

**INDUSTRIAL AND COMMERCIAL
PORTABLE COMBUSTIBLE GAS DETECTOR**

Model: AQM-434

User Manual

Thank you for using the detector series products. Please keep this manual in a safe place for future reference and assistance.

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The manufacturer is committed to technological progress and continuously works on product improvement and performance enhancement. The company reserves the right to make any product improvements without prior notice.

If the user installs or repairs/replaces parts without following the instructions in this manual, the resulting responsibility lies with the user.

USER SERVICE GUIDELINES:

1. Before using this product, carefully check whether the accessories, product certificates, and user warranty cards match the checklist. If anything is missing, please contact the sales representative or the manufacturer immediately.
2. This product has a one-year warranty from the date of sale. Users who comply with storage, transportation, and usage requirements are entitled to free repairs if the product quality falls below technical specifications, based on the warranty card.
3. Damages caused by violations of operating regulations, repairs not carried out by our designated technical service department, or product quality issues due to force majeure, will incur repair charges.
4. During product repairs, please present the product warranty card proactively. Failure to present the product warranty card may result in charges for the repairs.
5. After product maintenance or repair, please present this manual. The maintenance personnel will fill out the attached "Maintenance and Repair Record" and sign it. Please also sign on the maintenance personnel's record to confirm the maintenance and repair details and provide valuable feedback. For corporate users, please affix the official seal.
6. If you have any questions or concerns about the products and services we provide, including product technology, quality, installation, maintenance, service attitude, or fee standards, please contact us promptly. We will handle your feedback properly.

INSTRUCTIONS FOR USE

Before using the gas detector, please read the following precautions:

- Do not use a damaged gas detector. Before use, check for cracks or missing parts on the outer casing. If the detector is damaged or parts are missing, please contact our company or distributor immediately. Self-replacement of components may compromise the internal safety of the detector.
- Do not expose the gas detector to electric shock or severe continuous mechanical vibrations.
- Disposed batteries and sensors should be handled by qualified recyclers or hazardous waste disposal professionals. Do not dispose of them in regular trash bins.
- Do not dismantle batteries, throw them into fire, or short-circuit the positive and negative poles of the battery, as this may cause fire or explosion.
- Prohibit unauthorized disassembly, adjustment, or repair of the detector.
- Do not open the detector cover while it is powered in the operating site! Do not charge, dismantle, or replace batteries in hazardous locations!
- Do not splash water, chemical solvents, benzene, gasoline, or similar substances on the detector, and avoid the detector from inhaling such substances, as it may cause malfunction.
- Prevent the detector from falling from heights or experiencing severe vibration.
- To ensure the measurement accuracy of the detector, it should be calibrated regularly (not exceeding once a year).
- Avoid frequent exposure of the detector to high concentrations of toxic gases by human intervention.
- Do not continue to use the detector when the sensor has failed or exceeded its service life.
- Before using this instrument, carefully read the user manual and strictly follow the instructions.
- For any application or malfunction beyond the scope of this manual, please contact your distributor or manufacturer for assistance.

The "Industrial and Commercial Portable Combustible Gas Detector" is abbreviated as portable gas detector in this manual.

The appearance and color of products in the product catalog are for reference only. Supply shall be based on actual products. We reserve the right to modify the technical parameters of products in this catalog without prior notice. If you have any questions, please call our service hotline.

1. OVERVIEW

This portable gas detector is a highly sensitive industrial gas detection instrument. It is suitable for gas concentration detection in industrial and commercial environments such as gas stations, chemical workshops, hazardous chemical warehouses, petroleum and petrochemical sites, laboratories, etc. It effectively ensures the safety of personnel and prevents damage to production equipment. This product can detect different gases depending on the type of sensor used. It is compact, easy to operate, portable, and has good shock resistance.

