



SPR-711 TO SPR-716

Gas and dust particle detector

Operating Manual

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Notice:

①Key instruction:

Total seven keys: ▲、▼、Back、OK、run/stop、 and Print.

Three interfaces: Testing interface、Menu interface、Setting interface

Seven keys will have different function in the three interfaces as the following:

	Testing interface	Menu interface	Setting interface
▲	----	move to left or up	move to left or up /data plus
▼	----	move to right or down	move to right or down/ data minus
Back	----	back	back
OK	main menu (Press 5s)	enter the sub menu	Select/save
run/stop	pump switch	—	—
	on/off (Press 5s)	on/off (Press 5s)	on/off (Press 5s)
Print	Print real-time data	-----	-----

Attentions: OC-1000 gas and dust particle detector only available to detect the gas concentration when the pump on.

②Treatment for the over measuring range.

Please avoid use the device in concentration which exceeds the measurement range. It will shorten the life of the sensor or damage the sensor.

If user used the device under the high concentration gas exceeds the measurement range, please take the device leave the environment at once, and put the device in clean air for about half an hour to observe if the displayed concentration value goes lower. If the value keep decreased, please wait it decrease to zero, then power off. If the displayed value can

not decrease to zero in clean air, please send it back to manufacturer of distributor.

Remarks: If use the detector under the exceed range, this is not provided the free repair service.

③Calibrate service

We promise all detector in our company be calibrated with normal gas before leaving our factory, once bought from our company without need to calibrate, and must under the professional tenical guidance.

Warranty is 12months from the date leaving our factory, for the accessory within 3months providing free repairments, and for the detector providing the free calibration service once in a year.

④About the Backlight instruction

OC-1000 with the electricity saver procedure,when the device without any operation within 30s, the detector will turn on the electricity saver procedure automatically, then the screen will become dark, and press any keys will become light again.

⑤Fast operation instruction

Mute:When the detector under the alarming, short press ▲ or ▼ will be muted.

Manual storage: When the storage mode under the manual storage, on the testing interface long press the ▲, then after the “beep”, will keep the measuring data.

Menu entrance: Under the testing interface, long press “ok” for 5s then will enter the menu.

⑥Parameter revise instruction

All parameter for SPR-71X could be revised with the “Back”, “OK”,▲,▼.

1.Description

SPR-71X series multi gas and dust particle detector, can be used for multi gas and dust, at most for 5 sensors. With the imported sensor and micro control technology, respond quickly, high accuracy and stability, good repeatability. With the rechargeable 4000mA lithium battery, continuous working for longer time. With the 3.5 inch industrial grade color screen, displaying the each parameter and gas concentration, with the function of detecting the temperature and humidity, also with the data logger.

2.Feature

- ◆ With semiconductor technology of ultra low power 32 bit microprocessor, 24 bit ADC acquisition chip.
- ◆ 2.4 inch IPS industrial grade color screen, displaying each parameter.
- ◆ It is able to select gas concentration unit of PPM、%VOL、mg/m³.
- ◆ For 1~5 gas detecting, supporting PM2.5 dust particle sensor and temperature sensor, humidity sensor.
- ◆ With data logger, about 100000 group of detecting data, could be transmitted to computer.
- ◆ The various modes can be adjusted: detection model, storage model, display model, pump model, print model.
- ◆ With the data printing function, could be equipped with the micro-printer(optional).
- ◆ The powerful pump, can be used in the micro vacuum environment.
- ◆ The full auto calibration software, sensor can be adjusted up to six point to ensure the accuracy and linearity of the measurement, also the function of data recovery.
- ◆ With overvoltage protection, overcharge protection, anti-static, anti magnetic interference interference function

- ◆ Support Chinese or English operation menu.
- ◆ With the function of temperature compensation, water-proof and dust-proof, equipped with the dust filter.
- ◆ With the temperature and humidity detection.

