BX171

Portable gas detector

Operation manual

*Please read this manual carefully and thoroughly
before using this product*

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Safety Information

Please read the following security information carefully before using the detector:

➢ Do not use the damaged gas detector. Before using the detector, please check whether there's crack or parts missing. If the detector is damaged or uncompleted, please contact with us or our agent immediately.

➢ Highly recommend do "impact test" (set detector in the target gas that the concentration is higher than high-alarm point, can use calibration gas) to make sure the good performance of detector. Calibrate if the test value beyond detection range.

➢ Do "impact test" periodically to confirm sensor's ability of good respond to gas. Ensure that the audio, visual and vibration alarms working properly.

➢ Changing the parts may be harmful to the inner safety of detector.

➢ Do not use other sensor for your BX171.

➢ Only assigned model lithium battery DC3V CR123A allowed.

➢ It's not allowed to change the battery by the user.

➢ The concentration of oxygen in the air exceeding 20.9%vol could reduce the anti-explosion grade of detector.

➢ There's lithium battery inside the detector and do not put the used-battery together with rubbish. The used-battery should be handled by the qualified processor for recovery or disposal of hazardous materials.

➢ Unauthorized removal, adjustment or repair of the gas detector is forbidden, because it will influence the performance of the device and the explosion-proof.

➢ It's forbidden to replace the battery or open the device in the possible explosive working environment.

1. Brief introduction

BX171 is an intrinsically-safety type gas detector which can continuously detect the concentration of combustible gas and toxic gas. With the features of lower consumption, good reliability, firm configuration, small size, it can be widely used in the oil field, chemical plant, mining, environmental protection, city construction etc.

2. Main function and features

- ➢ 3V Lithium battery can work continually for 2 years;
- ➢ High contrast LCD display the gas level and device status;
- ➢ Audio, video and vibration alarm method;
- ➢ Single button operation
- ➢ Alarm of low-alarm, high-alarm, TWA alert, STEL alert, Exceeding detecting range alert, low voltage alert etc;
- ➢ Confidence beep;
- ➢ Self test on the gas sensor, electric circuit, battery, audio alarm, video alarm and vibration alarm.

3. Technical specification

Detection method	Natural diffusion
Sensor	Electrochemical sensor
Detecting range	See the attached table
Alarming level	
Indication error	≤±5% F.S.
Response time	＜30s
Indication	LCD displays the data and detector status Alarm of audio, video, vibration indicates the gas leakage, low voltage,sensor fault.
Working condition	Temperature: -20℃～55℃ Humidity: ＜95%RH non dew
Power supply	DC3V CR123A Lithium battery
Sensor life	2 years
Explosion-proof	CE 0470 ⟨Ex⟩ II 1G Ex ia IIC T4 Ga
Dimension	l×b×h, mm: 91×58×34
Weight	About 132g

4. Configuration and function

4.1 Configuration
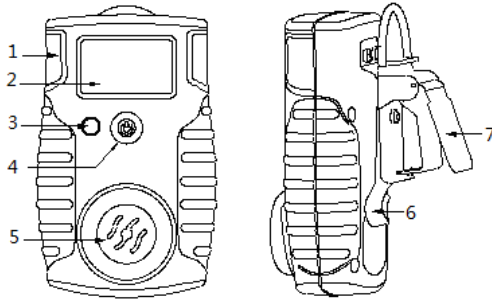
No.	Description
1	Video alarm light
2	LCD screen
3	Buzzer sound hole
4	Button
5	Sensor hole
6	Strap nip
7	Crocodile clip

Fig. 1 BX171 gas detector

4.2 Indication
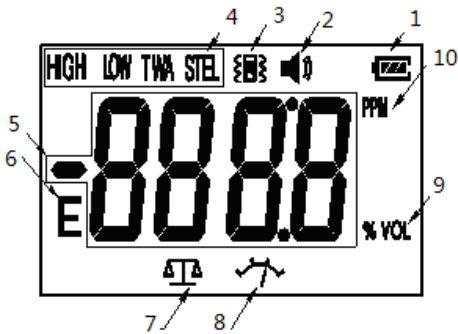
Fig. 2 Indication

No.	Indication
1	Battery volume
2	Buzzer status
3	Vibration status
4	Alarm type
5	Value display
6	Indication
7	Error display
8	Zero calibration
9	Calibration point
10	measurement unit %VOL

4.3 Button function

Easy operation through the single button: turn on or off the detector, mute, cancel vibration alarm, information checking, open/close the heartbeat information, calibration etc. In different status, the function of the button is different as follows:

Button function	Operation
Turn on	Press it for 3 seconds when it is power off.
Turn off	Press it for 3 seconds when it is power on.
Cancelling sound or vibration alarm	When alarming, press it once.
Information checking	In normal monitoring status, press it for 1 second, the backlit is on, and the screen displays in turns STEL, TWA, peak level, minimum level, heartbeat information etc.
Open/close heartbeat information	When the detector is being turned on, keep pressing it till the screen displays "H OP" or "H CL".
Calibration	Keep pressing it till the detector is power off and is again turned on, the screen displays "CAL", then release the button, and the detector enters calibration status.

