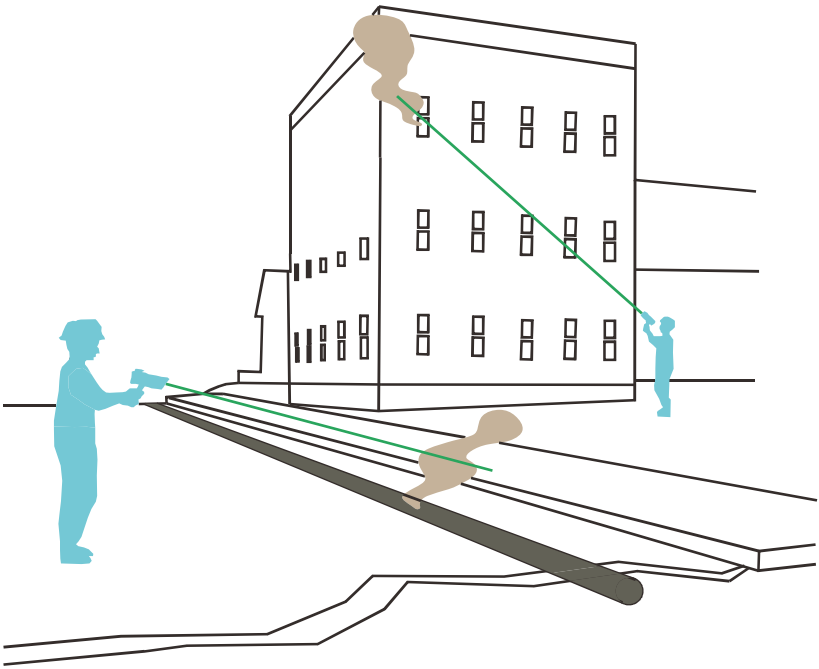
ARJ 3000

Remote Methane Leak Detector

User Manual



Contents

1. Background

With the design concept of "improving the core performance of the instrument and discovering more hidden dangers of leakage", a new generation of ARD3000 Remote Methane Leak Detector is launched.

Four major features:

1. Higher detection sensitivity
2. Faster response speed
3. Stronger remote detection capability
4. Lower probability of false positives

2. Introduction

2.1 Open the carrying case

Confirm that there are the following accessories:

ARD3000 Remote Methane Leak Detector

Charger

Backup Battery

Black foam (for fixing the Detector)

Calibration chamber(fixed on black foam)

Tool Bag

User Manual

Quality Certificate

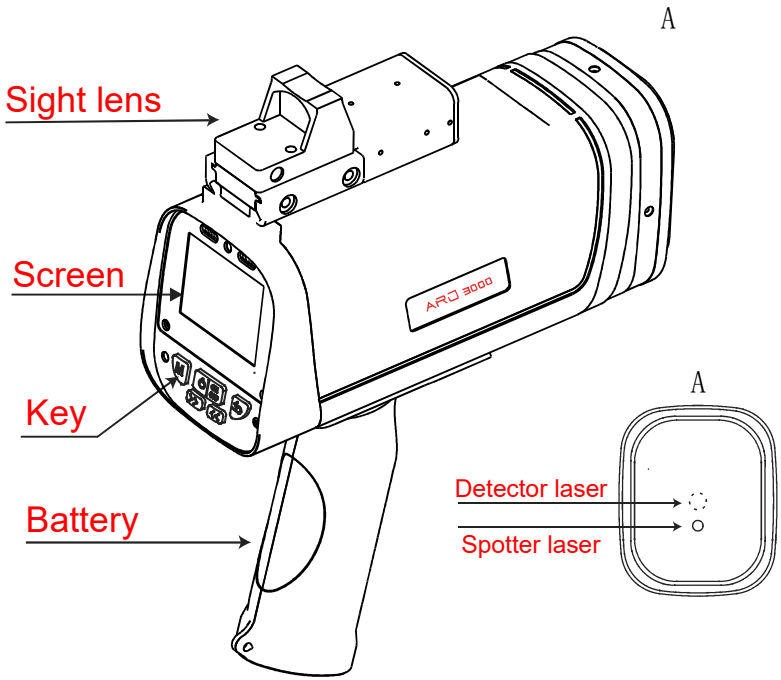
Wrist strap (attached to the Detector)

*The calibration gas chamber is used for Detector calibration, please do not disassemble it at will.