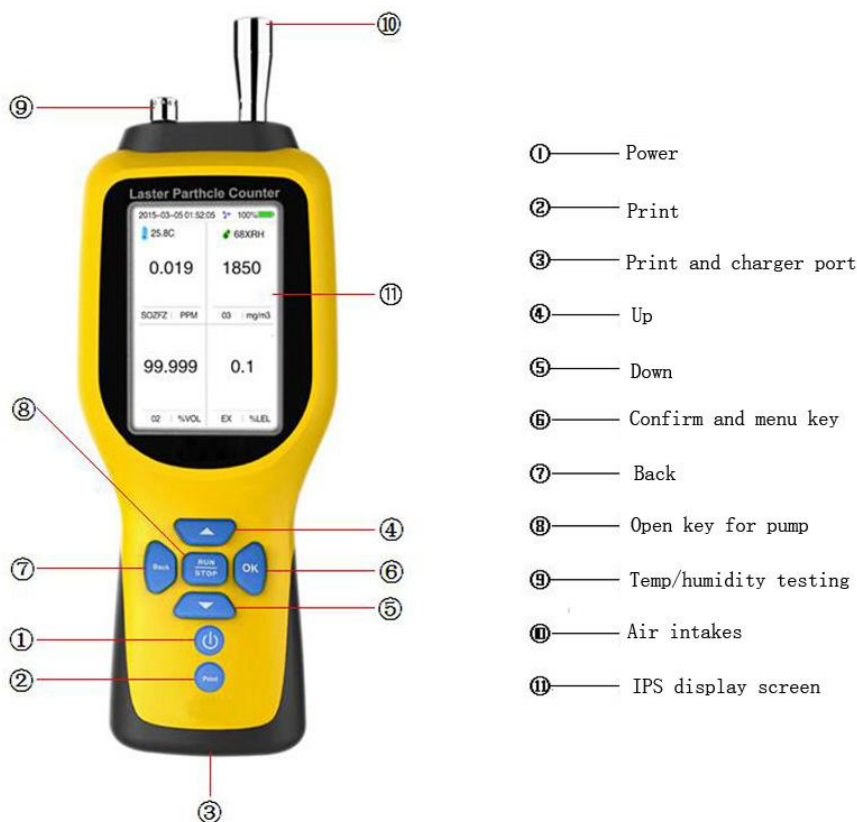
3. Technical parameter

Product:	Multi gas and dust particle detector		
Measuring range:	Reffering to the gas list		
Resolution:	Reffering to the gas list		
Gas type:	At most for 5 sensors, the gas type will be according to your requirements.		
Particle counter:	Particle size of 0.3 μ m, 2.5 μ m, 10 μ m (optional)		
Temperature and humidity:	Temperature: -40 ~ 120°C, Humidity: 0-100%RH		
Testing mode:	Pump-sunction, inner pump, adjustable flow rage(500-1000mL L/min), workable for the vacuum environment.		
Accuracy:	≤±3%F.S	Linearity:	≤±1%F.S
Response time:	≤20s (T90)	Zero drift:	≤±1% (F.S/year)
Recovery time:	≤20s	Repeatability:	≤±1%F.S
Testing mode:	Realtime detecting or Timing detecting is adjustable.		

Data Storage:	Automatic storage or manual storage is adjustable; About 100000 group of data capacity.		
Explosion-Proof grade:	ExdII CT6	Case Material :	ABS+PC
Protection grade:	IP66	Working temperature:	-30 ~ 60°C
Working power:	4000mA rechargeable lithium battery	Working humidity:	≤95%RH(no n-condensing)
Size and weight:	220*85*55 mm (L×W×H) 0.5 Kg (Net weight)	Working pressure:	-30Kpa ~ 100Kpa
Accessory:	Dust filter,box, instruction, USB charger, data line,calibration cap		

Model	Detected Parameters
SPR-711	SO ₂ , NO ₂ , O ₃ , H ₂ S, PM10, PM2.5, PM1.0, PM0.3
SPR-712	CO, SO ₂ , NO ₂ , H ₂ S, PM10, PM2.5, PM1.0, PM0.3
SPR-713	O ₂ , CO, O ₃ , H ₂ S, PM10, PM2.5, PM1.0, PM0.3
SPR-714	O ₂ , CO, H ₂ S, CH ₄ , PM10, PM2.5, PM1.0, PM0.3
SPR-715	CO, SO ₂ , NO ₂ , O ₃ , PM10, PM2.5, PM1.0, PM0.3
SPR-716	NO _x

4. Structure



5. Operation instruction

5.1 Keys

Total seven keys: ▲、▼、Back、OK、run/stop、 and print.

Three interfaces: Testing interface、Menu interface、Setting interface

Seven keys will have different function in the three interfaces as the following:

	Testing interface	Menu interface	Setting interface
▲	----	move to left or up	move to left or up /data plus
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OK	main menu (Press 5s)	enter the sub menu	Select/save
run/stop	pump switch	—	—
	on/off (Press 5s)	on/off (Press 5s)	on/off (Press 5s)
Print	Print real-time data	-----	-----

Attentions: SPR-71X multi gas and dust particle detector only available to detect the gas concentration when the pump on.

5.2 Power on

When power off, long press  key for 5s to activate the backlight and red indicator, then “beep”, then the detector power on. Then the display will be sensor testing(3s), sensor information(1s), preheating for 60s with the pump on. After the start-up, then will enter the Testing interface.

