# Single Portable Gas Detector

## CO-172P LCD Display with Built- in pump

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4.2 Battery Charge

When the power supply is not enough due to the low voltage, please charge in time and needs the detector is power off, because the consumption is very large when power on, it may leads to not charge completely. 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. Until the light turns green, which means the detector has been charged well and can be used normally.

## 5 Notice

5.1 Detector has air pump, when the air pump appears fault, please check the gas route immediately, avoid damage the parts.

5.2 The sensor is located on the surface the body, so should avoid touch the water.

5.3 Please calibrate the sensor timely to assure the precision of the detector.

5.4 Do not make the the zero point calibration and debugging when there is flammable gas in the air, do the zero point calibration must be in the clean air.

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

**Declaration**

**Declaration**

To keep continued product improvement, **Hanwei** reserves the right to change design features without prior notice



## Precautions:

To avoid personal safety injury, Instrument damage and potential dangerous accident; do not use the CO-172P portable gas detector before reading this manual.

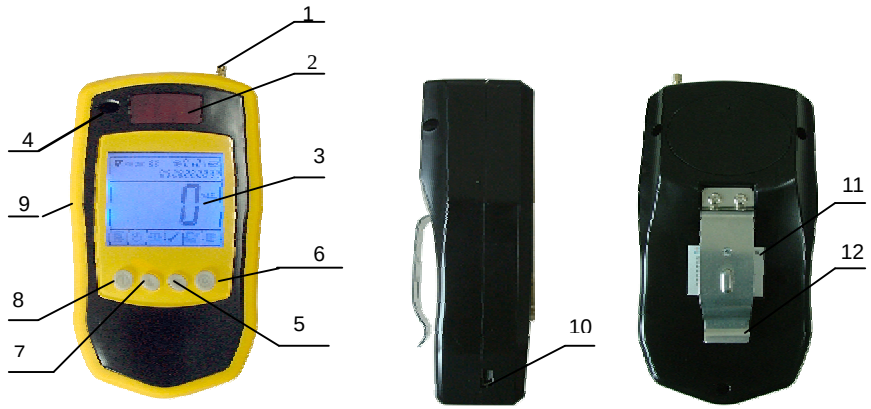
## 1. Brief Introduction

CO-172P portable gas detector can continuously detect the content of combustible gas or toxic gas. It is used for anti-explosion and toxic gas leak alarm in underground pipe or mines, especially confined space, which keep the people safe and prevent equipments from being destroyed.

The detector with large LCD and lump, detect the gas by pump sampling. And there are different sampling probes attached, which is convenient for detecting in different environment. And the high and low alarm level is adjustable (there is Time-weighted average based on a 15-minute period (STEL) and Time-weighted average based on an 8-hour workday (TWA) alarming function for toxic gas). It could check the concentration, STEL and TWA, test extreme level etc. User could open or shut the vibration alarming function according your application. When alarming there is visible and audio warning and back light shall be activated automatically. The screen also displays the relative indication to help user to realize the alarming type. During the operating or alarming, the back light shall be activated automatically. The mark in the LCD makes the operation simple and convenience.

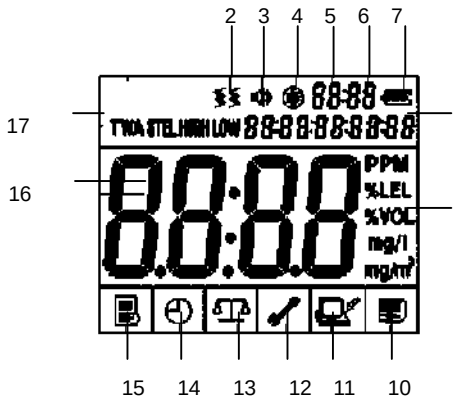
## 2. System Configuration and Specifications

2.1 Illustration of the outside configuration




1. Gas entrance
2. Alarming Lamp
3. LCD Display
4. Buzzer
5. Adjust reduce key
6. Enter key
7. Adjust add key
8. On /off /cancel key
9. Protect wrap
10. Charge/data up load jack
11. Name plate
12. Clip

2.2 Illustration of LCD DISPLAY




2. Pulsator
3.Sound
4. Pump
5.Operator number
6. Place number
7.Battery
8. Time
9. Unit
10. Data setup
11. Record upload
12. Calibration
13. Zero calibration
14. Time setup
15. History record check
16. Concentration value
17. Alarm state

2.3 The Main Functions and Technical Data

2.3.1 The Main Functions

Advanced 16 digit MCU control

Large LCD display

Built-in pump to sampling, could sample test from long distance.

