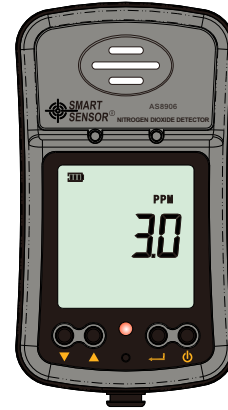




Model: AS8906

NITROGEN DIOXIDE GAS METER

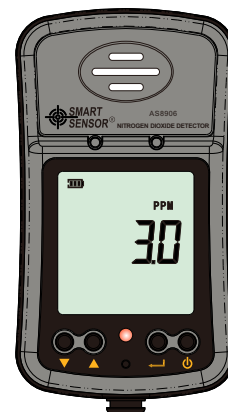


Version :6-AS8906-0016-00



Model: AS8906

NITROGEN DIOXIDE GAS METER



Version :6-AS8906-0016-00

Front Page back

- Thank you for purchase of our Nitrogen dioxide gas meter
- This instruction manual provided the necessary information for how to use it, what need to be careful, what is important notice. To get the maximum performance of this product, please read this user manual in detail before use this instrument, also please keep it in easy finding place, for later reference
- Before use this instrument, please make some simple test to make sure the function is normal.

ASHRAE standard 62-1989: 1000ppm: CO2 concentration in occupied building should not exceed 1000ppm. **OSHA:** 5000ppm : Time weighted average over the 8-hours work days should be exceed 5000ppm. Building bulletin 101 (Bb101): 1500ppm, UK standards for schools say that NO₂ at averaged over the whole day (i.e. 9am to 3.30 pm) should not exceed 1500ppm. Germany, Japan, Australia, U.K... 5000ppm, 8 hours weighted average in occupational exposure limit is 5000ppm.

-16-

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3.4 DECLARATION

1) You, as the end user, are legally bound (Battery ordinance) to return all used batteries and accumulator: disposal in the household garbage is prohibited". You can hand over your used batteries / accumulators at the collection points in your community or wherever batteries / accumulator are sold!

Disposal: Follow the valid legal stipulations in respect of the disposal of the device at the end of its life cycle.

2) Our company to reserve the right to modify and update the content of this manual and design specification without further notice.

3.5 Appendix for Nitrogen dioxide Gas

Nitrogen dioxide gas (NO ₂) Hazardous to the human body:	
Nitrogen dioxide gas concentration (PPM)	Breathing intime and poisoning show symptoms
1.0ppm	Can be perceived Nitrogen dioxide gas.
5.0ppm	Smell strong Nitrogen dioxide gas
10-15ppm	Will irritate nose, throat and eyes.
50ppm	become hard to breathing, irritate nose.
80ppm	within 3 to 5 minute, chest pain happened.
100-150ppm	Human will be death due to Pulmonary Edema.
>200ppm	Death immediately.
>5000ppm	Exposure may lead to serious oxygen deprivation resulting in permanent brain damage, coma and even death.

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1. NOTICE BEFORE USE

- Cautions and warnings -----(01)
- Unit packing and Certificat----- (02)
- Product specifications----- (03)
- Outlook of the instrument -----(04)
- Introduction----- (04)

2. OPERATION INSTRUCTION.

- Instrument operation----- (05)
- Nitrogen dioxide Gas monitoring mode----- (05)
- Peak value mode -----(06)
- Configuration mode ----- (06)
- Low alarm setting mode ----- (07)
- High alarm setting mode -----(07)
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3. OTHERS

- Maintenance and Warranty----- (12)
- AS8930 Gas pump (Optional parts) ----- (12)
- Quality assurance ----- (13)
- Copyright----- (14)
- Declaration----- (15)
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1. NOTICE BEFORE USE

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Not correct operation or not suitable environment, will decrease the instrument's accuracy, to use it in safety and effective way please read the user manual in detail and use it in suitable environment.

