

User manual for  
Wallmounted analog type control panel



V1.0

## Foreword

You are welcome to use Safegas products, if you find anything unclear, wrong in this manual, please contact our agent or after-sales service department, thank you!

Before any operation on this device, please read the manual carefully!

Dissemination of the contents of this manual without permission is prohibited.

Our company is committed to the continuous improvement of product performance, and the company reserves the right to improve any content in the manual without prior notice.

The color and configuration of the product are only for reference in the description of this manual, please refer to the actual product.

## Warning

- Any operations such as installation and disassembly must be performed by professionals.
- The power must be cut off when installing or disassembling. And can only be installed and used in non-hazardous areas.
- This instrument is suitable for 3-hole power plug, please make sure that the socket has a reliable ground connection.
- Cable installation must comply with local or national electrical standards.

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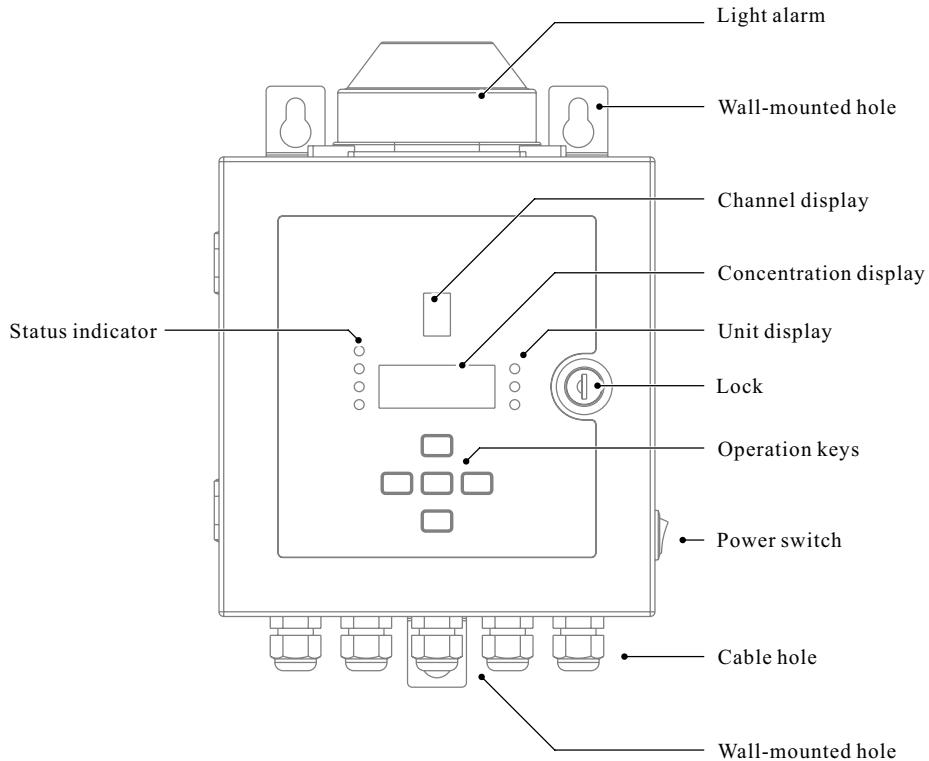
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## 2 What is in the package

Standard:

- 1, Gas control alarm x 1
- 2, User manual x 1

## 3 Product Structure



## 4 Product Installation

### 4.1 Installation environment

This control panel is non-explosion-proof designed, please do not install it in hazardous areas and the installation must follow local regulations. The following environments should be avoided during installation:

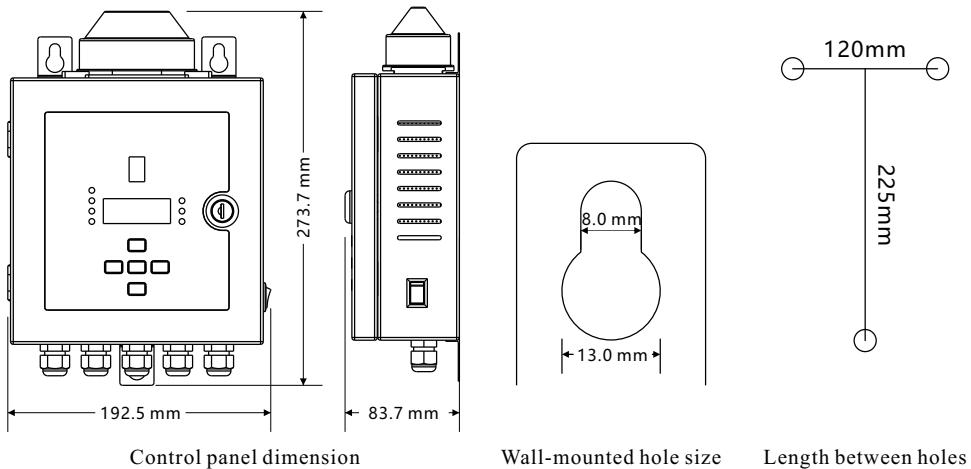
- High humidity
- Strong electromagnetic radiation
- Mechanical vibration
- High voltage electricity

