



Portable Hydrogen Gas Detector LMPHGD-A100

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1. Safety Measures

- 1) Read the product manual carefully before using the instrument.
- 2) It is forbidden to start the machine for maintenance or to replace parts without the permission of your authorized service personnel.
- 3) Prevent the gas detector from falling from a high place or being severely shocked.
- 4) Professionals must carry out installation, debugging, setting, and other operations.
- 5) The calibration inspection shall be carried out regularly, and if the sensor is beyond the effective service life or with a fault shall be replaced in time
- 6) It is strictly prohibited to use gas higher than the measurement range for detection.
- 7) Prevent the instrument from falling from a height or being impacted by severe vibration.
- 8) Too high or too low oxygen content in the atmosphere may affect the reading of the combustible gas sensor.
- 9) Sudden change of atmospheric pressure may affect the reading of the oxygen sensor.
- 10) The instrument shall avoid contact with organic solvents, alcohol, coating, oil, and high-concentration gas, including silica gel and other adhesives.
- 11) The charging must be carried out in a safe place, and the special charger matched with the machine shall be used.
- 12) The instrument shall not be stored or used in an environment containing corrosive gas (such as concentrated chlorine, etc.), nor in another harsh environment (including high and low temperatures, high humidity, electromagnetic fields, and strong sunlight).
- 13) If there is dirt on the surface of the detector after long-term use, use a clean soft cloth dipped in water to gently wipe; 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.

2. Introduction

Portable Hydrogen Gas Detector LMPHGD-A100 measures leaked gas concentration with high consistency and stability. It features 2.4-inch LCD color screen and multilingual voice prompts. Equipped with an imported gas sensor and high-end vacuum suction pump for reliable detection. Integrated with 2900mAh lithium battery and USB charging for continuous operation. Our Detector ensures safety monitoring in petroleum, chemical, environmental, and industrial sectors.

3. Features

- Triple alarm system
- Durable aluminum shell
- PPM/Mg/m³ unit switch
- Gas concentration graph

Portable Hydrogen Gas Detector LMPHGD-A100

4. Specifications

Model No.	LMPHGD-A100
Detection Gases	More than 1000 combustible, toxic, and volatile gases
Detection Principle	Electrochemistry, Infrared Detection, Catalytic Combustion, PID, Semiconductor, Optical Waveguide
Detection Range	0 to 1, 2, 5, 10, 50, 100, 500, 1000, 5000 PPM
Resolution	0.001, 0.01, 0.1, 1, 2, 5
Unit Options	%VOL, %LEL, ppm, mg/m ³
Precision	less than or equal to $\pm 3\%$
Warm-Up Time	less than or equal to 60 seconds
Display Mode	2.4-inch HD color screen
Alarm Mode	Sound, Light, Vibration
Working Temperature Range	-20°C to 50°C
Working Humidity	less than or equal to 95% RH
Detection Mode	Pump Suction Type
Pump Flow Rate	300 to 500 CC/Min
Material	Aluminum alloy
Data Storage	4000 alarm records
Charging Voltage	DC 5V
Power Supply	3.7V DC (Built-in 2900mAh rechargeable polymer battery)
Dimensions	130×63×36 mm
Packing Dimensions	140×70×45 mm
Net Weight	500 g
Gross Weight	1000 g

5. Applications

Portable Hydrogen Gas Detector LMPHGD-A100 is ideal for safety monitoring in petroleum, chemical, and industrial sectors. It ensures workplace protection by detecting combustible, toxic, and volatile gases.

