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BX170 1

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1. Brief Introduction

BX170 portable gas detector can continuously detect the content of combustible gas and toxic gas. It is used for anti-explosion and toxic gas leak alarm in underground pipe or mines, which assure the workers safety and prevent the equipments from being destroyed.

It detects though in the way of diffusion. With excellent-quality sensor from Henan Hanwei Electronics Co., Ltd, the detector has good sensitivity and reproducibility. The test procedure is MCU controlled, so it is easy to handle. Complete functions, LED indication and cabinet design enable you to enjoy using it.

The shell of the detector is made of high-intension material with anti-smooth rubber, and it can prevent water, dust and explosion.

This product is tested by the authorized government.



2. Main Functions and Technical Features

2.1 Main Functions

- Advanced MCU control
- LED indication
- Low and high alarms
- The alarming level can be specified
- Sensor high content protection function
- Indication of sensor malfunction self-test and low voltage
- Time indication
- Replaceable sensor
- Self-adjustment function
- Two level and three ternary alarms
- Power on and self-test
- Password management and password validation for important operation
- Self-safety anti-explosion

2.2 Technical Features

- Range: 0%LEL~100%LEL(combustible gas);
- Gas: combustible gas (CH₄,C₃H₈,H₂) and toxic gas
- Alarming: Can be specified
- Accuracy: ±5% F.S
- Response time: T₉₀<30s
- Indication: LED indicate the real-time data and system status
LBD, sound, vibration alarm, malfunction and low voltage
- Working condition: Temperature -40℃~70℃: Humidity <90%RH no condensation
- Working voltage: DC3.6V Li battery: 1200mAh
- Charging time: 3h~5h
- Working time: ± 8h continuously
- Life of sensor: 2 years
- Protection grade: IP65
- Weight: about 200g (battery included)

Outside dimension: 110mm×60mm×40mm
Standard: GB15322-2003; GB13468-2000

3. Illustration of configuration and functions

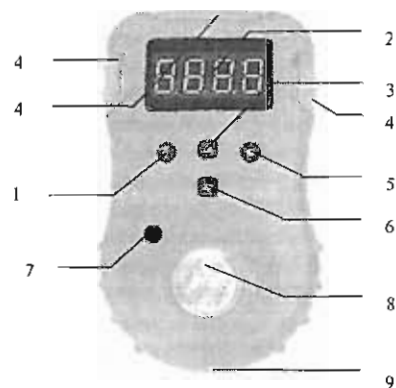


Chart 2 outside configuration

1	On-off switch	6	Downward key
2	LED indication	7	Sound antrum
3	Upward key	8	Air in hole
4	Alarm light	9	Charge socket
5	Confirmation key		

4. Use

4.1. Turn on the detector

Press "⏻" continuously for more than two seconds, then the detector is power on. It will first self test. All alarming lights on, buzzer tweets, oscillator works, LED indicates "8888", and then the detector is warming up with indication of "30,29. 28....2,1" in the indication display, then warm-up over. then indicates the important information in turn: year, week, month, day, hour, minute, concentration unit, low alarm point, high alarm point, then after a short tweet, the detector is ready to test.

4.2. Turn off the detector

When the detector is on, press "⏻" key for more than four seconds, then after a long tweet from the buzzer, all the displays are off. The detector is power off.

4.3. Test

4.3.1. In the normal test condition, the detector will indicate the real-time concentration of the tested gas, mainly in the following ways:

- 1) If the concentration of the gas is below the low alarming level, the detector doesn't alarm. At that time you can do any setup and operation except for demarcating.
- 2) When the concentration is high than the low alarming level, but lower than the high alarming level, the detector is in the condition of low alarming and the buzzer gives spiccato "DiDi" sound with some frequency, with the red light flickering; at the same time, the concentration result and the letter "L" are displayed on the screen, which means lower alarming, and the oscillator is on. When the tested concentration is below the low alarming level again, then the alarming signal disappears. And you can press "⏻" key to turn off the sound and quivering alarming, but the light alarming is still continuing. At this time, you can do some operation and setup.

3) When the concentration is higher than the higher alarming level but lower than the F.S., the detector is in the condition of higher alarming, and the buzzer gives rapid "DiDi" sound, with the red light flickering. At the same time, the concentration result and the letter "H" are displayed on the screen, which means higher alarming, and the oscillator is on. And you can press "F" key to turn off the sound and quivering alarming, but the light alarming is still continuing. At this time, you can do some operation and setup.

4) When the concentration is higher than the testing range but lower than the higher content protection point, the buzzer gives rapid "DiDi" sound, and the oscillator is on. At the same time, there is "OL" on the screen, which means the concentration is above the F.S. And you can press "F" key to turn off the sound and quivering alarming, but the light alarming is still continuing. At this time, you can do some operation and setup.

