GT-1000 SERIES

MULTIFUNCTIONAL GAS AND DUST DETECTOR

User Manual

Contents

1. Warranty

- Please read the user manual before using the gas detector controller.
- It is forbidden to disassemble the controller, repair and replace the spare parts without authorization.
- Installation, commissioning, setting and other operations must be carried out by professionals.
- The calibration should be carried out regularly, to replace the out-service gas sensors and broken sensors in time.
- Forbidden to use the sensor for over-range detection.
- Prevent the controller from falling from high or subjected to severe vibration and impact.
- Avoid to put the detectors under high temperature, humidity, dust particle environment.
- Replacing the battery needs to use the same type of battery and be carried out in a safe place.
- The charging must be carried out in a safe place, and use the special charger (DC5V/≥1A) equipped with this machine
- Don't block the gas inlet or gas outlet during use to prevent damage to the pump.
- Before entering the dangerous area, the human body shall release static electricity first, and then carry the instruments into the site.
- If the user manual is modified, please understand.

2. Product Brief Introduction

GT-1000 series multifunctional gas detector are portable gas and dust detector which can be configure flexibly up to 5 gas sensors or 3 gas sensors plus 1 dust sensor.

With import gas sensors and advanced nanometer semiconductor technology, GT-1000 series multifunctional gas detector can detect corresponding gas and dust concentration at the same time rapidly and precisely. User can custom setting all parameters to ensure the operations are user-friendly, 4000mA built-in high capacity polymer rechargeable battery, technical indicators, gas concentrations and history data can be displayed on the 3.5 inches IPS technical grade screen, User can save history data, print and export data, detect temperature and humidity.

3. Product Features

◆ With the advanced nanometer semiconductor technology, ultra-low power 32bit microprocessor, 24bit ADC data acquisition chip and high accuracy.

◆ 3.5 inches IPS technical grade display with a pixel up to 320*480, display technical indicators and gas concentration value.

◆ Three concentration units are available PPM, %VOL, mg/m3.

◆ User can combine different sensors, 1-5 kinds of gas can be detected at the same time, PM 2.5 dust sensor, temperature and humidity sensor and other kinds of sensors are available.

◆ Up to 30,800 to 215,600 groups data can be stored, user can view history data on the display or export the data to computer via excel formal.

◆ GT-1000 allows user to connect to portable printer to print data

◆ With temperature and humidity detection, user can detect temperature and humidity value on the scene or the temperature and humidity value inside the pipe.

◆ Five operation modes are optional: Detection mode, Storage mode, Printing mode, Display mode and Pumping mode.

◆ With powerful pump allowing detector working under a tiny negative pressure condition, the reasonable gas chamber design ensures that the sensor is not affected by the pressure.

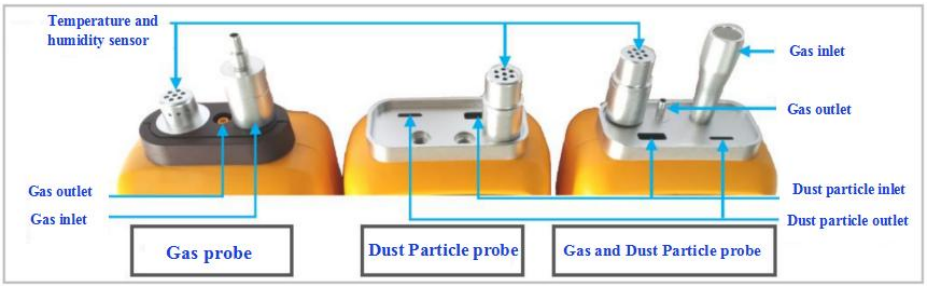
◆ With over-voltage protection, overcharge protection,electrostatic prevention, magnetic-field interference prevention