6. Instrument Introduction

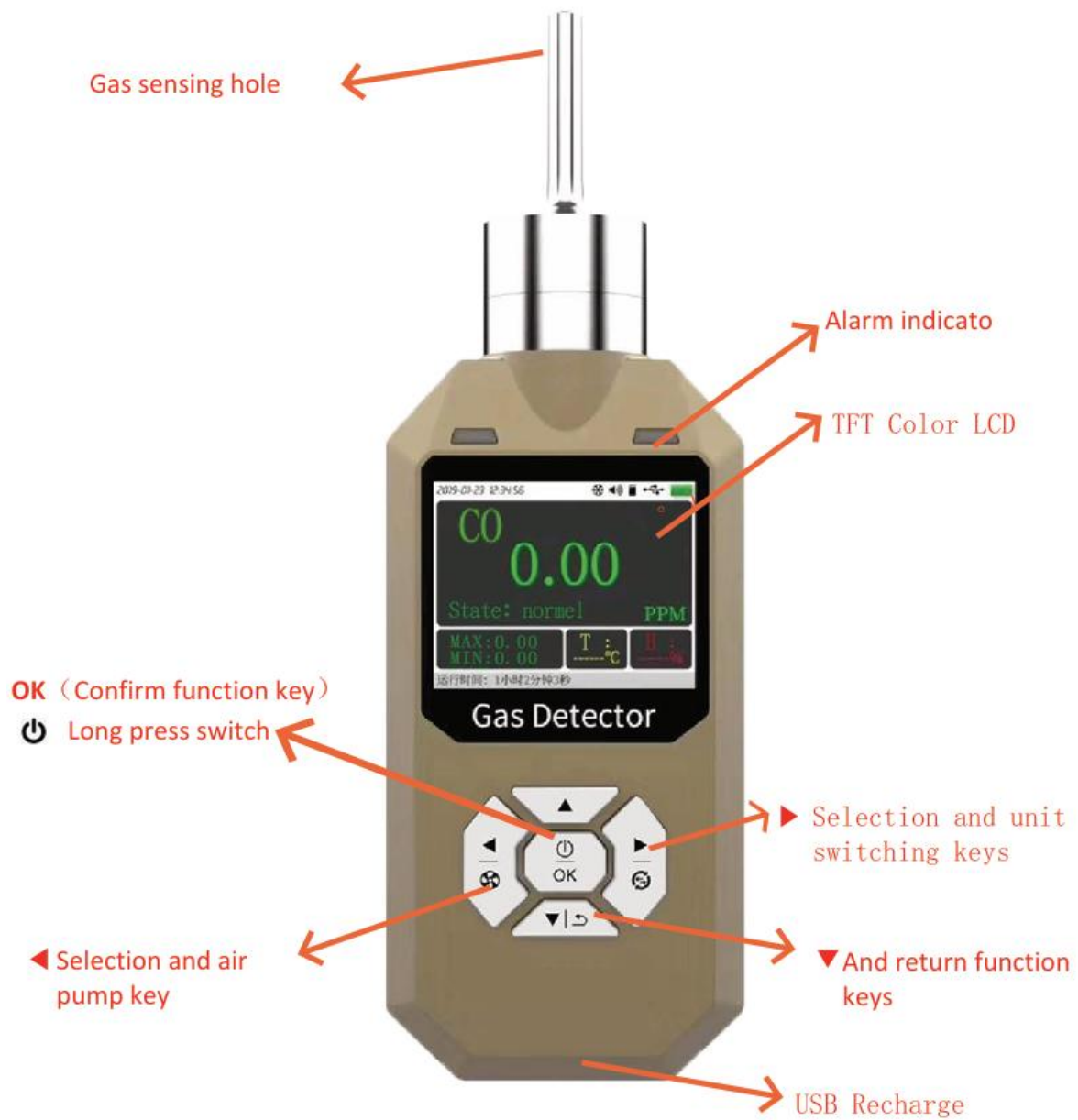


Figure-1

7. Operations

7.1 Key Description

There are five function buttons in the middle of the instrument:  (long press on /off / OK key),  (data plus key)  |  (data decrease/return),  (left shift/pump switch), and  (right shift/unit switch)

The following table is the function description of each key in different interfaces:

Interface					
Gas detection interface	Long press to turn on/off Short-press switch curve	Nothing	Password interface	Air pump switch	Unit switching
Diagram Interface	Switch detection interface	Nothing	Password interface	Air pump switch	Nothing
Password interface	Confirm	Digital plus	Digital subtraction	Left shift	Right shift
Icon menu interface	Go to submenu	Nothing	Return to the gas detection interface	Target function switch	Target function switching
Sub-option interface	Confirm selection options	Nothing	Go back to previous level Interface	Left shift	Right shift
Modify the digital interface	Confirm the selection number	Digital plus	Digital subtraction	Left shift	Right shift

Note: Press "short press" to press once, press "long press" for 3 seconds.

