

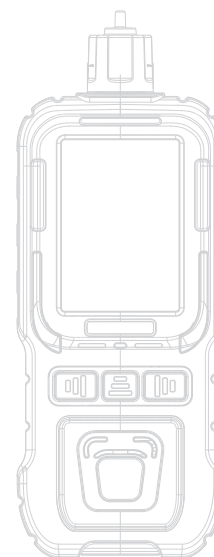
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JB-M6M

Portable Multi-gas Detector with Built-in Pump

Operation Manual



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Affix. Table1

Model	Range	L-alarm	H-alarm
CH4	0-100%LEL	20%LEL	50%LEL
C3H8	0-100%LEL	20%LEL	50%LEL
H2	0-100%LEL	20%LEL	50%LEL
H2	0-1000ppm	35ppm	250 ppm
H2S	0-100ppm	10ppm	15ppm
H2S	0-100ppm	10ppm	20ppm
CO	0-1000ppm	35ppm	200ppm
CO	0-1000ppm	30ppm	60ppm
C2H4O	0-20ppm	10ppm	15ppm
C2H4	0-100%LEL	20%LEL	50%LEL
C2H4	0-20ppm	5ppm	10ppm
O2	0-30%vol	19.5%vol	23.5%vol
C2H5OH	0-100%LEL	20%LEL	50%LEL
NH3	0-100ppm	25ppm	50ppm
CL2	0-20ppm	5ppm	10ppm
O3	0-20ppm	5ppm	10ppm
O3	0-10ppm	2ppm	5ppm
SO2	0-20ppm	2ppm	5ppm
SO2	0-100ppm	2ppm	5ppm
PH3	0-20ppm	0.3ppm	5ppm
PH3	0-5ppm	0.3ppm	2ppm
CO2	0-5000ppm	1000ppm	2000ppm
CO2	0-50000ppm	1000ppm	2000ppm
NO	0-250ppm	20ppm	50ppm
NO2	0-20ppm	5ppm	10ppm
HCN	0-500ppm	10ppm	20ppm
HCN	0-50ppm	10ppm	20ppm
HCL	0-50ppm	10ppm	20ppm
CH2O	0-10ppm	2ppm	5ppm
VOC	0-100ppm	20ppm	50ppm
C6H6	0-100ppm	20ppm	50ppm

10. Accessories and Others

Accessory name	Quantity	Accessory name	Quantity
Matching box	1	USB data line	1
Gas detector	1	Ventilation filter element	2
Exhaust hose	1	Manual	1
Charger	1	Certificate and warranty card	1

1. Product Description

K-600M pumping compound multi-parameter detector (hereinafter referred to as the detector) is an intelligent multi-parameter detector designed with advanced integrated circuit technology, standard intelligent technical level design technology and proprietary digital-analog hybrid communication technology.

The detector adopts a built-in pump-suction sampling method for gas sampling, and the sensitive element adopts a high-quality gas sensor for gas detection. It has good sensitivity and excellent repeatability, easy to use and maintain, and greatly meets the safety of the industrial site. For high reliability requirements, the shell is made of high-strength engineering plastics and composite non-slip rubber, which has high strength, good hand feeling, and is waterproof, dustproof and explosion-proof. It can be widely used in petroleum, chemical, environmental protection, smelting, refining, biochemical medicine, agriculture, scientific research, universities and other industries and fields.

The detector can detect one or up to 6 gas combinations according to user needs. It can integrate electrochemistry, catalysis,

Various detection principles such as semiconductors, thermal conductivity, and optics provide users with reliable, accurate and safe gas detection solutions.

The detector can expand a variety of functional modules according to user needs, such as PM2.5/PM10 detection module, 4G module, GPS and other functional modules to meet the needs of users in a variety of application scenarios.



2. Feature of Product

2.1. Features

- ★ Using a new GUI design scheme, the interface display is more comprehensive and the operation is more user-friendly.
- ★ The integrated built-in pumping gas detection method can detect one or six gas types at the same time.
- ★ Imported miniature vacuum suction pump is adopted, with stable flow, long life and low noise.
- ★ It adopts a 3.5-inch high-definition color screen with a wide viewing angle of 120 degrees.
- ★ The three-button operation is simple and intuitive.
- ★ Support a variety of extended functions to meet users' different product applications.

2.2. Product Function

1. The flow rate of the sampling pump is adjustable in 6 levels, suitable for different detection environments (flow range 300-800mL/min).
2. Sound, light, vibration and display four alarm modes, support TWA, STEL alarm function.
3. Support fall alarm; the sampling pump will automatically alarm and prompt if it fails.
4. Support gas unit switching function; support Chinese and English switching, other languages can be customized.
5. Real-time detection of temperature and humidity in the environment.
6. Support extended PM2.5/PM10 detection module to obtain real-time particulate matter concentration information (measurement range 0-1000 $\mu\text{g}/\text{m}^3$).
7. Support mixed gas calibration method, convenient and fast; support multi-point calibration method, up to 5 points calibration.

Failure phenomenon	Possible cause of failure	Processing method
The normal detection interface of the instrument displays full scale	Sensor failure	Sensor failure
Abnormal temperature and humidity display	Loose wiring or device failure	Check the wiring or contact the dealer or manufacturer for repair
Particulate matter PM2.5 PM10 display abnormal	Loose wiring or device failure	Check the wiring or contact the dealer or manufacturer for repair
Prompt "Bluetooth error:0" after turning on Bluetooth	circuit failure	Please contact the dealer or manufacturer for repair
Prompt "Network error:0" after turning on mobile network	Loose wiring or device failure	Check the wiring or contact the dealer or manufacturer for repair
Prompt "Network Error: 1" after opening the mobile network	The network signal is weak or the SIM card is in arrears	Check the network signal or tariff
Prompt "Network Error: 2" after opening the mobile network	Weak network signal	Check network signal
Prompt after turning on GPS "GPS error: 0"	Loose wiring or device failure	Check the wiring or contact the dealer or manufacturer for repair