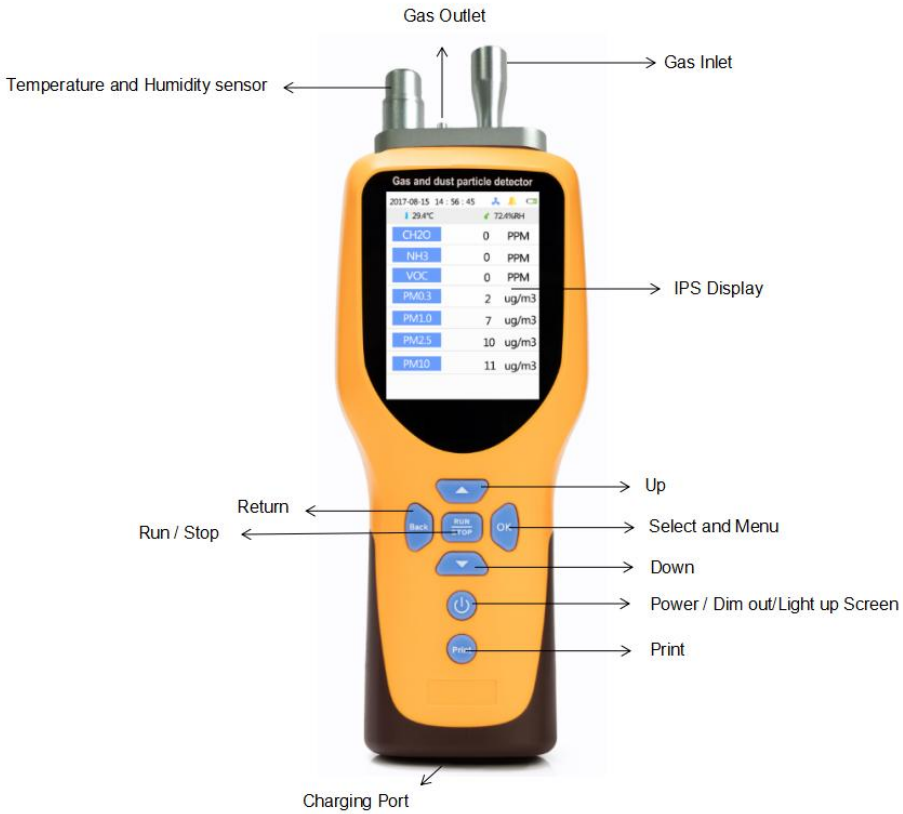
◆ All software automatic calibration, sensor up to 6 levels target calibration, ensure the accuracy and linearity of the entire measurement, also with data recovery function.

◆ Chinese and English operation model are available, user-friendly.

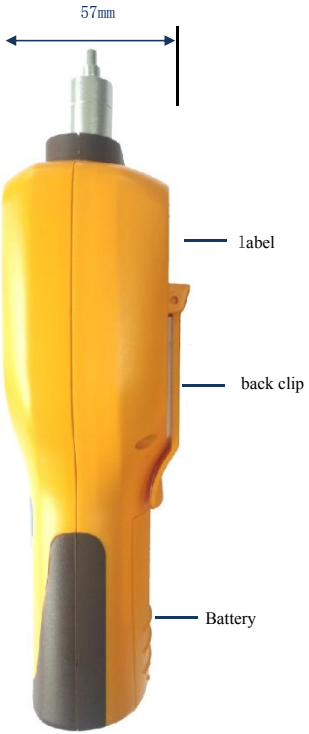
◆ With temperature and humidity compensating function.With dust filter and dust-proof design allow device applies in all sort of harsh conditions.(Except the detector with dust detection function)

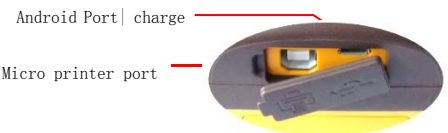
4. Product Structure

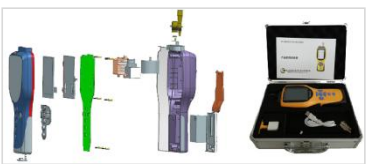





Intelligent Gas Detector
2021-09-14 10:11:42
27.2℃
73.2%
Max:25.83
Max:5.5
20.95
0.1
O2
%VOL
CO
PPM
Max:26.7
Max:6.61
0
0.19
EX
%LEL
VOC
PPM
Back
RUN STOP
OK
Print
90mm
222mm
68mm


