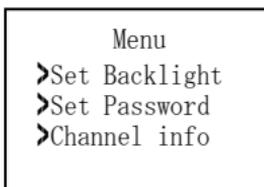
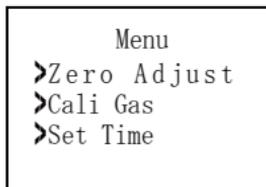
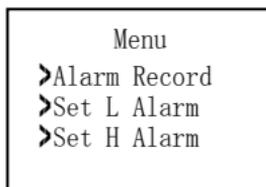


## 4.2 Setting menu

The detector menu has alarm record, low alarm setting, high alarm setting, zero setting, calibration setting, time setting, backlight setting, password setting, channel information, and language switching function. When the gas concentration main page status is displayed, press the right button, Prompt for password (factory default password is set to 1111) ▶

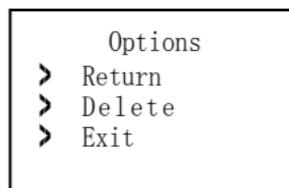
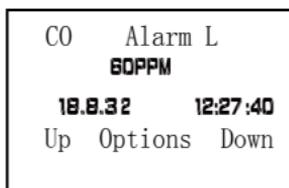


After entering the correct password by pressing the button, enter the menu selection. If the password is wrong, it will return to the gas display main page with a voice "password error" prompt.



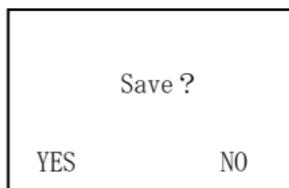
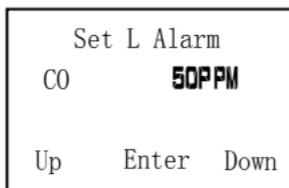
### 4.3 Alarm record

When the arrow in the menu selection bar points to the alarm record, press the middle confirmation button to view the alarm record; press the up and down arrows to scroll through the previous alarm records; press the middle button to switch to the option page and select "Delete" to clear all records, or select "return": return to the record query page; "exit": return to the main menu;



### 4.4 Low alarm setting

When the arrow in the menu selection bar points to the low-alarm setting, press the middle confirmation button to Enter the Low-alarming concentration setting page; the user can adjust the actual required alarm concentration according to the increase and decrease, and press the confirm button to save. The carbon monoxide gas is shown below, if other sensors will display the corresponding gas type information.



## 4.5. High alarm setting

When the arrow in the menu selection bar points to the high-alarm setting, press the middle button to switch to Enter the High-alarmed concentration setting page; the user can adjust the actual required alarm concentration according to the increase and decrease, and press the confirm button to save. The carbon monoxide gas is shown below, if other sensors will display the corresponding gas type information.

Set H Alarm		
CO	<b>50PPM</b>	
Up	Enter	Down

Save ?	
YES	NO

## 4.6. Zero setting

When the arrow in the menu selection bar points to the zero point setting, press the middle confirmation button to go to the zero setting page; the page shows the current gas concentration AD data. press the left button ← to save and set the current value to the new zero point of the gas.

In order to prevent the user from misoperation, the detector detects that the gas value is much different from the zero value, it will prompt " data abnormality, save failed" .

Zero Adjust	
<b>2</b>	
Save	Exit

**WARNING:** This operation should be performed in clean air (oxygen must be in pure nitrogen) to ensure that no trace gas in the current air present, Otherwise, the difference in the concentration of the reaction gas in the environment will affect the detection accuracy of the detector!

## 4.7. Calibration settings

When the arrow in the menu selection bar points to the calibration setting, press the middle confirmation button to enter the calibration settings page;

When doing this, the user needs to place the detector and the same concentration of gas in the sealed air box. The increase and decrease can be used to adjust the calibration value to match the gas in the air box. By observing the real-time display of the AD value, the gas change in the box is judged at this time; when the gas concentration is stabilized, press the enter key to save.

In order to prevent the user from misoperation, the detector detects that the calibration value is too different from the input gas, and will prompt " data abnormality, save failed" .

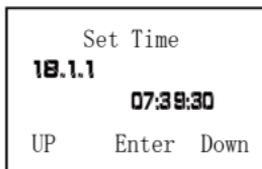
CO		
Adjust	<b>250PPM</b>	
AD 值	<b>143</b>	
Up	Enter	Down

Save ?	
YAS	NO

**Warning:** It is strictly forbidden for non-professionals to do this, otherwise all consequences will be borne by themselves! The detector has been uniformly calibrated at the factory. If the user wants to recalibrate, please follow the steps strictly, first set the zero point, and then recalibrate the setting. If the user misuses this setting, please contact the manufacturer to return the recalibration process.