9. Common Faults and Solutions

Failure phenomenon	Possible cause of failure	Processing method
Can not boot	Voltage is too low	Please charge in time
	Crash	Please contact the dealer or manufacturer for repair
	circuit failure	Please contact the dealer or manufacturer for repair
No response to detection gas	circuit failure	Please contact the dealer or manufacturer for repair
Inaccurate display	Sensor expired	Please contact the dealer or manufacturer to replace the sensor
	Long-term uncalibrated	Please calibrate in time
Time display error	The battery is completely exhausted	Please charge in time and reset the time
	Strong electromagnetic interference	Reset time
Zero calibration failed	Sensor drift	Modify the zero calibration threshold and calibration threshold parameters in the channel settings

8. Support the switch of real-time data display of gas concentration and real-time curve display mode.

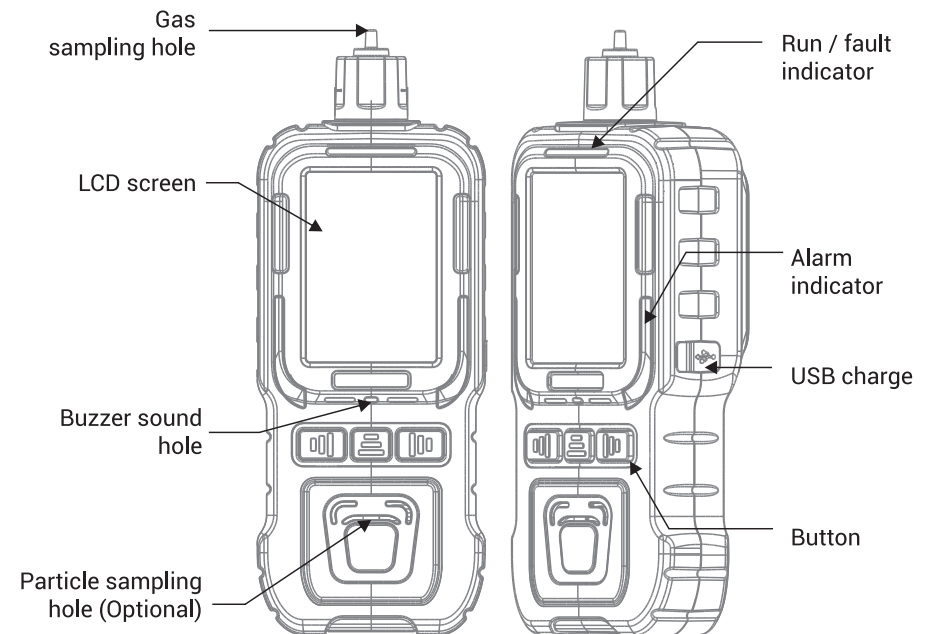
9. A variety of data storage methods, alarm storage, timing storage, manual storage; support external TF memory card storage mode, can read the stored data through the USB cable; external storage .csv file format, data viewing at a glance.

10. Support Bluetooth function, you can view data and set parameters through the mobile APP; support external Bluetooth printer, real-time printing of test data. 11. Support GPS positioning function; support 4G data transmission, transmission interval can be configured, support cloud platform data viewing function.

12. The USB interface adopts Type-C interface, no fear of plugging in front and back.

13. Large capacity (4000mAh) rechargeable lithium battery, longer use time

3. Structure



4. Parameter

Gas	Measure Range	Low Alarm	High Alarm	Resolution
EX	(0~100)%LEL	20%LEL	50%LEL	1%LEL
H2S	(0~100) ppm	10ppm	35ppm	1ppm
CO	(0~1000) ppm	50ppm	150ppm	1ppm
O2	(0~30)%vol	19.5%vol	23.5%vol	0.1%vol
CO2	(0~5)%vol	1.00%vol	2.00%vol	0.01%vol
NO2	(0~20)ppm	5.0ppm	10.0ppm	0.1ppm

Please contact the company for other gas combinations

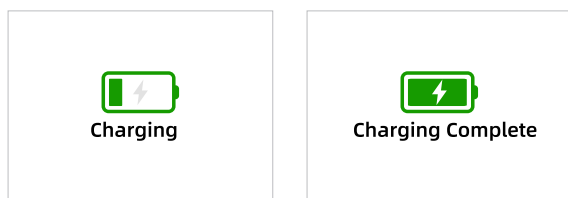
Response Time	T ₉₀ <30s
Working Environment	Temp:-10°C~50°C; Humidity <95%RH
Voltage	DC3.7V (Lithium battery capacity 4000mAh)
Display Mode	3.5 Inch color LCD Screen, Resolution 320*480
Alarm Type	T sound W, A light/S, T vibrating EL, alarm display four alarms, support for fall alarm, pump failure alarm
Pumping Type	Pump-suction type, 6-speed adjustable pump flow, range 300-800mL/min
Gas Detection	Support 1~6 types gas detection
Data Communication	Support USB connection to the host computer to view data

8. Charging Function Description

1. Prevent the instrument from falling from a height or subject to strenuous exercise.
2. The machine cannot be used normally in a high concentration gas environment.
3. Please strictly follow the operation and use specifications in the manual, otherwise it may cause inaccurate test results or damage the instrument.
4. This product must not be stored or used in an environment containing corrosive gases (such as high concentration of chlorine, etc.), nor in other harsh environments, including excessively high or low temperatures, high humidity, strong electromagnetic fields, etc. Use or store the machine in the environment.
5. If there is dirt on the surface of the instrument after long-term use, please wipe it gently with a clean soft cloth dipped in water, instead of using corrosive solvents and hard objects to wipe the surface of the instrument, otherwise it may cause scratches on the surface of the instrument Or damaged.
6. In order to ensure the detection accuracy of the instrument, the instrument should be calibrated regularly, and the calibration period should not exceed one year.
7. The battery pack cannot be disassembled or replaced, and the battery cannot be charged in an explosive gas environment; in an explosive gas environment, it is not allowed to use peripheral plug-in instruments without explosion-proof certification, and cannot replace the sensor.
8. When the instrument has the function of detecting particulate matter PM2.5 and PM10, it cannot be used in high-concentration dust locations such as cement plants, flour mills, flue gas exhaust, etc., otherwise the accuracy of the sensor may decrease or become invalid.
9. Don't plug or insert the TF memory card at will during power-on, otherwise the TF memory card may be damaged or data may be lost.
10. When using the 4G function, please do not unplug and insert the SIM card of the mobile phone at will, otherwise it will cause data interruption. You need to shut down and restart before you can use 4G related functions normally.
11. When the surface of the filter element at the gas sampling hole is seriously polluted, please replace the filter element in time to ensure the sensitivity and accuracy of the gas detection.