The product adopts high-resolution dot matrix LCD display technology for a more intuitive and clear display. The detector uses a diffusion detection method, and the sensitive components employ high-quality gas sensors, ensuring excellent sensitivity and repeatability. It is controlled by embedded microcomputer technology, offering simple operation, comprehensive functionality, and high reliability with various adaptive capabilities. Its compact and elegant portable design makes it easy to carry and use on the move. The detector's outer shell is made of high-strength engineering plastics with composite anti-slip rubber, providing high strength, good feel, and features such as waterproof, dustproof, and explosion-proof capabilities.

It is suitable for areas with explosive gas mixtures of Zone 1 and Zone 2, classified as Zone II A, II B, II C, and for dust-laden environments classified as Zone 21 and Zone 22.

1.1 NORMATIVE REFERENCES

This product's design, manufacturing, and testing comply with the following national standards:

GB/T 3836.1—2021 Explosive atmospheres - Part 1: Equipment - General requirements

GB/T 3836.4—2021 Explosive atmospheres - Part 4: Equipment protected by intrinsic safety "i"

GB/T 4208—2017 Degrees of protection provided by enclosure (IP code)

JB/T 9329—1999 Basic environmental conditions and test methods for transportation, storage, and storage of instruments and meters

GB 12358—2006 General technical requirements for gas detectors in workplace environments

GB 15322.3—2019 Portable combustible gas detectors for industrial and commercial use

JJG 693—2011 Combustible gas detector
JJG 365—2008 Electrochemical oxygen analyzer
JJG 915—2008 Carbon monoxide detector
JJG 695—2019 Hydrogen sulfide gas detector
GB/T 191—2008 Packaging storage and transportation icon signs

1.2 PRODUCT TERMS

LEL (Lower Explosion Limit): The lowest concentration of a combustible gas in air that can ignite with a flame, expressed as a percentage of the Lower Explosive Limit (%LEL). In English: Lower Explosion Limit. When the concentration of combustible gas in air reaches its lower explosive limit, the explosive hazard of the environment is considered to be 100% LEL.

%VOL: Percentage of gas volume.

ppm (parts per million): Parts per million by volume of a gas in air.

μmol/mol (micromoles per mole): Unit of amount of substance.

Conversion: 1 ppm = 1 μmol/mol.

1.3 PRODUCT FUNCTIONS

- Can interconnect with confined space detectors and other portable detectors, supporting mutual connection with the same device.
- Supports Bluetooth (for Android only)
- Screen supports 0° and 180° flip for easy viewing.
- Type-C charging port for convenience.
- Audible, visual, and vibration alarms; low voltage alarm, fault alarm; fall detection alarm, SOS alarm, one-key SOS.
- Multiple alarm mode settings: low alarm, high alarm, interval alarm, TWA (Time Weighted Average), STEL (Short Term Exposure Limit), OL (Over Limit) alarm.
- Multi-level calibration, automatic zero tracking; factory settings can be restored, concentration calibration errors are automatically identified and prevented.
- Switch between Chinese and English interfaces.
- Units can be freely switched.
- Can store 30,000 data records; storage interval and mode can be set.

2. MAIN TECHNICAL INDEX

• Detectable Gases:	Combustible and toxic gases
• Sampling Method:	Diffusion (natural diffusion)
• Display:	LCD display
• Operating Temperature:	-10°C to +55°C
• Relative Humidity:	<93%
• Indication Method:	LCD liquid crystal display
• Power Supply Voltage:	DC 3.7 V
• Battery Model:	104050
• Battery Capacity:	3000 mAh lithium-ion rechargeable battery
• Charging Time:	<5 hours
• Operating Time:	≥8 hours (continuous)
• Explosion-proof Certificate Number:	CCRI 24.2663X
• Explosion-proof Marking:	Ex ia II C T4 Ga / Ex ia III C T200130°C Da
• Protection Level:	IP68
• Product Weight:	Approximately 200 g
• Pressure Limit:	86 kPa to 106 kPa
• Dimensions:	L 120 mm × W 56 mm × H 30 mm