## 4.8. time setting

When the menu selection bar arrow points to the time setting, press the middle confirmation button to switch to the setting time interface; press the key ← to increase the value and the key → to decrease the value. The middle confirmation key switches between seconds, minutes, hours, days, months, years, and finally saves.



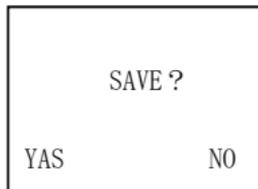
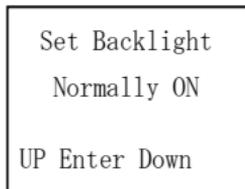
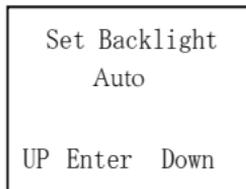
Since the internal clock chip of the detector may affect the clock error due to temperature, electromagnetic interference, and insufficient battery power, it is recommended that the user set the time at intervals.

## 4.9. Backlight setting

When the menu selection bar arrow points to the backlight setting, press the middle button to switch to the backlight setting interface; press the button ← and → to switch the backlight setting option;

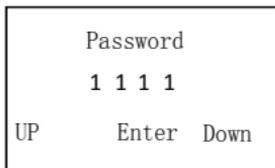
“Auto” will wake up the backlight and re-clock for 60 seconds each time the button is pressed. The LCD backlight will go out after the time is over.

“Normally bright” is the setting of the constant light function when the user needs to observe the gas change for a long time in a place with insufficient light. LCD backlight will always stay on



## 4.10 password setting

When the arrow in the menu selection bar points to the backlight setting, press the middle button to switch to the password setting interface; you need to re-verify the password before setting the password. After the password is verified, the password will be redirected to the password setting page; the factory default password is 1 1 1 1, in order to prevent others from mishandling, the user can reset the new password;

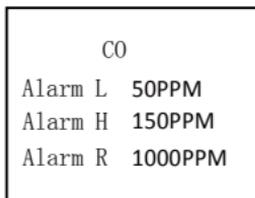


Note: Please save the password properly. If it is lost, it can only be returned to the factory to restore the factory settings.

## 4.11. Channel information

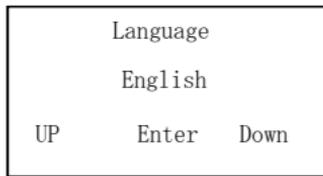
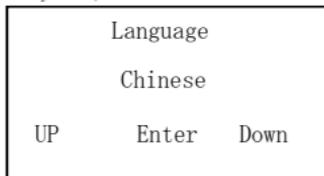
When the arrow in the menu selection bar points to the channel information, pressing the middle button will display the low concentration alarm thresholds of the gases, the high concentration alarm threshold and the maximum range information;

Carbon monoxide gas is shown below, if other sensors will display the corresponding gas type information.



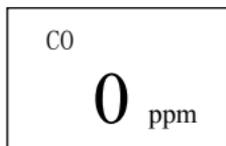
## 4.12. Language switching

When the menu selection bar arrow points to the channel information, press the middle confirmation key to jump to the language setting page; press the key ← and → to switch the language setting option; press the key ① to save. (The detector supports Chinese and English language switching, and the prompt voice played is consistent with the voice set by the system)



## 4.13. Exit

When the menu selection bar arrow points to exit, press the middle button, the system exits the menu selection and returns to the display gas real-time concentration main page. Re-enter the verification password when entering the menu selection again.



## V、Function use

After the detector is turned on, the liquid crystal display is in a standby state in which the current gas are displayed in real time. Press any button to turn on the LCD backlight(the backlight stays 60S after any operation).

(See the appendix table for a variety of optional gas types.)

### 5.1 Combustible gas alarm

When it is detected that the concentration of flammable gas is higher than the minimum alarm threshold set by the system, the detector will broadcast the voice “Please note that the flammable gas concentration exceeds the standard” and always simulate the siren alarm sound; the alarm light above the detector and the internal vibration motor simultaneously Turn on; when the detector detects that the concentration of combustible gas returns to the minimum alarm threshold, the voice, light, and vibration alarm states disappear.