\*Please follow the working environment requirements of the device.

\*Connect to a power socket with a reliable ground wire to avoid personal safety accidents or instrument damage caused by leakage or static electricity

### 4.2 Installation dimensions

The external dimension of the control panel is: 273.7x192.5x83.7mm(height x width x thickness). As shown in the figure below.



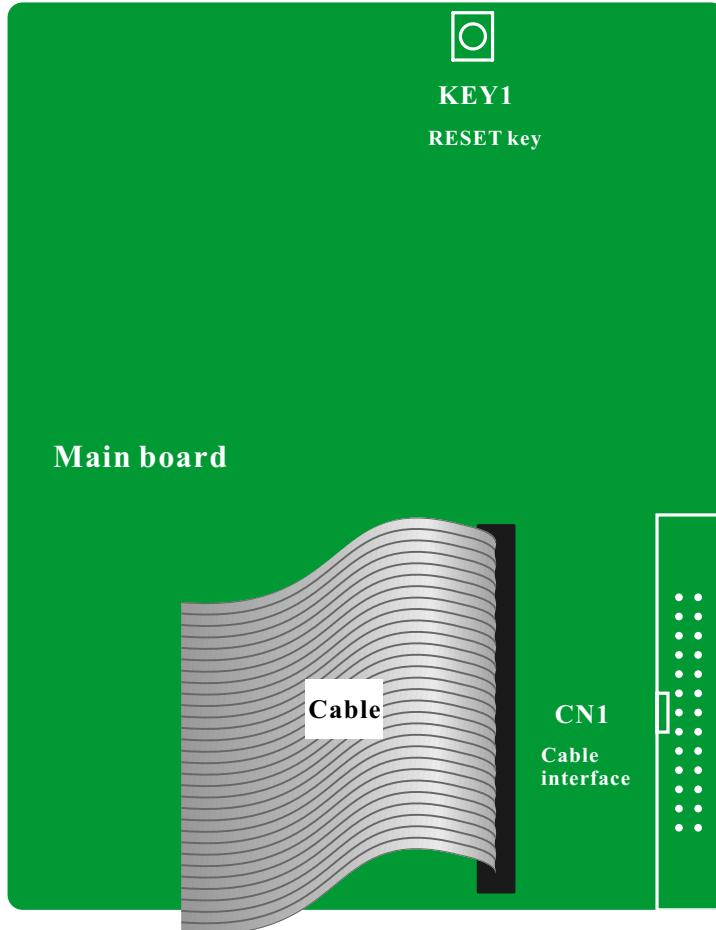
### 4.3 Installation type

This control panel shall be wall-mounted installed. According to the size of the above three wall-mounted holes, drill holes to install expansion screws, and use nuts to fix.

#### 4.4 Main board

KEY1, RESET key, when the system crashes, press this key to reboot  
CN1, Cable interface connect to CN9 interface on power board.

\*Warning: Unmarked interface, do not operate or connect anything.



#### 4.5 Power board

CON1A~4A、CON5, there is 5 relay interface; CON1A~4A is relay control interface for CON1-4 4~20mA channels; CON5 is the main relay control ; NO, Normally Open; COM, Common.