6. Charging Function Description

When the interface prompts "Battery power is low!" or the tester cannot be turned on normally due to undervoltage, please charge it in time; when the tester is off, connect the charger plug to the charging jack of the tester, and then charge. Connect the AC plug of the charger to the AC220V AC power source, the tester will automatically turn on and display the charging status (Figure 47). After the charging is completed, the interface will display "Charging Complete" (Figure 48). Turn on the detector for normal use.



Undervoltage: When the power of the detector is low, the interface prompts "Battery low!" every two minutes, and the buzzer "didididi" four beeps.

Under-voltage shutdown: When the battery power is lower than the normal working voltage, the instrument enters an automatic shutdown countdown, and the instrument shuts down after the countdown ends.

Note: Please try not to charge the detector when it is turned on, so as not to affect the charging speed; please do not charge the detector at the testing site, so as to avoid fire or explosion caused by sparks caused by plugging in and out the charger.

7. Store

The detector should be stored in a ventilated room with an ambient temperature of -10°C~50°C and a relative humidity of no more than 85%, and the air must not contain harmful gases or impurities that may corrode the detector.

Tf Memory Card	Support extended external TF memory card, storage file format .csv; support USB data import (optional)
Blue Tooth	Support Bluetooth communication, view data and parameter settings through the mobile APP
Blue Printer	Supports external blue printer to print real-time data (optional)
4G	Support 4G communication, support cloud platform data viewing (optional)
GPS	Support GPS positioning function, need to be used with 4G (optional)
System Language	Support Chinese and English switching; other languages can be customized
Temperature Range	-40°C~125°C
Humidity Range	0~100%RH
Particles Detection	Detection function of particle size PM2.5、PM10, measuring range 0~1000µg/m ³ (optional)
Charger	Type-C charging connector, 5V/1A standard charger
Standby Time	≥8h
Charging Time	<5h
Sensor Lifespan	2 years
Size	231*87*60mm

5. Function and Operation

5.1. Power-on Self-test and Warm-up

When the tester is turned off, press and hold the middle button for 2 seconds. The LCD screen of the tester will gradually light up from dark to bright and display the welcome interface (Figure 1). Then the instrument will initialize the system and then proceed (sound, light, vibration).) System self-check, and finally system warm-up. When the preheating is completed, enter the main detection interface of the detector (Figure 2).

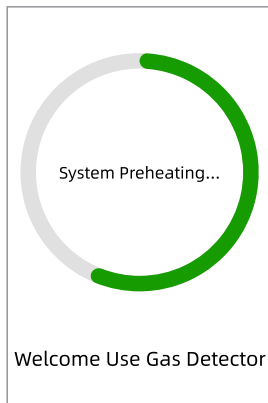


Figure 1

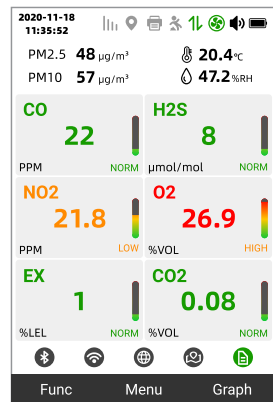



Figure 2

5.2. Main Interface Icon Description

<p>2020-11-18 11:35:52</p>	<p>Display the current date and time. The time can be automatically updated once the mobile network (optional) function is turned on.</p>
	<p>GPS (optional) current positioning status. After the GPS function is turned on, the icon flashes to indicate that the positioning is in progress, and the icon stops flashing after the positioning is successful.</p>

5.7.10 Shutdown

Select the shutdown icon in the main menu interface of the detector, and click the middle button to enter the shutdown operation interface (Figure 45), click the left button to return to the previous menu, click the right button to shut down (Figure 46), when the progress bar is completed, the detector will shut down.

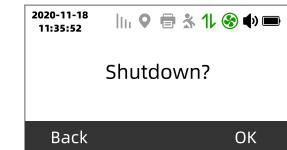


Figure 45

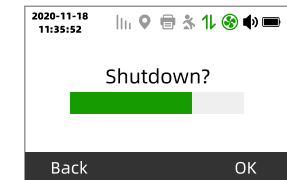


Figure 46

5.7.11 System upgrade

Select the system upgrade icon under the main menu interface of the tester, and click the middle key to enter the system upgrade operation interface (as shown in Figure 47-1). When there is an upgrade file in the "update" folder in the TF Card (if it does not exist, please create it manually), the interface displays as shown in Figure 47-2. Right click to confirm the upgrade (as shown in Figure 47-3), and left click to return. When you click OK to upgrade, the system enters the upgrade interface (as shown in Figure 48-1). After the upgrade is completed (as shown in Figure 48-2), the system enters the charging interface.

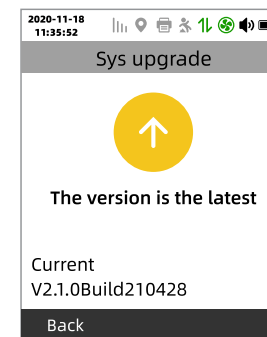


Figure 47-1

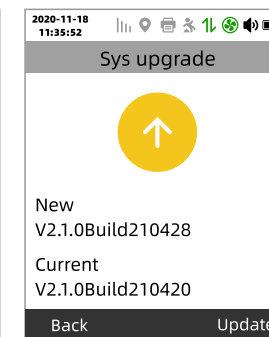


Figure 47-2

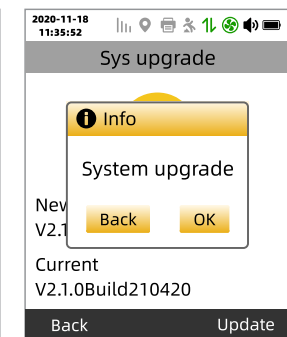


Figure 47-3

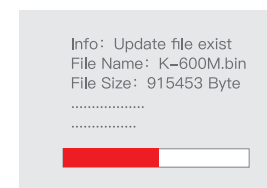


Figure 48-1

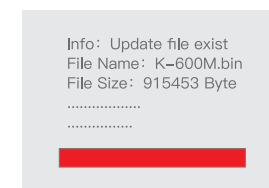


Figure 48-2

Note: when upgrading the system, be sure to plug in the USB cable to supply power to the instrument before upgrading.