3. PRODUCT OPERATION FUNCTION DESCRIPTION

3.1 PRODUCT OVERALL APPEARANCE AND FUNCTION INDICATION



Figure 1

Number	Name
1	LCD screen
2	Buttons
3	Air inlet
4	Indicator light
5	Charging port

4. PRODUCT OPERATION FUNCTION DESCRIPTION

4.1.1 BUTTON EXPLANATION



Figure 2

The product has three buttons:

- Up button: Used for left page flipping/upward selection.
- Power button: Power on/off button. Long press acts as a return button, short press as a confirmation button. (Note: Long press on the main display screen turns off the device; long press on other screens returns to the previous screen.)
- Down button: Used for right page flipping/downward selection.

4.1.2 INDICATOR LIGHT EXPLANATION:

The product has one indicator light:

- Green light: Indicates normal detection status.
- Yellow light: Indicates a fault status.
- Red light: Indicates an alarm status.

4.2 MAIN DISPLAY INTERFACE



Figure 3

Number	Name
1	Current Time
2	Bluetooth
3	Current Battery Level
4	Gas Detection Name
5	Gas Concentration Value
6	Gas Concentration Unit
7	Current Page/Total Pages

The current interface displays information about four types of detected gases. Pressing the button allows entry into specific information for each gas type, as shown in Figure 4. This screen displays the current gas name, gas concentration, historical maximum concentration, historical minimum concentration, time-weighted average concentration (TWA), short-term exposure limit (STEL), and concentration curve. Pressing the up or down button allows you to navigate left or right to view detailed information for other detected gases. For user convenience, the product features automatic page flipping functionality. When the product is held upright, the page orientation is 0°. When the product is flipped upside down, the page automatically flips 180°, making it easier for users to view data.



Figure 4

4.3 Power On Instructions:

Long press the power button. The indicator light will illuminate, accompanied by a vibration and a system notification sound. Release the button when this occurs. The screen will display a QR code for approximately 30 seconds, after which it will enter the main display interface.

4.4 Power Off Instructions:

While on the main display interface, long press the power button. Release the button when the indicator light illuminates along with a vibration to shut down the system.

4.5 Menu List:

On the main display interface, short press the power button. The system will prompt for a password entry, as shown in Figure 5. A yellow cursor will appear on the first digit, indicating it is editable. The initial password is "1111". Use the up and down buttons to edit each digit, and use the power button to confirm each digit. Enter "1111" to access the menu list. Short pressing the down button changes the first digit to "1" (short pressing the up button changes it to "9"), as shown in Figure 6. Short press the power button to confirm and move the yellow cursor to the second digit. Repeat this process for all four digits to set them all to "1", as shown in Figure 7. Short press the power button to confirm the entry, and the system will transition to the main menu interface, as shown in Figure 8. The menu list includes: Channel Settings, Time Settings, System Settings, Alarm Records, Zero Calibration, Calibration, Upload Settings, Historical Records, Factory Reset, BT.