57mm
label
back clip
Battery


Android Port| charge
Micro printer port



5. Technical Parameters

Product type:	Multifunctional gas detector(Customize according to user need)		
Detection Range:	Please refer to sensor list at end of this manual		
Display:	Please refer to sensor list at end of this manual		
Scalable Gas Sensor:	User can customize 1-5 gas sensors in any combination, please refer to the sensor parameters		
Dust sensor:	Laser dust sensor （0.3/0.5um、1.0um、2.5um、10um）is optional		
Temperature and humidity:	Temperature detection range:-40 ～ 120℃ Humidity detection range:0-100%RH		
Detection pattern:	Pumping, with built-in high-power pump allow device working under tiny negative pressure condition, the flow rate is 500ml/min.		
Detection accuracy:	≤±3%F.S(base on different sensor)	**Linearity error:**	≤±2%F.S
Reaction Time:	≤30 S（T90）	**Zero drift:**	≤±2%（F.S/Year）
Recovery Time:	≤30 S	**Repeatability:**	≤±2%F.S
Detection pattern:	Real-time detection mode and timing detection mode can be switch freely		
Storage pattern:	Automatically saving and manually saving is available, up to 30,800 to 215,600 groups data is available, user can view history data on the display.		
Printing pattern:	Micro printer is optional, user can set		
Explosion proof sign:	Ex ia IIC T4 Ga	**Shell material:**	ABS+PC
IP rating:	IP66	**Working Temperature:**	-30 ～ 60℃
Power:	4000mA high capacity polymer rechargeable battery	**Humidity:**	≤90%RH，Non-condensing
Dimensions:	255*88*57 mm（L×W×H） 0.5 Kg（net weight）	**Working pressure:**	-30Kpa ～ 100Kpa
Accessories:	Case, User manual, Certification, USB charger+Data cable, Calibration cover		

6. Detector instructions

6.1.Button Definition

Button Name	Icon	parameter setting
Back		Cancel/Return to previous menu
Up		Move up/ Move left
Down		Move down/ Move right
OK/Menu		Enter menu(press and hold for 5 seconds)/ Confirm
Run/ stop		Pump switch/ Manually store(long press)
Print		Print data(micro printer is optional)
Power		1. On/Off(press and hold for 5 seconds) 2. Short press-Screen dim out
Mute	Alarm  Mute 	Under detection interface, Press “ Back” , “OK” , “▲” , “▼” button, Switch Alarm and Mute(Boot default mute)

6.2. Charging mode

*When low battery, use the matching charger (5VDC/≥1A) to charge.

*The indicator light flashes blue during charging, and flashes green when charging is complete.

*Please don't wait until the battery is fully used up before charging.

6.3. Parameter modification

User can modify all parameters by “Back”,Up” ,“Down” ,“Ok” buttons.

Move the cursor to modify the parameters.

6.4. Shortcut description

***Mute:** When detector is in the state of alarming user can mute the detector by pressing the “Back”,“Up” or “Down” or “OK” button.

***Save manually:** When storage mode was preset as manually, user can save the gas concentration value of each channel by long press the “RUN/STOP” button in detection interface

