IX170

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Precautions:

To avoid personal safety injury, Instrument damage and potential dangerous accident; do not use the product before reading this manual.

1. Description

IX170 portable single gas detector can make continuous detection to combustible and toxic gases. It is suitable for combustible and toxic gas leakage detection in underground pipe or mines, and keeps the workers safe, prevents the facilities from being destroyed.

The detector, adopting excellent-quality sensor, makes detection in the way of natural diffusion. It has good sensitivity and reproducibility. The detector adopts embedded MCU controller, easy to operate.

The shell adopts special high strength material and anti-smooth rubber, with the characters of water-proof and dust-proof.

2. Features and specifications

2.1 **Features**

Advanced MCU control with low power consumption;
Low and high alarm level;
Adjustable calibrating level;
Excessive high concentration protection function;
High concentration protection for combustible gas;
Self test for the combustible gas sensor;
Low battery indication;
Replaceable sensor module;
Self-adjustment function
Visual and audible alarm with vibration;
STEL and TWA alarming for toxic gases
Advanced self-examination and self-renovation function
Password management to avoid wrong operation;
Explosive proof housing

10.8 Any malfunction not being included in this manual, please contact us for solutions.

Affix. Table1

Model	Range	L-alarm range	H-alarm range	L-alarm	H-alarm	TWA	STEL
□IX170 -CH_4	0-100%LEL	10%LEL～25%LEL	25%LEL ～80%LEL	20%LEL	50%LEL		
□IX170 -C_3H_8	0-100%LEL	10%LEL～25%LEL	25%LEL ～80%LEL	20%LEL	50%LEL		
□IX170 -H_2	0-100%LEL	10%LEL～25%LEL	25%LEL ～80%LEL	20%LEL	50%LEL		
□IX170 -H2	0-1000ppm	20ppm ～150ppm	150ppm ～500ppm	35ppm	250 ppm		
□IX170 -H_2S	0-100ppm	5ppm ～15ppm	15ppm ～30ppm	10ppm	15ppm	10ppm	15ppm
□IX170 -CO	0-1000ppm	25ppm ～100ppm	100ppm ～500ppm	35ppm	200ppm	35ppm	200ppm
□IX170 -CO	0-2000ppm	25ppm ～100ppm	100ppm ～500ppm	35ppm	200ppm	35ppm	200ppm
□IX170 -O_2	0-30%vol	16%vol ～19.5%vol	22.5%vol～24%vol	19.5%vol	23.5%vol		
□IX170 -C_2H_5OH	0-100%LEL	10%LEL～25%LEL	25%LEL ～80%LEL	20%LEL	50%LEL		
□IX170 -NH_3	0-100ppm	20ppm ～30ppm	30ppm ～70ppm	25ppm	50ppm	25ppm	35ppm
□IX170 -CL_2	0-20ppm	3ppm ～10ppm	5ppm ～15ppm	5ppm	10ppm	0.5ppm	1.0ppm
□IX170 -SO_2	0-100ppm	1ppm ～3ppm	3ppm ～10ppm	2ppm	5ppm	2ppm	5ppm

Declaration

To keep continued product improvement, **we** reserve the right to change design features without prior notice.

Gas sampling method: natural diffusion
Accuracy: ≤±5% F.S.
Response Time: ≤30s
Indication: LCD displays real-time and system status;
LED, audio and vibration alert for gas leakage, fault and low voltage.
Working environment: -20℃～50℃, ＜95%RH (no dew)
Charging time: ≤ 6h
Working time: ⩾ 8h continuously (without alarming)
Gas Sensor Life: 2 years
Explosion-proof grade: ExiadIICT3
Protection Grade: IP65

Unable to Turn on the detector	low voltage	Charge in time
	Detector down	Contact distributor
	Circuit malfunction	Contact distributor
No reaction to the tested gas	Prolong time unfinished	Wait until prolong time finished
	Circuit malfunction	Contact distributor
Inaccurate indication	Overdue sensor	Replace the sensor
	Not calibrated long time	Calibrate in time
Wrong time display	Exhausted battery	Charge and reset the time
	Electromagnetic disturb	Reset the time
Zero calibration function unavailable	Too much drift	Calibrate or replace the sensor
Zero point excursion function unavailable	Too much excursion	Calibrate or replace the sensor

9. Accessories

One charger, one screwdriver, one set of portable accessories, one manual are inside this package.