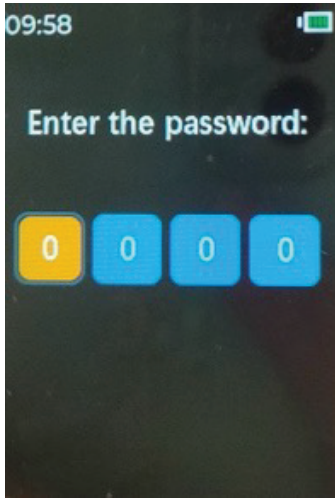


Figure 5

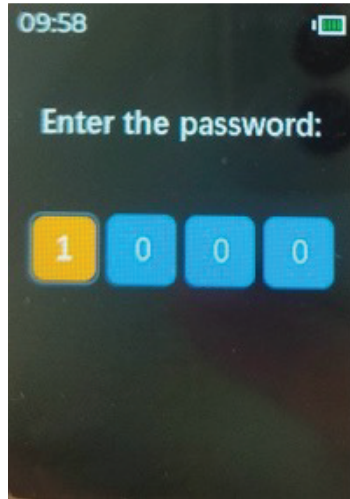


Figure 6

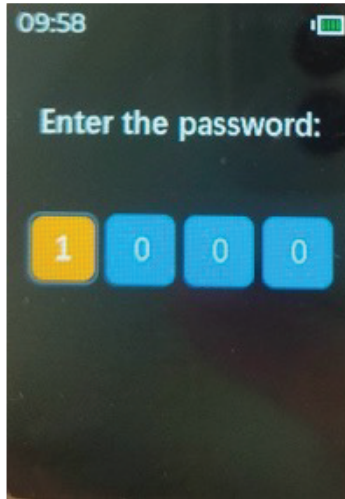


Figure 7

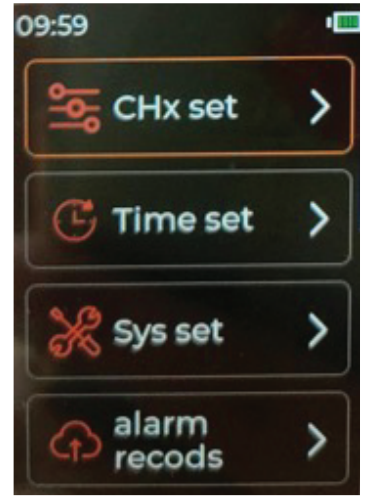


Figure 8

4.5.1 Channel Settings:

On the main menu interface, use the up or down button to select the "Channel Settings" menu item. Short press the power button to enter the Channel Settings interface, as shown in Figure 9. In this interface, users can set parameters for each channel, including gas name, gas unit, decimal places for gas concentration value, range, alarm 1, alarm 2, and other information. Short press the power button to confirm the channel selection. Press the down button (or directly press it to enter another channel) to choose the parameter you want to modify, as shown in Figure 10. First, press the power button to confirm and then modify the parameter.

If modifying a parameter with a dropdown arrow, use the up or down button to make selections, as shown in Figure 11. If modifying a parameter without a dropdown arrow, first press the power button to confirm, as shown in Figure 12. The system will display a "Please enter ×××" screen, as shown in Figure 13. Use the on-screen keyboard at the bottom to input the value. After inputting, be sure to select "√" for confirmation.

After setting parameters, press the down button to select "Save" and then press the power button to confirm. If you do not wish to save the changes, select "Cancel" and then press the power button to confirm, as shown in Figure 14.

Upon completing menu settings as described, the system will automatically return to the main menu interface. If you wish to stop modifying settings in any menu interface, long press the power button to automatically return to the main menu interface.