7.2 Boot Method

When the gas detector is off, press and hold "" key for 3 seconds, the backlight of the instrument will be on, and the voice prompt "welcome to use the intelligent voice gas detector, please wait while starting". Then enter the instrument self-test, which is followed by vibration self-test, alarm light self-test, gas low alarm, high alarm, range information, and power on 60 60-second preheating interfaces. Enter the gas detection interface automatically after completion. (During preheating, press  to end preheating in advance)

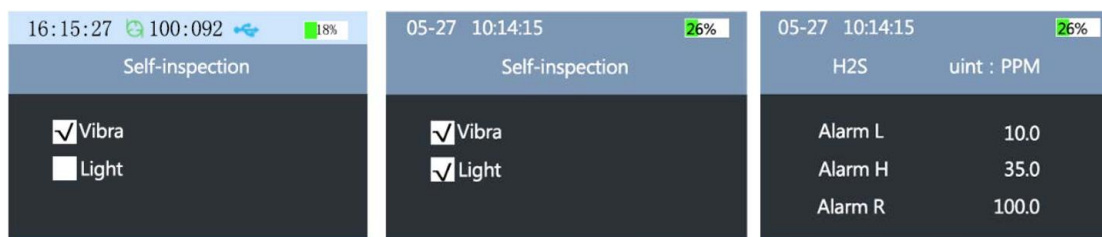


Figure-2

7.3 Shutdown Method

Under the gas detection interface, long press “ $\odot$ ” key for 3 seconds, the instrument will enter the shutdown interface, select OK, and the system will enter the sleep shutdown state.



Figure-3

7.4 Charging Method

When the USB charging cable is inserted in the shutdown state, the current power will be displayed on the screen. When the power is only 10%, there will be a voice prompt "power is insufficient, charge" every 60 seconds. When the power is less than 5%, the detector will automatically shut down to prevent the loss of data inside the detector and unexpected damage to the sensitive components inside the instrument due to the lack of voltage.

Note: Make sure that the instrument is fully charged before use!

7.5 Switching

7.5.1 Air pump switch

On the gas detection page, briefly press the “ $\odot$ ” key to switch on and off the air pump. If the user needs to switch the air pump on and off at a fixed time, you can modify the time of the air pump on and off under the "system settings" column.

Note: The gas concentration curve will be drawn only when the air pump is on in the curve interface.

7.5.2 Unit switching

On the gas detection page, short-press “ $\odot$ ” key to switch the current gas unit. Currently, ppm and Mg / m3 one key switching are supported. Simple and clear.

7.5.3 Special shortcut key

Pause the audible and visual alarm: When the detector gives an alarm due to the gas exceeding the standard, press and hold the "▼|↵" key to pause the audible and visual vibration alarm; press and hold the "▼|↵" key again to start the suspended audible and visual vibration alarm.



Figure-4

7.6 Instrument Operation Interface

7.6.1 Display of instrument test interface

When the self-check of the instrument is completed, it will enter the normal test interface, and the upper part of the interface is time "16:15:27". Working state of air extraction pump "100:092" USB power access flag, "Battery level symbol "18%".



Figure-5

As shown in the gas detection interface, when the gas reaches the low alarm concentration value, the concentration value of the corresponding channel will turn yellow to indicate a warning; when the gas reaches the high alarm concentration value, the concentration value of the corresponding channel will turn red to indicate a warning, and the working state will change from "normal" to "low alarm" or "high alarm". The maximum and minimum values are the limit values of the gas measured in the current test cycle, and the values are cleared after switching pages.

Temperature and humidity: Current temperature and humidity data (optional function)

The air pump can be switched on and off through "⏻" in the instrument detection interface, 100:092 it is a countdown of 100 seconds to automatic shutdown of the air pump. The factory default air pump is normally in open mode without countdown display. If you want to turn off the air pump regularly, you can change the timing under the "system settings" option.

Note: The curve interface will only draw the gas concentration curve when the air pump is on.