### 5.2 Oxygen alarm

When the concentration of oxygen is detected to be lower than the minimum alarm threshold set by the system, the detector will announce “Please note that the oxygen concentration is too low”, which is higher than the highest alarm threshold set by the system. The detector will broadcast the voice “Please note that The oxygen concentration exceeds the standard and the alarm sound is always simulated; the alarm light on the detector and the internal vibration motor are simultaneously turned on; when the detector detects that the concentration of the combustible gas returns to the minimum alarm threshold, the voice, light, and vibration alarm states disappear.

Remarks: The concentration of oxygen in normal air is 20.9%. Users can adjust the under-report and over-report according to actual needs.

### 5.3 Hydrogen sulfide

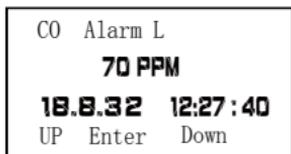
When it is detected that the concentration of hydrogen sulfide is higher than the minimum alarm threshold set by the system, the detector will broadcast the voice “Please note that the concentration of hydrogen sulfide exceeds the standard” and always simulate the siren alarm sound; the alarm light above the detector and the internal vibration motor simultaneously Turn on; when the detector detects that the concentration of hydrogen sulfide has returned to the minimum alarm threshold, the voice, light, and vibration alarm states disappear.

### 5.4 Carbon monoxide

When the concentration of carbon monoxide is detected to be higher than the minimum alarm threshold set by the system, the detector will broadcast a voice message “Please note that the concentration of carbon monoxide exceeds the standard” and always simulate the alarm sound; the alarm light on the detector and the internal vibration motor are simultaneously turned on; When the detector detects that the concentration of carbon monoxide has returned to the minimum alarm threshold, the voice, light, and vibration alarm states disappear.

## 5.5 Alarm data saving

After the detector triggers the alarm, when the detection alarm gas returns to the set normal threshold, the detector saves the current alarm information to the internal storage of the detector, and according to the low concentration alarm threshold and high concentration alarm threshold set by the user. It is divided into under-reporting and high-reporting. The user can query through the alarm record in the menu bar.

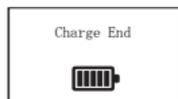
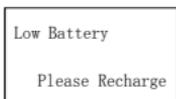


Remarks :

1. Alarm voice supports Chinese and English voice alarms, consistent with system language settings
2. When the detector triggers an alarm, quickly double-click the middle button to turn off the sound, vibration, and light alarm. When all gases return to within the preset alarm threshold, the detector re-enters the warning state

## Warning :

1. The detector will only trigger an alarm when it is turned on and on the gas detection page;
2. Please do not charge the detector at the gas monitoring site to avoid sparks or explosions during the plugging process.
3. Try not to charge the detector when it is turned on, so as not to affect the charging speed.
4. The detector has a smart tracking zero function. Please turn it on when the air is clean.



## VI、Charging function

1. The detector has built-in large-capacity rechargeable battery. It can be used for continuous standby monitoring at full charge for more than 10H. When the detector indicates that the battery is low or the voltage is too low, please charge it in time; plug the charger AC plug into the charger. On the AC220V AC power supply, connect the 5V USB power cable from the other end to the charging jack of the detector. When the detector is turned off, it will automatically turn on after plugging in the power and display the charging status. Charging is completed when the detector displays 100% charge on the screen.
2. Please use the original adapter charger and USB charging cable as much as possible.
3. Charging in the off state does not open the detector normally. You can unplug the USB charging cable after charging is complete, and then turn the detector back on for gas monitoring.

## VII、Precautions for use

1. Prevent the unit from falling from high places or being subjected to severe vibration.
2. When the high concentration gas is present, the detector may not be used normally.
3. Please operate and use it in strict accordance with the instructions. Otherwise, the test result may be inaccurate or the detector may be damaged.
4. This product should not be stored or used in an environment containing corrosive substances (such as chlorine, etc.), nor in other harsh environments, including excessively high and low temperatures, large humidity, electromagnetic fields, and strong Use and store the unit under sunlight.
5. If the surface of the detector is dirty after long-term use, please wipe it gently with a clean soft cloth. Do not use corrosive solvents and hard objects to wipe the surface of the machine. Otherwise, the surface of the detector may be scratched. Or damaged.
6. In order to ensure the detection accuracy, the detector should be regularly calibrated, and the verification period must not exceed 1 year.
7. Discharge the lithium battery and sensor of the discarded portable gas detector to the designated location or return to our company. Do not throw it into the trash can.
8. Anyone who is beyond the scope of this manual or who has troubles should contact our company for resolution.
9. The battery pack cannot be charged without being able to disassemble or replace the battery pack in an explosive atmosphere. Peripheral plug-in devices that are not certified for explosion-proof can not be used in an explosive atmosphere, and sensors cannot be replaced.
10. This product has obtained explosion-proof certification, and users are not allowed to change or modify components or structures that affect explosion-proof performance.