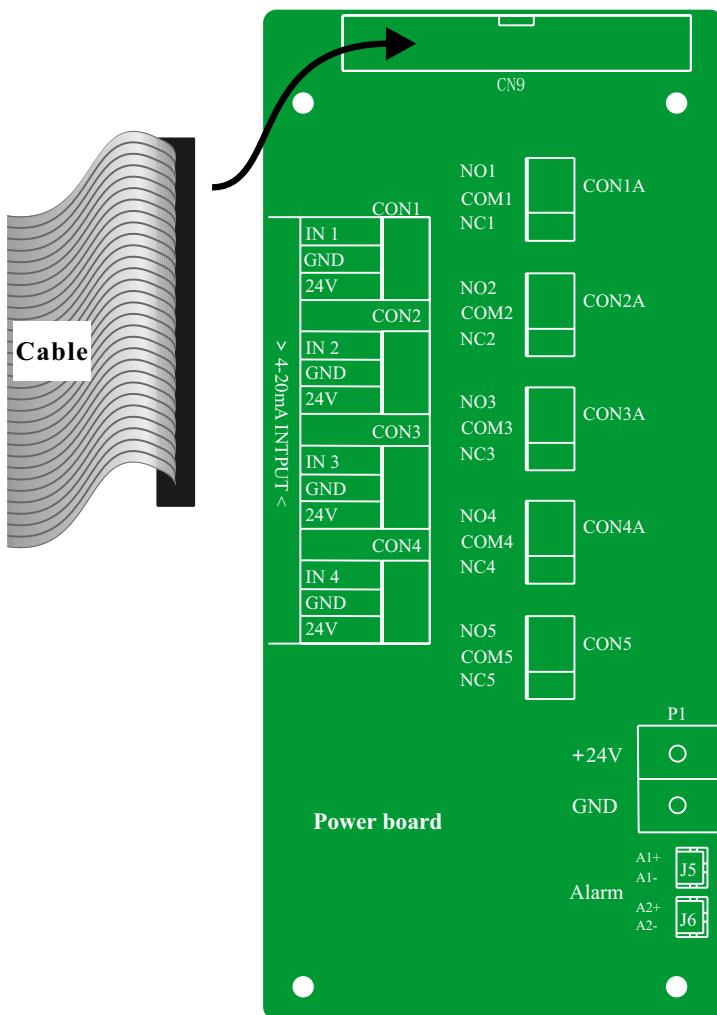
CON1/2/3/4, Four channels of 4-20mA input interface. Supply 24V DC power

CN9, Cable interface, connect to CN1 interface on main board

P1, 24V+ DC Power supply interface

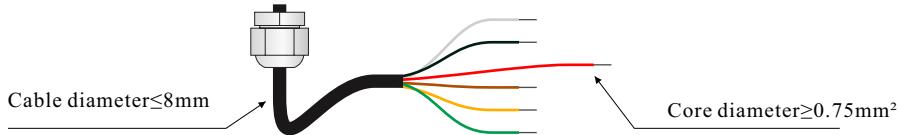
J5, Light alarm interface

J6, Sound alarm interface



#### 4.6 Data transmission distance by wire

4-20mA transmission cable:Please use shielded cables with a diameter of  $\leq 8\text{mm}$  and core diameter  $\geq 0.75\text{mm}^2$ .



\* Cable diameter $\leq 8\text{mm}$ (Shown as above picture)

\* The transmission distance of 4-20mA is determined by the load resistance. The maximum load of this control panel is  $500\Omega$ .

Under the condition that the input resistance of the control system remains unchanged, the transmission distance is calculated with reference to the following formula:

$$\text{Reference distance} = (500 - R_c) \div R_m$$

\* $R_c$ -input resistance of control system,  $R_m$ -resistivity of transmission cable.

## 4.7 Cable connection instruction

Warning: Live wiring is not allowed at any time!

Note: The cable connection must be operated by qualified professionals!

