Hanwei 汉威科技集团
Hanwei Electronics Group Corporation

BZ100 Portable Gas Detector

User Manual

Notes: Read and understand this user manual before using this product.

Ver: HW230731

Thank you for purchasing our products. When you are ready to use this product, please read the instruction carefully and follow the relevant operation steps provided, so that you can fully enjoy the service provided by our company, and avoid damage to the machine or other accidents caused by incorrect operation.

Please keep this manual properly so that you can refer to it and get help whenever you need it in the future.

User Service Guide

- Before using the product, please carefully check whether the accessories, conformity certificate and user warranty card are complete. If there is any missing, please contact the vendor or manufacturer immediately.
- We provide a 12-month warranty service for this device. Users who comply with storage, transportation and use requirements can enjoy free repairs if there is a fault.
- We will charge for repair of damage caused by violation of operating rules and requirements, failure caused by maintenance of special technical service department not designated by our company, or product quality problems caused by irresistible factors.
- When the product is repaired, please take the initiative to present the product warranty card. Those who cannot present the warranty card will be charged for the repair.
- If you have any questions or dissatisfaction with the products and services we provide, including product technology, quality, installation and maintenance, services attitude, charging rates and other issues, please contact us in a timely manner, and we will deal with your comments properly.

Safety Information

Before using the product, please read the following safety information:

- Please do not use a gas detector that has been damaged.
- Please check whether there is crack in the housing or is short of accessories about the gas detector. If the gas detector has already been damaged or short of accessories, please contact the vendor or manufacturer.
- In order to ensure the detector can work normally, “bump test”

(put the device in the target gas of a higher concentration than high-limit alarm setpoint, and calibration gas can be used) is recommended before normal operation every day. If the device testing result is not within the required range, please make calibration in time.

- "Bump test" shall be periodically made to the sensor to confirm its ability to respond to the gas. Make sure the audible, visual and vibration alarms are working properly.
- Replacing components may compromise the internal security of the detector.
- Only use sensors that are specially designed for your BZ100.
- Long-term exposure to certain concentration of gas and air may increase the load on the detector and may seriously affect its performance. If the alarm is caused by a high concentration of gas, it should be recalibrated and, if necessary, the sensor should be replaced.
- Do not expose the detector to electric shock or severe continuous mechanical vibration.
- It is forbidden to disassemble, adjust or repair the gas detector without permission.
- The word "ppm" is commonly used abroad instead of "μ mol/mol" in this manual.

1. Product Introduction

BZ100 portable gas detection and alarm instrument is an intrinsically safe device that can continuously detect the concentration of combustible gas, toxic gas, or oxygen. It is suitable for explosion-proof, toxic gas leakage rescue, underground pipelines, and other places, and can effectively ensure that the life safety of the staff is not infringed, and the production equipment is not damaged.

The housing of BZ100 is made of high-strength engineering plastics and composite non-slip rubber, which has the advantages of high strength, good hand feeling, waterproof and dustproof.

2.1 Main Functions and Features:

- Low-consumption 16-bit MCU to ensure long battery life

- Wide viewing-angle graphic LCD display
- Configurable high and low alarm points, two levels of alarm
- Battery low voltage alert
- Automatic calibration to reduce detection error
- Audible, visual, and vibrative alarming signals
- Data upload function (Bluetooth)
- STEL and TWA alarms for toxic gases
- Automatic self-test function after power-on
- Intrinsically safe design and approved