5.7.7 Time setting

Select the time setting icon in the main menu interface of the detector and click the middle button to enter the time setting operation interface (Figure 40). Click the left button to return to the previous menu; click the right button to save the time; click the middle button to edit the time (Figure 41), click the left and right buttons to edit the currently selected date or time, and click the middle button to select parameters .

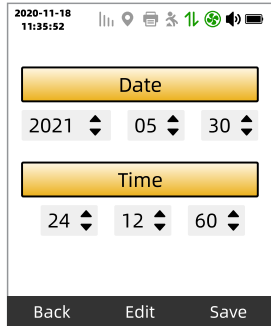


Figure 40

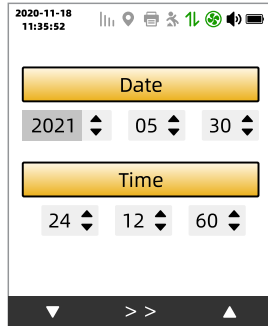


Figure 41

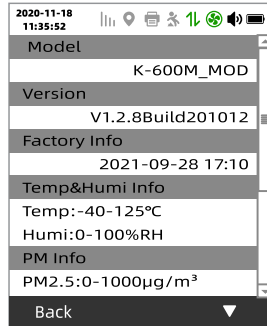


Figure 42

5.7.8 System message

Select the system information icon in the main menu interface of the detector, and click the middle button to enter the system information view interface (Figure 42). Click the left button to return to the previous menu, and click the right button to slide the interface to view information.

5.7.9 System Restore

Select the system restore icon in the main menu interface of the detector, click the middle button to enter the system restore operation interface (Figure 43), enter the password "1111", click the right button to confirm to enter the system restore interface (Figure 44), click the left button to return to the previous menu, and click the right button to restore the factory settings. After the restoration is successful, a pop-up "Setup successful" dialog box, the "setting failed" dialog box pops up after failure, click the middle button to close the dialog box. **Note: after restoring the factory settings, the "language" and "theme" settings remain unchanged.**

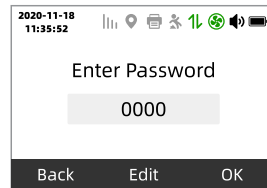


Figure 43

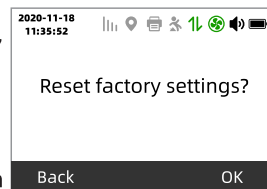














Figure 44

	4G (optional) current signal strength indicator. After the mobile network function is turned on, it is used to indicate the strength of the current mobile signal and dynamically change according to the signal strength icon.
	Printer status indication. When the printer is successfully connected, the icon color changes to blue; after disconnection, it changes to gray
	Personnel fall status indication. When a person's fall is detected, the icon will turn red, the buzzer will beep for a long time, and the alarm value indicator will be on. In the main interface, press and hold the right button for 2 seconds to release the fall alarm
	Communication status indication. When the instrument communicates with the computer host computer or mobile phone APP, the icon flashes once
	Air pump status indication. When the air pump is normally turned on, the icon rotates and the color changes to green; when the air pump is blocked or does not respond, the icon rotates and the color changes to red, and every 3 seconds, the yellow fault indicator at the top of the screen flashes twice. The buzzer beeps twice
	Alarm status indication. When the gas concentration detection is in the normal state, the icon is gray; when the gas concentration detection is in the under-reporting state, the icon turns yellow; when the gas concentration detection is in the high-reporting state, the icon turns to red
	Battery level indicator. The battery power is divided into four bars. When there is one bar remaining, the icon turns yellow, and when the power is exhausted, the icon turns red

	Bluetooth enabled status indication. When Bluetooth is turned on, the icon color changes to green
	WiFi enable status indication. This function is temporarily not supported, please contact the manufacturer if you need it
	4G (optional) enable status indication. When the network is turned on, the icon color changes to green
	GPS (optional) enable status indication. When the function is turned on, the icon color changes to green
	SD card (optional) status indication. When the card is detected, the icon color changes to green

Note: SD card does not support hot plug


5.3. Main Interface Display Description

In the normal detection state, as shown in Figure 2, the detector can detect the temperature and humidity in the on-site environment in real time; the real-time concentration of related gases in the environment; and the concentration of PM2.5/PM10 in the air (optional);

◆When the gas concentration detected by the detector is lower than the set alarm value (Note: when the oxygen concentration is higher than the low alarm value but lower than the high alarm value), the detection status bar displays "normal".

◆When the gas concentration detected by the detector is higher than the set low alarm value (Note: when the oxygen concentration is lower than the set low alarm value), the detector is in the low alarm state, and the gas concentration value display color changes to yellow. The detection status bar displays "low alarm" and flashes. At the same time, the buzzer beeps at 0.5 second intervals. The alarm lights on both sides of the screen flash synchronously, and the

5.7.6.3 Mobile network: it is used for relevant operations of mobile network (as shown in Figure 38), including opening and closing of mobile network and setting of data transmission cycle.

Enable: turn on and off the mobile network, and the icon changes to .

Data cycle: set the data transmission cycle with the cloud platform. Setting range: 10-3600, unit: second.






Operator: currently only "China Mobile" is supported.

Network number: displays the cloud platform number of the instrument after the mobile network is turned on.

IP address: displays the registered local IP address after successfully registering the mobile network.

Note: please refer to section 5.3 for error conditions.

5.7.6.4 GPS: relevant operations for GPS positioning (as shown in Figure 39).

When the GPS function is turned on, the icon changes to . And if the GPS module fails to be detected, the GPS will be automatically turned off and the icon changes to . After the GPS function is turned on, the icon  at the top of the interface starts to flash, indicating that the positioning operation is in progress. If the positioning is successful, the interface will prompt "GPS positioning is successful", and  stop flashing. When positioning fails, the interface will prompt "GPS positioning fails", and the icon  will resume flashing.