*Safety protective box has the function of dustproof and waterproof, store it in the protective box when the Detector is not in use.

*If any accessories are found to be damaged or missing, please contact us immediately.

2.2 Structure



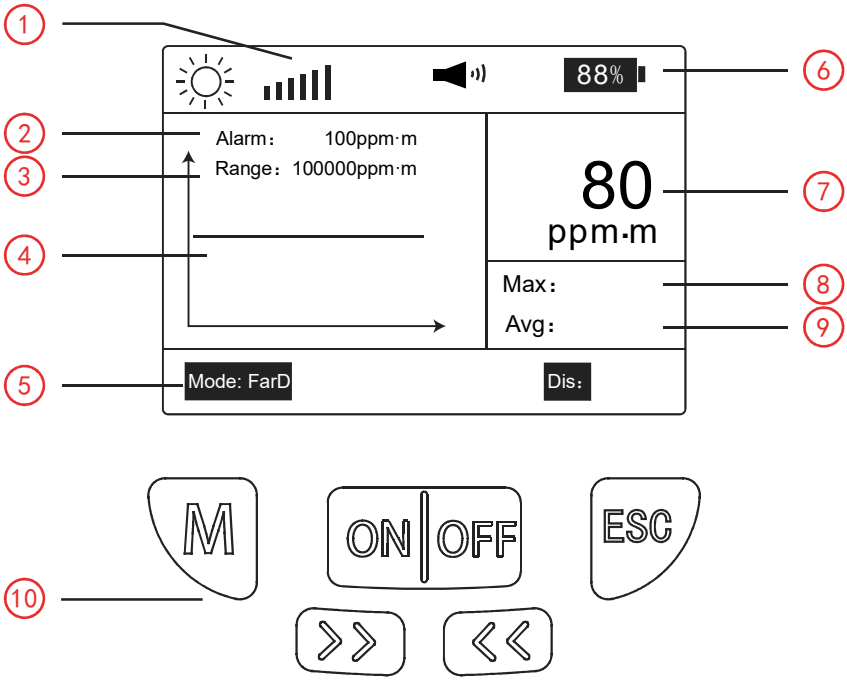
ARD3000 Remote Methane Leak Detector is suitable for remote measurement of methane gas leakage. It emits two light beams, one is a visible spotter laser (green), used to point to suspected leaks; the other is an invisible detector laser, used to measure the concentration of methane at the leak, and the concentration unit is ppm.m.

2.3 Technical parameter

Measurement Range:	0 ppm·m- 100000 ppm·m
Sensitivity:	2.5 ppm·m
Detection Distance:	High-sensitivity mode: 30m Long-distance mode: 200m
Response Time:	0.05 s
Protection Class:	Ip66
Explosion Proof Classification:	Ex ib IIA T4 Gb
Laser Class:	Detector laser Class 1； Spotter laser Class IIIR
Operating Temperature:	- 20°C~ 50°C
Battery Operating Life:	12 hours
Aiming Method:	Spotter laser
Display and Alarm:	LCD display + audible alarm
Power:	Rechargeable Lithium battery
Weight:	750g
Size:	201mm*76 mm* 248mm

3. Operation Instruction

3.1 Operation interface



1 Received light intensity
2 Alarm threshold
3 Range value
4 Concentration curve
5 Detection mode
6 Battery
7 Concentration value
8 Max. value
9 Avg. value
10 Key

3.2 Turn on and turn off

Long press the ON/OFF key of the Detector until the screen appears, and the Detector will turn on after a clink. Long press the ON/OFF button of the Detector, and the Detector is turned off.