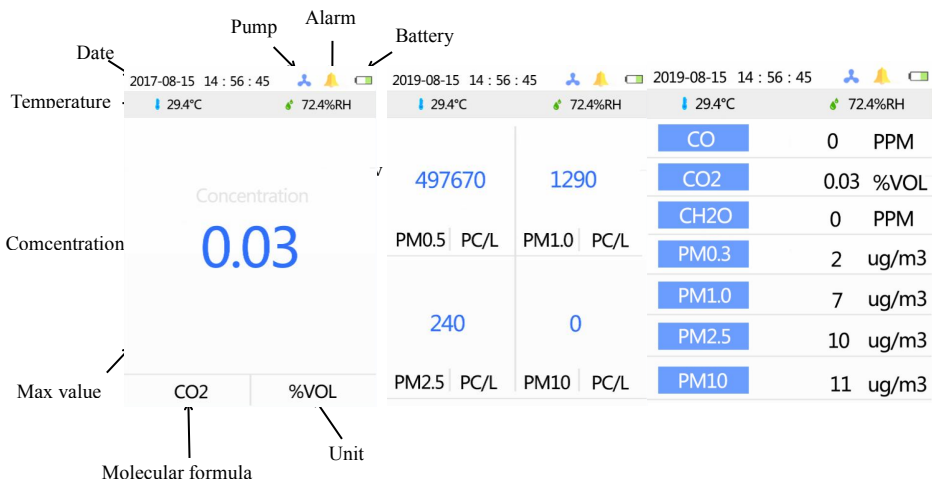
***Screen lock function:** Short press the "Power" button, can dim out the screen, press again, the screen light up. The detector will dim out if not operated after 300 seconds.

Notice:

1. GT-1000 series multifunctional gas and dust detector could be work normally only in condition of the pump was switched on. Buttons only can be operated when screen light up.
2. GT- 1000 Dust Particle Counter doesn’t has the “Pump Switch” function.

7. Operation instructions

7.1 Operation Interface



Single gas

Dust Particle

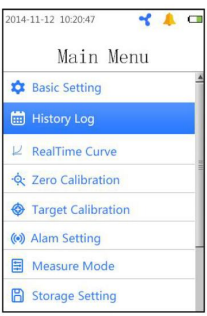
Dust sensor + Gas sensors

1 2 3 4

Long press the “Power” button, the screen will light up and display the sensor information. It needs about 1 minutes to warm up the gas detector. After power on, the screen will display the configured gas/ gases.

7.2 Function Menu Instruction

Long press “OK” button for 5 seconds to enter function menu as shown in figure 10. Nine sub-menus are including in function menu: Basic setting、History Log、RealTime Curve、Zero calibration、Target calibration、Alarm setting、Measure Mode、Storage setting、Print Setting、Time Setting、Factory Setting.In main menu move the cursor to different sub-menu by press “Up” and “Down”button,press “Ok” to enter corresponding sub-menu, press “Back” to return to normal detection interface or previous menu.



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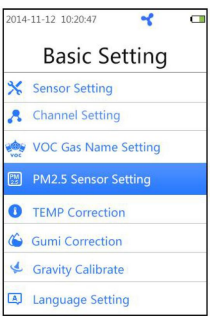

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7.2.1 Basic Setting

In Basic setting menu user can see various setting as shown in figure 11,press “Up” and “Down” button to move the cursor , press “Ok”to enter sub-menu and modify parameters.

1. Sensor setting:(as shown in figure 12)User set detection range and units(ppm、mg/m³、mg/L、%VOL)of different gas

2. Channel setting:In this menu user can set to activate/shield one or various gas channels as shown in figure 13,and also allow user to check channel address.

3. Temp Correction:In this menu user were allow to modify the temperature parameter manually as shown in figure 14.

4. Humi Correction:In this menu user were allow to modify the humidity parameter manually as shown in figure 15.

5. Language Setting: User can switch between Chinese and English menu as shown in figure 17.

6. 2 Special Sub-menu:VOC Gas Name Setting and PM2.5 Sensor Setting.

These two sub-menu only will exist when the detector is equipped with VOC sensor and dust particle sensor.The user can choose the specific VOC gas name as shown in figure18,and choose the detection unit or the min detect diameter of dust particle as shown in figure 19-20.