5) When the concentration is higher than the high content protection point, the buzzer gives more rapid "DiDi" sound, with the oscillator on, and there is "HOFF" on the screen, which means high concentration protection. And you can press "F" key to turn off the sound and quivering alarming, but the light alarming is still continuing. But you can just turn off the sound alarming or turn off the detector. This situation will continue for two minutes and then the detector warms up for 5 seconds then in the condition of test again.

4.3.2 When the sensor is destroyed due to overdue use or inadvertent use, the detector gives malfunction alarm (sometimes strong electromagnetic radiation causes such alarm). Then the buzzer gives 5-second-long but spiccato "DiDi" sound, with the red light flickering. At the same time there is "FAUL" on the screen, which means the detector needs repairing for malfunction, and the oscillator is on too. And you can press "F" key to turn off the sound and quivering alarming, but the light alarming is still continuing. But you can just turn off the sound alarming or turn off the detector.

4.3.3 When the power supply of the detector is almost used up, it will give low voltage alarm with short sound and light alarming every 10 seconds; at the same time, there is "P L" on the screen, which means the power supply is too low. But the detector still can work normally for more than 15 hours until the detector is power off due to the exhausted power supply.

4.4 Setup

4.4.1 Lower alarm setup: In the normal condition, press "F" or "F" or "F" to enter the root mode of "F-1", then press "F" to enter the mode of lower alarm setup. At this time, you can adjust the lower alarm point by pressing "F" or "F". After the adjustment, you can press "F" to exit, but the result will not be saved. If you press "F" key, the detector will give a long tweet, and there is "good" on the screen, which means the result is saved. Then the detector returns to the base menu mode. Please be noted that the lower alarm point can be specified within some range. Details please find in the attached table.

4.4.2 Higher alarm setup: In the normal condition, press "F" or "F" or "F" to enter the root mode of "F-2", then press "F" to enter the mode of higher alarm setup. At this time, you can adjust the higher alarm point by pressing "F" or "F". After the adjustment, you can press "F" to exit, but the result will not be saved. If you press "F" key, the detector will give a long tweet, and there is "good" on the screen, which means the result is saved. Then the detector returns to the base menu mode. Please be noted that the higher alarm point can be specified within some range. Details please find in the attached table.

4.4.3 Zero point excursion: In the clean air, if the concentration displayed on the screen is not "0" or "-0", it proves that there is excursion, and you need to drift the zero point to adjust the curve. The method is, in normal condition, to press "F", "F" or "F" to enter the base menu mode, then press "F" or "F" to enter the "F-3" mode. Then press "F" to enter the mode of password. Now the

first letter on the screen flickers with some frequency (the flickering letter can be changed). You can press "F" to adjust the first letter or press "F" to transfer to the other flicking letter to change. After inputting the password, press "F" to enter zero point excursion mode. Now the LED displays the amplificatory AD of the sensor. And you can press "F" to exit, and the new zero point will not be saved. If you press "F" after the AD is steady, the buzzer will give a long tweet, and "good" is shown on the screen, which means the result is saved. Then the detector returns to the mode of base menu. Please be noted that if there are some more testing gas or there is bigger excursion with the sensor, you will not have the same result as the above one. That is to say, when you press "F", the buzzer will give a long tweet and "EEEE" is displayed on the screen, which means the result can't be saved.

4.4.4 Calibrate the Detector: If in the clean air, the content indicated is not zero, or is "-0", or the concentration indicated is not right, which can't be corrected through "zero point excursion", the client can recalibrate the detector through this function. In normal condition, press "F" or "F" or "F" to enter the mode of base menu, then press "F" or "F" to adjust to the "F-4" menu, then press "F" to enter the interface of password input. Then the first figure on the screen is flickering in frequency (the flickering figure can be changed), which can be changed by pressing "F", or you can press "F" to change the other figures. After inputting the password, press "F" to enter the mode of detector calibration. Normally the detector indicates "d1 0". Then you can press "F" to enter mode of detector zero point calibration, or you can press "F" to return to the mode of base menu, or press "F" or "F" to choose "mode of the calibration point calibration d2xx" or "mode of the calibration point adjustment-xx"(xx means figure of the calibrated point).

1) Mode of Zero Point Calibration: It means to calibrate the zero point of the detector. Entering this mode, AD of the zero point will be displayed on the screen. The client can press "F" to exit, or when the AD is steady press "F" to calibrate the zero point. After that, the detector gives a long buzz then indicates "good", then back to the menu of detector calibration.

2) Mode of the calibration point adjustment: Entering this mode, the display indicated the figure of the calibrated point. You can press "F" to exit or press "F" to enter. Choose the calibrated point by pressing "F" or "F", then press "F" to confirm. After that the detector indicates "good" after a buzz, then back to the menu of detector calibration.

3) Mode of the calibrated point calibration: In this mode, the screen indicates the AD of the calibrated point. You can press "F" to exit or when the AD is steady, press "F" to calibrate. After calibration, the detector indicates "good" after a buzz, then back to the menu of detector calibration. Please be noted that this calibration should be carried out when the AD of the calibrated point is the LEL of the calibrated gas. Besides, this calibration will fail in the clean air, because the detector has the function of the calibration point incorrect operation protection. That's to say, when you press "F", the detector gives a long buzz, "EEEE" is displayed on the screen, which means the result can't be saved.