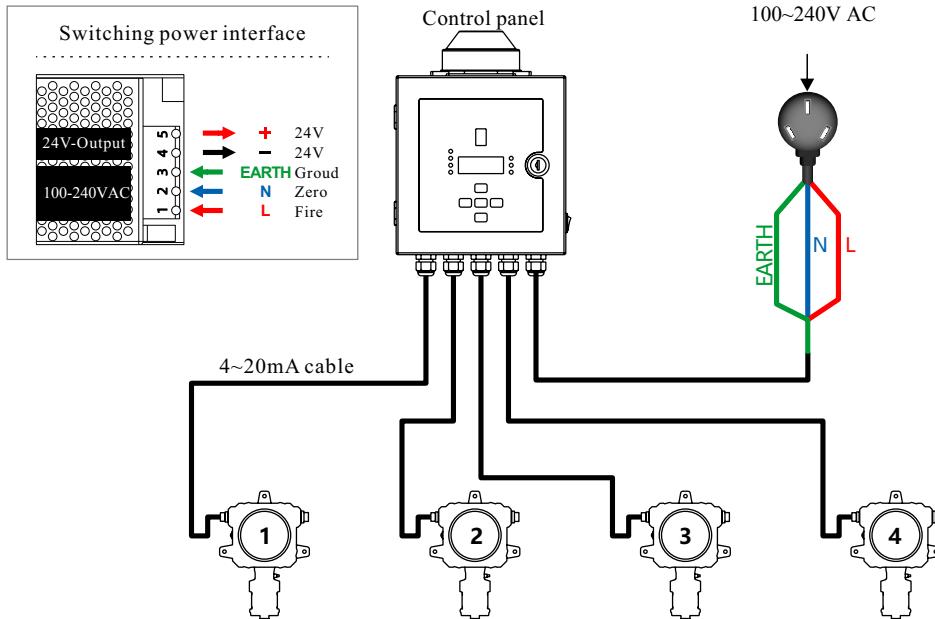
The control panel provides 4 channels of 4-20mA signal input.

- Power access of control panel

Support AC100-240V, 50/60Hz.

- Communication cable access of control panel

Connect gas detectors to 4-20mA input interface on control panel(As shown below), control panel will supply 24V DC/0.25A power for gas detector(Each channel support).



\* The above is the connection mode of full four input, for reference only, can be adjusted according to the actual application scenario.

#### 4.8 External Load Connection Example

The control panel is with light alarm and sound alarm. Also there are 5 channels of relay on power board to control external load lower than AC250V/10A.

- CON1A, Activated when Channel 1 (CON1) alarm
- CON2A, Activated when Channel 2 (CON2) alarm
- CON3A, Activated when Channel 3 (CON3) alarm
- CON4A, Activated when Channel 4 (CON4) alarm
- CON5, Main relay, activated when any channel alarm

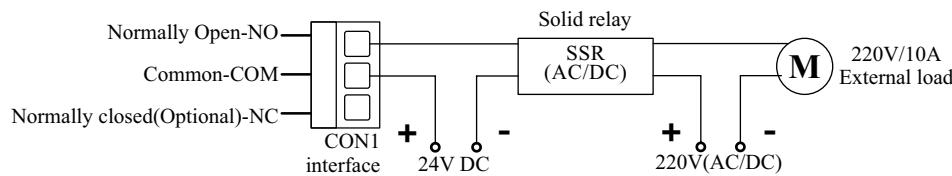
\* With different configurations (1, 2, 4 channels), the number of available relay ports is also different (1, 3, 5).

Example: At the site, the detector detects that the concentration of harmful gas reaches the low alarm value.

There will be sound and light alarm, alarm status indicate. In addition, the relay normally open end closes the circuit, (as shown in the connection diagram below) to drive the fan for ventilation or drive the alarm system to remind workers.

Note: Considering the safety of electricity use and avoiding the electromagnetic interference of the high-voltage circuit, it is recommended to install a solid-state relay to indirectly control the external load.

**Relay(CON1)external load connection diagram**



- Channel example: Channel 1, gas type CO, low alarm 100ppm, high alarm 200ppm, measure range 0-1000ppm.

- Control panel status: Concentration is over low alarm value (As shown below), low alarm status indicator on, sound and light alarm and relay control start working.



**Warning: When the equipment alarms, the on-site personnel must be warned to leave as soon as possible. Failure to do so may result in serious personal injury or even death.**

## 5 Operation Instructions

### 5.1 Key function

There are 5 buttons on the control panel: up, down, menu, enter, cancel.

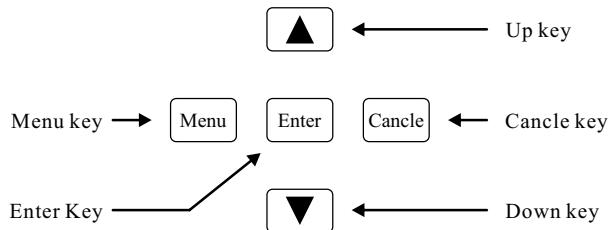
Up key: increase value, switch unit or gas type, etc.

Down key: Decrease value, switch unit or gas type, etc.

Menu key: Short press on the monitor interface to enter the password verification interface, and short press on the value and parameter setting interface to switch the setting position.