Figure-6

7.6.2 Instrument function menu description

Main menu: Press "⏻" on the gas detection page to enter the password input interface. The user can use "⏻" and "⏻" keys to switch the password position, "▲" and "▼" and "⏻" to add or subtract the password value, press the "OK" key to determine the current value, and enter the main menu after entering the password correctly.

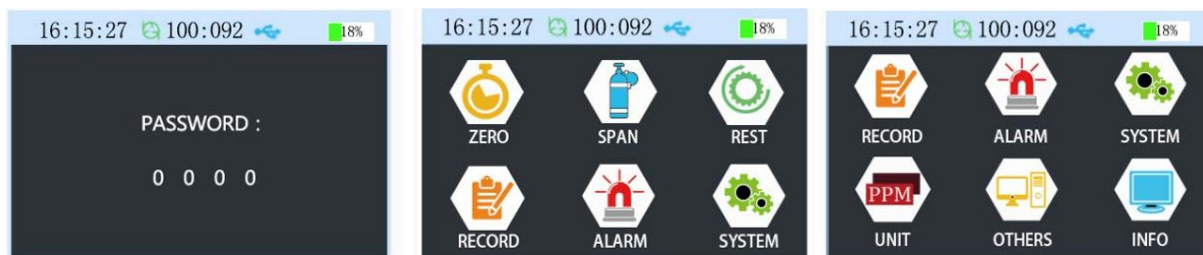


Figure-7

The factory default password of the gas detector is "1111"; when the password is input incorrectly, the voice will prompt "password error" and automatically return to the gas detection interface. The main menu consists of nine function submenus: zero setting, concentration calibration, factory recovery, data recording, alarm setting, system setting, unit setting, other settings, and local information.

In the main menu interface, you can move the cursor to different submenu icons through the "⏻" and "⏻" keys. At this time, short press the "OK" key to enter the corresponding submenu options, and short press "⏻" key to return to the gas detection interface.

1) Zero Setting

Under the zero-setting column, there are two sub-options: zero calibration and zero trim.

Zero calibration: If the zero drift of the sensor is too large, the user can perform zero calibration. After selection, the data detected by the current sensor can be stored as zero.

Zero trim: Based on the user's needs, the zero data of the detector can be increased or decreased artificially. Pay attention to the current gas unit, ppm and Mg / m3 will be automatically converted according to the ratio to prevent the user from mis operation, when the zero-calibration tester detects that the gas value is too different from the factory zero value, the system will prompt "calibration failure" and voice prompt "save failure".



Figure-8

Note: The zero-point calibration must be carried out in an environment without target detection gas, generally in a clean air environment or a high-purity inert gas environment (such as 99.999% nitrogen N2, etc.), otherwise the accuracy of the detector will be affected to varying degrees!

2) Concentration calibration (prohibited by non-professional technicians)

In the channel selection interface of concentration calibration, the user can switch the value and the focus of the calibration column through "↔" and "↔". When the focus is on the value, click the "OK" key, and then switch the cursor to select a value in the calibration value column through "↔" and "↔". Add or subtract the calibration value through "▲" and "▼↵". When the calibration value is set, press the "OK" key to confirm. Then slowly open the standard gas valve and control the flow at 500ml / min. the pump suction product needs to use a three-way gas pipe connector. Observe the real-time concentration value of the instrument (at this time, the concentration value should be rising. When the real-time concentration value rises to the peak value and is stable, the user will move the focus to the calibration position and press the "OK" key for calibration. At this time, the screen will display "calibration succeeded" and a voice prompt "calibration succeeded". After the target point calibration operation is completed, the user can return to the previous menu through "▼↵" key.

Be careful:

- 1) This operation must be carried out with standard concentration gas, pressure reducing valve, a flowmeter, a three-way connector, and a gas circuit well connected, otherwise, it is forbidden to use.

- 2) Pay attention to the need to turn on the air pump during the gas calibration. Connect a tee joint between the gas cylinder and the gas pipe in the middle of the detector to ensure a smooth gas flow.

Warning: Non-professional personnel are strictly prohibited from carrying out this operation, or all consequences will be borne by themselves! The tester has been calibrated and tested uniformly at the time of delivery. If the user wants to calibrate again, please strictly follow the steps, calibrate the zero point first (if the zero point fine adjustment value is modified, the fine adjustment value needs to be changed to 0), and then calibrate the concentration again. If the user misoperates this setting, restore the factory setting in time.