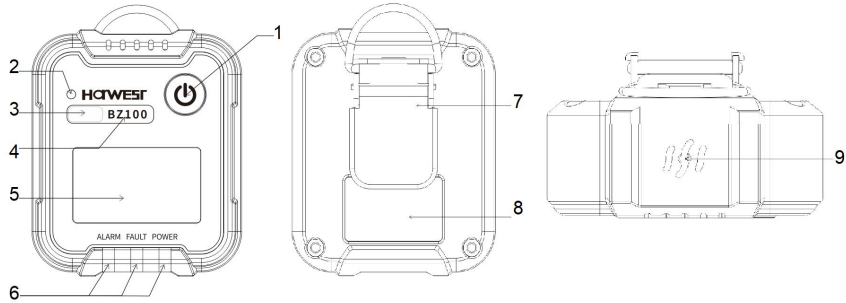
2.2 Technical Parameters

Detection method	Diffuse naturally
Sensor type	Electrochemical
No of sensor channel	1 channel
Display deviation	CO: Absolute: ±5 ppm, Relative:±10% H2S: Absolute: ±2 ppm, Relative: ±10% O2: ±2%F.S.
Alarm signal	Audible, visual, and vibrative
Alarm sound	90dB @10cm
Communication method	Wireless (infrared communication with host computer)
Featured functions:	Parameter setting, log storage and export functions
Indication method	LCD screen: show real-time data and system status. Backlight: illuminates on command or alarm status in low light.
Ambient condition	Temperature: -20℃～50℃ Humidity: ＜95%RH (no condensation) Pressure: 90-110Kpa
Power source	Lithium battery DC3.6V, 1200mAh
Sensor lifespan	2 years (2 minutes of alarm per day)
Ingress protection	IP66
Approval	ATEX II 1G Ex ia Ⅱ C T4 Ga IECEx Ex ia IIC T4 Ga

Explosion-proof type	Intrinsically safe
Dimension	61.5*52.8*27mm
Weight	About 85g

