

BH-90A

Portable Single Gas Detector

Operation Manual



Oxygen Detector

1.Description

BH-90A portable single gas detector can make continuous detection to combustible and toxic gases. It is suitable for combustible and toxic gas leakage detection in underground pipe or mines, and keeps the workers safe, prevents the facilities from being destroyed. The detector, adopting excellent-quality sensor, makes detection in the way of natural diffusion. It has good sensitivity and reproducibility. The detector adopts embedded MCU controller, easy to operate.

The shell adopts special high strength material and anti-smooth rubber, with the characters of water-proof and dust-proof.

2.Features and specifications

2.1 Features

Advanced MCU control with low power consumption;

Adjustable low and high alarm level;

Adjustable calibrating level;

High concentration protection;

Self test for the gas sensor;

Low battery indication;

Self-adjustment function

Visual and audible alarm with vibration;

Advanced self-examination and self-renovation function

Password management to avoid wrong operation;

Explosive proof housing

2.2 Specifications

Range: See attached table 1.

Gas Detected: combustible gas (CH₄, C₃H₈, H₂) and toxic gas, oxygen, Other rare toxic gas like ammonia, NO, PH₃, NH₃, NO₂, HCN, SO₂ etc also available, Can be specified by the Customer in advance.

Alarm set points: see attached table 1.

Accuracy: $\leq \pm 5\%$ F.S.

Response time: T₉₀ < 60s

Indication: LCD indicates the time and state

Indication of alarm, fault and low voltage with LED, sound, vibration

Operating Environment:

Operating temperature: -10°C ~ +55°C

Humidity: < 95% RH non-condensing

Operating voltage: DC 3.7V Li battery 1500mAh

Working time: > 8h continuously

Charging time: 4h ~ 6h

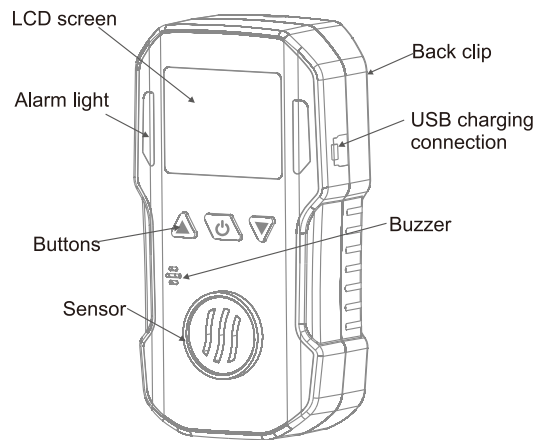
Sensor life: 2 years

Weight: about 130g (including battery but without accessories)

Dimension: 109mm × 60mm × 30mm

3. Structure & Function

3.1 Appearance



3.2 Detector structure

The main shell, circuit boards, batteries, display, sensors, chargers of the components.

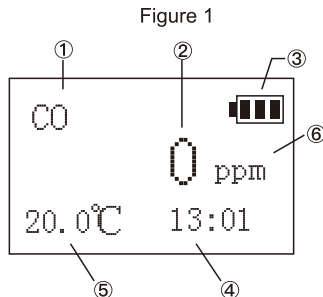
3.3 Principle

Electrochemical or Catalytic sensor.

4. Operation & Function

4.1 Display Elements

1. Gas type
2. Concentration value
3. Battery indicator
4. Time
5. Temperature
6. Gas unit



4.2 Push buttons




To active the detector, press and hold it for 5 seconds
Press it to cancel the the operation;
To deactivate the detector, press and hold it for 5 seconds
Press it to set up the parameters.




Can check parameters, alarm record, low alarm, high alarm, zero calibration, calibration, time set.


4.2 Turn On

Press the button  for 5s and then release it. The interface shows “Starting”, “LED Testing”, and then vibrates with “Motor Testing”, then beep and flashes with “Sound and Alarm Testing”, it enters into detecting status.

At this time, it displays the concentration of gas in the environment as figure 1.

4.4 Turn off

To deactivate the detector, press  key, then it displays the following information:

At this time, the buzzer gives beep sound. After 3 seconds, when it displays the following figure on the screen, loosen the  key. The detector is turned off.

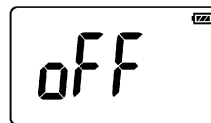


Figure2

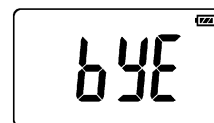



Figure 3

Attentions: When the detector is not detecting status, press  continuously till it returns to the detection mode.