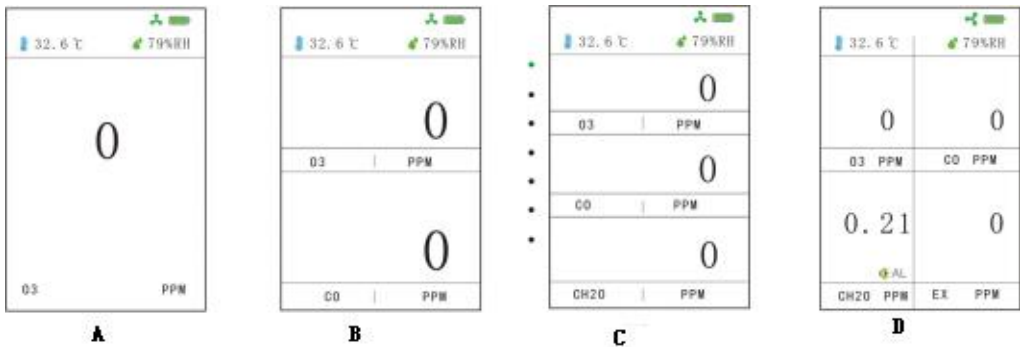
5.3 Power off

In normal working status, long press  key for 5s, it will power off with a buzzer tone.

6.Operation interface

6.1 Testing interface display

After enter into the testing interface, for different gas quantity, will display different interface: as the following picture, displaying one gas, two gas, three gas, four gas orderly.



As the above displaying, time, temperature, pump running, battery and humidity. Take A for example, for O3, CO, CH2O, Ex, for each gas with the gas concentration; Once some up to the alarming value, it will appear the alarming symbol, such as the CH2O alarming.

6.2 Function menu instruction

Long press “OK” key for 5s, will enter to the menu, then will display nine sub menu: Basic set, History data, Data analyse, Zero cali, Range calibration, Alarm param, Detection /Storage/Print , Date time, Reset factory. On this menu by “▲” or “▼” the can move to different sub menu, then short press the “OK” key will enter the sub menu, pressing the “back” will back to normal detecting interface.

6.2.1 Settings

Enter into setting menu, then display each parameter, by “▲” or “▼”, “ok” key, user can revise different parameter. With the “Range/unit setting” option, user can check and revise different measuring range and concentration unit(ppm、mg/m³、VOL% is selectable); With the “Channel setting”, can turn on or off some one or more channel gas.

With the “Pump flow rate ” can adjust the pump flow rate (only need to setting under vaccum enviroment, default is 30); With “Temperature correction” and “Humidity correction” can adjust the device display of temperature and humidity; With “Language setting” can choose the Chinese or English.

6.2.2 History data

User can check the previous measuring data, after entering into the “History data”, then will display “Check” or “Delete” the data. If choose to check the history data, move the cursor to “Check”, then press “OK”key, and by “▲” or “▼” will change into the export status, then press twice “ok” key will find the previous concentration data.

6.2.3 Data analysis

This function record the average concentration and largest concentration of each gas type in the process of usage. TWA is the average concentration, STEL is the largest concentration.

6.2.4 Zero Calibrate

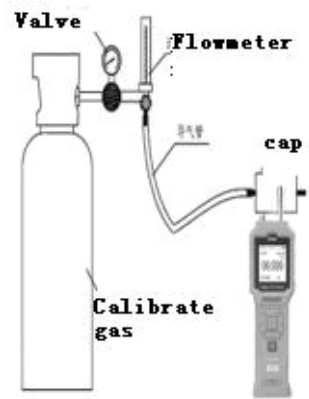
If the zero drift of the sensor is larger, user can do the zero calibration, this will make the default of target gas concentration as “0”.

Attention: zero calibration must be in the clean air.

6.2.5 Target Calibrate (Only professional engineer operation allowed)

SPR-71X multi gas and dust particle detector can make the six level target concentration calibration for the detecting gas, as the picture shows, this must with the standard concentration gas, pressure relief valve, flowmeter, calibration cap, and good connection of gas, or will be prohibited.

Operation details: Connecting the device as the picture, enter into the target gas calibration interface, slowly turn on the calibrate gas and control the flow rate within 500ml/min, observing the detector gas concentration(now should be rising), when the value up to the peak value and keep stable, then choose a non-calibrated option(“√” means been calibrated, “×” means non-calibrated): firstly input the calibrate gas concentration, then press the “calibrate”. After completing the target point calibration, the target gas concentration of detector will be the calibrate gas concentration.