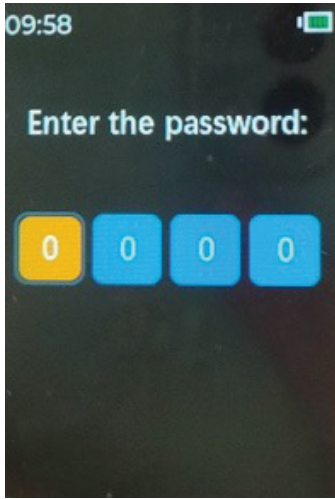


Figure 5

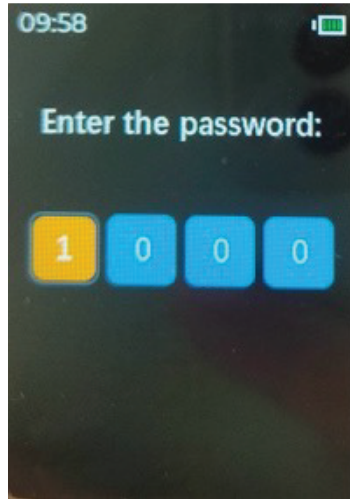


Figure 6

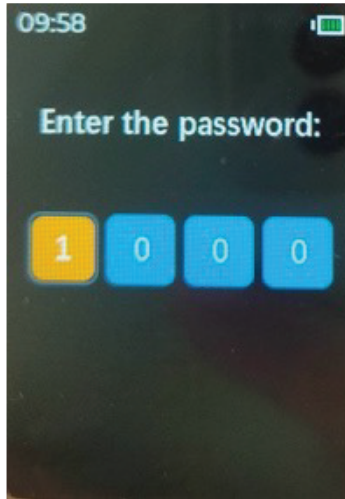


Figure 7



Figure 8

4.5.1 Channel Settings:

On the main menu interface, use the up or down button to select the "Channel Settings" menu item. Short press the power button to enter the Channel Settings interface, as shown in Figure 9. In this interface, users can set parameters for each channel, including gas name, gas unit, decimal places for gas concentration value, range, alarm 1, alarm 2, and other information. Short press the power button to confirm the channel selection. Press the down button (or directly press it to enter another channel) to choose the parameter you want to modify, as shown in Figure 10. First, press the power button to confirm and then modify the parameter.

If modifying a parameter with a dropdown arrow, use the up or down button to make selections, as shown in Figure 11. If modifying a parameter without a dropdown arrow, first press the power button to confirm, as shown in Figure 12. The system will display a "Please enter xxx" screen, as shown in Figure 13. Use the on-screen keyboard at the bottom to input the value. After inputting, be sure to select "✓" for confirmation.

After setting parameters, press the down button to select "Save" and then press the power button to confirm. If you do not wish to save the changes, select "Cancel" and then press the power button to confirm, as shown in Figure 14.

Upon completing menu settings as described, the system will automatically return to the main menu interface. If you wish to stop modifying settings in any menu interface, long press the power button to automatically return to the main menu interface.