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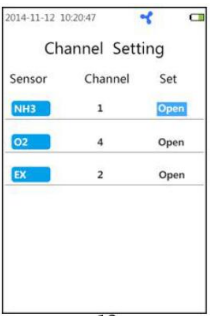

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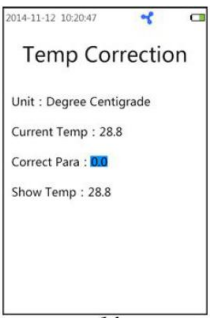

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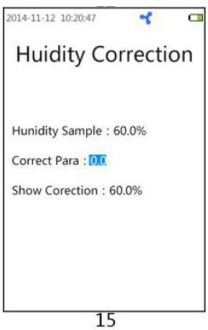

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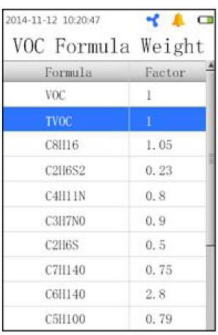

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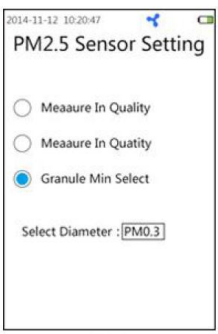

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7.2.2 History Data Log

User can check history log, view history log curve, export history log and clear history log as shown in figure 21.

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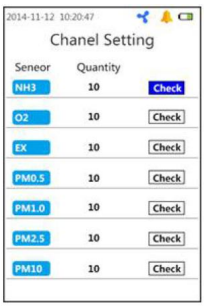
1.Check History Log:Press “OK” to enter this sub-menu,the sensor name,quantity of history data will be shown,press “OK” again to check all previous concentration datalogs as it shown in figures 22-23.

2.History Log Curve:`Press “OK” to check history log in curve format as it shown in figures 24-25.



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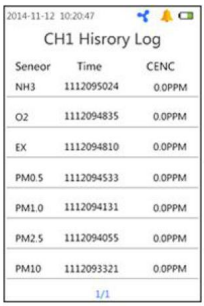

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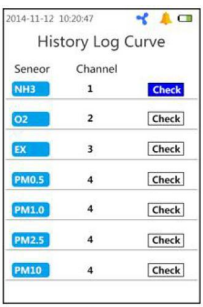

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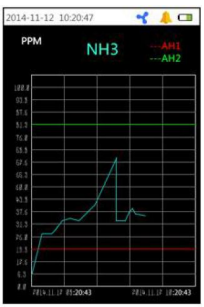

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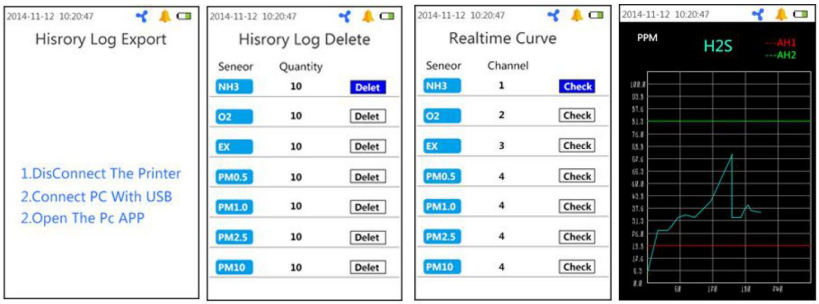
3.History Log Export:Press “OK” and follow the procedure as it shown in figure 26 to export the history data.

4.Clear CH History Log:Press “OK” to enter this sub-menu,in this menu users can view all the sensors and corresponding data

quantity,press “OK” again to history data of specific channel as it shown in figure 27.

5.Clear ALL History Log:Press “OK” to delete all history data.

See “Appendix 9:Concentration Datalog Output Instruction” on page.



26 27 28 29

7.2.3 Real-time Curve

In this menu users can view all the sensors and corresponding channel.Press “Enter” to check each sensor’s real-time curve as shown in figure 28-29.

7.2.4 Zero Calibration

If zero drift of the sensor is over range, user can proceed zero calibration ,the gas concentration are defaulted set to zero after zero calibration as shown in figures 30.