- 1) Before use it, please read the user manual in detail.
- 2) The window of the sensor and protection filter must be kept in cleaned, if window was blocked or protection filter be dirt, will cause the concentration reading lower than the actual value.
- 3) Suddenly changes in atmospheric pressure may cause temporary fluctuation in the Carbon Dioxide reading.
- 4) Charging battery, repair & replace the unit parts, must be operated in safety environment.
- 5) Prohibited charge unit under a well
- 6) Attention: replace parts or sensor with un-authority third party components, will damage the accuracy and void the warranty of this unit and cause any un-expected safety problems.
- 7) Attention: For safety, this unit must be operate or repair by authorized person, before operation, please read this manual in detail and all the contents.
- 8) Attention: When the measured value is less or higher than the alarm level that you preset (the buzzer alarms), please take care to protect people's lives and property in case of explosion.
- 9) This meter is a precise measurement apparatus, suitable to be use at the temperature between -10 oC to 50oC.
- 10) In case of repair, don't replace parts with different part number and characteristic parts. This unit can't be connected to other products without authorization.
- 11) If you need sample pump, please connected to our AS8930

-01-

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-01-

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The user must be committed to what you purchased products can meet your target and suitable for you. Both Buying and selling party much be confirmed and agreed with, Smart Sensor Holding Co., Ltd. no any liability and responsibility, it should be response by the user, so that any suggestion that Smart Sensor Holding Co., Ltd provided to user are no any liability and obligation.

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All above information and contents are be confirmed and accuracy, trusty.

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We warranty , AS89Seriesgas meter , no any defects in material and workmanships for a period of one year after purchase.

This warranty included the sensor, battery pack and gas sample pump (gas pump is optional parts for AS8906). We warranty, no any defected in material and workmanships within 15 months after ship out the good.

Smart Sensor Holding Co. Ltd. no any clear or hint for quality warranty, included any method for sales promotion or for special required.

If this product incompatible the above quality warranty, theremedy that customer can get and Smart Sensor Holding Co., Ltd. only have the obligation is to replace or repair the incompatible product, or refund the money to the customer with same amount of purchase value.

For the sales, manufacture or use any one of the products within this warranty, that cause any specially, accidental or resulting due to use this product, including any lost of time and money, no matter it is contract or Infringement, Smart Sensor holding Co. Ltd. have no any responsibility for above items.

Need to be clear, the warranty of Smart Sensor Holding Co., Ltd. is base on the below conditions: After customer purchased our product, he have carefully check it up to sure it is perfect, no any damage, and according to his special requirement to do a suitable calibration for this products, and precisely according to user manual instruction to operate, maintenance and repair the product. If maintenance or repaired by un-authorized person, or use any un-certified components or parts to cause any quality issue, it is not related or covered with this quality warranty.

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For the sales, manufacture or use any one of the products within this warranty, that cause any specially, accidental or resulting due to use this product, including any lost of time and money, no matter it is contract or Infringement, Smart Sensor holding Co. Ltd. have no any responsibility for above items.

Need to be clear, the warranty of Smart Sensor Holding Co., Ltd. is base on the below conditions: After customer purchased our product, he have carefully check it up to sure it is perfect, no any damage, and according to his special requirement to do a suitable calibration for this products, and precisely according to user manual instruction to operate, maintenance and repair the product. If maintenance or repaired by un-authorized person, or use any un-certified components or parts to cause any quality issue, it is not related or covered with this quality warranty.

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sample pump, it is poweredby the unit itself.

12) Prohibited use third party battery that is not specifiedby this manual.

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15) If you don't plan to use the meter for a long time, please fully charge the battery to prevent the battery too much dischargeby itself to damage the battery.

16) Prohibited to open the cabinet at dangerousenvironment

17)Certificate: This product compiled with following standard and regulation JJG693; JJG695: JJG915 and GB3836series anti-explosion standard.

1. 2 PACKING LIST AND ACCESSORIES

The gift box should be contain the following items, if you find any items missing or missing page of the instruction manual, please contact our sole agent that they sell this product to you.

- Nitrogen dioxidegas meter -----1pcs.
- Instruction manual -----1 pcs
- USB Cable ----- 1 pcs
- Charging adapter-----1 pcs

1.3 CERTIFICATION

EXPLOSION CERTICATION
EXPLOSION PROOF GRADE : Exic II CT3 Gc
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Sensor specification:		
Gas	Range	Resolution
Nitrogen dioxide(NO ₂)	0-20ppm	0.1 ppm

Other specification :			
Operation current	16mA	Short circuit current	<3A
Operation voltage	3.7V	maximum open circuit voltage	<4.2V
Battery type	KXD-N3310	Display Type	Segment type LCD
Operation humidity	15% ~95%	Operation temperature	-10°C ~ 50°C
Storage temperature	0~40°C	Weight	200 gram
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3.OTHERS ISSUE

3.1 MAINTENANCE

The following guidelines should be followed to achieve good maintenance for AS8906 unit.