4.4.5 Time setup: The detector has the function of time adjustment. If for some reason, time function is missed or incorrect, you can enter the mode of time setup to reset the time. In the normal condition, press "F" or "F" or "F" to enter the mode of base menu, then press "F" or "F" to menu of "F-5", and then press "F" to enter the mode of time setup. At this time, "XX-X" is displayed on the screen (year-week) with the first figure flickering at some frequency (the flickering figure is changeable). You can press "F" to adjust the first figure, or press "F" to adjust the other figure. When the first screen are finished, continue to the next screen by pressing "F", and "XXXX" (month, day) is displayed on the screen with the first figure flickering at some frequency (the flickering figure is changeable). You can press "F" to adjust the first figure, or press "F" to adjust the other figure. When the second screen are finished, continue to the third screen by

pressing , and "XXXX" (hour, minute) is displayed on the screen with the first figure flickering at some frequency (the flickering figure is changeable) . You can press to adjust the first figure, or press to adjust the other figure. After adjustment, press to save the adjustment. After that the detector indicates "good" after a buzz, then back to the menu of base menu.

4.4.6 Time: In the normal condition, press or to enter the root menu mode, then press or to enter the "F-6" menu, then press to enter the mode of time display. The first two letters represent hour and the last two minute.

The entire password related in the above operation is "1111".

5 Battery Charge

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 power off, please connect the AC connector plugs of the charger with the 220V AC electrical source. The light of the charger turns red, and the charger begins to charge the detector. It will continue for 3 to 4 hours until the light turns green, which means the detector has been charged well and can be used normally.

Attention: In order to avoid fire or explosion, please do not charge the detector when it is working. Please try not to charge when the detector is power on, otherwise the charge speed will be affected. And don't turn on and turn off the detector frequently when it is being charged to avoiding destroying the detector.

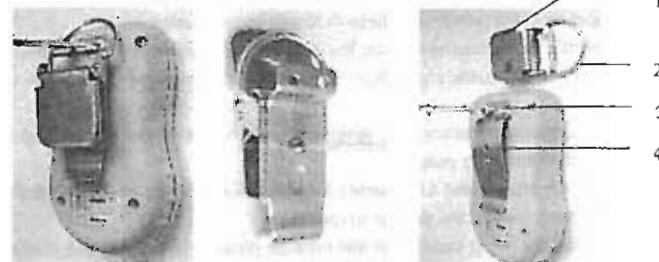
6 Use and Replacement of Sensor

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 Use of Portable Accessories

In order that it's easy for the clients to 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. (table 11) . If you mainly use the buckle, please take out the crocodile buckle (table 12), and then fix the buckle (table 13) .



(table 11)

(table 12)

(table 13)

1	crocodile buckle	3	Orientation hole
2	flying rings	4	buckle

8 Normal Malfunction and Solutions

Malfunction	Possible Reasons	Solutions
Unable to Turn on the detector	low voltage	Charge in time
	Detector down	Contact distributor or the manufacturer
	Circuit malfunction	Contact distributor or the manufacturer
No reaction to the tested gas	Prolong time unfinished	Wait until prolong time finished
	Circuit malfunction	Contact distributor or the manufacturer
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 point excursion function unavailable	Too much excursion	Calibrate or replace the sensor in time

9 Normal Malfunction and Solutions

There are one detector, one charger, one screwdriver, one set of portable accessories, two pieces of screws, one manual, and one piece of application disk, one quality certificate and one warranty card inside this package.

10 Attention

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

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

Attached Table

Menu	Gas	Full Standard	Lower Alarm range	Higher Alarm Range	Demarcating point	L Alarm	H Alarm
CH ₄	CH ₄	0-100%LEL	10%LEL~ 25%LEL	30%LEL~ 80%LEL	10%LEL~ 90%LEL	20%LEL	50%LEL
C ₃ H ₈	C ₃ H ₈	0-100%LEL	10%LEL~ 25%LEL	30%LEL~ 80%LEL	10%LEL~ 90%LEL	20%LEL	50%LEL
H ₂	H ₂	0-100%LEL	10%LEL~ 25%LEL	30%LEL~ 80%LEL	10%LEL~ 90%LEL	20%LEL	50%LEL
H ₂ S	H ₂ S	0-100ppm	5ppm~12ppm	15ppm~25ppm	10ppm~90ppm	10ppm	15ppm
CO	CO	0-1000ppm	25ppm~100ppm	150ppm~300ppm	100ppm~ 900ppm	35ppm	200ppm
O ₂	O ₂	0-30%vol	16.5%vol~ 19%vol	22.5%vol~24%vol	20.9%vol	19.5%vol	23.5%vol