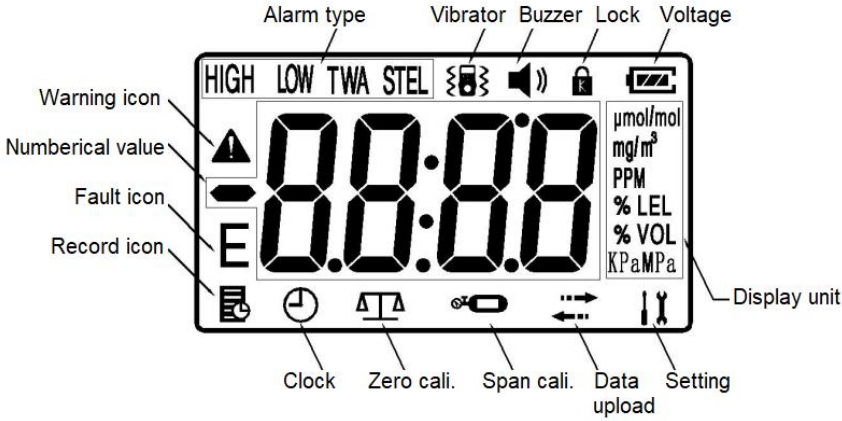
3. Structure and Function Instructions

3.1 Appearance and structure

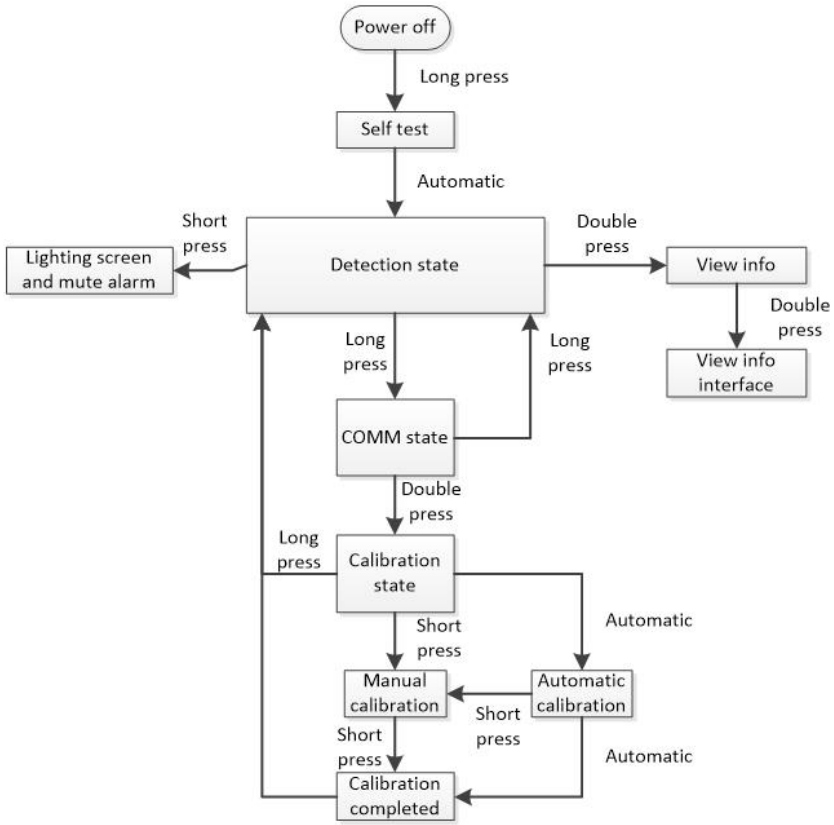


1	Power-on button	6	Status indicators
2	Buzzer hole	7	Clip
3	Measuring gas Label	8	Label
4	Module Name	9	Sensor hole
5	LCD screen		

3.2 Display Information



3.3 Button function logic diagram



4. Operating Instructions

4.1 Power on

In the shutdown state, press and hold the button for about 3 seconds and then release it, then the detector will power on. The detector automatically performs the following self-test procedure.

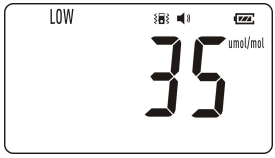
(1) Display all fields and graphics, and turn on the backlight.

(2) Emit a power-on tone to check the buzzer function.

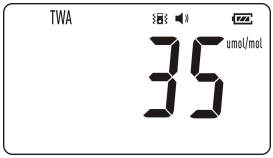
(3) Display version number.

(4) Display the target gas.

(5) Display the values of low-alarm and high-alarm.



(6) Display the values of STEL and TWA.



(7) When the self-test completes, the detector enters a short warm-up countdown phase. After warm-up, the detector enters the normal monitoring state and the screen displays the surrounding measured gas readings.

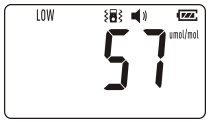
If the self-test fails, then the detector will indicate a fault.

4.2 Lighting up screen and eliminating alarms
In the normal monitoring state, press the button for less than 1 second, then the backlight lights up.
In the alarming state, press the button for less than 1 second, user can eliminate the alarming (of sound, light and vibration).

4.3 Information viewing
In the normal monitoring state, press the button twice, the buzzer will sound once and the screen will display the current temperature, STEL and TWA in turns.

4.4 Detector self-test
In the information viewing interface, press the button twice, the buzzer will sound once, then the red light, yellow light, green light and backlight will be lit in sequence, and the screen will keep displaying TEST (“tESt”) during the process.

4.5 Alarm Information

Alarm type	Display information
Low-alarm ● Slowly modulating alarm tone ● Alarm indicator flashes • Vibrating	
High-alarm ● Acutely modulating alarm tone ● Alarm indicator flashes ● Vibrating	
STEL alarm ● Acutely modulating alarm tone ● Alarm indicator flashes ● Vibrating	
TWA alarm ● Acutely modulating alarm tone ● Alarm indicator flashes ● Vibrating	
Over-range alarm ● Acutely modulating alarm tone ● Alarm indicator flashes	
Battery undervoltage alert ● Icon appears ● At this time, the detector can work for up to 30 days and will automatically shut down when the power is exhausted.	
Expire of lifespan ● After the entire life of the machine has expired, the screen will indicate “EOL”.	

4.6 Bump test

Before using the alarm device every day, please do a " bump test " to confirm if the alarm device works normally.

Test method: After the alarm device is turned on, place it in the target gas or standard gas whose concentration exceeds the high alarm point. If the alarm device functions normally, it can enter the detection area for detection;

Otherwise, please follow 4.7 to re-calibrate. If the alarm does not respond or displays a fault, please contact the dealer or manufacturer for help.