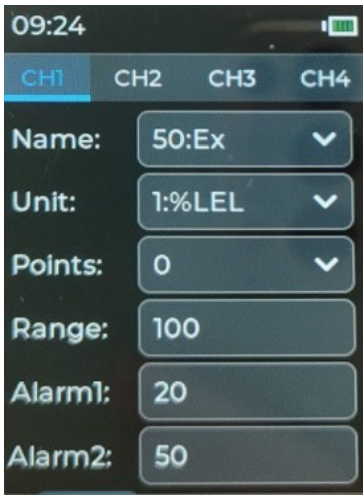


Figure 9

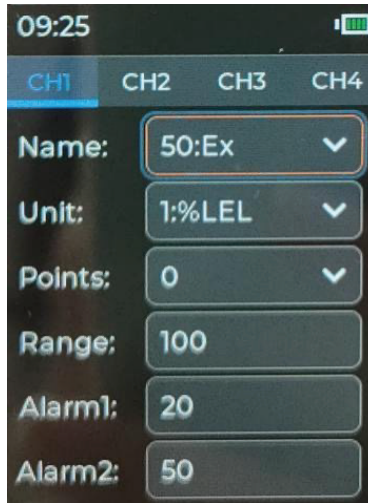


Figure 10

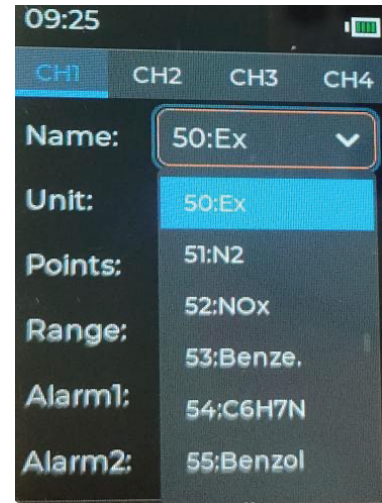


Figure 11



Figure 12

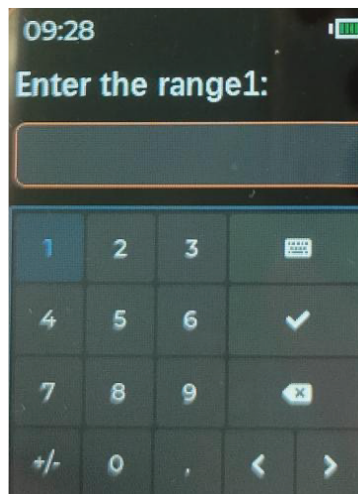


Figure 13



Figure 14

4.5.2 Time Settings:

On the main menu interface, use the up or down button to select the "Time Settings" menu item. Short press the power button to enter the Time Settings interface, as shown in Figure 15. In this interface, users can set the values for year, month, day, hour, minute, and second. After setting the desired values, select "Save" and press the power button to confirm.



Figure 15

4.5.3 System Settings:

On the main menu interface, use the up or down button to select the "System Settings" menu item. Short press the power button to enter the System Settings interface, as shown in Figure 16. In this interface, users can: Configure channel functions, enabling or disabling specific channels. Set the language to Chinese or English. Adjust the backlight brightness to make the screen brighter or dimmer.

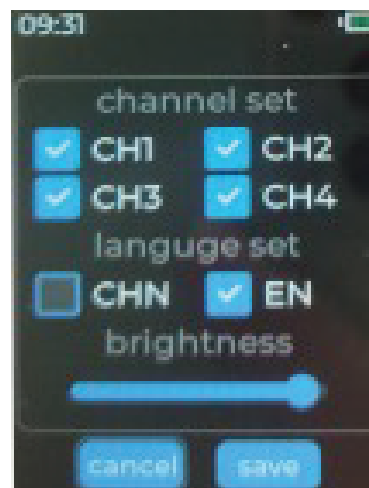


Figure 16

4.5.4 Alarm Records:

On the main menu interface, use the up or down button to select the "Alarm Records" menu item. Short press the power button to enter the Alarm Records interface, as shown in Figure 17. In this interface, users can:

- View historical alarm records, displaying the alarm date, alarm time, gas name during the alarm, alarm status, gas concentration during the alarm, and current page/total pages. Use the up or down button to navigate through pages, as shown in Figure 18. Long press the power button to return to the main menu interface.



Figure 17



Figure 18

4.5.5 Zero Setting:

On the main menu interface, use the up or down button to select the "Zero Setting" menu item. Short press the power button to enter the Zero Setting interface, as shown in Figure 19. This interface displays the gas channel and gas name, real-time zero AD value, historical zero value, and a curve graph. Select the gas channel for zero shift. After the real-time value stabilizes, select "Save" and press the power button to confirm to complete the zero shift.



Figure 19

4.5.6 Calibration:

On the main menu interface, use the up or down button to select the "Calibration" menu item. Short press the power button to enter the Calibration interface, as shown in Figure 20. Users can choose the gas channel for calibration, as shown in Figure 21. After selection, users can adjust the calibration gas value, as shown in Figure 22. After pressing the power button, the system prompts to enter the calibration gas value, as shown in Figure 23. Enter the value using the on-screen keyboard and confirm.