CLEANING:

- If necessary, wipe the outside surface of the unit, please use the soft, clean cloth.
- Never use any solvents or cleaning solutions.
- Make sure the rubber buttons are free of dirt.
- To clean the sensor opening, please use the clean, soft cloth or soft brush.

CHARGING THE BATTERY

- The lithium-ion battery suggested to be fully charged before using the AS8906.
- To charge the battery, plug the connecting lead wire of the battery charger into the charging port located at the bottom of the unit. The port is protected by a rubber flap, so need to release the flag before charging.
- The battery should be fully charged within 6 hours
- Once fully charged, the unit will be good enough to work for 160 hours operation, and work about 12 hours with AS8930 external gas sampling pump.
- The shaded area of the battery indicator shows full once the battery is fully charged.
- If all shaded are only have one bar is left, the battery need to be charged at once.
- When the battery is low, the unit might emit a periodic alarm sound to alert you to charge the unit.

AS8930 SAMPLING PUMP (OPTIONAL PARTS)

AS8930 sampling pump can be use with AS89 series gas monitoring meter. AS8930 sampling pump can't be operate separately, must be work up AS89 series main unit, it get power from main unit by two contact pin located in top side of front panel. The gas flow is 0.5SCFH (0.25LPM), can be sampling gas maximum 50 feet by suitable gas tube.

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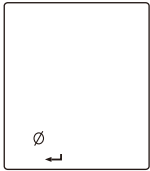
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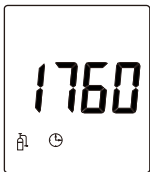
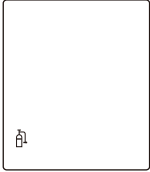
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2.11 Zero calibration mode.



Depress the [▼] & [▲] button at the same from the gas monitoring mode, then input the correct security code as last security code setup mode described, the unit will be go into the Instrument Calibration mode. Then press [▲] button four time go to the Zero calibration mode, you can get the screen as left hand photo show, [∅] and [←] icon will show at the left hand side, press [←] button start the unit zero calibration, once the process completed, the LCD screen will shows the [⊠] icon and it started to flash, at this step, please place the calibration cup firmly on top of the gas sensor, connected calibration cup with a silicone tube to the passive flow adjustment valve of the Cal gas cylinder. Then press [←] button, the display will shows [⊠] and [⊕] icon with the calibrating value (calibrating value is not fixed within this period), If the calibration is succeeded, the display will shows "P" icon represent the unit passed this calibration. If display shows 'F' icon, represent the unit failed this calibration, need to re-calibrate again.

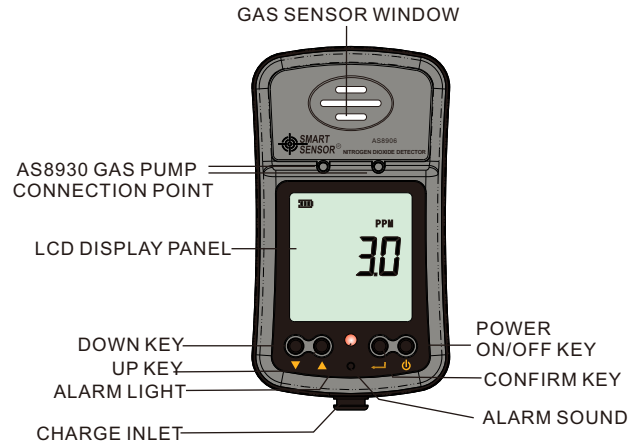


Attention : If the security code is changed, user must be follow the setup of security code setting, can't be direct go to calibration mode. More detail information, please refer to security code setting mode.

WARNING: If you don't have enough calibration equipment, don't go into this calibration mode, otherwise the calibration may be changed and effective gas measure not correct, be careful.