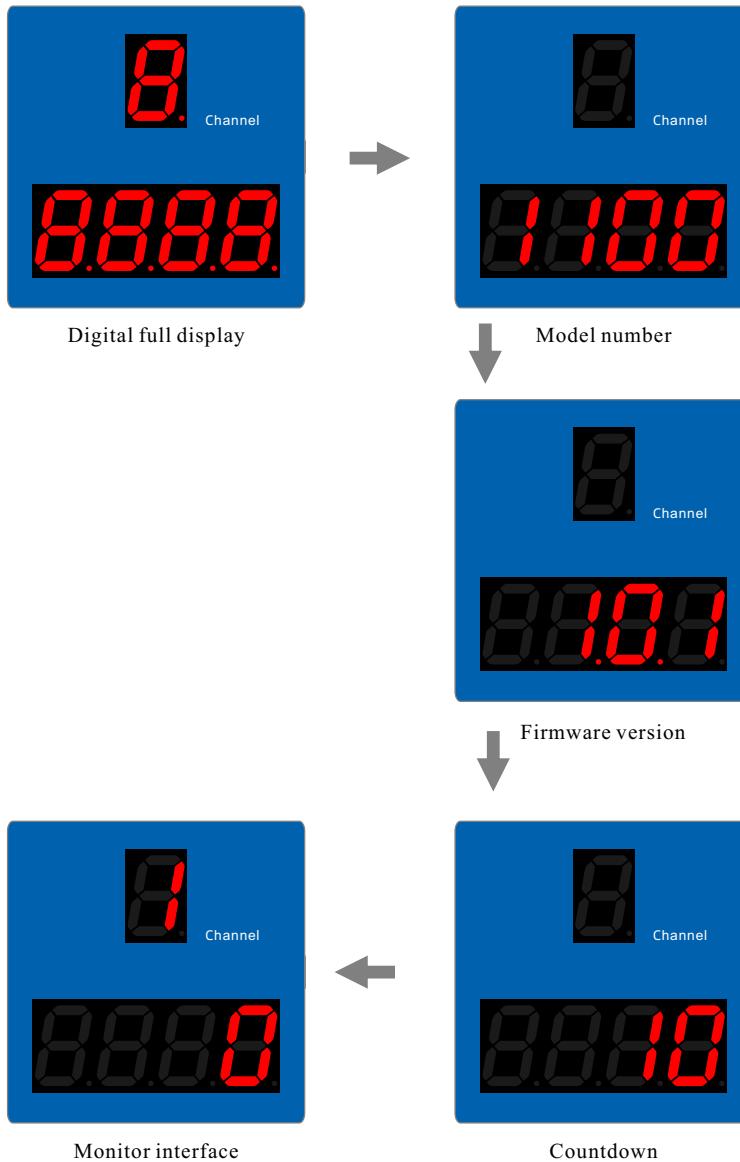
Cancel key: Short press on the setting interface to return to the previous menu and cancel the setting.

Enter key: enter options or execute save settings.



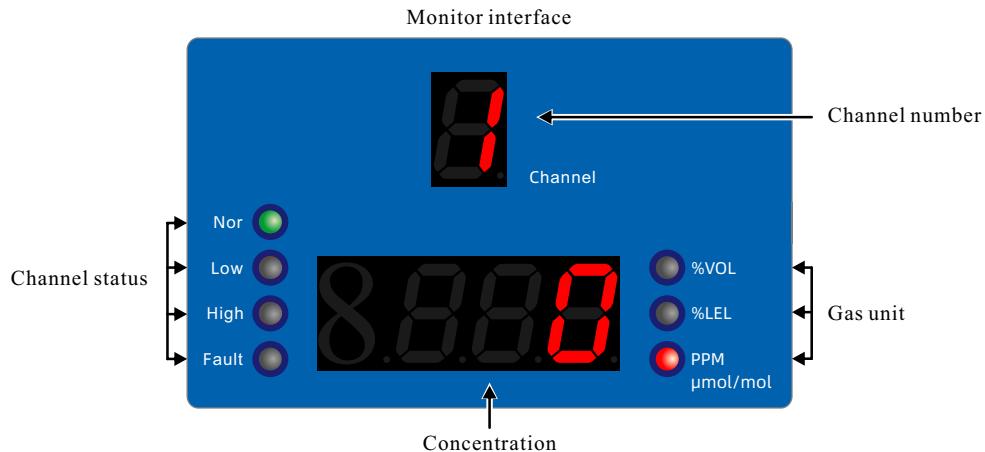
## 5.2 Power On

Before device start to work, display will showing below for self-test: Digital full display → model number → firmware version → monitor interface.