4.7 Calibration

Warning: This operation can only be carried out by trained professionals and must be in an environment free of dangerous gases.

Note: To ensure detection accuracy, it is recommended that the sensor be calibrated every 180 days (six months) maximum.

In the communications interface, press the button twice, the screen will display “CAL”, and the detector will enter the calibration state.

Automatic calibration: According to the screen instructions, the standard gas with the concentration indicated on the screen is passed in order to complete the automatic calibration; The screen will display End and automatically return to the monitoring state if the calibration is successful; Otherwise, the screen will display Fail and return to the calibration failure and back to calibration interface.

Manual calibration: If in the calibration state, short press the button, the device will enter the manual calibration state, and the screen will display the AD value of the current standard gas. After the AD value is stable, press the button manually to confirm, and then the manual calibration can be completed.

In the calibration state, long press the button to return to the monitoring state.

5. Data communication function (optional)

Note: This function can only be realized when the user purchases the supporting software and communication module of this product, which is used to set the general parameters of the alarm device and download the log data of the alarm device.

In the monitoring state, press the button for a long time, the device will enter the communication interface, and the functions of reading and burning parameters, exporting logs and other functions can be realized through the computer with software of the user version.

Long press the button in the communication interface to return to the monitoring state.

6. Use and replacement of sensor

Note: Please replace the sensor through our company or dealer.

Please pay attention to the service life of the sensor when using the device, and replace the sensor of the same type in time after the expiration.

7. Maintenance and repair

(1) In order to keep the detector in good working condition, the following basic maintenance should be performed on the detector.
(2) Please contact our company or dealer for any application or use failure beyond the description in this manual.
(3) When there is high-concentration gas existing in the environment, the detector may not work normally.
(4) The detector should not be stored or used in an environment containing corrosive gases (such as higher concentrations of CL2, etc.), or under the other harsh circumstances (including excessive high and low temperatures, high humidity, electromagnetic fields and strong sunlight).
(5) The detector for oxygen should not be exposed to acidic gas environment for a long time, otherwise its performance will be affected.
(6) If there is dirt on the housing of the detector after long-term use,

please wipe it gently with a clean soft cloth dipped in water. It's forbidden to use solvents, soap, or polish to clean it. When cleaning the area of gas sensing hole, use a dry lint cloth or soft bristle brush.

(7) We recommend performing a bump test on the device after cleaning to confirm that the alarm is working normally.

(8) The high level of ingress protection is to prevent accidental damage to the detector. Please do not intentionally immerse the detector in liquid.

(9) Check, test and calibrate the detector regularly, and it is recommended to calibrate it every 6 months at most.

(10) We recommend that the sensor be calibrated at least once every six months, In order to ensure the detection accuracy.

(11) It is forbidden to disassemble, replace the battery and repair the alarm without permission.

8. Possible problem and suggested solutions

Problem	**Possible reason**	**Suggested solution**
Can't power on	Device crashed	Contact seller to repair
	Circuit fault	Contact seller to repair
No response to target gas	Warm up not finish	Wait till it finishes
	Circuit fault	Contact seller to repair
Result exceeds accuracy range	Sensor expired	Contact seller to repair
	Not calibrated for a long time	Calibrate the detector in time
Screen displays sensor failure	Sensor failure	Contact seller to repair

Table 1 Default Setting in Factory

Specification	H2S	CO	O2
Detection range	0-100ppm	0-500ppm	0-25%VOL
Low alarm	6ppm	35ppm	19.5%VOL
High alarm	12ppm	70ppm	23.5%VOL
TWA alert	1ppm	16ppm	N/A
STEL alert	5ppm	24ppm	N/A
Calibration gas flow rate	500±50ml/min	300±50ml/min	500±50ml/min
Response time	T_{90}≤30s	T_{90}≤30s	T_{90}≤25s

Hanwei Electronics Group Corporation
Address: No.169, Xuesong Road, Hi-Tech Zone,
Zhengzhou 450001, China
Tel.: 0086-371-67169080
Fax: 0086-371-67169090
E-mail: sales@hwsensor.com
Website: www.hwsensor.com