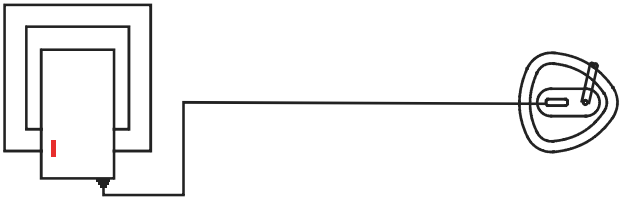
3.3 Turn on/off the laser

After the instrument is turned on, short press the ON/OFF key, the spotter laser and the detector laser are both turned on, and the front of the Detector is light with a green beam. Short press the ON/OFF key to turn off the laser, and the green beam of the Detector is turned off.

Warning: The laser level of the green beam is Class 3R, do not look directly to avoid burning your eyes.

3.4 Charging

When the power of the Detector is lower than 20%, it must be charged in time. Please use the original charger to charge, the charging port is located at the bottom of the Detector, open the bottom rubber plug and insert the charger plug. The red light is charging, and the green light is fully charged.



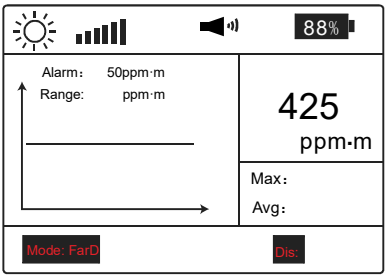
Warning: Do not charge the Detector in an explosive atmosphere!

3.5 Test method

3.5.1 Mode setting

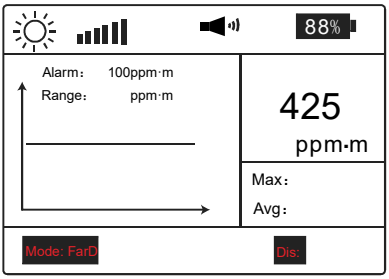
The Detector is divided into two modes: high-sensitivity mode and long-distance mode. "Mode: High-sensitivity " appears in the lower left corner

of the screen, which means high-sensitivity mode; "Mode: Long-distance" appears in the lower left corner, which means long-distance mode.



[1] High sensitivity mode

After the Detector is turned on, when the lower left corner of the LCD screen displays "Mode: Long-distance", long press the M key until " Mode: High-sensitivity" appears. The high-sensitivity mode test is suitable for small eaks within 30 meters; if the suspected leak is more than 30 meters away, please switch to the long-distance mode.



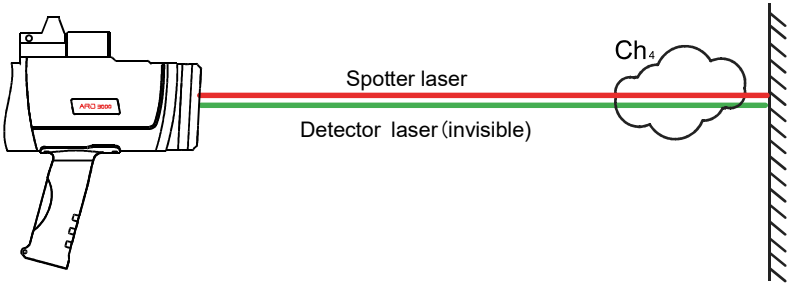
See 4.3.2 for specific adjustment methods

[2]Long distance mode

After the Detector is turned on, when the lower right corner of the LCD screen displays " Mode: High-sensitivity ", press and hold the M key until " Mode: Long-distance" appears. The long-distance mode can detect suspected leaks within 200 meters.

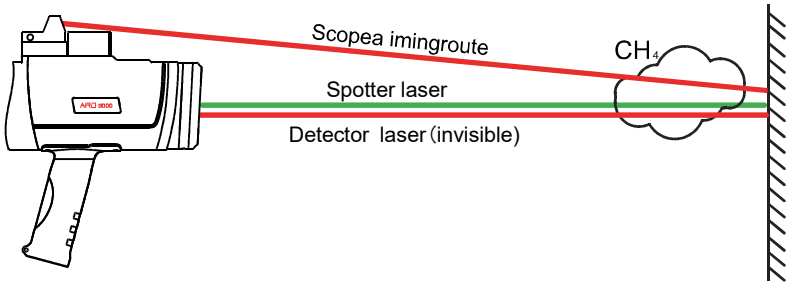
In the long-distance mode, you can also adjust the "distance setting" to determine the distance of the test.