### 5.3 Display

After power on, the status indicator start to work.



When there is more than 1 channel, the display will automatic cycle display.

Status	Indicator color	Alarm Status	Relay status
Nor	Green	Off	Off
Low	Red	Alarm	Activated
High	Red	Alarm	Activated
Fault	Yellow	Alarm	Activated

Gas Unit: Showing %LEL, %VOL, PPM according to gas type (Can set on F-05) .

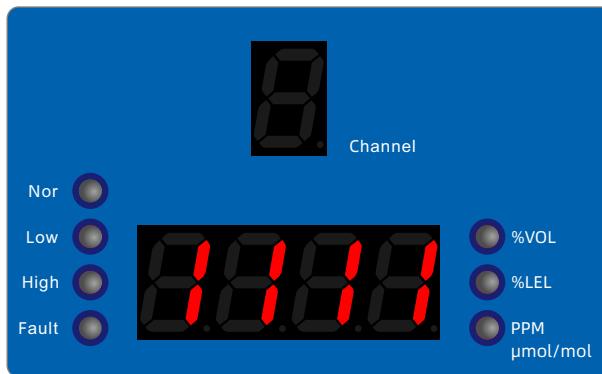
Concentration: The resolution can set on F-04.

## 5.4 Menu

Press Menu key at monitor interface to get in Password Verification interface.

### Password verification

Default password is “1111”, input in then press confirm to get in Channel Selection interface.



#### Operation:

- 1) Enter the password verification interface. Press the menu key, the interface displays "0000".
- 2) Enter the correct password. Press the up and down keys to add and subtract values; press the menukey to switch the setting bits. Make the interface display "1111".
- 3)Press the confirm button, the interface displays "C-01".
- 4) Press the cancel key to return to the monitor interface.



### 5.4.1 Channel Selection

After the password verification is successful, the Channel Selection interface will be displayed, as shown below.



**Single channel mode:** C-01/C-02/C-03/C-04 are optional, each channel needs to be set individually. please follow below rules: zero point  $\leq$  low alarm value  $<$  high alarm value  $<$  span value.

**Full channel mode:** C-AL, all parameter settings are set and take effect simultaneously with channel 1 as the template. But for low alarm value, high alarm value, measure range, and gas unit, please set according to real gas type.

Operation:

- 1) Channel selection: Press the up and down keys to switch the channel options. Press the enter key to enter the function menu, and display channel 1 (channel number), F-01 (low alarm value setting)
- 2) Return to the previous menu: press the cancel key to return to the monitor interface.

#### Function Menu Directory List

Menu	Function
<b>F-01</b>	Low alarm value
<b>F-02</b>	High alarm value
<b>F-03</b>	Measure range
<b>F-04</b>	Resolution
<b>F-05</b>	Gas unit
<b>F-06</b>	Gas type
<b>F-07</b>	Restore settings
<b>F-08</b>	Display channel current value
<b>F-09</b>	Display firmware version

#### 5.4.2 F-01[Low alarm value]



##### Operation Guide:

1) Low alarm value setting: as shown in the above interface, press the confirm key to display the low alarm value. Press the up and down keys to change the value, press the menu key to switch the position of the set value, and press the enter key to save the setting. If the setting is successful, it will display PASS and return to the function list F-01.

2) Return to the previous menu: press the cancel key.

##### Precautions for setting low alarm value:

In the single-channel setting mode the channel displays 1 (channel value), and the setting of the low

reporting value needs to satisfy: zero point  $\leq$  low reporting value  $<$  high reporting value  
In all channel setting mode, channel A is displayed.

##### Prompt:

PASS, the setting is successful.

E-01, the setting value exceeds the limit range. If the previous low report 100/high alarm 200/range 1000, and the new low alarm value is set to 200, there will be this Code hints.

E-03, in all-channel setting mode, the channel displays A. When setting the value, if the parameter is not changed, press the confirm key directly, and E-03 will be displayed.

### 5.4.3 F-02[High Alarm Value]



#### Operation guide:

1) High alarm value setting: As shown in the above interface, press the confirm key to display the high alarm concentration value. Press the up and down keys to change the value, press the menu key to switch the setting value position, press the confirm key to save the setting, if the setting is successful, it will display PASS and return to the function list F-02.

2) Return to the previous menu: press the cancel key.