Low and high alarm can be specified display alarm type.

Display STEL and TWA level;

Supply time and remain battery level display.

Replaceable sensor module

2000 pieces records, including peak value, type, could auto cover when it full.

Could connect with computer and output data, and analyses the results.

Two alarming level， three ternary alarming (visible audio and vibration)

Power on and self-test function, sensor, visible, audio and vibration information

Password management and password validation for important operation

2.3.2 Technical Data:

Safe degree: Intrinsically safe

Testing type: pump sampling

Sensor: Catalytic or electrochemical

Gas: Combustible or toxic gas

Response time：T<30s

Working condition：Temperature -40℃～70℃ for combustible gas;

Temperature -20℃～50℃ for toxic gas;



3.5.7 Air Pump Switch

This function without password, under the control state, press "  " key one time, the air pump and remark disappeared, and press again, the air pump and remark open.

3.5.8 Replace the filter paper

The appliance needs to change the filter paper every two months. We suggest replace the filter paper every one month if the environment is very rugged. Change the filter paper as following:

Get the connector off from the detector first, and then take the filter out with tweezers and screws. Put the filter paper in and fixed the connector to the detector.


| | | | |
|---|---|---|---|
| 1 | Gas entrance | 3 | Airproof ring |
| 2 | Filter paper | 4 | connector |

## 4、Battery

4.1 Battery Capacity

Detector could test the voltage when power on, could auto indicate due to low voltage, it also test the battery capacity, which could display in battery sing on the up right of the screen. When battery charged, there are three line, along with the weaken, the line will reduce, when remain a outline means low power, then needs charged, if do not charge, it could work for 15 min, then the detector could auto power off.

3.5.5.6 Setup of the buzzer switch

Press “F－06” to enter the mode of buzzer switch setup. You can turn off the buzzer by pressing “△” key, as figure 23; or turn on the buzzer by pressing “▽” key, as Table 24. Press “◎” key after setup. The detector will save the setup and return to the mode of detection.

3.5.5.7 Setup of the vibrator switch

Choose “F－09” and press “◎” key, you enter the mode of vibrator switch setup. You can turn off the vibrator by pressing “△” key, as figure 25; or turn on the vibrator by pressing “▽” key, as figure 26. Press “◎” key after setup. The detector will save the setup and return to the mode of detection.

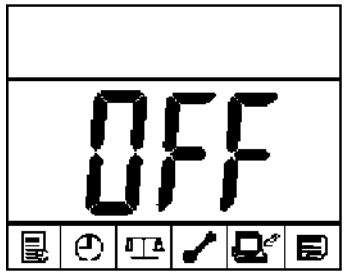



Fig 23

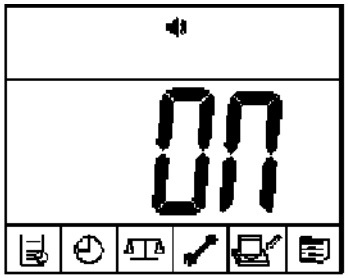



Fig 24

3.5.5.8 Edition information check

Select F-08， and press “◎” to confirm. The screen will display”V1.0” edition information.

3.5.6 Mute

This function without password, when alarming, press adjust “▽” key one time, the sound and remark disappeared, press again, the sound and remark open.

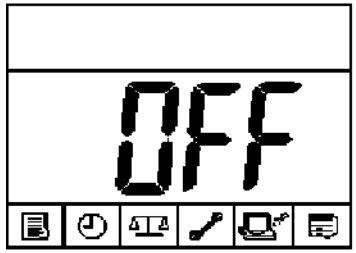



Fig 25

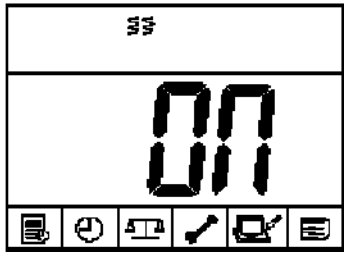



Fig 26



Humidity ＜90%RH no condensation

Protection grade：IP65

Battery: DC3.7V, 2.1AH, Li battery；

Working time: 8 hours continuously for catalytic gas sensor;