3.5.2 Aiming method



[1] Spotter laser aiming

After the instrument is turned on, the spotter laser and the detector laser are turned off, short press the ON/OFF key on the Detector, the spotter laser and the detector laser are turned on at the same time, and the front of the Detector lights up with a green beam. At this time, it is suitable for aiming at close range and in weak sunlight environment.

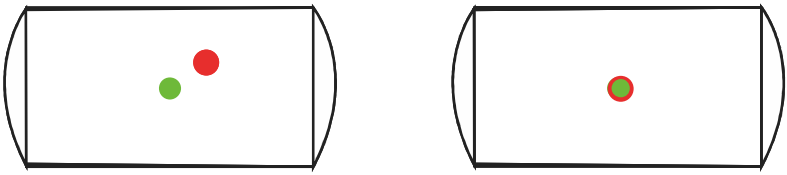


[2] Scope aiming

When the Spotter laser is turned on, the scope is also turned on, and a red dot will appear in the center of the scope. At this time, it is suitable for aiming at long distances and in strong sunlight.

Scope adjustment:

Turn on the laser, point the Detector at 30 meters, look directly at the glass window of the scope, use the "black plastic part" in the tool bag to adjust the up and down, left and right directions until the red dot of the scope and the green spotter laser coincide.



3.5.3 Alignment of suspected leaks

Point the Detector to the suspected leak point, if there is a methane gas leak, the real-time concentration value will be displayed on the screen, and a clink alarm will sound for the concentration exceeding the alarm threshold.

Note: In order to ensure that the Detector can correctly detect methane gas, the following conditions must be met:

[1] There is an accumulation of methane gas in the path of the laser;

[2] The laser passes through the gas;

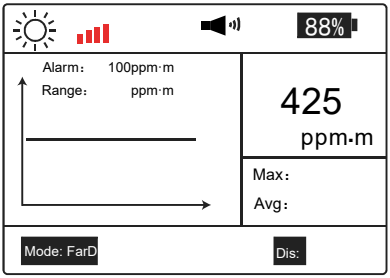
[3] The laser reflects back to the receiver through a reflective surface.

3.5.4 Reflective surface

The reflection ability of the reflective surface to the laser will directly affect the test results. When the reflective surface is dark, tilted at a large angle, porous, mirror surface, strongly reflective surface or non-reflective surface, please adjust the angle and position to achieve the best effect. The signal strength in the upper left corner of the screen represents the laser reception strength.

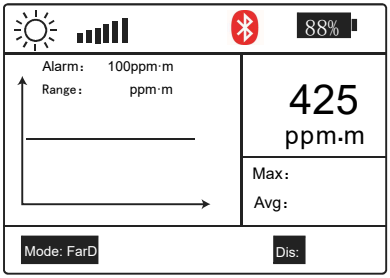
Poor reflective surface: black wall, mirror, etc.;

Excellent reflective surface: cement wall, gypsum surface, etc.



3.5.5 Connect to smart inspection applications

ARD3000 has Bluetooth function. Open the application on the mobile to automatically search for and connect to the Detector. After the connection is successful, the Bluetooth logo on the Detector screen will automatically light up.