10. Notices

10.1 Prevent the detector from falling down high places or serious vibration.

10.2 When there is interferential high-concentration gas, the detector may not work normally.

10.3 Please operate and handle in strict accordance with the introduction, otherwise the result may be incorrect or you may destroy the detector.

10.4 The detector should not be stored or used under the circumstance with caustic gas (such as Cl2), or be use or stored under the other rigorous circumstances (including excessive high and low temperature, higher humidity, electromagnetic field and strong sunlight).

10.5 After long-term use, if there is dust on the surface of the detector, please clean it lightly with clean soft cloth, instead of caustic impregnant or hard things. Otherwise, the surface of the machine may be destroyed.

10.6 To assure the testing accuracy, the detector should be calibrated termly, and the calibration period should not more than one year.

10.7 Please send the abandoned Li batteries from the detectors to the appointed places or our company. Don't throw them into the dustbin at random.

2.2 **Specifications**

Range: See attached table 1.

Gas Detected: combustible gas (CH_4,C_3H_8,H_2) and toxic gas, oxygen, Other rare toxic gas like ammonia , NO,PH_3,NH_3,NO_2,HCN, SO_2 etc also available, ,Can be specified by the Customer in advance.,

Alarm set points: see attached table 1.

Accuracy: ≤±5% F.S. Response time: T<30s

Indication: LCD indicates the time and state

Indication of alarm, fault and low voltage with LED, sound, vibration

Operating Environment:

Operating temperature -40℃～70℃ (for combustible gas)

Operating temperature: -20℃～50℃ (for toxic gas)

Humidity: <90%RH non-condensing

Operating voltage: DC3.6V Li battery 1200mAh

Working time: Combustible gas: ≮ 8h continuously Toxic gas: ≮300h continuously

Charging time: 4h～6h

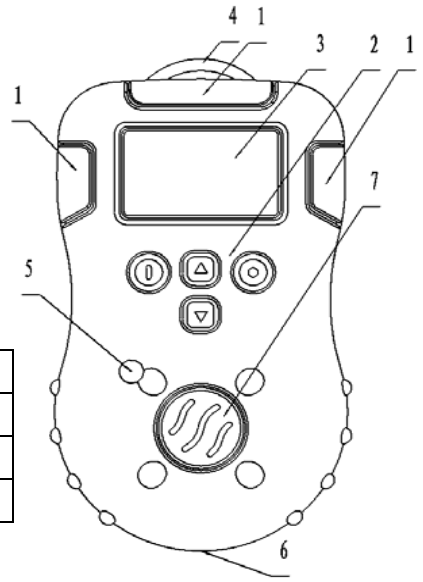
Sensor life: 2 years Protection category: IP65

Weight: about 130g (including battery but without accessories)

Dimension: 110mm×60mm×40mm

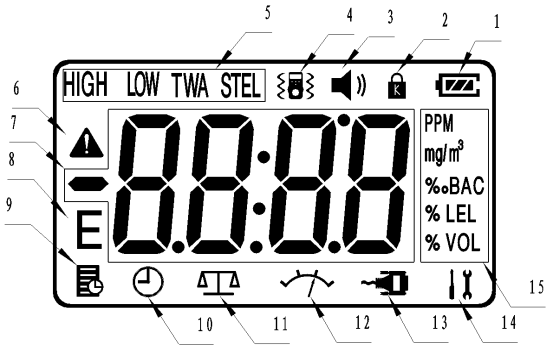
3. Configuration and functions.

3.1 Outside configuration



1	Visual alarm	5	Buzzer
2	Push buttons	6	Recharging socket
3	LCD display	7	sensor
4	buckle		

3.2 Display elements



Number	Function
1	Battery
2	Lock
3	Audio
4	vibration
5	Alarming conditions
6	Warning or the maxium level
7	numeric value
8	Error
9	History record ①
10	Clock
11	Zero calibration
12	Calibration point or calibration status
13	Data transmission ①
14	Set-up of the parameters
15	Indication of the gas consentration units

Attentions: ① this function is only available only when the product you bought has the function of infrared communications.