Note: if the GPS signal is lost after successful positioning, the longitude, latitude and altitude will save the data at the last positioning.

Note: when the instrument gives an alarm, the data cycle is forcibly changed to 10 seconds to transmit data once until it returns to normal, and then continue to send according to the set cycle.

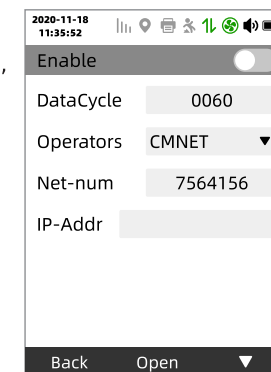


Figure 38

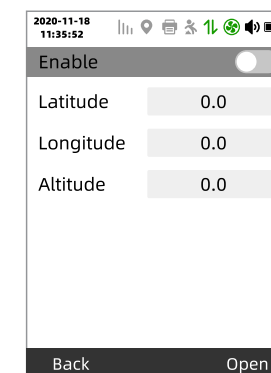


Figure 39


Name	Modification date
CO	2020-09-08 14:40
H2S	2020-01-04 8:50
O2	2020-09-08 14:52
CO2	2020-01-07 5:55
NO2	2020-09-08 14:53
CH4	2020-08-26 8:43



Figure 35

Name	Modification date
Info.txt	2020-09-09 11:54
CO.csv	2020-09-08 14:40

Figure 36

5.7.6.2 Bluetooth: Used for Bluetooth-related operations (Figure 37), including Bluetooth on and off, printer connection and disconnection, printing mode settings, and Bluetooth name settings. Click the left button to return to the previous menu; click the right button to switch menus; click the middle button to perform function operations.

Enable: Turn on and turn off Bluetooth, and the icon will change to .

Print enable: click the middle button to start searching for printers and automatically connect to the matched printers searched, and the icon will change to . If a printer is connected, the icon  at the top of the interface turns blue.

Printing options: Divided into two methods: "single print" and "automatic print". When set to "single print", press and hold the middle button for 2 seconds in the main interface to print a real-time measurement value; when set to "automatic print", the detector periodically prints a real-time value according to the time value set in "print cycle" Measure the value.

Print cycle: set the timing cycle of "automatic printing", the setting range is 5–3600, unit: second.

Bluetooth name: Set the display name of the Bluetooth, the default name is "K-600M_000", you can edit the last three digits to change the Bluetooth name. After the change is successful, the interface prompts "Setup successful!".

Note: Only after the "Enable" is turned on, can the "Print Enable" be turned on; see Appendix A for the related operations of the mobile APP.

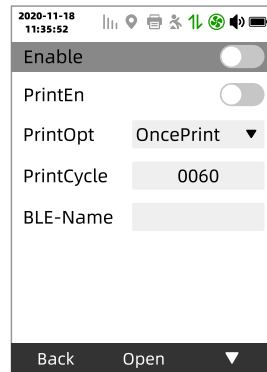


Figure 37

vibrator starts to vibrate synchronously. Light up.

◆ When the gas concentration detected by the detector is higher than the set high alarm value, the detector is in the high alarm state, the gas concentration value display color changes to red, the detection status bar displays "**High Alarm**" and flashes, and the buzzer beeps at the same time The screen beeps at 0.25 second intervals, the alarm lights on both sides of the screen flash synchronously, and the vibrator starts to vibrate synchronously. If the screen is in the off-screen state, the screen lights up at the same time.

◆ When the gas concentration detected by the detector is higher than the sensor range, the detector is in the over-limit state, the gas concentration value is displayed as red "**HHHH**", the detection status bar displays "over-limit" and flashes, and the buzzer interval A beep of "di" is emitted in 0.25 seconds, the alarm lights on both sides of the screen flash synchronously, and the vibrator starts to vibrate synchronously. If the screen is in the off state, the screen lights up at the same time.

◆ When the TWA and STEL alarm functions are turned on, when the gas concentration detected by the detector is higher than the set alarm value, the detector will alarm, and the detection status bar will display "TWA" or "STEL" and flashing. At the same time, the buzzer beeps three times at an interval of 3 seconds, the alarm lights on both sides of the screen flash three times simultaneously, and the vibrator starts vibrating three times simultaneously. If the screen is in the off state, the screen lights up at the same time.

Note: When the alarm mute function is turned on, if a new alarm state occurs, the buzzer will resume sounding, and the alarm light and vibrator will also resume operation.

When the gas concentration detected by the detector returns to the lower limit alarm value, the gas concentration value changes to green, the detection status bar displays "**Normal**", and the alarm signal is automatically released.

When multiple alarm states are detected, only the highest priority alarm action is performed, and the alarm priority is as follows:

Normal < TWA < STEL < low alarm < High Alarm < HHHH

5.4. The Main Interface Button Function Description

In the main interface, click the left button to enter the "Function Settings" interface (Figure 3). In this interface, you can perform shortcut operations of some functions. Such as alarm mute, air pump switch settings. Click the right button to select the function, click the middle button to turn on and off the function, and click the left button to return to the main interface.

Right-click in the main interface to enter the "curve display" interface (Figure 4). In this interface, you can view the real-time detection curve of a certain gas channel within one minute. Click the left or right button to switch the channel display, and click the middle button to return to the main interface. If the TWA and STEL alarm functions are enabled, the fonts of TWA and STEL will change to red and flashing when an alarm is reported.

Click the middle button in the main interface to enter the "Main Menu" interface (Figure 5). Click the left or right button to select the menu option. Click the middle button to confirm and switch the interface.

Note: When the screen backlight is off, click any button in any interface to light up the screen.