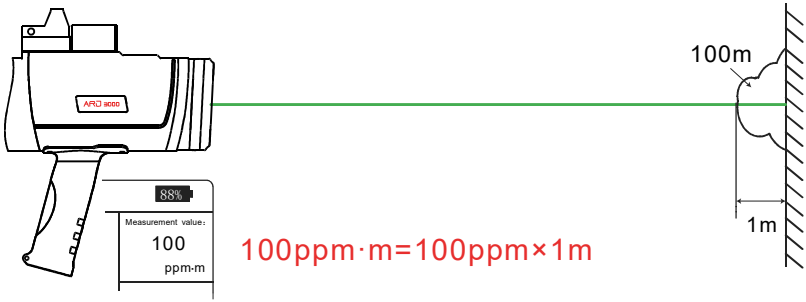
3.5.6 Unit concentration

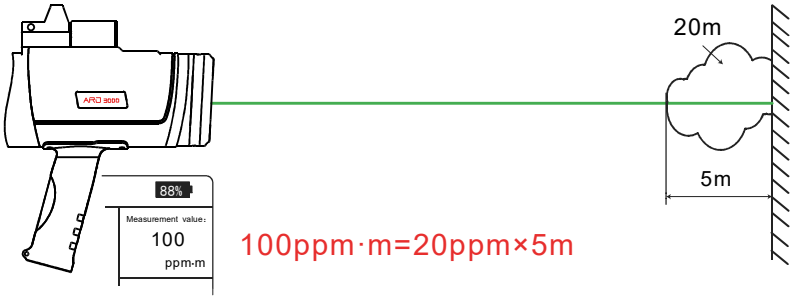
ppm: One-millionth of the volume percent content of a gas, a dimensionless unit.
lel: The lowest volume percent concentration of a combustible gas that can be detonated in air.
vol: The volume percentage of gas, which is a physical unit.

Generally speaking, ppm is used for more accurate measurements; lel is used for explosion detection; the magnitude of vol is the largest of the three. Due to the continuous change and uneven distribution of leaked methane gas, ppm·m, lel·m, and vol·m were introduced.

The default unit of the Detector is: ppm·m.

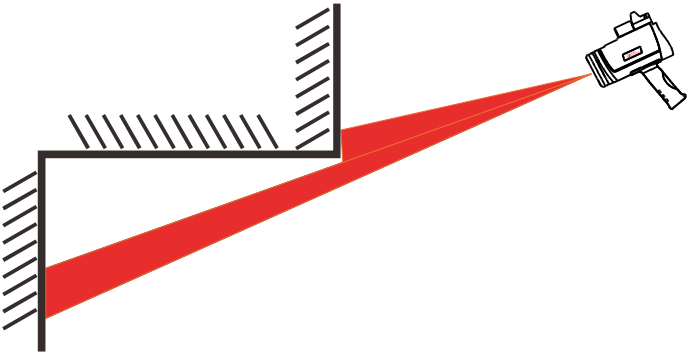
100 ppm·m: Uniform distribution of 100 ppm methane over a 1 meter thick methane mass



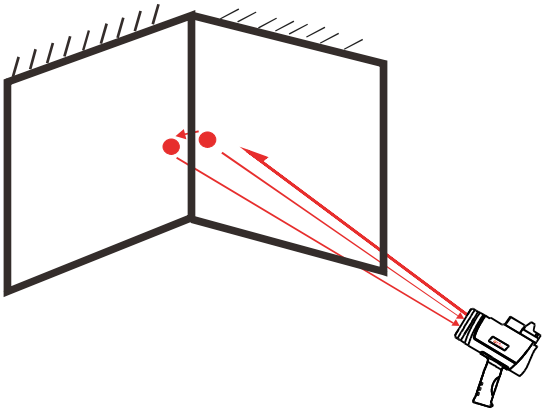


3.5.7 Common misuses

[1] During the detection, the moving speed is too fast, causing a sudden change in the signal and easily causing false alarms;
[2] When the detector laser is blocked by some objects, the distance will be abruptly changed, and false alarms may occur.



[3] When detecting a corner against a high reflectance background, two reflection points of spotter laser can be observed. At this time, false alarms may be caused, and other angles should be changed to test again to determine whether it is a leak alarm.



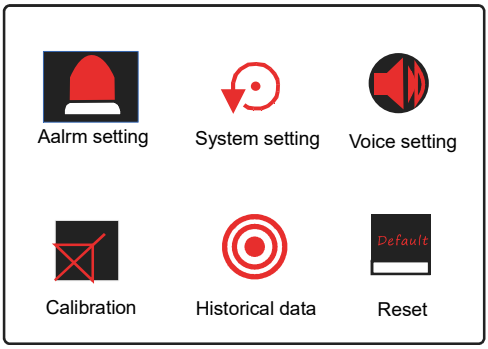
[4] When the laser passes through a thin PE pipe, the detector laser may penetrate the PE pipe to detect the methane gas in the pipe, and the pipeline detection should be avoided at this time.