Special Note:

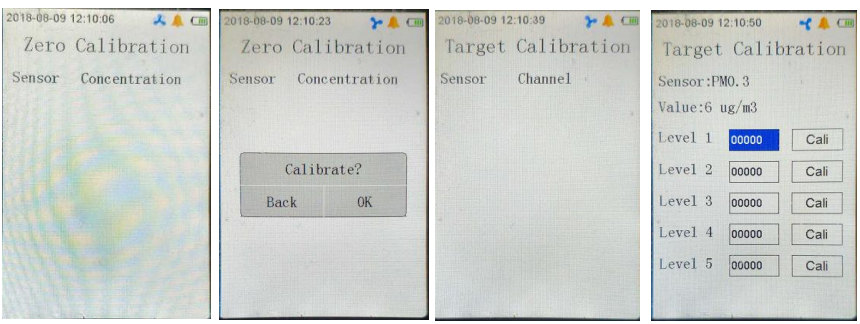
1.Zero calibration must be proceed in fresh air or high-purity inert gas(for example 99.999%VOL N2 etc)

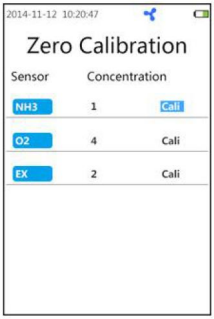
2.Do not operate zero calibration for those gases which already exist in the air,such as oxygen,carbon dioxide,nitrogen,dust particle.

3.When GT-1000 series gas detector combined with gas sensors, or with dust sensors, the detector has two calibration functions.

4.When GT-1000 series gas detector combined with dust sensor, the dust sensor doesn’t has calibration functions.

Zero calibration must be proceed in a clean,dust-free space. **Target calibration** must be proceed in a professional dust calibration system.





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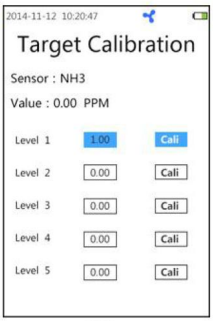

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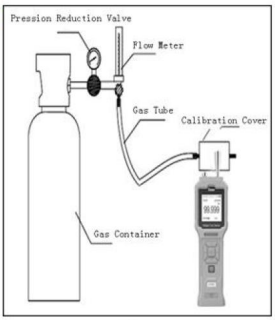

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7.2.5 Target Calibration (Do Not Calibrate Unless You Are Professional)

Find a fresh-air environment. This is an environment free of toxic or combustible gases and a normal oxygen content(20.9%VOL); **Dust detector need proceed in a professional dust detection system.**

GT-1000 series gas detector provide 6 levels target gas concentration calibration,as shown in figure 31-32,this calibration should be operate under conditions of certain standard concentration gas, Pressure reduction valve ,Flow meter, Calibration cover and make sure all instruments are well connected, otherwise this function is forbidden.

Procedures: Connect all instruments as shown in figure 33,enter target gas calibration interface,release standard gas slowly and control gas flow within 600ml/min,observe the real-time concentration value(concentration value should be increasing),wait until real-time concentration value rise to the peak reading and stay still, user can chose a un-calibrate option to operate(√ stand for this level has been calibrated and × stand for this level still need to be calibrate);first of all input a concentration value of standard gas then calibrate. Target gas concentration value will set up to be the standard gas concentration value after calibration.

7.2.6 Alarm setting

User can set the alarm limit and alarm mode in this menu, as shown in figures 34-35,there are two alarm value setting, which are high alarm and low alarm. When user set as the low alarm mode, it will trigger alarm when real-time concentration is lower than preset value , when user switch to high alarm mode, it will trigger alarm when real-time concentration is higher than preset value.

Procedures: Enter alarm settings sub-menu, Move the cursor to “Enter”,press “Ok” to select and press “Up” and “Down” to switch alarm mode, then press “Ok” to save your modification.

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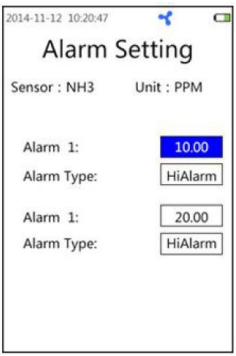

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7.2.7 Measure Mode

User can choose two measure mode:real time measure and fixed time measure as shown in figure 36.When detector is preset as “real-time measure”mode, it provides continuous monitoring and will shows real-time concentration of each channel in the display.And you can select the duration of each fixed time detection, the detect cycle times and the interval between the two fixed time measure as shown in figure 37.