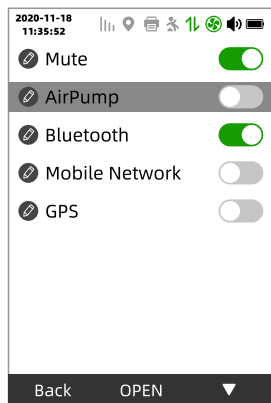


Figure 3

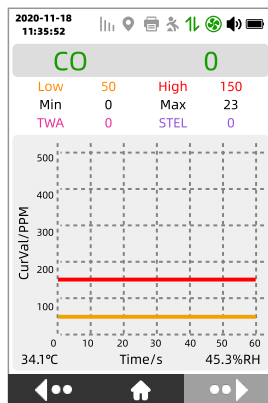


Figure 4

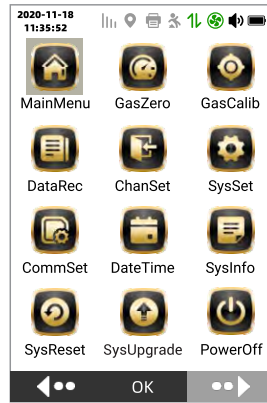


Figure 5

5.7.6 Communication settings

Select the communication setting icon in the main menu interface of the detector, and click the middle button to enter the communication setting menu interface (Figure 32). Click the left button to return to the previous menu; click the right button to switch the menu; click the middle button to confirm the menu.

Note: "Mobile network" and "GPS" are optional functions. Without this function, the interface does not display this option.

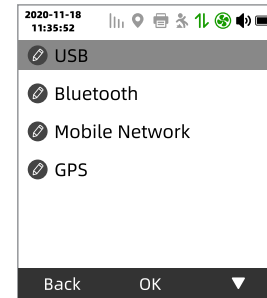


Figure 32

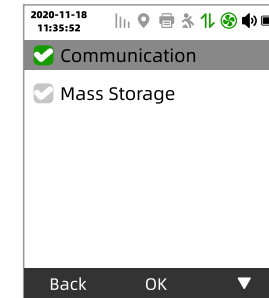


Figure 33

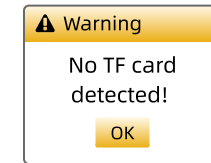


Figure 34

5.7.6.1 USB: used to set the USB interface function (as shown in Figure 33), when the "USB communication" function is selected. After the USB cable is connected to the computer, it can communicate with the computer host computer; when the "USB storage" function is selected, the tester can simulate the TF memory card as a U disk for data viewing after connecting to the computer through the USB cable. After opening the U disk, the file directory content (As shown in Figure 35), after opening the folder (Figure 36), do not change the content of the "information.txt" file, otherwise the data information will be destroyed. "*.csv" saves the data record information of the specific gas. It can be opened and viewed with Excel software. The default setting is the "USB communication" function.

Note: ① "USB storage" can use this function only when the TF memory card exists, otherwise a warning dialog box will pop up (Figure 34), click the middle button to close the dialog box.

② The maximum number of lines displayed in the csv file is 1048576.

③ Do not change and save the content of the .csv file, otherwise the data may be damaged and the instrument cannot view the data. If you need to change it, please copy the file to another place for related operations.

Note: ① "Timed storage" and "Manual storage" are only valid during this power-on setting, and will automatically restore to "alarm storage" after shutdown and restart

②The "manual storage" operation mode is to store data once in the main interface by long pressing the left button for 2 seconds. After the storage is successful, the interface prompts "Save successfully!".

Storage interval: Set the timing period under the "timing storage" mode, the setting range is 5–300, unit: second.

Clear storage: used to clear all data records. Click the middle button to pop up the clear record confirmation dialog box (Figure 28), click the left button to cancel the clearing, and right-click to confirm the clearing. After the clearing is successful, it will display "Empty successful!" (Figure 29) and automatically close the dialog box .

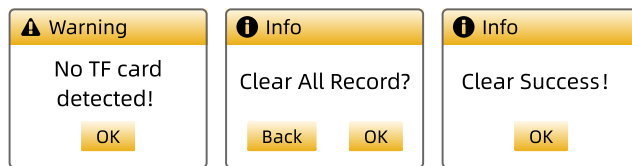


Figure 27

Figure 28

Figure 29

Air pump calibration: used for the calibration operation when the air pump is running. Click the middle button to calibrate, and the calibration will pop up after successful"Calibration succeeded!" dialog box (Figure 30), when it fails, the "Calibration failed!" dialog box pops up (Figure 31), click the middle button to close the dialog box.

Air pump flow: used to set the flow parameters of the air pump. Currently, it supports six flow parameters of 300mL/min, 400mL/min, 500mL/min, 600mL/min, 700mL/min, and 800mL/min. The default is 500mL/min.

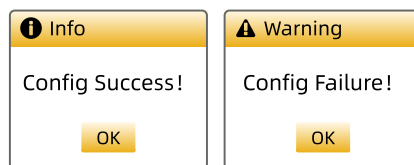





Figure 30



Figure 31


5.5. Description of Function Setting Interface

As shown in Figure 3, the right key is used for function selection, the middle key is used for function opening and closing, and the left key is used to return.

① When the mute function is turned on, the switch status icon changes to  , and the alarm status indicator icon changes to  . If the detector is in an alarm state, after turning on the mute function, turn off the buzzer and vibrator, and the alarm indicator will keep flashing.



② When the air pump function is turned on, the switch status icon changes to  . When the air pump is turned on, the icon starts to rotate, and the color changes to green or red according to the state of the air pump.

③ When the Bluetooth function is turned on, if the Bluetooth detection is successful, the switch status icon will change to  ; if the detection fails, the interface pops up a "Bluetooth error: 0" prompt box, at the same time turn off Bluetooth and turn the switch status icon to  .

④When the mobile network function is turned on, the switch status icon changes to  ; after successfully connecting to the cloud platform, the interface prompts "Network connected", and after disconnecting from the cloud platform, the interface prompts "Network disconnected".

Note: The error conditions are as follows












- a) When the "Network Error:0" prompt box pops up on the interface, it indicates that there is a problem with the hardware connection. Please check the connection.
- b) When the "Network Error: 1" prompt box pops up on the interface, it means that the network registration has failed. Please check the status of the SIM card and the tariff.
- c) When the "Network Error: 2" prompt box pops up on the interface, it means that the communication may fail this time. Check whether the current network signal is good.

⑤ When the GPS function is turned on, if the GPS is turned on successfully, the switch status icon will change to  ; if the turn on fails, the interface will pop up a "G P S error: 0" prompt box, at the same time turn off G P S and turn the switch status icon to  .