[5] The detector laser is facing the sky, and the light signal cannot be returned.

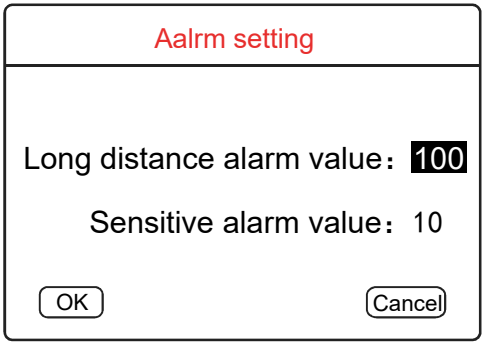
4. Parameter Settings

4.1 Menu interface

Press the M key to enter the menu interface. The menu interface is as follows:



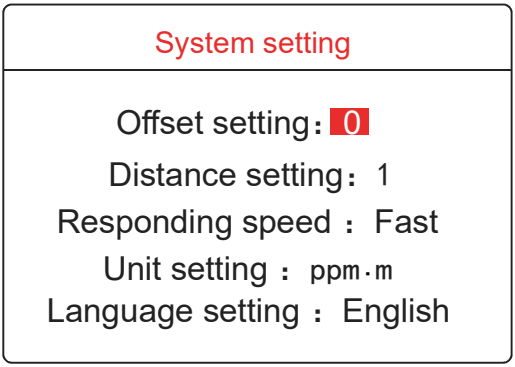
4.2 Alarm setting



After selecting the alarm setting, press the M key to enter the alarm setting; "Long distance alarm value" is the alarm minimum value in remote mode, and "Sensitive alarm value" is the fluctuation value alarm in high sensitivity mode. After selecting the alarm value, press the M key to select the value, and adjust the 《《、》》 keys to change the alarm threshold.

4.3 System setting

After selecting the “System setting”, press the M key to enter the system setting; the submenu includes offset setting, distance setting, response speed, unit setting and language setting.



4.3.1 Distance setting

Use the 《《、》》 keys to change the distance value. Press M key to confirm the changes and return to the main menu.

The distance can be set from 1 to 10, corresponding to the ARD3000 detection distance from near to far. For example, when measuring a nearby pipeline or other nearby unknown leaks, you can set the distance value to 1 to improve near-site measurement accuracy; when detecting a distant leak or a high-rise building, you can increase the distance value to increase the detection distance.

Note: As the distance value increases, the probability of false alarms from the telemeter increases.

4.3.2 Responding speed

Use the 《《、》》 keys to change the response speed. Press M key to confirm the changes and return to the main menu.

The distance setting can be set to "fast", "medium" and "slow", corresponding to the response speed of ARD3000 from fast to slow.

4.3.3 Unit setting

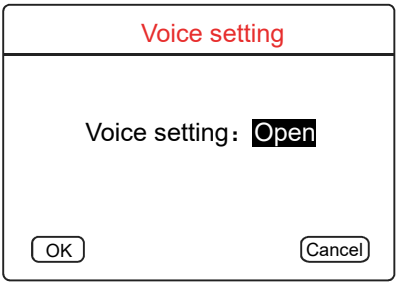
Use the 《《、》》 keys to change the unit setting. Press M key to confirm the changes and return to the main menu.

Unit setting can be set to "ppm", "% lel" or "% vol".

4.3.4 Language setting

Change the language setting with the 《《、》》 keys. Press M key to confirm the changes and return to the main menu. The language can be set to "Chinese" or "English".

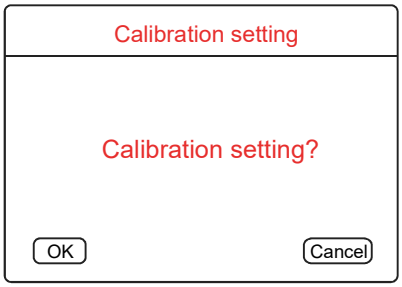
4.4 Voice setting



On the main menu interface, move the cursor with the 《《、》》 keys to select the sound setting icon, and press the M key to enter the sound setting.