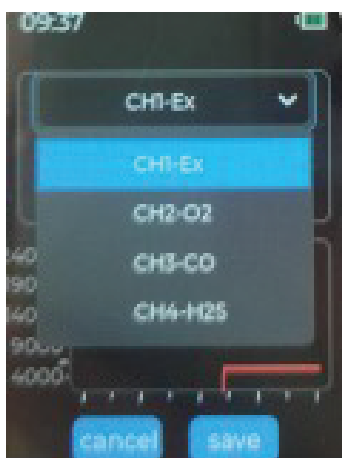


Figure 20

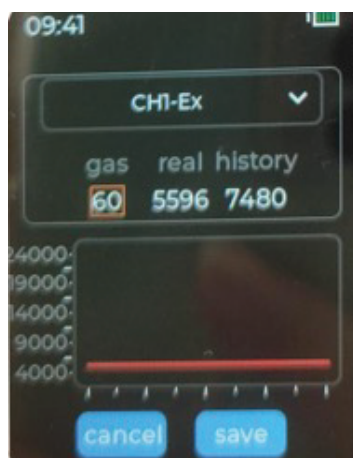


Figure 21

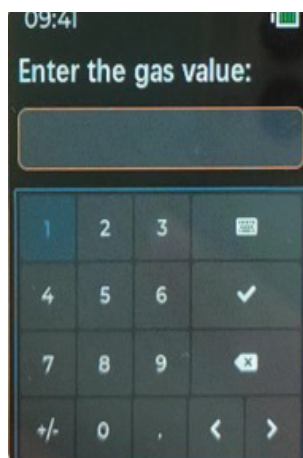


Figure 22



Figure 23

4.5.7 Historical Records:

On the main menu interface, use the up or down button to select the "Historical Records" menu item. Short press the power button to enter the Historical Records interface, as shown in Figure 24. This interface displays the current date and time, gas names, current concentrations of each gas, and "373/373" at the bottom indicating "current page/-total pages of historical records". Use the up or down button to flip through pages for viewing.



Figure 24

4.5.8 Factory Reset:

On the main menu interface, use the up or down button to select the "Factory Reset" menu item. Short press the power button and enter the password "5656" to perform a factory reset.

4.5.9 BT (For Android only)

Operation on the meter:

After turning on the meter, press the power button and enter the password 1111. Turn on the meter's Bluetooth (Figure 25), save and exit, then shut down and restart the machine for standby use. (If Bluetooth has been enabled before, there is no need to turn it on again; simply power on the machine for standby use.)

Operation on APP:

1. Download the app. After downloading, check if the app name is "智☒☒牙.apk". If not, please rename the app to "智☒☒牙.apk".
2. Open the app and switch the language to English (Figure 26). After switching the language, the app will restart.
3. On the app's Bluetooth interface, click "Search for Device" and connect to "ZA_A116" (Figure 27 & 28).
Once connected successfully, click "Data" to view real-time data.



Figure 25



Figure 26

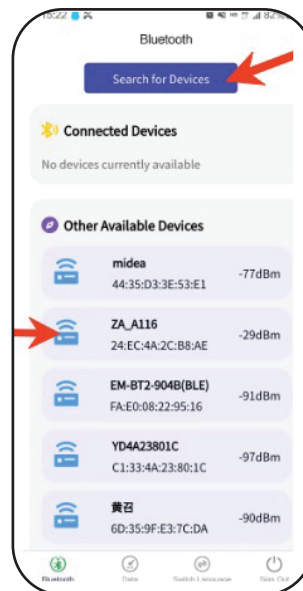


Figure 27

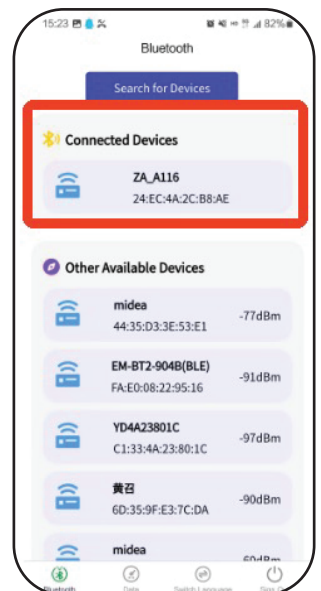


Figure 28

Note: When the system battery is low, the battery indicator will intermittently flash. Please shut down the system promptly and charge using a Type-C data cable. While charging, the screen will display "Charging"; when charging is complete, the screen will display "Charging Complete".