4.5 Menu Operating Instructions

The user menu contains the following options:

Alarm record, low alarm settings, high alarm settings, zero calibration, calibration, time set.

In the detection state, press  key, the screen displays the following screen, directly into user menu as shown in figure4.

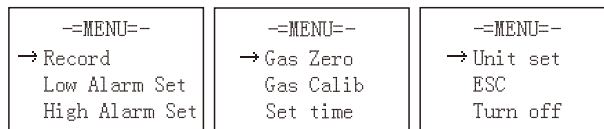







Figure4

Parameter setting of the detector

1. Zero function setting

Press the button  in the menu interface, the interface shown as Figure 14: press  key to enter into the zero setting page as Figure 5: press the button  for zero drift, as shown in Figure 6: the instrument directly into the menu settings page, press the button  to save the drift value, interface as shown in Figure 7: the instrument directly into the menu screen, press the button  again, the instrument enters the normal detection interface.

Warning: this operation is to ensure that the operation is carried out in clean air, otherwise the concentration of the reaction gas in the environment will affect the accuracy of the portable gas detector.

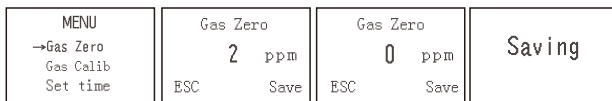








Fig.5

Fig.6

Fig.7

Fig.8

2. Low alarm settings

Press the button  in the menu interface, move the cursor with  key, the interface shown as Figure 9: press  enter into the calibration setting page as Figure 10: press  to choose number, press  to adjust the number, input password 8888 and press the button  into calibration interface.

Input the standard calibration gas value in the calibration interface as Figure 11, for example, CO, it's 500ppm on the gas cylinder, input 500, and press "Next" into gas entry interface as Figure 12.

Please inject standard calibration gas, once the value is stable after 2 minutes, press "SAVE" calibration is done. The rate of flow 500ml/min is recommended.

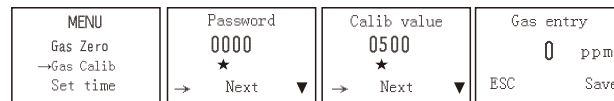





Fig.9

Fig.10

Fig.11

Fig.12

3. Time setting

Press the button  in the menu interface, move the cursor with  key, choose the set time, the year interface shown as Figure 13: press → to move the *, press  to adjust number, press Next to confirm.

After set year, press next, you can set month, date, hour, minute, Press "SAVE" to complete the time set.

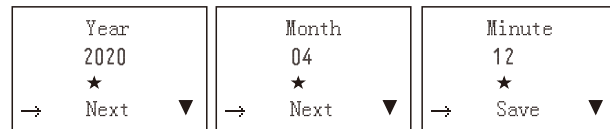



Fig.13

Fig.14

Fig.15

4. Alarm Record

Enter alarm record interface, display date and max alarm value, it save the max alarm value every 3 minutes as shown Figure 16, "11.29.12.36" means 29th November 12:36, "65" display the max alarm value within 3 minutes. Press "ESC" return main interface, Press  to delete the record as shown Figure 17.

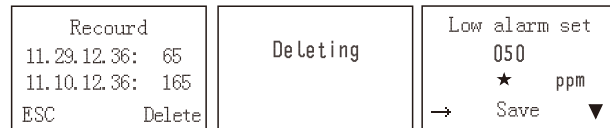


Fig.16

Fig.17

Fig.18

5.Low alarm setting

Enter “LA set” menu, use ▲ to adjust the cursor, use ▼ to adjust the value, choose the right value and press “SAVE”. then it will return the normal detecting interface show as Figure 18. If no special requirement, please do not revised alarm value.

6.High alarm setting

The setting is same as low alarm setting. Note: High alarm value never lower than low alarm value. If no special requirement, please do not revised alarm value.

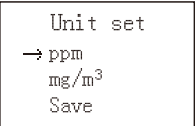


Fig.19


7.Unit set

Enter “Unit set” function show as Figure 19, choose the suitable unit and save it. Note, this function can be used on the PPM unit gas.



Fig.20

8.ESC

Under the menu function interface, choose ESC, press  to return normal detecting interface.

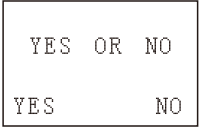


Fig.21

9.Turn off

Under the menu function interface, choose “Turn off”, press ▲ to turn off, press ▼ to return normal detecting interface.