Figure-9

7.6.3 Resume factory

If the user accidentally misoperates or wants to restore the parameters of the instrument to the factory configuration, the menu operation can be carried out. The user can move the cursor to the "restore factory" icon, press the "OK" key to enter this menu, and then press the "↶" and "↷" keys to move the cursor to select the gas to be recovered and press the "OK" key to confirm. If you need to recover, select confirm; otherwise, select cancel. After confirming the recovery, the system prompts "recovery succeeded" and voice prompts "save succeeded". At this time, press "↵" key to return to the previous menu.

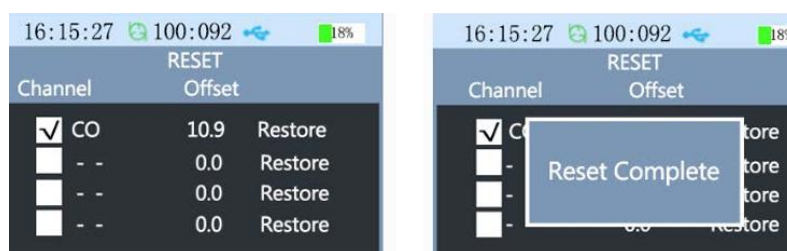


Figure-10

7.6.4 Data record

The user can move the cursor to the "data record" icon to enter the data record interface to view and delete the sensor's historical data. Select by moving the cursor with "↶" and "↷". When the user selects to delete, press the "OK" key to confirm, and the system will prompt "deleting". After waiting for 10-20 seconds, the system will prompt "deleting succeeded" and voice prompt "saving succeeded".

At this time, press "▼|↵" key to return to the previous menu. When the view option is selected, the detector will enter the data view interface, where it will display the gas concentration value and the corresponding time of all alarm records. Users can turn the page back and forth through the "⏮" and "⏭" keys. At this time, press "▼|↵" key to return to the previous menu.

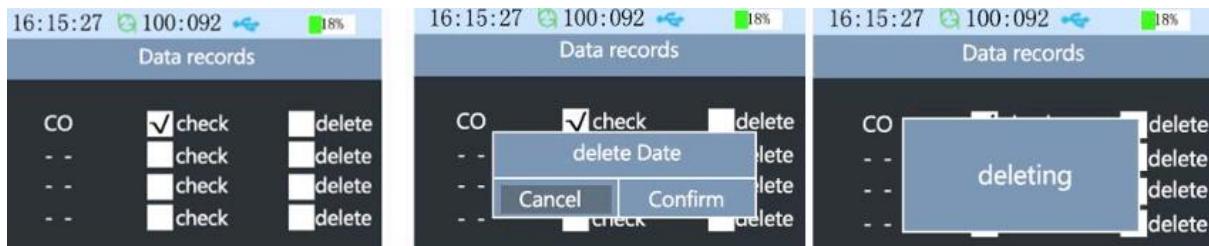


Figure-11

7.6.5 Alarm settings

The user can set the alarm threshold and alarm mode of the target gas through this option. The alarm threshold of the detector is divided into high alarm value and a low alarm value. When the gas concentration is higher than the minimum alarm threshold set by the system, the detector will give a voice prompt and then simulate the alarm signal alarm sound all the time; the alarm light on the detector and the internal vibration motor will be turned on at the same time; when the gas concentration detected by the detector returns to the normal value, the alarm will be released. For the oxygen sensor, when the oxygen concentration value is lower than the system minimum threshold or higher than the system maximum threshold, the detector will give an alarm.

