User Manual


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1 Safety Precautions

Introduction of Safety precautions to use this device

1.1 Safety precautions

Please read the following carefully before operating this device.

DANGER

Please check the structure and assembly of the device before use each time, and find out the hidden dangers of the structure such as deformation and fracture in time!

DANGER

This device meets the requirements of intrinsically safe explosion-proof standards Ex ib IIC T4 Gb, and can be used in explosive atmospheres. But do not charge the device in explosive atmospheres!

CAUTION

The use of a strap can avoid an accidental drop of the device, thus extending the life of the device, and it is recommended to wear the strap around your neck at all times in operation.

CAUTION

Do not expose the instrument to water or engage in actions such as collisions, throwing, or dropping, as it may result in instrument damage or operational failure!

CAUTION

Do not attempt to repair or replace components and parts! When the device does not work properly or an error is prompted, please refer to the relevant description of this manual for recovery operations or call for after-sales service.

CAUTION

Do not use non-original chargers for charging! Before charging, please check the charging port and charger for any damage to avoid potential short circuits.


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2 Instruction

Introduction of packaging, structure and working principle

The portable laser methane detector is a device designed to measure trace concentrations of methane (the main component of natural gas). It is equipped with a pump sampling device and can be used in conjunction with a probe or handcart for underground pipeline inspections.

2.1 Packing list

Take out the detector and all the accessories from the carrying case[1], check whether the accessories are complete according to the following items. If you find something missing or damaged, please contact us immediately.

Item	Product name	Quantity
1	Detector (including a strap)	1
2	Precision filter	3
3	Condensate filter	2
4	Swan-neck probe (including a spare filter)	1 (set)
5	Mini self-locking quick-release connectors A&B parts	1 (set) for each
6	Charger (plug and wire)	1 (set)
7	Documentation (manual and quick start guide etc.)	1 (set)

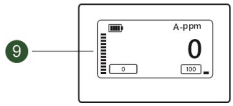
1 Carrying case is waterproof moisture-proof and dustproof, please store the detector in the device case when it is not used.

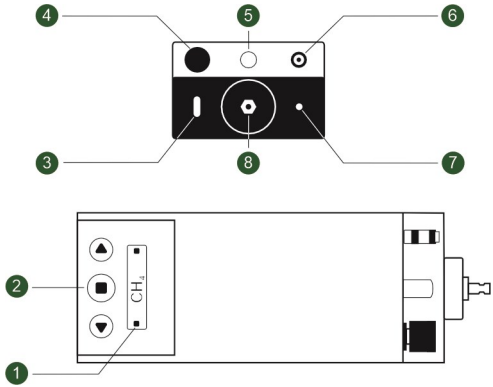
2 Product configurations may vary. Please refer to the configurations inside the carrying case for accurate information.

2.2 Composition of Detector

The display screen of the operation panel is located at the front end of the detector; The air intake, outlet and charging port are located at the rear end; The operation buttons and indicator light are located in the upper part.

[1] Indicator light
[2] Operation panel - buttons
[3] Charging port
[4] Bluetooth antenna
[5] Air outlet
[6] External pump intake (Only for G10V)
[7] Buzzer
[8] Air intake
[9] Operation panel - Display



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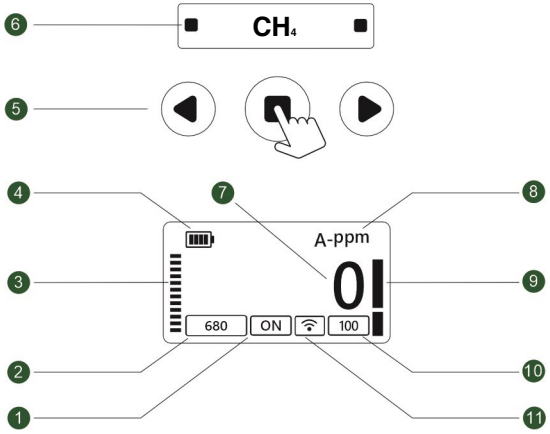
3 Operation Interface

Introduction of device interface, operation steps and buttons function

3.1 User Interface

The device conveys information to the user through a display screen, indicator lights, and a buzzer, and operates with user input through buttons.