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1.5 OUTLOOK OF THIS INSTRUMENT

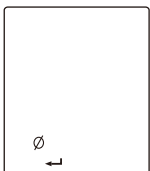


1.6 INTRODUCTION

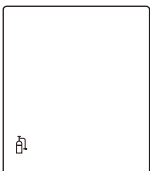
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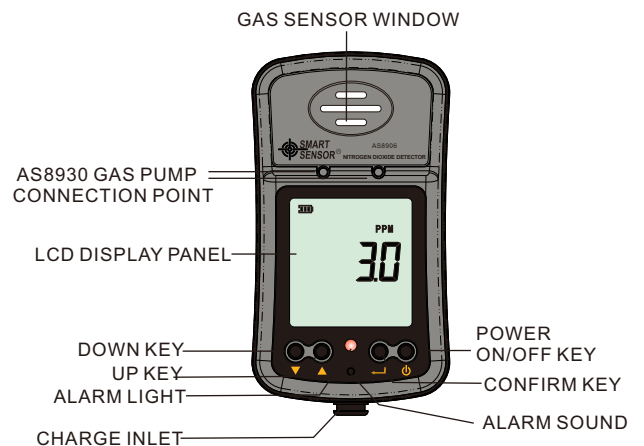


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1.5 OUTLOOK OF THIS INSTRUMENT



1.6 INTRODUCTION

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2. OPERATION INSTRUCTION

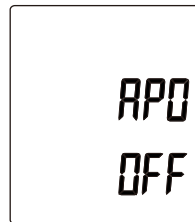
2.1 INSTRUMENT OPERATION

- 1) To turn on the instrument AS8906, please depress and hold the [⏻] button over 2 seconds, the unit will be turn on with a beep sound and vibration, then the LCD will light up all icons and segments. Then the LCD will display the software version code. Then the unit will go to 45 second countdown timer, when countdown completed, unit will enter normal gas monitoring mode.
- 2) To turn off the unit, please depress and hold the [⏻] button for over 3 seconds, then the unit will be power off after 3 beep sounds.
- 3) For light up or turn off the backlight of the LCD display, please depress the [←] button at the normal gas monitor mode.
- 4) Turn on the power auto off function, at normal gas monitor mode, depress [▼] button until LCD display shown "APO" and "ON" or "OFF", then press [▼] button to select "ON" or "OFF": "ON" means the unit will turn off after 10 minute if in this period no any button activated. "OFF" means no auto power off function. Press [←] to confirm this selection then unit back to normal gas monitor mode. (As Figure shown). When unit set to auto power off mode, at normal gas monitor mode, LCD have a [☺] icon shown, if unit set to no auto power off, no [☺] icon display on LCD screen.



Auto
Power
Off

-05-



Non-
Auto
Power
Off

-10-

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-05-



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Off

-10-

keep flash, then repeat the setup again for second and third digit. Completed this setup the display will show the new security code. If already have security code, but the user can't input the correct code, then the user can't make any calibration or high low alarm setting.

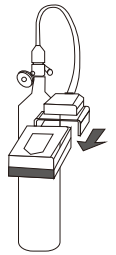
WARM HINTS: If you forgot the security code, you can press down the [▲][▼] and [←] button at the same time at the security screen, then you can go to the setup code to setup a new security code.

2.9 INSTRUMENT CALIBRATION MODE

The last setup screen is the zero point calibration and calibration point mode. Only at the setup mode and the user input the correct security code, you can get into the calibration mode, first step is to calibrate the zero point, then calibration point. Related to how to calibrate the unit, please refer to below section.

2.10 INSTRUMENT CALIBRATION

This unit can be easy calibrated by a standard Cal gas bottle. Use the easy calibration function, you can finished the calibration as one time. You can calibrate the unit along, or calibrate it with sampling pump as per left hand photo shown. If unit under calibration is connected with sampling pump, please use a calibration silicone tube, one end connected to sampling pump inlet, and the other end connected to Cal gas cylinder with a passiveflow adjustment valve. If you to calibrate the unit without sampling pump, just connect the one end of the calibration silicone tube to the inlet of the unit, the other end to the Cal gas cylinder through a passiveflow adjustment valve.



keep flash, then repeat the setup again for second and third digit. Completed this setup the display will show the new security code. If already have security code, but the user can't input the correct code, then the user can't make any calibration or high low alarm setting.