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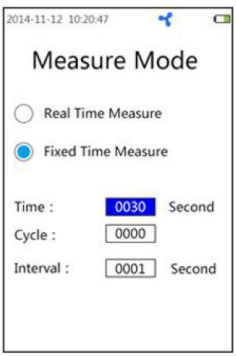

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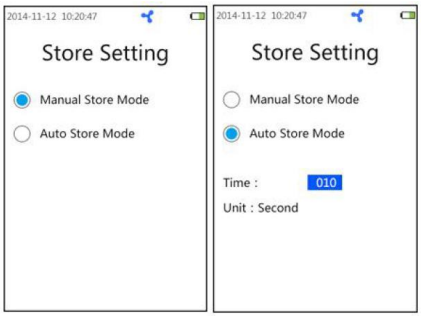
7.2.8 Store Setting

Manually save、automatically save are optional in this menu,it also allows user to set storage cycle under automatically storage mode. Users can set the storage interval(interval of two storage data) when preset as “ Auto Store Mode” .The maximum setting is 999 second and the minimum setting is 1 second.(figure 38-39)



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7.2.9 Print Setting

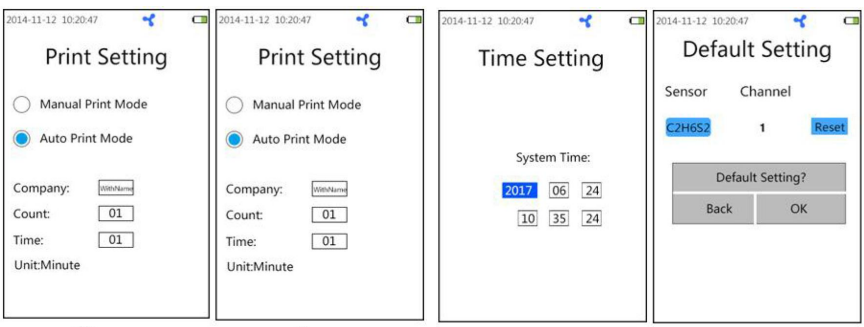
Manually print、automatically print are optional in this menu. It can print data via a micro printer(the micro printer is optional accessory). The report will print with company name,count,time and unit of time as shown in figure 40-41.

7.2.10 Time Setting

Time setting menu allow user to set date and time,this time is related to the time of the concentration values are being recorded as it shown in figure 42

7.2.11 Factory Setting

If user proceeded an wrong operation by accidentally or need to reset all parameters to factory setting,you can reset all parameter to factory setting as it shown in figure 43.



40 41 42 43

8. Common faults and solutions

◆ **Problem:** Concentration value is not stably when detector place in air, reading is unstable

Possible reasons: Electrochemical sensor might interfered with unrelated colorless and odorless gas

Solutions: Place detector at pure gas environment to see whether the concentration value decreasing or not, if it is that the environment is clear but the concentration value remains high, you need to proceed zero calibration

◆ **Problem:** No response or weak response when detecting

Possible reasons:

1) Oxygen content value of gas is too low: <5%VOL.

2) Gas pressure is too high, the pump can't not afford it.

3) Expired sensor might cause the problem too .

Solutions: Make sure the oxygen content value of the gas is higher than 5%VOL when equip with Electrochemistry sensor, Catalytic combustion sensor or Semiconductor sensor. Detector working pressure is -30Kpa~100Kpa, User can proceed zero calibration if has standard gas. If oxygen content value, working pressure are eligible for detection but problems still remain, user should return detector to factory for maintenance.

◆ **Problem:** Concentration value is unstable when start detecting.

Possible reasons: Normally dude to gas oxygen content is too low or changing of gas concentration value.

Solutions: Increase gas oxygen content value and make sure the gas flow speed is stable.

◆ **Problem:** Weak pumping,or device make a unusual sound while pumping.