#### Notes on setting high alarm value:

In the single-channel setting mode, the channel displays 1 (channel value), and the setting of the high alarm value needs to satisfy: low alarm value  $\leq$  high alarm value.

In all channel setting mode, channel A is displayed.

#### Prompt:

PASS, the setting is successful.

E-01, the setting value exceeds the limit range. If the previous low report 100/high alarm 200/range 1000, and the new low alarm value is set to 200, there will be this Code hints.

E-03, in all-channel setting mode, the channel displays A. When setting the value, if the parameter is not changed, press the confirm key directly, and E-03 will be displayed.

\*If high alarm is not required, set the high alarm value larger than the range.

#### 5.4.4 F-03[Measure Range]



##### Operation Guide:

- 1) Measure range setting: on the above interface, press the confirm key to display the range value. Press the up and down keys to change the value, press the menu key to switch the settings. If the setting is successful, it will display PASS and return to the function list F-03.
- 2) Return to the previous menu: press the cancel key.

##### Precautions for measure range setting:

The setting of the range value needs to meet the conditions: the low alarm value  $\leq$  the range value. Because the control panel can only display 4 digits, limited by the display (resolution, function F-04), it is necessary to know in advance that the gas of the current channel needs to be displayed in how many digits.

For example, oxygen is generally displayed with a resolution of 0.01, and two decimal places need to be reserved, so the range cannot be set greater than two digits(1~99).

##### Prompt:

PASS, the setting is successful.

E-01, the setting value exceeds the limit range. If the previous low report 100/high alarm 200/range 1000, and the new low alarm value is set to 200, there will be this Code hints.

E-03, in all-channel setting mode, the channel displays A. When setting the value, if the parameter is not changed, press the confirm key directly, and E-03 will be displayed.

#### 5.4.5 F-04[Resolution]



##### Operation Guide:

- 1) Resolution setting: on the above interface, press the Confirm key to enter the setting interface. There are four gears of 1, 0.1, 0.01, and 0.001 to choose from. Press the up and down keys to change the resolution, press the confirm key to save the setting, if the setting is successful, it will display PASS and return to the function list F-04.
- 2) Return to the previous menu: press the cancel key.

##### Precautions for resolution setting:

Because the control panel can only display 4 digits, limited by the display (resolution, function F-04), it is necessary to know in advance that the gas of the current channel needs to be displayed in how many digits.

For example, oxygen is generally displayed with a resolution of 0.01, and two decimal places need to be reserved, so the range cannot be set greater than two digits(1~99).

##### Prompt:

PASS, the setting is successful.

E-01, the setting value exceeds the limit range. If the previous low report 100/high alarm 200/range 1000, and the new low alarm value is set to 200, there will be this Code hints.

E-03, in all-channel setting mode, the channel displays A. When setting the value, if the parameter is not changed, press the confirm key directly, and E-03 will be displayed.

**5.4.6 F-05[Unit]****Operation Guide:**

1) Unit setting: on the above interface, press the confirm key to enter the setting interface. There are three gears, P, L, and V to choose from. Press the up and down keys to change the options (and the indicator light of the corresponding unit on the right is on), press the confirm key to save the settings, if the setting is successful, it will display PASS and return to the function list F-05.

2) Return to the previous menu: press the cancel key.

**Display meaning:**

P, stands for PPM  
L, for %LEL  
V, for %VOL

**Prompt:**

PASS, the setting is successful.

### 5.4.7 F-06[Gas Type]

**Operation Guide:**

1) Gas type setting: on the above interface, press the confirm key to enter the setting interface. There are 0 and 1 gears to choose from. Press the up and down keys to change the options, press the confirm key to save the settings, if the setting is successful, it will display PASS and return to the function list F-06.

2) Return to the previous menu: press the cancel key.

**Display meaning:**

0, non-oxygen;

1. Oxygen.

\*When setting the oxygen channel, please be careful to change 0 to 1 in the F-06 function.

**Prompt:**

PASS, the setting is successful.

### 5.4.8 F-07[Restore Settings]

Restore the current/all channel settings (F-01 to F-06) to the factory default settings.



#### Operation Guide:

1) Restore settings: on the above interface, press the confirm key to enter the setting interface.

There are 0 and 1 gears to choose from. Press the up and down keys to change the options, press the confirm key to save the settings, if the setting is successful, it will display PASS and return to the function list F-07.

2) Return to the previous menu: press the cancel key.