6.2.6 Alarming setting

SPR-71X with two adjustable alarm threshold values, high alarming value and low alarming value. When set the low alarming, gas concentration lower than the set value will alarm; when set the high alarming, gas concentration higher than the set value will alarm.

Operation details: user move the cursor to “Alarming mode”, press “ok”, by “▲” or “▼” can change the alarming mode, after switch then press “ok” will save the setting.

6.2.7 Detection storage

With this function user can set the detecting mode, storage mode, print mode, the detecting mode including the realtime detecting and timing detecting, storage mode including the manual save , auto save and close(not save), print mode including hand, auto, close.

If realtime detecting, the detector will display the realtime concentration of each channel, then user can set the storage mode and print mode, also can set the storage and print cycle. If timing detecting mode, will display and print the average concentration is this period, can set the timing cycle and round cycle(time between the twice timing detecting).

Setting the timing detection, need to back to the Detecting interface to press the “Run/stop”key, turn on the countdown to begin timing detection, if not turn on the round detecting, when the countdown over, the detector will stop pump detecting automaticly; if turn on the round detection, after several seconds, it will begin the timing detecting again automaticly.

6.2.8 Date

Setting the date related with the detecting gas concentration data.

6.2.9 Factory reset

Once mistake operation, user can use this function to recover the initial configuration.

7.Remarks

- ◆Befor use the detector, please read the instruction carefully.
- ◆Prohibit open the detector and replace the accessories privately.
- ◆Install ,setting must be operated by professional guidance.
- ◆Regularly check the device and change the sensor.

- ◆ Prohibit drop from high space.
- ◆ Under the high temperature or pressure is not allowed to use, if high humidity, then need to add the device to decrease the humidity.
- ◆ Human damage is not free repairment.
- ◆ Before enter into dangerous area, people need to be electrostatic discharged, then bring the detector into the working place.
- ◆ Using the special charger for this detector.

8. Common faults and treatments

- ◆ Value display not stable, up and down
Reason : some electrochemical sensor easily effected by other gas, maybe is colorless and odorless.
Solution: Bring the detector into clean air, then the data will decrease to normal value; If still not normal, then zero calibrate in clean air.
- ◆ Response weak
Reason: Lower level of oxygen: $<5\%VOL$;
High pressure, pump not work;
The sensor useful life end, or other faults;
Solution : If the Electrochemical sensor, Catalytic combustion sensor, Semiconductor sensor, need oxygen to work, so the level of oxygen should more than $5\%VOL$, pressure range is: $-30Kpa \sim 100Kpa$, If user have calibrate gas, can import the gas to test and target point calibrate. If oxygen and pressure both normal, then maybe other faults, need to send back to manufacturer.
- ◆ After access the detecting gas, the data cann't stable for a long time, up and down
Reason: Maybe the too low content of oxygen in the detecting gas, or the change of the detecting gas.
Solution : Increasing the oxygen level and keep stable flow rate, or

change the higher oxygen calibrate gas.

◆ Pump weak, lack strength

Reason : Pump have suction many particle and gas, the entrance blocked.

Solution: Send back to manufacturer to change a new pump, adding the dust filter in the later usage.

◆ Turn on fails

Reason: No power.

Solution : After charge, if still cann't turn on it, then send back to manufacturer.

◆ Charged fails

Reason : Charger problems or wrong model charger
(Usually 5-5.5VDC, 1-2A)

Solution: Check the charger output voltage if is 5V, if not, then need to change the charger, if is 5V, then need to send back to manufacturer for testing.

9.Data logger

SPR-71X with the data logger function, the charging port is the data output port, the operation steps as the following:

- 1、 Install the export software on the computer.
- 2、 Turn on the detector, after the 60s preheating over, connected with the computer.
- 3、 After install the drive of communication line, open the software, and confirm the computer COM port, then click the “Open port”, now the lower left corner will display the “Port Open”(Baud rate default is 115200)
- 4 、 Enter into the history data menu interface, export the gas concentration data, if complete will appear the cues.

- 5 、 On the software,set the detector address and channel number(same with the “address setting”and “channel setting”in the “Setting”), start time and deadline(The save time of history data should be in this period range).
- 6、 Click the “search”can find the above period gas concentration for the according channel gas,the data also could be saved as the EXCEL form by click the “Read Data”

Remark: Data transmission line is the USB connection line.

10. Particle counter

For the dust particle counter with four testing mode, if you want to change the mode, just need to press the “back” will display the four different mode: Particle number, Particle quality, Particle number PE, Particle quality PE.

Remark: The historic data could check on the device, data storage capacity is about 100000 groups, but couldn't upload to the computer.