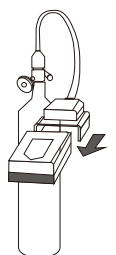
WARM HINTS: If you forgot the security code, you can press down the [▲][▼] and [←] button at the same time at the security screen, then you can go to the setup code to setup a new security code.

2.9 INSTRUMENT CALIBRATION MODE

The last setup screen is the zero point calibration and calibration point mode. Only at the setup mode and the user input the correct security code, you can get into the calibration mode, first step is to calibrate the zero point, then calibration point. Related to how to calibrate the unit, please refer to below section.

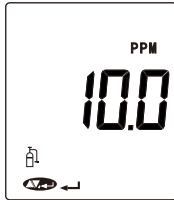
2.10 INSTRUMENT CALIBRATION

This unit can be easy calibrated by a standard Cal gas bottle. Use the easy calibration function, you can finished the calibration as one time. You can calibrate the unit along, or calibrate it with sampling pump as per left hand photo shown. If unit under calibration is connected with sampling pump, please use a calibration silicone tube, one end connected to sampling pump inlet, and the other end connected to Cal gas cylinder with a passiveflow adjustment valve. If you to calibrate the unit without sampling pump, just connect the one end of the calibration silicone tube to the inlet of the unit, the other end to the Cal gas cylinder through a passiveflow adjustment valve.



2.7 Concentration calibration mode

At the high alarm setup mode, depress the [▲] button once, the unit will go to concentration calibration mode, at the mode the screen will display [⊕] icon, [←] icon and [🔋] icon along with concentration setting point. In this mode the icon of [⊕], [←] and [🔋] will be displayed along with Sulfur Dioxide gas calibration setup point. Depress the [←] button, at this time the calibration value will flash, press [▼] or [▲] button to adjust the value same as the calibration gas bottle shown. After finished and confirmed the value is correct, press [←] button to confirmed it. At this time if you still want to change the calibration again, press [←] button, then repeat the above setting again; If you press [←] key, **WARNING:** If you don't have calibration gas bottle, don't attempt to change this calibration value, if you have changed it, all the reading value will be wrong, need to be re-calibrate again with calibration gas bottles. Be careful.



2.8 SECURITY CODE SETTING MODE

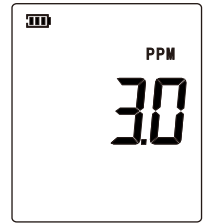
Left hand figure shown us is the security code setting mode screen, the display show "123" is the factory pre-set security code. If no need to change, press [▲] button will go to calibration mode. If you need to change the security code, press [←] button, at this time the first digit of security code will flash, press [▲] and [▼] to change to desired digit, if finished press [←] button to confirm the enter. Then will move the second digit, second digit



-09-

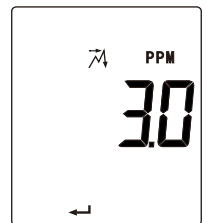
2.2 NITROGEN DIOXIDE GAS MONITORING MODE

After unit turn on, it will go to normal Nitrogen dioxide gas monitor mode, it will real time monitor Nitrogen dioxide (NO₂) gas changes without stop, and show up the update value on the LCD display, if the value over the maximum detection range, LCD display with show [HI]. On the left hand side corner, have a battery icon to show the battery power condition, if the power reduced, the bar inside the battery icon will decrease. If the Nitrogen dioxide gas concentration lower or higher the user preset value, the unit will activated the alarm signal. At the alarm mode, unit will alarm with a low frequency voice (low concentration alarm), or high frequency voice (high concentration alarm), light alert and vibration alert also active at the same time. At the normal Nitrogen dioxide monitor mode, user can change it by depress [▲] key go to next three detection mode.



2.3 PEAK VALUE DISPLAY MODE

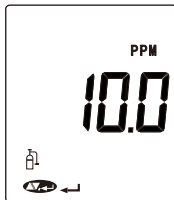
At normal Nitrogen dioxide gas monitor mode, depress [▲] once key go to "Peak value" display mode. Under this mode, the screen will shows the peak concentration value of the detected gas, [🔋] icon and [←] icon also display at the same time (as the figure shown), press [←] button once with reset the peak value to normal monitor value.