## VIII、Common faults and solutions

Fault phenomenon	Possible cause of failure	Processing method
Can not starting up	Low voltage	Please charge in time
	Crash	Please contact the dealer or manufacturer for repair
	circuit failure	Please contact the dealer or manufacturer for repair
No reaction to the detection gas	circuit failure	Please contact the dealer or manufacturer for repair
Inaccurate display	Sensor overdue	Please contact your dealer or manufacturer to replace the sensor
	Long-term uncalibrated	Please calibrate in time
Time display error	The battery is completely drained	Charge and reset time in time
	Strong electromagnetic interference	Reset time
Zero setting failed	Excessive sensor drift	Calibrate or replace the sensor in time
The instrument does not return to zero in the normal detection sector (except oxygen)	Sensor drift	Zero calibration
When the instrument normal detection interface displays full scale	Sensor failure	Please contact your dealer or manufacturer to replace the sensor

## IX、Storage

The detector should be stored in a ventilated room with an ambient temperature of  $-10^{\circ}\text{C} \sim 55^{\circ}\text{C}$  and a relative humidity of no more than 85%. Avoid direct sunlight and the air must not contain harmful gases or impurities that corrode the detector.

## X、Accessories and others

Accessory name	Quantity
Packing box	1
Portable voice gas detector	1
Charger	1
USB cable	1
Instruction manual	1
Certificate and warranty card	1
mask	1

The detector has passed the inspection and issued the certificate. If the damage is found during transportation, please contact the manufacturer to replace it.

## XI、 Appendix - Sensor Selection Table

Gas to be measured	Measuring range	Optional range	Resolution	Alarm point
EX	0-100%lel	0-100%vol	1%lel/1%vol	Low : 20 High : 50 %vol
O2	0-30%vol	0-30%vol	0.1%vol	Low : 19.5% High : 23.5%vol
H2S	0-100ppm	0-50/200/1000ppm	0.1ppm	Low : 10 High : 35ppm
CO	0-1000ppm	0-500/2000/5000 ppm	1ppm	Low : 50 High : 150ppm
CO2	0-5000ppm	0-1%/5%/10%vol	1ppm/0.1%vol	Low : 1 000 High : 2000ppm
NO	0-250ppm	0-500/1000ppm	1ppm	Low : 50 High : 150ppm
NO2	0-20ppm	0-50/1000ppm	0.1ppm	Low : 5 High : 10ppm
SO2	0-20ppm	0-50/1000ppm	0.1/1ppm	Low : 5 High : 10ppm
CL2	0-20ppm	0-100/1000ppm	0.1ppm	Low : 5 High : 10ppm
H2	0-1000ppm	0-5000ppm	1ppm	Low : 50 High : 150ppm
NH3	0-100ppm	0-50/500/1000ppm	0.1/1ppm	Low : 20 High : 50ppm
PH3	0-20ppm	0-20/1000ppm	0.1ppm	Low : 5 High : 10ppm
HC1	0-20ppm	0-20/500/1000ppm	0.001/0.1ppm	Low : 5 High : 10ppm
CL02	0-50ppm	0-10/100ppm	0.1ppm	Low : 5 High : 10ppm
HCN	0-50ppm	0-100ppm	0.1/0.01ppm	Low : 10 High : 20ppm
C2H4O	0-100ppm	0-100ppm	1/0.1ppm	Low : 20 High : 50ppm
O3	0-10ppm	0-20/100ppm	0.1ppm	Low : 2 High : 5 ppm
CH2O	0-20ppm	0-50/100ppm	1/0.1ppm	Low : 5 High : 10ppm
HF	0-100ppm	0-1/10/50/100ppm	0.01/0.1ppm	Low : 2 High : 5 ppm
C7H8/C8H10	0-20ppm	0-1/10/50/100ppm	0.01/0.1ppm	Low : 5 High : 10ppm

**intersense**