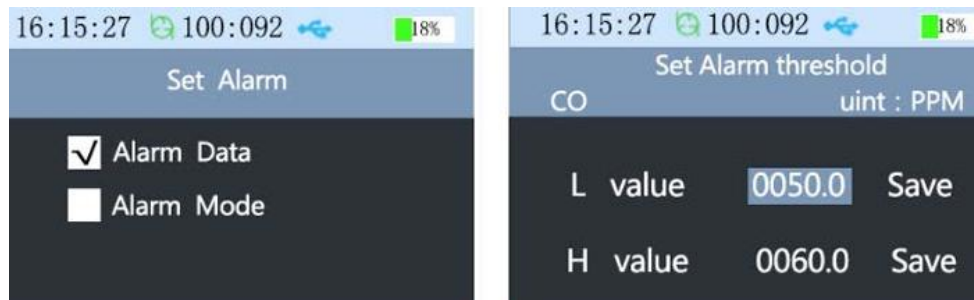


Figure-12

Alarm threshold: When in the alarm threshold setting interface, move the focus to select the high alarm value or low alarm value to be modified. The user can press the "OK" key to operate the value, switch the cursor to select a value through the "⏮" and "⏭" keys, add or subtract the value through "▲" and "▼|↵", press the "OK" key to confirm when the value is set, move the light mark to the storage place through the "⏮" and "⏭" keys, and press it again to save. At this time, the system prompts that the saving is successful, and the voice mentions "Save successful" is displayed. Press "▼|↵" to return to the previous menu.

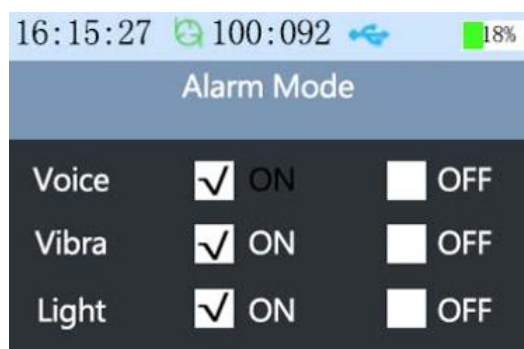


Figure-13

Alarm mode: There are three alarm modes of the detector, namely sound, vibration, and light alarm. When the gas detector of the factory, the alarm modes are all on by default, and the user can adjust them according to their actual needs. When entering the alarm mode setting interface, you can move the cursor through the "⬅" and "➡" keys, and press the "OK" key to turn on or off the switch of sound, vibration, or light. Press "▼|↩" to save and return to the previous menu.

7.6.6 System setup

The user can move the cursor to the "system settings" icon and press the "OK" key to enter the system settings selection interface. The system setting includes four aspects: time setting, communication setting, password setting and air pump setting.

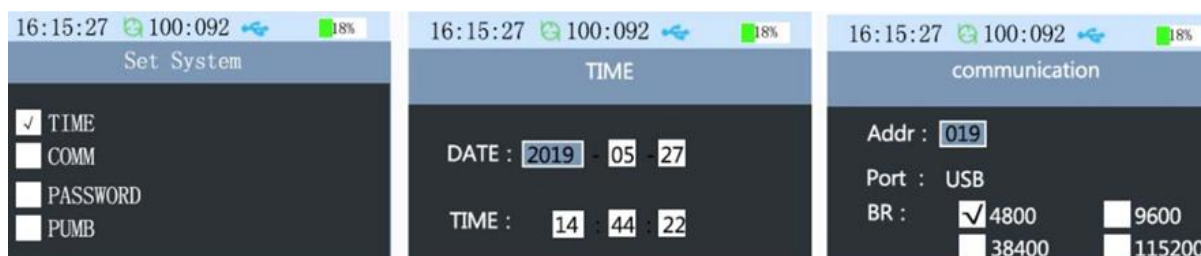


Figure-14

Time setting: In the time setting interface, the user can add and subtract the date and time by pressing "⬅" and "➡". Press "OK" to switch year, month, day, hour, minute, and second in turn. When saving, the system will prompt "save successfully" and a voice prompt. Press "▼|↩" Key during setting to return to the previous menu.

Communication setting: The address and baud rate of the instrument can be set. When importing data into the computer, you need to select the address and baud rate (optional).

Password setting: Set the password to enter the main menu. The default password of the instrument at the factory is "1111".

Air pump setting: Set the air pump to close automatically at a fixed time, with a maximum fixed time of 999 seconds. If no timing is required, change the time to 000 seconds, and the air pump will be normally open.