4.5.10 Fall Alarm Function:

The product features a fall alarm function. When the product falls, it triggers an SOS alert, as shown in Figure 29. Press the up or down button to cancel the alarm.



Figure 29

4.6 SOS Alarm Function:

The product features an SOS alarm function. Press both the up and down buttons simultaneously to activate the SOS alarm, and press either the up or down button to cancel the alarm.

5. PRECAUTIONS FOR USE:

5.1 Prevent the device from falling from a height or experiencing severe vibration.

5.2 The device may not function properly in environments with high gas concentrations.

5.3 Strictly follow the user manual for operation and usage to avoid inaccurate detection results or damage to the device.

5.4 Do not store or use the product in environments containing corrosive gases (such as high concentrations of chlorine) or in harsh conditions (including extreme temperatures, high humidity, electromagnetic fields, and intense sunlight).

5.5 If the device surface becomes dirty after long-term use, gently wipe it with a clean, damp cloth. Avoid using corrosive solvents or abrasive materials, as they may scratch or damage the device surface.

5.6 To ensure detection accuracy, the device should undergo regular calibration with a calibration period not exceeding one year.

5.7 Infrared sensors and semiconductor sensors have a recommended lifespan of 5 years, while catalytic combustion sensors and electrochemical sensors have a recommended lifespan of 2 years.

5.8 Dispose of the lithium batteries and sensors of the discarded detector at designated locations or return them to the company. Do not dispose of them in regular trash bins.

5.9 For any applications or malfunctions beyond what is described in this manual, please contact our company for assistance.

5.10 Do not dismantle or replace the battery pack in explosive gas environments, or charge the battery pack. Do not use peripheral devices that are not explosion-proof certified or replace sensors in explosive gas environments.

5.11 Products with explosion-proof certificates should not have components or structures that affect their explosion-proof performance replaced or modified arbitrarily.

5.12 Electrical design, selection, installation, and use in explosive hazardous areas must strictly comply with relevant national standards to ensure the explosion-proof safety of electrical equipment in such areas.

5.13 Charge the device in a safe location using the professional charger provided with the device.

6. COMMON FAULTS AND SOLUTIONS:

Fault Phenomenon	Possible Causes	Solutions
	Low voltage	Please charge in time
Unable to power on	Device freeze	Contact dealer or manufacturer for repair
	Circuit failure	Contact dealer or manufacturer for repair
No response from gas detection	Circuit failure or sensor end of life	Contact dealer or manufacturer for repair
Display inaccurate readings	Sensor expired	Contact dealer or manufacturer for repair or replace sensors
	Long-term without calibration	Please calibrate in time

Fault Phenomenon	Possible Causes	Solutions
Incorrect time display	Battery fully depleted	Charge promptly and reset the time
	Strong electromagnetic interference	Reset the time
Zero calibration function unusable	Sensor drift too much	Calibrate in time or replace sensors
Interface shows values when no gas detected	Sensor drift	Perform zero calibration Contact dealer or
Device shows full range on normal detection interface	Sensor malfunction	manufacturer to replace sensors

7. WARRANTY AND MAINTENANCE:

7.1 This product has a one-year warranty (excluding consumables). If there is a malfunction under normal use, you can enjoy free factory repair and maintenance services. Damage caused by human factors, natural disasters, or abnormal use is not covered by the warranty.

7.2 If the sensor reaches the end of its lifespan, please contact our company for replacement.

7.3 If users cannot troubleshoot, they can send the detector back to our company for repairs. We will resolve the issue and return it to the user as quickly as possible.

8. STORAGE:

The product should be stored in a ventilated room with an ambient temperature of -10°C to $+55^{\circ}\text{C}$ and a relative humidity not exceeding 85%. The air should not contain harmful gases or impurities that can corrode the product.

9. ACCESSORIES

The accompanying detector package includes one packaging box, one portable gas detector, one charger, one user manual, one certificate of conformity, and one warranty card.