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2.7 Concentration calibration mode

At the high alarm setup mode, depress the [▲] button once, the unit will go to concentration calibration mode, at the mode the screen will display [⊕] icon, [←] icon and [🔋] icon along with concentration setting point. In this mode the icon of [⊕], [←] and [🔋] will be displayed along with Sulfur Dioxide gas calibration setup point. Depress the [←] button, at this time the calibration value will flash, press [▼] or [▲] button to adjust the value same as the calibration gas bottle shown. After finished and confirmed the value is correct, press [←] button to confirmed it. At this time if you still want to change the calibration again, press [←] button, then repeat the above setting again; If you press [←] key, **WARNING:** If you don't have calibration gas bottle, don't attempt to change this calibration value, if you have changed it, all the reading value will be wrong, need to be re-calibrate again with calibration gas bottles. Be careful.



2.8 SECURITY CODE SETTING MODE

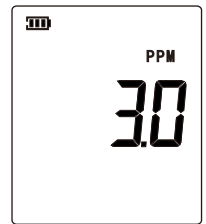
Left hand figure shown us is the security code setting mode screen, the display show "123" is the factory pre-set security code. If no need to change, press [▲] button will go to calibration mode. If you need to change the security code, press [←] button, at this time the first digit of security code will flash, press [▲] and [▼] to change to desired digit, if finished press [←] button to confirm the enter. Then will move the second digit, second digit



-09-

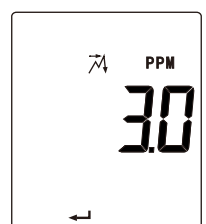
2.2 NITROGEN DIOXIDE GAS MONITORING MODE

After unit turn on, it will go to normal Nitrogen dioxide gas monitor mode, it will real time monitor Nitrogen dioxide (NO₂) gas changes without stop, and show up the update value on the LCD display, if the value over the maximum detection range, LCD display with show [HI]. On the left hand side corner, have a battery icon to show the battery power condition, if the power reduced, the bar inside the battery icon will decrease. If the Nitrogen dioxide gas concentration lower or higher the user preset value, the unit will activated the alarm signal. At the alarm mode, unit will alarm with a low frequency voice (low concentration alarm), or high frequency voice (high concentration alarm), light alert and vibration alert also active at the same time. At the normal Nitrogen dioxide monitor mode, user can change it by depress [▲] key go to next three detection mode.



2.3 PEAK VALUE DISPLAY MODE

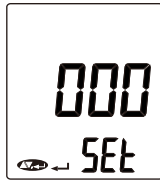
At normal Nitrogen dioxide gas monitor mode, depress [▲] once key go to "Peak value" display mode. Under this mode, the screen will shows the peak concentration value of the detected gas, [🔋] icon and [←] icon also display at the same time (as the figure shown), press [←] button once with reset the peak value to normal monitor value.



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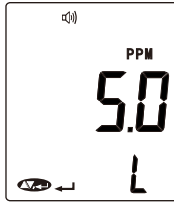
2.4 CONFIGURAION MODE

At normal Sulfur Dioxide gas monitor mode, depress [▼] and [▲] keys simultaneously, unit will go to configuration mode, in this mode, user not only can change the setting of low concentration alarm, high concentration alarm setup value, and can change the calibration setup up value. Also can change the security code, (factory pre-set code is "123"). If you had setup a security code, depress [▼] and [▲] can change the value of the code, when you value is correct, you can go to the low alarm setup mode. After input the first digit security code correct value, depress [←] key to confirmed, then continue go to setup the second digit security code, repeat the steps as above mentioned for both second and last digit. After finished three security code input, depress [←] key to confirm the input.



2.5 LOW ALARM SET POINT

At normal Carbon Dioxide gas monitor mode, depress [▲] and [▼] button at the same time, unit will go to setup mode, in this mode, enter the correct security code, then press [←] key go to low alarm setup mode, Low alarm setting mode is the first configuration screen, the display will show the [←] icon, [🔊] icon, [🔇] icon and "L" letter, after input the correct security code, unit will go direct to this mode. If the change is desired or no change required (factory pre-set low alarm value is 5.0ppm), press [▲] button direct go to high alarm value setup screen, if you need to change the setting, press [←] button, this time the low alarm

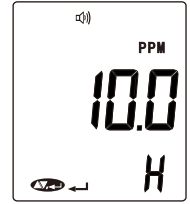


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value will flashing, to adjust the value by press [▲] or [▼] button. Once the value confirmed and completed, press [←] button to confirm it. Depress [▲] button, the unit will back to high alarm setting mode. If value is flashing, that is at value setup mode, depress [⏻] button once, the unit will be back to the original gas monitoring mode but no change will be saved.