48hours continuously for electrochemical gas sensor;

Charging time:（4～6）h

2.3.3 Specifications

| Model | Gas | Range | TWA alarm | STEL alarm | Low alarm | High alarm |
|---|---|---|---|---|---|---|
| CO172P-$CH_4$ | $CH_4$ | 0-100%LEL | — | — | 20%LEL | 50%LEL |
| CO172P--$C_3H_8$ | $C_3H_8$ | 0-100%LEL | — | — | 20%LEL | 50%LEL |
| CO172P--$H_2$ | $H_2$ | 0-100%LEL | — | — | 20%LEL | 50%LEL |
| CO172P--$H_2S$ | $H_2S$ | 0-100ppm | 10ppm | 15ppm | 10ppm | 15ppm |
| CO172P--CO | CO | 0-1000ppm | 35ppm | 200ppm | 35ppm | 200ppm |
| CO172P--$O_2$ | $O_2$ | 0-30%vol | — | — | 19.5%vol | 23.5%vol |
| Model | Permit set rang L | | Permit set rang H | | | |
| CO172P--$CH_4$ | 10%LEL～25%LEL | | 25%LEL～80%LEL | | | |
| CO172P--$C_3H_8$ | 10%LEL～25%LEL | | 25%LEL～80%LEL | | | |
| CO172P--$H_2$ | 10%LEL～25%LEL | | 25%LEL～80%LEL | | | |
| CO172P--$H_2S$ | 5ppm～15ppm | | 15ppm～25ppm | | | |
| CO172P--CO | 25ppm～100ppm | | 100ppm～500ppm | | | |
| CO172P--$O_2$ | 16%vol～19.5%vol | | 22.5%vol～24%vol | | | |

Table 1

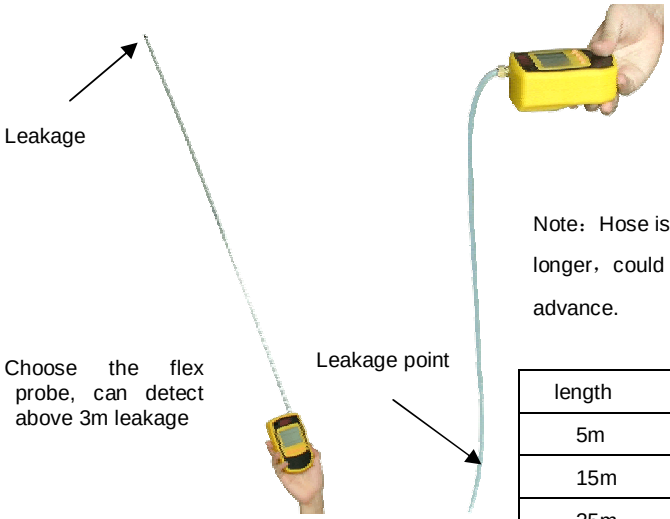
## 3. Operation

**Note; the operation for the combustible gas detector is the same as the operation for toxic gas detector. Following instruction is based on the combustible gas detector.**

3.1 Self-test and Warm-up

3.1.1 Connect the Probe

Open the package box, take out the detector, could choose flex rod or Hose to connect the detector.




Note：Hose is 1.5m, if needs more longer，could make request in advance.

| length | Response time |
|---|---|
| 5m | 5s |
| 15m | 15s |
| 35m | 40s |

3.1.2 Activating the detector

Press and hold “on-off” button continuously for more than 1 second till the back light on with “di” sound, then release the button. The detector is activated.

3.1.3 SELF-TEST

The detector will first make a visual and audible self –test after power on and display all information as figure 1:

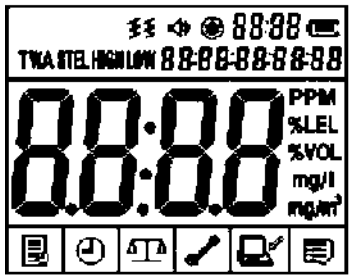



Fig 1

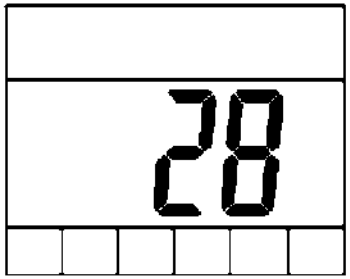



Fig 2

3.1.4 Warm Up

There is a counting down warm up after the self test as figure 2 shows, When the screen display 1, it shows the warm up finishes. The detector enters alarming level display process, first display high level, latter display low level as figure 3 and figure 4 display. The displaying value depends on the operator setting. After displaying, the detector enters the