3.3 Pushbuttons

pushbutton	Description
	● To active the detector, press and hold it for 3 seconds ● Press it to cancel the the operation; ● Calibration: When the device is deactivated, press  and  for more than 3s. ● To deactive the detector, press and hold it for 3 seconds
	● To increment the display value,press it; ● To check the device status, Press  and  ,the LCD will display TEM, time, STEL & TWA levels②, maxium level. ● Press  and  for more than 3s to set up the parameters

automatically and indicates that it is being charged. When the charging is completed, the voltage ico is full and there is no change. Then please remove the plug and the detector can work normally.

Attentions: You can't activate the detector when is being charged in the status of power off. In order to avoid fire or explosion, please do not charge the detector when it is working in the spot. Please try not to charge when the detector is power on, otherwise the charge speed will be affected.

6. Use and replacement of Sensor

As the sensor of the detector is modularized, so please pay attention to the life of the sensor. When it is overdue, please replace it. Every half year you need to calibrate the sensor in order to guarantee the accuracy of the detector.

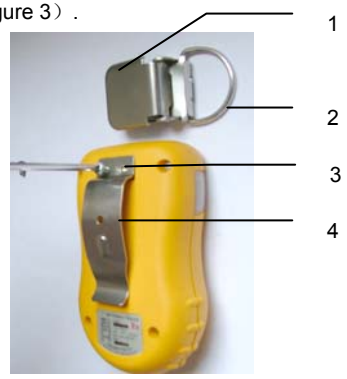
You'd better replace the sensor through the distributors or the local repairing department. If there is no distributor or repairing department, please replace the sensor after you get permission from our company. The sensor should be replaced with the same modularized sensor supplied by our company.

7. Accessories

For the user easy o bring, we equip buckle, crocodile buckle and flying rings with the detector. If you need the above accessories, you can fix them on the back shell of the detector with the screw.（figure 1）. If you mainly use the buckle, please take out the crocodile buckle（figure 2），and then fix the buckle（figure 3）.

（figure 1）

（figure 2）



（figure 3）

8. Troubleshooting guide:

Malfunction	Possible Reasons	Solutions

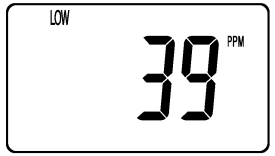
At this time, please cover the gas response hole with the calibration cap, open the gas valve to adjust the flux as 120mL/min. Within 30 seconds, if the detector detects the calibration gas, the detector will start up the calibration date analysis procedure by itself. And the detector will automatically adjust the conversion arithmetics till all the standard gas complete the response. Then the detector saves the best arithmetics and complete the calibration. After that it enters into the L-alarm set up.

Attentions：In this mode, please avoid touching any buttons, otherwise the accuracy will be effected badly.

If the detector indication figure can't reach half the calibration figure within 30s, or the gas concentration is beyond the maximum drift range of the sensor, the E ico will light, which means the gas is not proper for calibration or the sensor is destroyed. Please replace the gas or the sensor.

5. Set up of L-alarm

In this mode, the L-alarm level can be adjusted, and the screen displays as the following chart, with the figure flickering. Press  or  to adjust the flickering figure according to your need, and then press  to complete the set up. After that it enters into the H-alarm set up.



Attentions：Attached Table 2 is the L-alarm level range.

6. Set up of H-alarm

In this mode, the H-alarm level can be adjusted, and the screen displays as the following chart, with the figure flickering. Press  or  to adjust the flickering figure according to your need, and then press  to complete the set up. After that the detector will automatically turn off.

Attentions：Attached Table 1 is the H-alarm level range.

5. Battery charging

When the power supply is not enough or the detector cannot work normally due to the low voltage, please charge in time. When the detector is deactivated, please connect the AC connector plugs of the charger with the 220V AC power. The detector will be activated

	● To decrement the display value,press it ● To make zero calibration Press  and  and hold for more than 3s ①
	● Confirmation of the parameters set-up ● To enable/disable the beep and vibration, press it.

Attentions： ① Password is needed when this operation does.

② only the detector for toxic gas has this function.