5. Operation introduction

5.1 Turn on the detector

When it is power off, press the button for 3 seconds and the detector will be turned on. After that, the detector will start the following self test:

A. Display all the fields and graphs and open the backlit.
B. The buzzer gives sound.
C. Turn on the vibration and alarm indication.
D. Display the version number:

Fig. 3 Version no.

E. Display the preset low alarming value and the high alarming value:

Fig.4 First alarm level

Fig. 5 Second alarm level

F. Display STEL and TWA levels:

Fig. 6 STEl alarm lvel

Fig. 7 TWA alarm level

G. Warm-up

After passing the self test, the detector starts warm-up, it will last 3 to 30 seconds. After warm-up, it will enter normal monitoring status and the screen will display the target gas's concentration in the area:

Fig. 8 Monitoring status

If the self test fails, the detector will turn off automatically. Please contact the seller for repairing.

5.2 Turn off the detector

In the normal monitoring status, hold the button till the buzzer gives sound 3 times and the screen displays "OFF", "OFF3", "OFF2" and "OFF1" as shown in the following pictures:

Fig. 9, 10, 11 Power off count down

After that, the screen is off. Release the button and the detector will be power off.

5.3 Information check

In the normal monitoring status, press this button for about 1s. The backlit is on, the screen displays in turn STEL level, TWA level, Max. gas level (for toxic gas) or Min. gas level (for O_2 only) since the detector is turned on, heartbeat information status (on or off), zero calibration information, resume information etc.

Fig. 13 STEL level

Fig. 14 TWA level

Fig. 15 Max. or Min. level

Fig. 16 Heartbeat info. on

Fig. 17 Heartbeat info. off

Fig. 18 Zero calibration

Fig. 19 Resume

5.3.1 Heartbeat information:

Only when the user is turning on the detector, can he turn on or off the "Heartbeat information". Follow the following steps to turn on it:
1. If the detector is on, please turn off it first.
2. Hold the button during the turn on period till the screen displays "H oP" or "H CL".
Repeat the above 2 steps once, the Heartbeat information will be turned on or off.
Note: After Heartbeat information is turned on, the buzzer gives sound once every 2 minutes, which indicates the detector is working normally. If the Heartbeat information is turned off, there is no such indication when the detector is working normally.
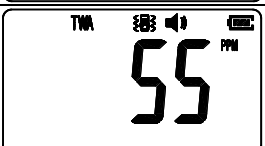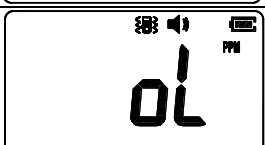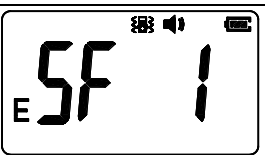
5.3.2 Zero calibration
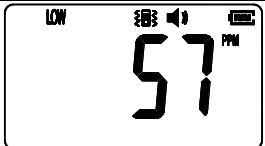
In the clean air, if the test result is not accurate, please proceed the zero calibration in the clean air. The procedures are as follows:
During the information checking, when the screen displays "ZoF", press the button for quite short time. If the operation is sucessfule, the buzzer gives sound once. The zero calibration range is ±5% F. S.

5.3.3 Resume

During the information checking, when the screen displays "rES", press the button for quite short time. If the operation is succesful, the buzzer gives sound once. And the STEL value, TWA value, Max. gas level (for toxic gas) or Min. gas level (for O_2) will be reset.

5.4 Alarm information

Alarm type	Information displayed
Low alarm: Slow modified tone alarm sound Alarm LED flickering Vibration	LOW 57 PPM
High alarm: Quick modified tone alarm sound Alarm LED flickering Vibration	HIGH 329 PPM
STEL alert: Quick modified tone alarm sound Alarm LED flickering Vibration	STEL 300 PPM
TWA alert: Quick modified tone alarm sound Alarm LED flickering Vibration	TWA 55 PPM
Overload alert: Quick modified tone alarm sound Alarm LED flickering	oL PPM
Battery low voltage alert: ⊏⊐ log appears. At this time, the detector can still work for 30 days at least. When the battery is used up, the detector will turn off automatically.	⊏⊐
Sensor end-of-life indication: Within 0-9 days before the sensor is used up, screen will display as the right picture shows when the detector is self testing after turning on. The figure means the number of the day.	E SF 1

5.5 Calibration

In order to assure the testing accuracy, we suggest to calibrate the detector once every 180 days. The calibration procedures are as follows:

Operation steps	Information displayed
1. In the clean air, press the button till the detector is turned off, keep pressing the button, the detector will turn on again, the screen displays time count-down of 3 second.	3
2. When the screen displays "CAL", release the button and the detector enters calibration status.	CAL
3. The detector will first calibrate the zero point. Please connect the detector to the gas bottle and input high-pure N_2 into the detector at the speed of 120ml/min. Or put the detector in the clean air and it will calibrate zero.	0
4. When the screen displays flickering calibration points, please connect the detector to the gas bottle and input the standard gas at the speed of 120ml/min. If no gas input within 30s, the system treats the calibration is failed.	500
5. If the standard gas is input normally, the detector will adjust once every 3 seconds till the system is steady and the calibration is finished. If calibration succeeded, the screen displays "S" and the detector turns off.	5
6. If calibration failed, the screen displays "F C" for 30 second. During this period, the user can press the button to repeat the calibration.	F C

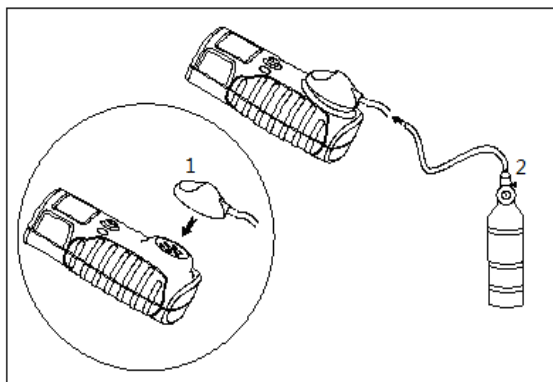| 7. During the 30 seconds of "F C" flickering, if no operation, the calibration failed. The screen will display "F" and the detector turns off automatically. | |

Fig. 18 Connect the gas bottle to the detector

No.	Instruction
1	Calibration cap and calibration tube
2	Valve and gas bottle

6. Sensor replacement

⚠ **Warning**

In order not to damage the user or detector, please use the specified gas sensor. Under normal working environment, the sensor can work for 2 years. When it finish life, please contact the distributor to purchase new gas sensor.

Screw off the fixing screw, open the detector, pull out the present gas sensor (If the sensor is too tight, please shake it slightly and then pull out it). And then put new gas sensor into the sensor socket. Make sure the sensor plug and socket is corresponding. After replacement, screw on the fixing screw.

Note: When taking down or plugging in the gas sensor, please don't use too much strength. Otherwise, the sensor may be damaged.

After replacement, please calibrate the sensor after the detector works for 30 minutes.
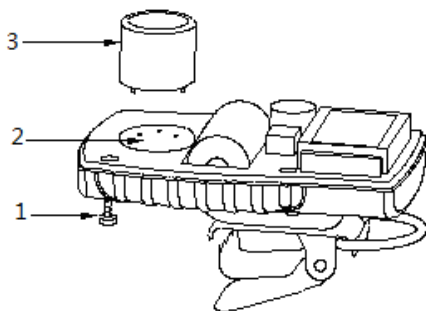
No.	Instruction
1	Fixing screw
2	Sensor socket
3	Gas sensor

Fig. 20 Replacing the gas sensor

7. Trouble shooting guidance

Problem	Possible reason	Solution
The detector cannot be turned on	Battery used up	Please contact the seller.
	Circuit fault	Contact the distributor.
No response to the gas	Warm-up not finished	Wait till warm-up is finished
	Circuit fault	Contact the distributor.
Testing not accurate	Sensor is end-of-life	Contact the distributor.
	Not calibrated for long time	Calibrate it in time.
Gas level is negative	Sensor drift	Calibrate zero point
Zero calibration unavailable	Too much sensor drift	Calibrate or replace the sensor

8. Maintenance

In order that the detector can work normally, please carry through the following maintenance:

8.1 Inspect, test and calibrate the detector termly. We suggest the user calibrate the detector once every half a year.

8.2 Keep record of all the maintenance, calibration and alarms.

8.3 After long time use, if there is dust on the cover of the detector, please clear it slightly by using clean soft cloth. The impregnant, soap and polishing reagent are forbidden to use. When clearing the gas sensing hole, please use dry downy cloth or soft brusher.

8.4 Please don't put the detector in any type liquid.

9. Notice

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

➢ When there is interferential high-concentration gas, the detector may not work well.

➢ Please operate the detector strictly accordance with the introduction, otherwise the result may be incorrect or you may destroy the detector.

➢ The detector should not be stored or used under the circumstance with caustic gas (such as Cl_2), or be used or stored under the other rigorous circumstances (including excessive high and low temperature, higher humidity, electromagnetic field and strong sunlight).

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

➢ Any malfunction not being included in this manual, please contact the distributor or manufacturer for solutions

Attached table

Target gas	Detecting range	Low alarm level	High alarm level	TWA level	STEL level
H_2S	0-100ppm	10ppm	15ppm	10ppm	15ppm
CO	0-1000ppm	35ppm	200ppm	35ppm	200ppm
O_2	0-30%vol	19.5%vol	23.5%vol	--	--