The detector returns to the normal condition after setup

3.5.5.1 Detect Operator setting

Select “F－01” then press “” button, you could set detect Operator No, the range is 1-99，as figure 18. Press the “” the setup, it will back to the detecting state automatically. Please record the person after setup to avoid confusion.

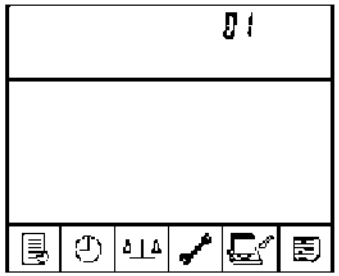



Fig 18

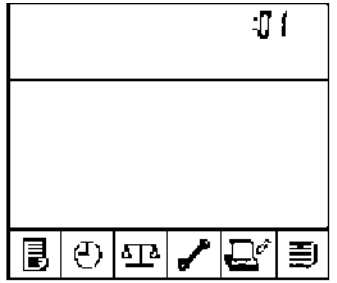



Fig 19

3.5.5.2 Detect address setting

Select “F－02” then press “” button, you could set detect address number, the range is 1-99，as figure 19. Press the “” the setup, it will back to the detecting state automatically. Please record the person after setup to avoid confusion.

3.5.5.3 Setup of High Alarm

Select “F－03” then press “” button, you enter mode of high alarm setup. Take reference of table 1 for the detecting range，as figure 20. Press the “” the setup, it will back to the detecting state automatically.

3.5.5.4 Setup of Low Alarm

Select “F－04” and press “” key, you enter mode of low alarm setup. Take reference of table 1 for the detecting range，as figure 21. Press the “” the setup, it will back to the detecting state automatically.

3.5.5.5 Alarm record deletion

Select “F－07” and press “” key, you enter mode of alarm record deletion. The detector delete rapidly all the alarm record saved before. The more the record you deleted, the bigger the figure displayed on the screen, as figure 22. The detector returns to the normal condition after deleting all the record.

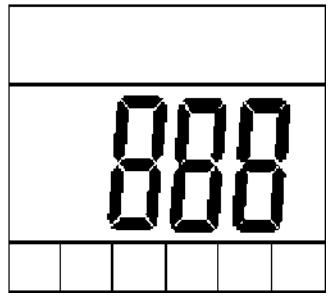



Fig 22

minute in turn; when setting year display as figure 12, then the first number is glittering, could set the number through adjust "△" and "▽" buttons, press "◎" button it auto enter next digit, method as the former. Press "◎" button after the all complete, the detector will enter detecting state, it will display the new time on clock display section.

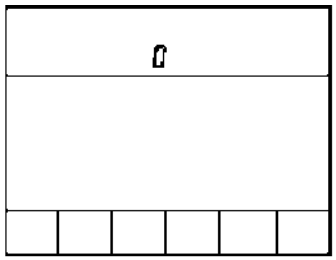


Fig12

3.5.3 Zero Point Calibration

If display is not zero in clean air, it will effect the detect result, then you need to make the zero point calibration. Enter the zero point calibration state, after calibrated it will enter normal detecting state. It display "0" means succeed. If there is no change means sensor has a large drift, it not allows calibrate, then needs re-calibration if you want to correct accuracy.

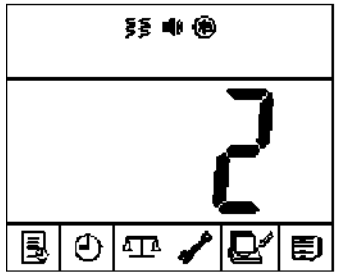


Fig 13

3.5.4 Memory Data Upload

This function could up load the memory data to PC through RS232 interface. If user want to up load data could choose data up load then it starts, when up loading, up load one piece of date then the counter adds one and display as figure 16 shows, press "◎" to cease the transmission, it could auto return normal state after transmission complete.