4. Operating instruction

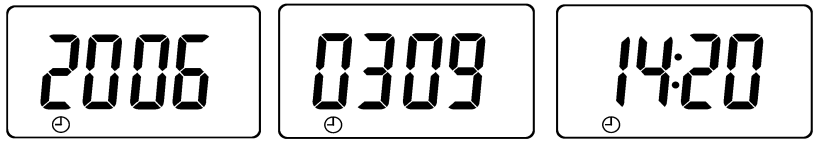
4.1. Activating the detector

To activate the detector, press  and hold for 3 seconds.

The detector begins a self test below:

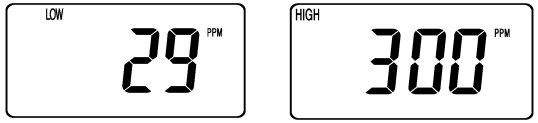
1. **Display Elements Test:** The LCD displays all of the screen elements.
2. **Alarm Function Test:** The audible alarm beeps, the visual alarm flashes, the backlight activates briefly, and the detector emits one vibration.
3、Opens the vibration and alarming indication so as to check these functions;
4、Indication of version number

5. **Date and Time:** The LCD displays the date and time automatically in the following order.



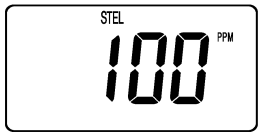
Year　　Month & Date　　Hour & minute

6、Indication of the low alarm level and high alarm level

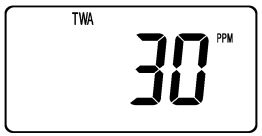


L-alarm　　H-alarm

7、Indicates STEL、TWA level



STEL



TWA

Attentions： The above pictures can only appears for toxic gases

8、Self-test pass

If the detector passes the self-test, it enters into a short-time count down to warm up. After that it enters normal operating mode. The LCD displays the ambient gas reading

Attentions： If the self-test fails, the LCD will display relative information. For details, please refer to the Time Error Alarming and Memorizer Alarming in the Alarming Status. If count down occurs when there is no fault, the device will choose a proper time of 3—30s according to the different sensors.

4.2. Deactivating the detector

To deactivate the detector, press "⓪"key, then it displays the following information:

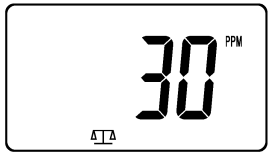
At this time, the buzzer gives beep sound. After 3 seconds, when it displays the following figure on the screen, loosen the "⓪"key. The detector is turned off.

Attentions： When the detector is not detecting status, press ⓪ continuously till it returns to the detection mode.

4.3 Menu options

The menu options include:

1. Setup of date and time
2. On/off of the vibration
3. On/of of the key sound
4. Mode of communications①

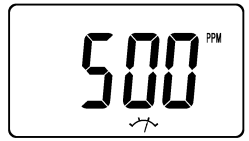


At this time, if ◎ is pressed or no operation within 1 minute, the detecor will accept the present concentration as the zero point, and then enters into the mode of calibration point set up. And press ⓪, it jumps over the calibration step to enter into the mode of alarming level set up, with reference to the 5 and 6 items.

Warning： This operation should be carried out in the clean air. Otherwise the accuracy of the detector will be affected differently according to the different gas concentration in the air. When entering into the next mode, if it displays E, which means the air is not clean, or the sensor is destroyed. So please choose another adjustment place or replace the sensor.

3、Calibration point adjustment

In this mode, the screen displays a set of flickering figures. Press △ or ▽ to modify this figure. This figure is the standard sample gas level with which the operator needs to calibrate the detector, as shown in the following chart:



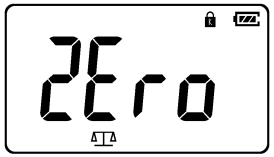
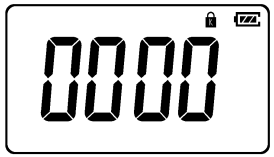
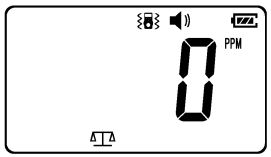
At this time, if ◎ is pressed or no operation within 1 minute, the detecor will accept the present concentration as the calibration gas concentration, and then enters into the mode of calibration point set up.

Attentions： The calibration point concentration range is shown in the Table 1.