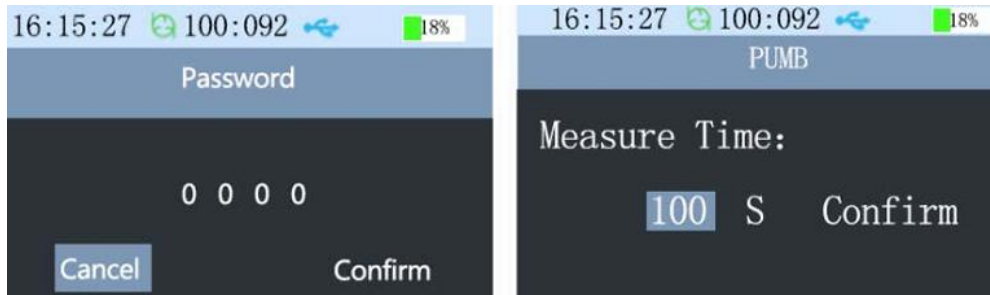


Figure-15

Note: If you need to change the password by yourself, take good care of the new password for the tester.

7.6.7 Unit settings

Enter the unit setting interface to modify the gas unit and molecular weight information. PPM and mg/m3 supports switching between each other. Other units are fixed display and cannot be switched.

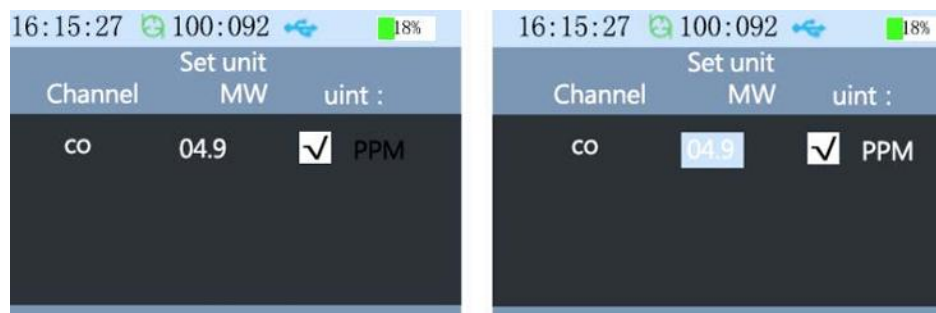


Figure-16

Switch the focus of unit and molecular weight through " $\uparrow$ " and " $\downarrow$ ". When the PPM column displays black, it means that the unit is selected for modification. Press "OK" to confirm. Then modify the unit to be displayed through " $\uparrow$ " and " $\downarrow$ " (default unit after power on). Click "OK" again after completion to cancel the current focus. Press " $\nabla \rightarrow$ " to save and return to the previous menu.

Switch the focus of unit and molecular weight through " $\uparrow$ " and " $\downarrow$ ". When the background color of the molecular weight data column changes, press "OK" to confirm. At this time " $\blacktriangle$ " and " $\nabla \rightarrow$ " can modify the value, and " $\uparrow$ " and " $\downarrow$ " can switch the value position. Click "OK" after molecular weight modification to cancel the current focus. Press " $\nabla \rightarrow$ " to save and return to the previous menu.

Note: The molecular weight value should be consistent with the chemical molecular weight of the currently measured gas, otherwise, the accuracy of unit switching will be affected.

7.6.8 Other settings

In the other settings interface, there are language settings, maximum value and minimum value display for users to choose.

Specific operation: In other settings, language settings can be selected in English through the "↶" and "↷" keys, and the display of maximum and minimum values can be turned on or off. After modification, press "↵" to save and return to the previous menu.



Figure-17

7.6.9 Local settings

In the "local setting" interface, you can select to view "local information", and "calibration information".



Figure-18

Local information: Check the address, software version, and delivery time of the tester.