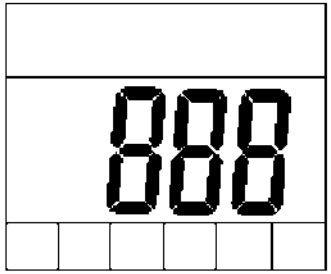


Fig 16

3.5.5 Parameter Setup

Under the normal detect state to enter toolbox menu as figure 17 shows: now enter parameter set environment, press adjust "△" and "▽" key and change the back number, it could choose different parameter set according to different number, the toleration is:

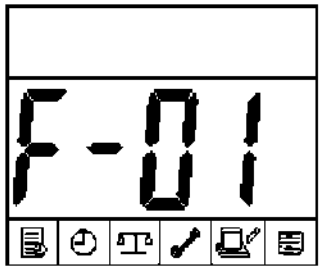


Fig17

F—01: Setup of detect Operator;

F—02: Setup of detect address;

F—03: Setup of High Alarm;

F—04: Setup of Low Alarm;

F—05: Alarm record deletion;

F—06: Setup of the buzzer switch;

F—07: Setup of the vibrator switch;



normal detect state as figure 5

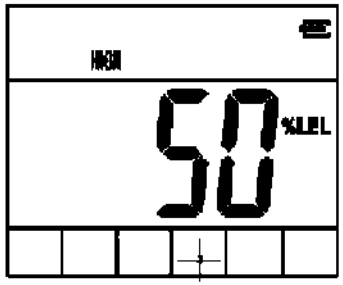



Fig 3

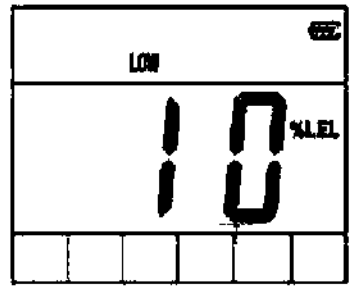



Fig 4

3.2 Deactivati

3.2.1 Deactivating the detector by hand

When the detector is on, press "◎" button, then after a long tweet from the buzzer, display count down 3,2,1, all the displays are off. The detector is in deactivated.

3.2.2 Automatic Off in low voltage

When the battery's voltage is lower than the pre-setting value, the detector will shut off automatically and remind operator needs charge.

3.3 Detecting

After the warm up, the detector enters detectiion, as figure 5 shows, the company logo is displayed in the left top of the screen and there is two displaying section in the right top of the screen, displaying the operator number and testing address number. When the detector is activated, the screen will display the time, power capacity and gas level.

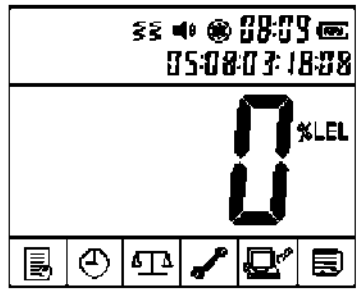



Fig 5

Press any key could turn on the back light under the normal detecting state, if there is not any operate the screen will shut backup light after 10 seconds.

3.3.1 Normal detecting

During the detecting, put the gas probe into the detecting area to detect. The screen displays the gas level as figure 6. When the gas level is under the low alarm level, the detector will not give alarm.

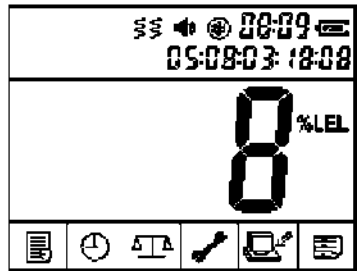



Fig 6

3.3.2Minus Drift

When the detector is stored too long, the LCD

may display “-0” when activated.

3.3.3 Low Alarm

When the gas concentration detected is between the low alarm level and high alarm level, the detector will get into the low alarm state, and the buzzer gives “DiDi” sound once a second, red indicator light glitter simultaneous, it will display “LOW “in the screen, which means low alarm, the back lamp and the oscillator will be on simultaneous, when the gas level detected is lower than the pre-set level, the alarm will stop automatically. When the detect give alarm, press “cancel” button to stop sound alarm, but other alarm mode also exist. Detector displays as figure 7 shows when alarm.