2.6 HIGH ALARM SET POINT

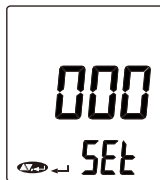
At the low alarm setting mode, press [▲] button, unit will go to high alarm setting mode, in this mode the screen will show [🔊] icon, [←] icon and [🔇] icon along with "H" letter on the right hand side, also will display the high alarm pre-set value. If no changes required, press [▲] button move to Carbon Dioxide gas calibration setting mode. If changes is required, press [←] button to have high alarm value setup, the value will be flashing, to adjust the value by press [▲] button or [▼] button. Once the setting is completed, press [←] button to confirm the value. The factory pre-set high alarm value is 10ppm. If you want to change the high alarm value again, press [←] button to re-enter this setting mode again for further adjust setting if required. Depress the [▲] button to move the setting to Carbon Dioxide gas calibration mode. When digit flash, depress [▲] or [▼] key to setup the alarm value. When the value is flashing, depress [⏻] button, the unit will back to normal gas monitor mode with no changes will be saved.



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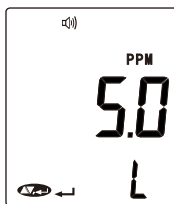
2.4 CONFIGURAION MODE

At normal Sulfur Dioxide gas monitor mode, depress [▼] and [▲] keys simultaneously, unit will go to configuration mode, in this mode, user not only can change the setting of low concentration alarm, high concentration alarm setup value, and can change the calibration setup up value. Also can change the security code, (factory pre-set code is "123"). If you had setup a security code, depress [▼] and [▲] can change the value of the code, when you value is correct, you can go to the low alarm setup mode. After input the first digit security code correct value, depress [←] key to confirmed, then continue go to setup the second digit security code, repeat the steps as above mentioned for both second and last digit. After finished three security code input, depress [←] key to confirm the input.



2.5 LOW ALARM SET POINT

At normal Carbon Dioxide gas monitor mode, depress [▲] and [▼] button at the same time, unit will go to setup mode, in this mode, enter the correct security code, then press [←] key go to low alarm setup mode, Low alarm setting mode is the first configuration screen, the display will show the [←] icon, [🔊] icon, [🔇] icon and "L" letter, after input the correct security code, unit will go direct to this mode. If the change is desired or no change required (factory pre-set low alarm value is 5.0ppm), press [▲] button direct go to high alarm value setup screen, if you need to change the setting, press [←] button, this time the low alarm

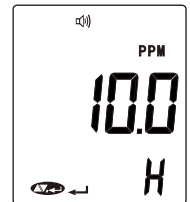


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value will flashing, to adjust the value by press [▲] or [▼] button. Once the value confirmed and completed, press [←] button to confirm it. Depress [▲] button, the unit will back to high alarm setting mode. If value is flashing, that is at value setup mode, depress [⏻] button once, the unit will be back to the original gas monitoring mode but no change will be saved.

2.6 HIGH ALARM SET POINT

At the low alarm setting mode, press [▲] button, unit will go to high alarm setting mode, in this mode the screen will show [🔊] icon, [←] icon and [🔇] icon along with "H" letter on the right hand side, also will display the high alarm pre-set value. If no changes required, press [▲] button move to Carbon Dioxide gas calibration setting mode. If changes is required, press [←] button to have high alarm value setup, the value will be flashing, to adjust the value by press [▲] button or [▼] button. Once the setting is completed, press [←] button to confirm the value. The factory pre-set high alarm value is 10ppm. If you want to change the high alarm value again, press [←] button to re-enter this setting mode again for further adjust setting if required. Depress the [▲] button to move the setting to Carbon Dioxide gas calibration mode. When digit flash, depress [▲] or [▼] key to setup the alarm value. When the value is flashing, depress [⏻] button, the unit will back to normal gas monitor mode with no changes will be saved.



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