4.6 Alarm information

The following table shows the details of each alarm:

Low alarm:	Short slow alarm tone; The alarm indication is yellow; The red alarm light flashes; Device vibrates .
High alarm:	Abnormal harsh alarm tone; The alarm indication is red; The red alarm light flashes; Device vibrates.
Low battery alarm:	When the device is in low battery, it will give slow short alarm every minute to remind user.

4.7.Charging

Please charge the detector when it shows low battery or the detector can't be turned on due to low battery. Before charging, please turn off the detector to avoid any potential damage. When the battery mark on the screen is full and doesn't change any more, it means the charging is completed, you can pull off the charger.

Warning: During charging status, the detector can't detect the gas leakage. Please do not try to charge it at testing places to avoid fire or explosion. Please do not charge it when the detector is working to avoid potential damage.

Note: Make sure full charge for at least once within 1 months
If do not use it for a long time.

5.Possible fault and corresponding solution

Possible fault	Possible reason	Corresponding solution
No response to alarm	Wrong alarm point	Please reset the alarm point
	Fault of electric circuit	Please contact the manufacturer
No response to gas detected	Zero drift	Calibrate zero point
	Fault of electric circuit	Please contact the manufacturer
Inaccurate indication	Sensor is overdue	Please contact manufacturer to replace gas sensor
	Uncalibrated for long time	Please calibrate it in time
Insufficient working hours	Fault of Charger	Please change charger
	Fault of the Device	Please contact the manufacturer
Can not charge electricity	Fault of Charger	Please change charger
	Fault of the Device	Please contact the manufacturer

6. Notices

6.1 Falling down from high places or strong shake is prohibited.

6.2 The detector may not work properly at interferential high-concentration gas.

6.3 To avoid incorrect result or possible damage to the detector, please operate and handle the detector in accordance with the manual.

6.4 The detector should be not stored or used neither under the circumstance with caustic gas (such as Cl₂), nor under the other rugged circumstances, including excessive high or low temperature, high humidity, electromagnetic field and strong sunshine.

6.5 If there is dust on the surface of the detector after a long-term use, please clean it lightly with clean soft cloth. The surface may be scraped or destroyed with caustic solvent or hard things.

6.6 To assure the testing accuracy, the detector should be calibrated periodically. And the calibration period should be less than one year.

6.7 Please put the used Lithium batteries to the appointed places or send to our company. Don't discard them into the dustbin randomly.

7.Standard accessories

Gas detector	1pc
Calibration cap	1pc
Charger	1pc
User manual	1pc
Suit case packaging	1pc
Warranty card	1pc

Affix. Table1

Model	Range	L-alarm	H-alarm
CH4	0-100%LEL	20%LEL	50%LEL
C3H8	0-100%LEL	20%LEL	50%LEL
H2	0-100%LEL	20%LEL	50%LEL
H2	0-1000ppm	35ppm	250 ppm
H2S	0-100ppm	10ppm	15ppm
H2S	0-100ppm	10ppm	20ppm
CO	0-1000ppm	35ppm	200ppm
CO	0-1000ppm	30ppm	60ppm
C2H4O	0-20ppm	10ppm	15ppm
C2H4	0-100%LEL	20%LEL	50%LEL
C2H4	0-20ppm	5ppm	10ppm
O2	0-30%vol	19.5%vol	23.5%vol
C2H5OH	0-100%LEL	20%LEL	50%LEL
NH3	0-100ppm	25ppm	50ppm
CL2	0-20ppm	5ppm	10ppm
O3	0-20ppm	5ppm	10ppm
O3	0-10ppm	2ppm	5ppm
SO2	0-20ppm	2ppm	5ppm
SO2	0-100ppm	2ppm	5ppm
PH3	0-20ppm	0.3ppm	5ppm
PH3	0-5ppm	0.3ppm	2ppm
CO2	0-5000ppm	1000ppm	2000ppm
CO2	0-50000ppm	1000ppm	2000ppm
NO	0-250ppm	20ppm	50ppm
NO2	0-20ppm	5ppm	10ppm
HCN	0-500ppm	10ppm	20ppm
HCN	0-50ppm	10ppm	20ppm
HCL	0-50ppm	10ppm	20ppm
CH2O	0-10ppm	2ppm	5ppm
VOC	0-100ppm	20ppm	50ppm
C6H6	0-100ppm	20ppm	50ppm