[1] Pump on
[2] Maximum value
[3] Light intensity indicator
[4] Battery level
[5] Buttons
[6] LED light
[7] Concentration value
[8] Concentration unit
[9] Concentration indicator bar
[10] Alarm threshold
[11] Communication connection

3.2 Function of buttons

Button	Name	Short Press	Double click	Press and hold
●	Middle	Confirm /Pump off/Check battery	Pump on	Power on/off
▶	Right	Alarm threshold	Adjust the alarm threshold	/
◀	Left	Alarm threshold lower/Check the max concentration	Switch concentra-tion unit	Reset to 0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4 Device Usage

Instruction of usage, procedural steps and relevant settings

4.1 Charge

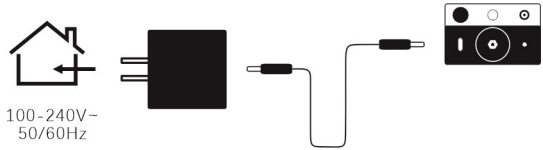
Please charge it with the original charger, which includes a plug and a cable, the charging port is located at the rear of the device.

Steps as below:

[1] Insert one end of the charging cable into the charging plug, and plug the charging plug into an outlet, ensuring that the outlet has power.

[2] Insert the other end of the charging cable into the charging port located at the rear of the device.

[3] Press the middle button"●"and a long beep is heard, and the screen displays a battery level icon while the icon means the battery is fully charged.



Check the battery level

Press the middle button "●" when the device is powered off to check the battery level[1], After a short beep, the screen displays the icon of current power.

1 Battery level is affected by age and ambient temperature. It is recommended to power on the device indoors when using it in winter, as the heat generated by the device itself helps to improve battery performance; If the battery endurance is seriously reduced, please contact the after-sales service.

4.2 Operation

[1] Visual inspection

Visually inspect the air tube and filter element of the device for water accumulation and contamination; Inspect the appearance of the device for damage, contamination and deformation.

[2] Install the sampling accessories

Connect the sampling accessories (swan-neck, gas hood, handcart, etc.) to the air intake and make sure the tube is not blocked and badly bent.

[3] Power on

Press and hold the middle button " ● ", hear a short beep, the device will be powered on, and start self-calibration, showing calibrating, after calibration done, it will send out a short beep, showing detection can be started.

[4] Pump on for detection

Double click the middle button " ● "when the device is powered on, two short beeps are heard, and the sampling pump is switched on, and the screen prompts icon ON, and the device starts working, displaying the concentration value, the concentration indicator bar shows the change of the concentration level, in the event exceeding the alarm threshold, two beeps alarm are heard with the flashing of a red LED indicator light.

Note: "A" before the concentration unit means the device will self-adjust the concentration unit according to the concentration level.

[5] Pump off

When operation is complete, click the middle button " ● "a short beep is heard, the sampling pump is switched off, icon disappears.

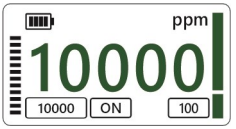
[6] Power off

The same as the power-on operation, press and hold the middle button "●", after hearing a long beep, the device will be powered off.

4.3 Other settings

High concentration measurement:

The methane gas concentration in ppm unit can be measured up to 10000ppm, if the actual concentration exceeds this value, the concentration indicator bar on the right starts to flash, At this point, you can switch concentration unit to choose %VOL or %LEL.

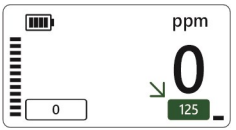


Switch concentration unit:

Double click the left button " ◀ ", two short beeps will be heard. An arrow appears in the upper right corner of the screen pointing to the concentration unit, use the left or right button to switch the unit, each time you click the unit, A-/ppm/%LEL/%VOL is cyclically switched to the previous or next, click the middle button to confirm it.

Adjust the alarm threshold:

Double click the right button" ▶", two short beeps will be heard. The alarm threshold icon comes with background color, use the left and right buttons to adjust (same for different units), one click a step of 5ppm (up to 999ppm), press and hold to accelerate the adjustment, click the middle button to confirm it.



Check maximum concentration:

In order to easily check the alarm concentration value after the device gave alarms, the device records the maximum concentration value every 10 seconds and displays it in the lower left corner of the screen, click the left button to review the maximum concentration value any time.

Reset to 0:

If it is emptied in clean air for 2 minutes, but there is still concentration value, keep the sampling pump on and continue to empty for over 2 minutes, press and hold the left button " ◀ " to reset to 0.

Invert the display of Operation Panel:

In order to facilitate the user to view the operation panel forward, press and hold both the left button" ◀ " and right button " ▶" for 3 seconds at the same time, a short beep will be heard, and the operation panel's display will be inverted.