4、Calibration point adjustment

In this mode, the detector displays a concentration value detected as shown in the following chart:

The detector will displays the following information in turns:

Status	Indication
When pressing both ▽ and ◎, it displays as the right picture. After 1 second, it enters into the next status.	
When indicating inputing the password, it displays as the right picture. The flickering figure can be modified by pressing △ or ▽	
When self-motion calibrate the zero point, it Displays as the right picture. Press ◎ to confirm the operation.	

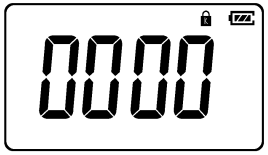
Warning： This operation should be carried out in the clean air. Otherwise the accuracy of the detector will be affected differently according to the different gas concentration in the air.

4.7 Calibration and alarm levels adjustment

If you need to re-calibrate the detector or adjust the alarm levels, please operate by the following steps:

1、Enter into the calibration and alarming level adjustment mode

When the device is close, press ⏻ amd ◎ and hold for 5 seconds, the detector begins self-test. If the self-test passes, then after a short time,it indicates inputing the password as showed in the following chart:



Only the password is correct can the detector enters into the zero calibration mode.

Attentions： As all the parameters of this mode may endanger the safety of the operator, so please make the operation carefully Within 10s after indicating inputting the password, if there is no operation or the password is wrong, the detector will be deactivated. So please input the right password in time.

2、Zero calibration

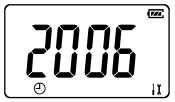
In this mode, the detector will display a figure it detected as shown in the following chart:

5. Setup of the password

Attentions: ① this function can be available only when the product you bought has the function of infrared communications.

In the mode of normal detection, press and hold △ and ▽ simultaneously until the screen displays as following figure for 1 second, and then release the buttons. it enters into the menu.

Press △ or ▽ to choose the option you need. The following is the indication picture of each option.

display	Meanings
	Press ◎ to adjust the time of the device
	Press ◎ to turn on or turn off the key sound
	Press ◎ to turn on of turn off the vibration
	Press ◎ to enter the mode of infrared communications and transmit the data to computer ①
	Press ◎ to modify the password（the initial : 0000）

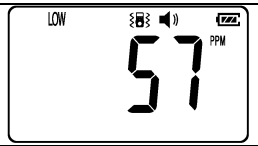
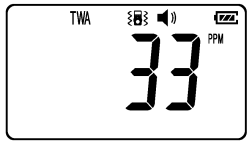
Attentions: ① this function can be available only when the product you bought has the function of infrared communications.

After entering into each item, press △ or ▽ to change options, press ◎ to confirm, press ⏻ to exit without saving. The following is the meaning of each options:

Indication pictures	Meanings
	activate the function
	Deactivate the function

4.4 Alarms

The following table describes detector alarms and shows how the LCD looks for each alarm:

Alarming type	Indicating information
Low-alarm： ● Slow tone ● flash ● Vibration ①	
High-alarm： ● fast tone ● flash ● Vibration ①	
High concentration protection: ② ● Slow tone ● flash	
Sensor Fault: ● fast tone	
STEL alarm： ● Slow tone ● flash ● Vibration ①	
TWA alarm： ● Slow tone ● flash ● Vibration ①	
Over F.S.alarm： ● Slow tone ● flash	
Time error： In this condition, the device will try to renovate it by itself. If succeeded, after start-up, it enters into the menu of time set up. Please set up the time according to the local time. If failed, the device will turn off. Please contact the supplier for repairment.	
Memorizer error： When detecting, the device will try to renovate it by itself. If failed, it will turn off. Please contact the supplier for repairment.	
Low voltage ● Modified tone alarming sound per second ● If the serious low voltage, the ico will flicker. Then the device can continue to work for 15min at most. Please recharge it at a safe place, otherwise it will turn off.	

Attentions：① It can vibrate only when the vibration item is open.

② It is only available for combustible gas.

When alarming continuously, you can press  to turn off the audible alarm and vibration, while the  and  are flashing.

4.5. To check the device status, Press  and  ,the LCD will display TEM, time, STEL & TWA levels①, maxium level

Attentions：① It is only available for combustible gas.

4.6 Automatic zero calibration

In the clean air, if the detecting value is not 0, choose this function to make the zero calibration.

In the mode of detection, press both  and  for 1 second, when it displays “please input password’, then release the two buttons. After that input the password to calibrate the zero point.