#### Display meaning:

0, no operation, return to function list F-07.

1. Restore factory settings and return to function list F-07.

#### Warning: This operation is irreversible!

#### Notes on restoring settings:

In the single channel setting mode, the channel displays 1 (channel value), and resets all the settings of the current channel to the factory default values.

All channel setting mode, channel display A, reset all settings of all channels to factory defaults.

#### Prompt:

PASS, the setting is successful.

**5.4.9 F-08[Channel Current]**

Displays the current value of the current/all channels.

**Operation Guide:**

- 1) Gas type setting: on the above interface, press the confirm key to enter the setting interface.
- 2) Return to the previous menu: press the cancel key.

Display example (as shown below):



In single-channel mode, the channel displays 1 (currently set channel), and the value below is the current value of the channel.

In all channel mode, the channels display 1~4 in turn, and the current value of the corresponding channel is displayed below.

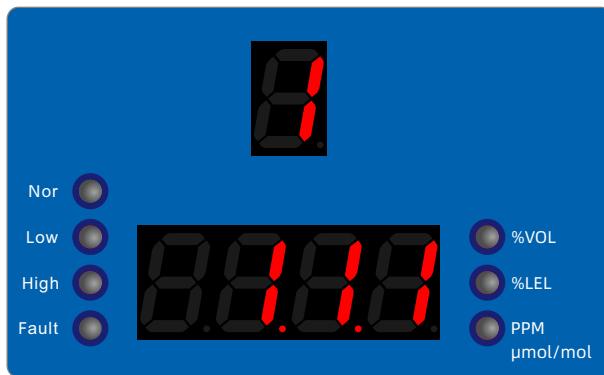
\*Relationship between gas concentration and current value:

Concentration	Current
Zero concentration	4.00mA
Full scale concentration	20.00mA

During the bump test, the standard value of the current signal shows a large deviation, please contact us.

**5.4.10 F-09[Firmware version]**

Displays the system version number of the control panel.

**Operation Guide:**

- 1) Check the firmware version: on the above interface, press the confirm key to enter the interface.
- 2) Return to the previous menu: press the cancel key.

## 6 Common fault troubleshooting

Fault	Reason	Solution
Showing “-” after power on	Detector information not scanned	Confirm the cable connection is correct, press the RESET reset button
	Incorrect cable connection	Check cables or reboot
The “fault” indicator lights up	Sound/light alarm is not connected.	Check whether the sound port on the mainboard is properly connected to the alarm
	Sound/light alarm is broken	Contact the merchant
	System failure	Press the RESET button or contact the merchant
No alarm sound/light	The power switch is off	Turn on the power switch on the right side of the chassis
	Incorrect connection or loose cable	Check whether the power cable is properly connected.
	Mainboard damage	Contact the merchant
No display after power-on	Key damage	Contact the merchant
	System failure	Press the RESET key
Keys, interfaces Operation unresponsive		

## 7 After-sales service

### 10.1 Warranty Commitment

The company promises that all the equipment that leaves the factory will be calibrated. After purchasing the company's products, users do not need to perform the calibration operation unless there are special circumstances, and the operation must be carried out under the guidance of professional technicians. All purchases through our distributors will provide you with a twelve-month warranty service from the date of purchase.

The company promises only the mainframe, excluding accessories. During the service period, if under normal use and maintenance conditions (non-human factors), the fault occurs due to the problem of the product itself, after our inspection is true, you will receive our free service for you.

### 10.2 Repair time commitment

The repaired device or new device will be ready for shipment within 7 working days. In case of special circumstances, if it can not be ready within 7 working days, we will call in advance to inform and negotiate a new date.

### 10.3 Limited Liability Warranty

Products returned to the factory for repair will continue to have the previous warranty period.

When you need warranty service, please present a valid warranty certificate, including warranty card and invoice or contract.

When the situation listed in the warranty description is not covered by the warranty, you can choose paid maintenance services.

If the repaired parts exceed the free warranty period, please pay the fixed maintenance service fee.

The standard of the maintenance service fee is provided by our maintenance organization.

We have the right not to provide warranty service for product damage caused by the following circumstances:

1. Human-induced damage.
2. Damage caused by violation of operating regulations and requirements.
3. Damage caused by all natural disasters such as floods, fires, etc.
4. Damage caused by bad use environment.
5. The product is repaired, altered, modified or disassembled by unauthorized service personnel.