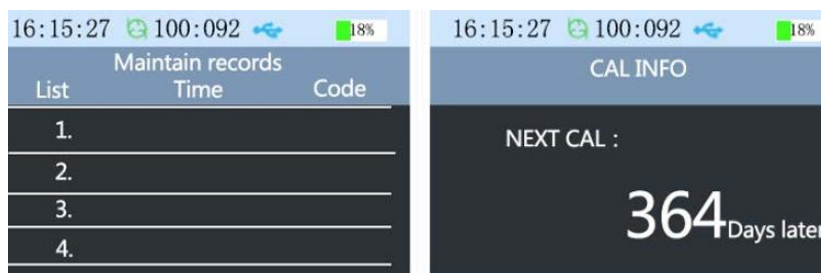


Figure-19

Calibration information: Displays the remaining time between the delivery of the instrument and the next calibration. Due to the limitation of the sensor of the instrument, the next calibration time will be set before the instrument leaves the factory (the default is 365 days. If the instrument is used in the environment containing corrosive gas for a long time, it is recommended to calibrate once every 1-3 months). When the countdown to zero, the user should calibrate in time to prevent the user's life or property from being damaged.

8. Troubleshooting

8.1 On the handling of over range operation of the detector

The user should avoid using the gas impact sensor, which is beyond the range of the instrument. The light operation will affect the service life and detection accuracy of the detector, and the heavy operation will directly damage the sensor of the detector. When the user inadvertently carries out the out-of-range operation, the instrument shall be quickly removed from the test site, placed in clean air for more than half an hour, and observed to see whether the concentration value of the instrument drops. If the concentration value can always drop to the normal value, the instrument can be used after zero calibration; if the instrument is placed in the clean air for a long time after the over-range operation. After then, if the concentration value is still high.

Special attention: Instrument damage caused by operation beyond the range of the tester is not covered by the warranty.)

8.2 The concentration value of the instrument in the clean air is unstable

Fault cause: Some electrochemical gas sensors are easy to be interfered with by other gases, which may be colourless and tasteless.

Solution: Place the instrument in a clean place without interfering gas, and the value of the instrument will drop to the normal value; if it is determined to be a clean place, and the value cannot be lowered, zero-point calibration can be carried out once.

8.3 No response to the test value of the gas introduced into the instrument

Fault cause: It may be that the oxygen content of the introduced gas is too low: < 5%; it may be that the service life of the sensor has reached, or the sensor has failed; it may be that the value is not normal due to not being well calibrated.

Solution: If it is electrochemical, catalytic combustion, semiconductor gas sensor, oxygen is required to work normally to ensure that the oxygen content of the gas is more than 5% vol, and the gas pressure is between - 30KPa and 100KPa. If the user has standard gas, they can test the gas and calibrate the target point. If the oxygen and pressure meet the normal conditions, it may be that the sensor has failed and needs to be returned to the factory for maintenance.

8.4 The instrument can't turn on

Fault cause: Generally, the battery is out of power.

Solution: Restart the machine for testing after charging. If the machine still can't be started, it needs to be returned to the factory for testing.

8.5 The instrument cannot be charged

Fault cause: Generally, there is a problem with the battery charger, or the specification of the charger is wrong (5-5.5vdc, more than 1A).

Solution: Measure whether the output voltage of the charger is 4.75- 5.5V. If the output voltage is abnormal, replace the charger. If the output voltage of the charger is normal, return it to the factory for inspection.

9. Accessories

Standard Accessories

Accessory	Quantity	Unit
USB charger (DC 5V)	1	Each
Data line	1	Each

10. Appendix

Gas 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	1ppm	Low: 50 High: 150ppm
CO2	0-5000ppm	0-1%/5%/10%vol	1ppm/0.1%vol	Low: 1000 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
HCl	0-20ppm	0-20/500/1000ppm	0.001/0.1ppm	Low: 5 High: 10ppm
CLO2	0-50ppm	0-10/100ppm	0.1ppm	Low: 5 High: 10ppm

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HCN	0-50ppm	0-100ppm	0.1/0.01ppm	Low: 10 High: 20ppm
C ₂ H ₄ O	0-100ppm	0-100ppm	1/0.1ppm	Low: 20 High: 50ppm
O ₃	0-10ppm	0-20/100ppm	0.1ppm	Low: 2 High: 5 ppm
CH ₂ O	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
C ₇ H ₈ /C ₈ H ₁₀	0-20ppm	0-1/10/50/100ppm	0.01/0.1ppm	Low: 5 High: 10 ppm
PH ₃	0-20ppm	0-20/1000ppm	0.1ppm	Low: 5 High: 10ppm



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