3.3.4 High Alarm

When the gas concentration detected is higher than the high alarm level, detector get into the high alarm state, the buzzer sounds rapid “di-di” three times a second, red indicator light glitter simultaneous, it will display “HIGH” in the screen which means high alarm, the back light and vibration be on simultaneous, Detector displays as figure 8 shows when alarm.

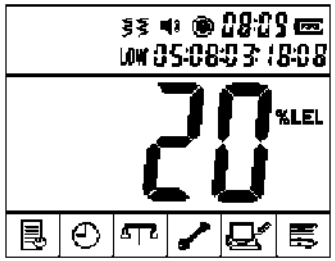



Fig 7

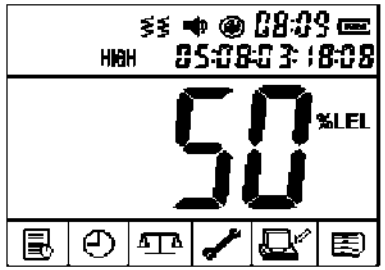



Fig 8

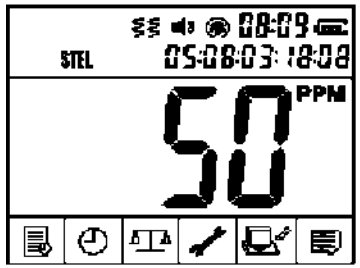



Fig 9

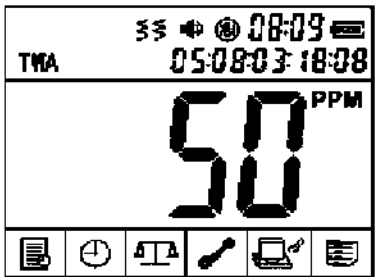



Fig 10

3.3.5 STEL Level

When the gas concentration detected exceed STEL alarming point, the detector get into the STEL alarm state, the buzzer sounds “di-di”, back light, it will display “STEL” in the screen which STEL alarming, and other alarming modes also exist. Screen display as figure 9 shows. (Unavailable to combustible gas)

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3.3.6 TWA Alarm

When the gas concentration detected exceed TWA alarming point, detector get into the TWA alarm state, the buzzer sounds “di-di”, back light, it will display “TWA” in the screen. Screen display as figure 10 shows. (Unavailable to combustible gas)

3.3.7 High Concentration Protection

When the gas concentration detected is higher the detection range, the buzzer sounds “di-di” 10 times per second, back light glitter, and vibrator will on, it will display “-OL-”at the screen which means exceed range. Screen display as figure 11 shows.

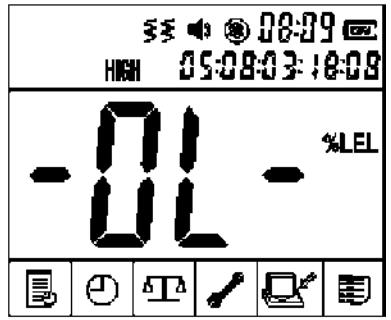


Fig 11

3.4 Fault Alarm

3.4.1 Detector Fault

If detector faults, detector will give a tweet per 5s, LCD displays FFFF simultaneous. The detector can’t detect and has to be repaired.

3.4.2 Pump Fault

When the air pump faults, the fan sign begins to glitter on the screen, which means pump fault, after last a period of time, if the pump resume normal, this sign will stop glittering, and otherwise it will keep glittering.

3.5 Operation and Function Setup

When set detector or check information, press “△” button under the normal state as fig 5, the LCD will display “PASS”, which will glitter twice. Enter the password when the ‘0” glitter in the LCD (detector password is “0508”), press “△” or “▽” to adjust the figure value and press “◎” to adjust next figure. Press “◎” button to confirm the password. It will flitter “YES” twice if the password is correct, otherwise it will flitter “NO” twice.

Use the “△” button to choose the setting function after enter the password, when the Fig icon is glittering means it is selected, you can choose history record check , clock setting, zero calibration, detector calibration, communication to the PC, detector parameter setup.

3.5.1 Memory Check

After enter the memory menu, it will display the history record, including operator, address, first alarming time and the max of the alarming. Adjust “△” and“▽” buttons to check the record till the whole 2000 are completed, if the records less than 2000 pieces, than it could stop automatically when is no data, then it display “NO”.

3.5.2 Clock Set

Under clock setting mode, it could set one digit every time, they are year, month, day, hour,