Note: The left and right buttons swapped each other.

4.4 Calibration

This device has a built-in calibration gas cell, and the device will be self-calbrated regularly during daily use, without user intervention.

4.5 Connect to the intelligent inspection application

The device has Bluetooth function and can be connected to mobile devices, with the inspection terminal app to achieve more functions.

The app can auto-search and connect to the device, after successful connection, blue tooth icon  on the screen will automatically light up, indicating the connection status.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5 Maintenance and Troubleshooting

Introduction to maintenance methods for device and related components and corresponding troubleshooting

5.1 Routine Maintenance

In order to make sure the device is in a good status, please follow below recommendations for routine maintenance.

[1]	Store the device in the device case	When not in use for a long time
[2]	Charge the device	Necessarily or When not in use for long time
[3]	Use a soft cloth dampened with water to clean the outer surface	Necessarily
[4]	Clean the filtering system	Refer to 5.2

CAUTION

During operation, please be aware of the accumulation of water, foreign objects and dust on the road surface, and do not immerse the air tube into the water, which will lead to the failure of the filtering system or even damage to the detection gas cell. Excessive dust can also affect device performance and reduce the life of the filtering system.

5.2 Maintenance for rest components

Filtering system maintenance

The laser gas sampling cell inside the device is a delicate optical component that is susceptible to dust and water contamination for failure, so the sampled air needs to be well filtered before it enters the detector.

The filtering system of the detector consists of a trifold filtering system including condensate filter, a high-precision filter within the gooseneck probe and a filter element at the air intake. The service life of these filtering components may vary depending on the operational environment and operating frequency.

TIPS

Do cleaning and inspection at least **once every week**, and replace contaminated and damaged parts in time to extend the life of the detector.

[1] Check:

Place the gas gathering parts and switch off the pump and power off the device;

Inspect the sampling air tube, clean the dust and foreign objects, replace it when necessary;

Remove the condensate filter and check the inside for water or dust contamination;

Remove the filter in the swan-neck and check for discoloration and contamination;

[2] Replace the condensate filter:

The condensate filter is located on the sampling tube, and the two ends

of the tube can be directly pulled out for disassembly and replacement;

When the screen gives a prompt, please replace the filter in time;

Replacement parts for free are included in the package, if you need extra ones, please contact after-sales service to purchase;

[3] Replace the precision filter:

The precision filter is located on the air intake of the detector, the precision filter can be seen after removing the part of air intake, be aware of the rubber sealing rings on the inner and outer sides when do replacement, the rough surface should be facing the device;

Replacement parts for free are included in the package, if you need extra ones, please contact after-sales service to purchase;

Battery Maintenance

This device is equipped with an intelligent lithium-ion battery pack. During prolonged periods of non-use, it is advised to charge the battery to a range of 50% to 80% and store it in a dry, cool environment. Additionally, it is recommended to recharge the battery every month to prevent irreversible capacity loss caused by self-discharge due to prolonged storage.

TIPS

To prolong the lifespan of the battery, it is advisable to perform a full charge and discharge cycle at least once a month, charging the battery to 100% capacity and operating it until a low battery alert is indicated.

5.3 Troubleshooting

The device has a self-diagnostic function. If an error occurs there will be a long and two short beeps. At this time, an error code like "E001" will be displayed on the screen. The meaning of the codes, device behaviors, and recommended method of handling are as follows:

[E001] Operation temperature is out of range

1. Power off and put the device in room temperature for 1 hour.
2. Reboot. Please contact the after-sales service if the error repeats.

[E005 / E006 / E202] Temperature control can't be stabilized

1. Power off and put the device in room temperature for 1 hour.
2. Reboot. Please contact the after-sales service if the error repeats.

[E102 / E103] Abnormal battery temperature

1. Power off and put the device in room temperature for 1 hour.
2. Reboot. Please contact the after-sales service if the error repeats.

[E104 / E105] Battery failure

1. Power off and reboot. Contact the after-sales service if the error repeats.

[E200] Calibration gas cell is not detected

1. Failure suction of the air into the device, do re-calibration.

[E201 / E203 / E204] Configuration error

1. Power off and reboot. Contact the after-sales service if the error repeats.

[E205 / E206 / E207] Calibration error

1. Power off and reboot. Contact the after-sales service if the error repeats.

[---] Abnormal light intensity

1. Place the device upside down and switch on the sampling pump for 10 minutes, if the error persists, please contact after-sales service.


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