Note: GPS is used in conjunction with mobile network and cannot be selected separately.

5.6. Main Menu Interface Description

As shown in Figure 5, click left or right to select menu options. Click the middle button to confirm and switch the interface.

Icon	Description	Set Content
	Main Interface	Used to return to the main interface. Note: If there is no key operation in the main menu interface, it will automatically return to the main interface after 10 seconds.
	Zero Gas	Enter the gas zeroing interface and perform zeroing operations on the relevant channel gas.
	Gas Calibration	Enter the gas calibration interface and perform standard gas calibration operations on the relevant channel gas.
	Data Record	Used to view the data record information of the relevant gas channel.
	Channel Settings	It is used to set the parameters of related channel gas.
	System Settings	Used to set system parameters such as language, backlight, theme, air pump flow rate, etc.
	Communication Settings	Used to set up communication methods such as USB, Bluetooth, mobile network, GPS, etc.
	Time Setting	Set the current date and time of the instrument.
	System Message	Used to view the factory default parameter information and maintenance record information of the instrument.
	System Restore	Used to restore the factory parameters and settings of the instrument.
	System Upgrade	Used for instrument software system update.

dialog box.

③ The set value of TWA threshold/STAL threshold must be greater than 0, if set to 0, a corresponding warning dialog box will pop up (Figure 24), click the middle button to close the dialog box.

④ Zero calibration threshold/calibration threshold is mainly used for gas zero calibration and calibration operations, customers generally do not need to operate.

5.7.5 System settings

Select the system setting icon in the main menu interface of the detector, and click the middle button to enter the system setting operation interface (Figure 26). Click the left button to return to the previous menu; click the right button to switch between menus; click the middle button to confirm options.

Language: The display language setting of the system interface.

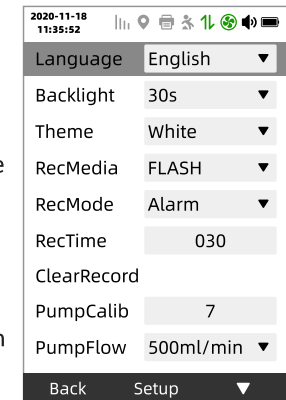


Figure 26

Backlight: The setting of the off time of the

instrument backlight. When set to "0s", the backlight is always on. When the screen is in the off-screen state, the green running indicator on the top of the instrument flashes twice every 10 seconds.

Subject: The setting of the system display effect.

Storage location: Set the storage location of data records. "Internal Storage" is used to store records in the internal storage space of the device; "External Storage" is used to store data in an external TF memory card. If the TF memory card is not inserted, a related warning dialog box will pop up (Figure 27). Click the middle Key to close the dialog.

Storage mode: Divided into "alarm storage", "timing storage" and "manual storage" three modes. "Alarm storage" stores related alarm data when the gas channel alarms; "Timed storage" periodically stores the data information of all gas channels according to the time set by the storage interval; "Manual storage" is used to manually store all gas channels once Data information.

5.7.4 Channel settings

Select the channel setting icon in the main menu interface of the detector, and click the middle button to enter the channel setting operation interface (Figure 21), click the left button to return to the previous menu, click the right button to switch menu options, click the middle button to confirm and enter the corresponding channel setting interface (Figure 22).

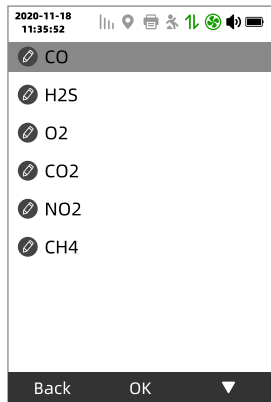


Figure 21

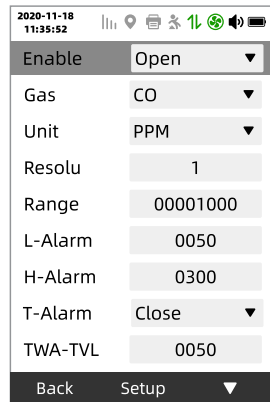


Figure 22-1



Figure 22-2

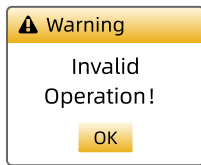


Figure 23

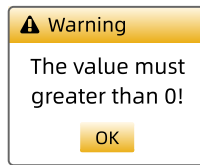


Figure 24

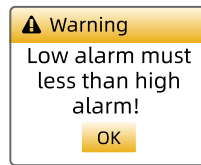


Figure 25

In the channel setting interface, you can switch the unit (if the switch fails, the "invalid operation!" dialog box will pop up (as shown in Figure 23), click the middle button to close the dialog box), low value/high value editing, and zero threshold /Calibration threshold editing, TWA/STEL alarm enabling and numerical editing.

Note: ① The set value of the under-reported value must be greater than 0, if it is set to 0, a corresponding warning dialog box will pop up (as shown in the figure)
 ② The set value of the low reported value must be less than the high reported value. If the set value is greater than the high reported value, a corresponding warning dialog box will pop up (Figure 25). Click the middle button to close the

5.7. Main Menu Function Description

5.7.1 Gas zeroing

Select the gas zero icon in the main menu interface of the detector, and click the middle button to enter the gas zero interface (as shown in the Figure 6). Click the left button to return to the previous menu; click the right button to select the gas type; click the middle button to zero the gas operation, after successful operation, the interface pops up the "Zero calibration successful" prompt box (Figure 7), and the icon after the display box changes to ; when it fails, the "Zero calibration failed" prompt box pops up (Figure 8), click the middle button to close Prompt box.