Possible reasons: Gas inlet blocked due to too many dust and vapor inhaled.

Solutions: Return to manufacturer to replace the pump, install a dust and vapor filter at the gas inlet.

◆ **Problem:** Unable to boot up instrument.

Possible reasons: Battery low or empty

Solutions: Try to start the instrument after fully charged the battery, if the problem still remain,user need to return the device to manufacturer.

◆ **Problem:** Unable to charge the instrument

Possible reasons: Adapter failure or wrong adapter(5-5.5VDC,1-2A)

Solutions: Make sure output voltage of adapter is 5V, user need to change a adapter if the output voltage is not 5V, if the problem still remain after change a adapter, user need to return the instrument to manufacturer.

9. History data export instructions

Please kindly contact with the sales for the export software and manual.

10. After-sales Service

A. WARRANTY

1.We provide 12-Month warranty for the detector and 3-Month warranty for the accessories.

2.We have free calibration once a year during the entire product's service life.（freight is not included）

3.From the date of purchase, quality problem occurred under normal use during the warranty period, you can enjoy free maintenance services. Note: required working conditions: Temperature : -30~50℃ relative humidity:0-90%RH pressure:0-200Kpa air environment: no interference gas, no dust

B. LIMITATION

（Note: Warranty will not be provided in case of the following circumstances.）

1. Man-made damage
2. Damage caused by natural disasters
3. Exceeds the warranty period
4. Unauthorized disassembly and modification
5. Purchase through non-legal distribution channels

C. SERVICE GUARANTEE

1. Maintenance within the scope of warranty does not charge maintenance fees, replacement parts costs.(freight is not included)
2. Maintenance without the scope of warranty does not charge maintenance fees, but replacement parts will be charged at a discounted price.
3. All the complaints will be responded within 24 hours.
4. Address: 2nd floor,Innovation Building,Qixing Creative Industrial Park,Baotian 1st Road,Xixiang Town,Bao'an District,Shenzhen City, Guangdong Province,China.

11. Common gas type list

O2	0-1000,5000,10000,30000PPM; 0-5,25,30,100%VOL	H2S	0-50,100,500,1000,2000,5000,10000PPM
CO	0-100,500,1000,2000PPM	EX	0-2,4%VOL; 0-100%LEL
NH3	0-50,100,500,1000,5000PPM	CO2	0-2000,5000,10000,50000PPM; 0-10,20%,50%,100%VOL
SO2	0-1,10,20,50,100,500,1000,2000PPM	CH2O	0-10,20,50,100PPM
VOC	0-10,20,50,100,200,500,1000,2000,5000PPM	O3	0-1,2,5,10,20,50,100,500,1000,2000,5000PPM
NO	0-1,2,5,50,100,250,500,1000,2000,5000PPM	NO2	0-1,20,50,100,500,1000,2000PPM
CLO2	0-1,5,10,20,50PPM	H2	0-500,1000,5000,20000,40000PPM; 0-100%VOL
N2	0-100%VOL	CS2	0-50,100,500PPM
CH4	0-5000,10000,50000PPM; 0-20%,50%,100%VOL	C2H2	0-100,500,1000,2000PPM; 0-2%VOL; 0-100%LEL
C2H4	0-10,50,100,200,500,1000,2000PPM	C2H6	0-5000,10000,30000PPM
C3H8	0-5000,10000,20000PPM; 0-20%,50%,100%VOL	C4H10	0-5000,10000,20000PPM
HF	0-10,20,50PPM	PH3	0-5,20,50,100,500,1000,2000,4000PPM
HCN	0-30,50,100,500,1000PPM	HCL	0-10,20,50,100,200,500,1000,3000PPM
CL2	0-10,20,50,100,200,500,1000,2000,5000PPM	CH3Br	0-1,6,100%VOL; 0-200g/m3; 0-5000,10000,30000PPM
Ar	0-100%VOL	He	0-100%VOL
SF6	0-500,1000,2000PPM	ETO	0-10,20,50,100,500PPM; 0-3%VOL

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