Use the 《《、》》 keys to turn the sound on and off. Press M key to confirm the changes and return to the main menu.

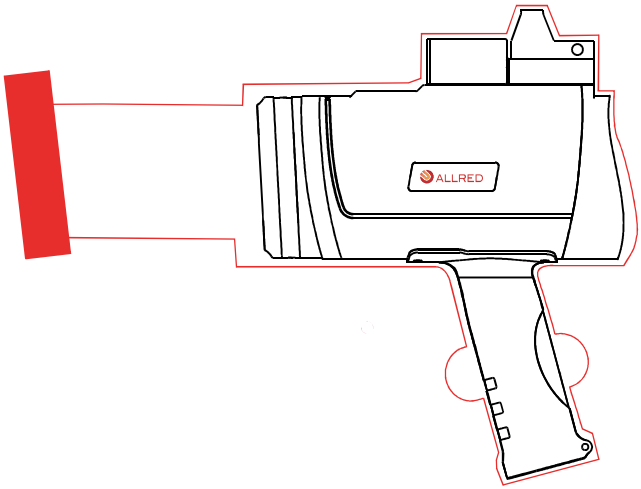
4.5 Calibration setting



On the main menu interface, move the cursor with the 《《、》》 keys to select the calibration setting icon, and press the M key to enter the calibration setting.

Press the M key to confirm the system. Within 10 seconds of the countdown, place the device directly in the calibration gas cell in the safety protection box. After three minutes, the calibration is successful, the device alarms, remove the device, and the calibration is complete.

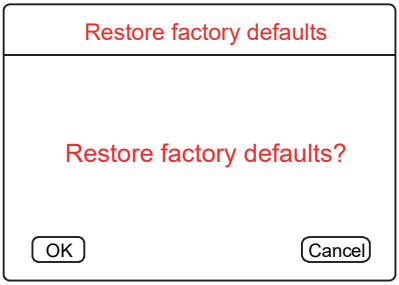
Note: The ARD3000 may cause the internal parameters to drift due to changes in time and temperature, resulting in higher or lower measured values. In order to ensure the reliability, accuracy of the measurement, it is recommended to calibrate once a month.



4.6 Historical data

On the main menu interface, move the cursor with the + and-buttons to select the historical data icon, and press M key to view the historical data. Press the M key to confirm the historical data and return to the main menu. The historical data stores the detection data records of the last 30 times.

4.7 Reset



On the main menu interface, move the cursor with the 《《、》》keys to select the factory reset icon, and press M key to enter the factory reset. Press M key to restore the factory and return to the main menu.

5. Repair and Maintenance

5.1 Trouble shooting

ARD3000 has a self-test function. After an error occurs, a fault alarm will be displayed on the screen. The common faults and their solutions are listed below.

[1] Temperature control failure

1. Turn off and move it to room temperature for 1 hour;
2. If the failure continues to occur, you should contact our after-sales department.

[2] Light intensity is too weak

1. Re-find a good reflective surface;
2. Check whether there are large particles blocking the laser emission port;
3. If neither of the above two situations exist, please contact our after-sales department.

[3] Light intensity is too strong

1. Re-find a good reflective surface;
2. If there is no such situation, please contact our after-sales department.

[4] Unable to detect known methane gas

1. Re-calibrate;

2. After calibration, it still cannot be detected, please contact the after-sales department.

[5] For other failures not listed, please contact our after-sales department

5.2 Routine maintenance

In order to keep the equipment in good condition, please follow the recommendations below for routine maintenance.

Maintenance project	Frequency
Wipe the exterior surface of the instrument with a damp cleaning cloth	Often
Clean the window of the handheld detector with an alcohol-based glass cleaning cloth	When the window has obvious dust and pollutants
Calibration	Once a month
Charge	End of each use

5.3 After-sales service

ARD3000 is upgraded and maintained for life, if you have problems during use, please contact our company.

Website：www.allredgd.com

Service hotline：86-0532-86766369