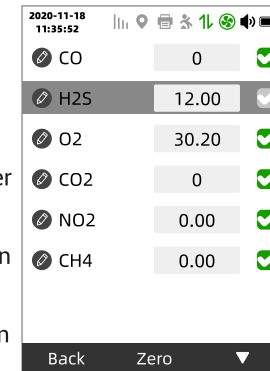


Figure 6

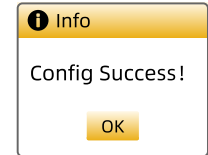


Figure 7



Figure 8

5.7.2 Gas calibration

Select the gas calibration icon in the main menu interface of the detector, and click the middle button to enter the password input interface (as shown in the Figure 9) After entering the password "1111", enter the calibration type selection interface (Figure 10)

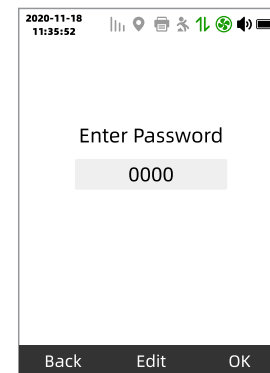


Figure 9

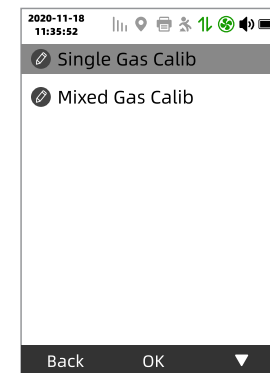


Figure 10

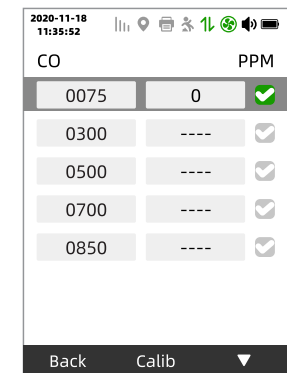



Figure 11

Select "Single gas calibration" and enter the gas channel selection interface, select a gas to enter the gas calibration interface (Figure 11), In this interface, click the left button to return to the previous menu; click the right button to select the calibration point; click the middle button to edit and calibrate the calibration point (as shown in Figure 12), click the left button to cancel the calibration operation, and click the middle button to proceed Move the cursor, and right-click to edit the value at the cursor. When the cursor moves out of the last digit, the calibration operation will be performed. After the calibration is successful, the "Calibration Successful" prompt box will pop up (Figure 13), and the icon behind the box will change , click The middle button can close the prompt box. After the calibration fails, the corresponding prompt dialog box will pop up. When the "Calibration failed" prompt box pops up, it means that the calibration threshold is not met; when the "Invalid Calibration" prompt box (Figure 14) or the "Repeat Calibration" prompt box (such as Figure 15, 16), it means that the current calibration point conflicts with the calibrated point.

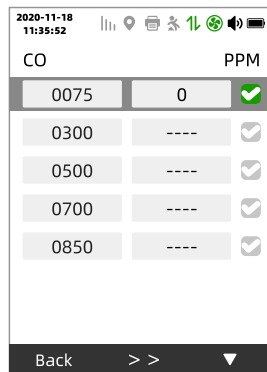


Figure 12

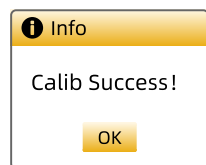


Figure 13

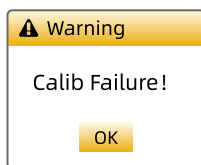


Figure 14

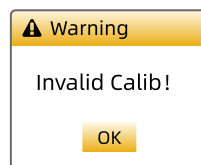


Figure 15

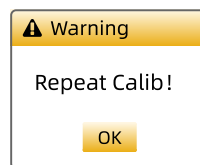



Figure 16

Select "Mixed Gas Calibration" to enter the mixed gas calibration interface (Figure 17), click the middle button to close the prompt box. Click the left button to return to the previous menu; click the right button to perform gas calibration. If a gas is successfully calibrated, the corresponding icon on the right will change . If it fails, the icon remains. Click the middle button to edit the calibration value.

Note: When the detector is a single gas detector, there is no "mixed gas calibration" function.

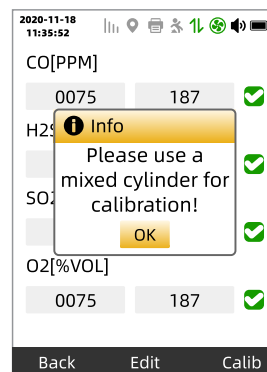


Figure 17

5.7.3 Gas zeroing

Select the data logging icon in the main menu interface of the detector and click the middle button to enter the data logging operation interface (Figure 18), "Internal Storage" is used to view the data record information stored in the internal storage space of the machine; "External Storage" is used to view the data record information stored in the external TF memory card. Click the left button to return to the previous menu; click the right button to switch menu options; click the middle button to confirm and enter the channel selection interface (Figure 19), click the left button in this interface to return to the previous menu; click the right button to select the channel, and click the middle button to confirm to enter the data record viewing interface (Figure 20).

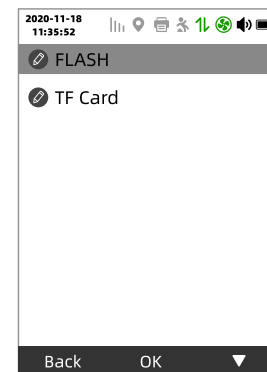


Figure 18

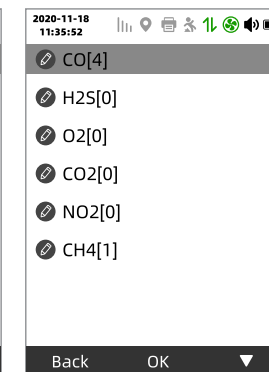


Figure 19

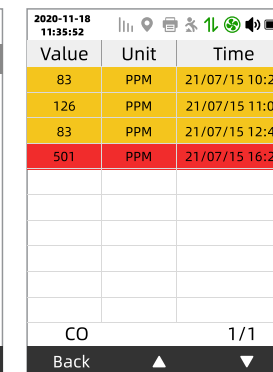


Figure 20

Note: ① When the tester does not support TF memory card, there is no page shown in (Figure 18).

② The number in the channel selection interface [] represents the total number of data records under the corresponding channel. The internal storage single channel stores 20,000 pieces of data by default, and the external storage single channel stores 1 million pieces of data by default. For customization, please contact the manufacturer to change. In the data record viewing interface, you can view the alarm value, unit, and alarm time of the relevant gas channel. Dark yellow background means low alarm; red background means high alarm or over limit (HHHH); orange background means STEL alarm; blue-green background means TWA alarm; green background means normal. The value "1/1" in the lower right corner represents the current page/total number of pages.