

Nucleic Acid Purification System

NPA-32+

**User's Manual**

**Hangzhou Bioer Technology Co.,Ltd.**

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**Note:** The Bioer Co. reserves the right to modify this manual at any time without notice.

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**Please read this manual carefully before operating the machine!**

## Important Note

### 1. CONVENTIONS

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**Note:** Because of the important information in this column, please read it carefully. Failure to follow the advice in this column will possibly result in damage or malfunctioning of the machine.

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### 2. SAFETY

During the operation, maintenance, or repair of the machine, the following safety measures should be taken. Otherwise, the guard provided by the machine is likely to be damaged, the rated safety level to be reduced, and the rated operation conditions to be affected.

*The Bioer Co. shall not be in any way responsible for the consequences resulted from buyer's not observing the following requirements.*

#### a) Grounding Considerations

A.C. power's grounding should be reliable for fear of an electric shock. The 3-pin plug with the machine's power line is a safety device that should be matched with a grounded socket. Never let the third ground pin floating. If the 3-pin plug cannot be inserted, it is recommended to ask an electrician to install an appropriate power socket.

#### b) Keep Away from Electric Circuits

The operator is not allowed to open the machine. Changing components or adjusting certain parameters inside the device must only be accomplished by the certificated professional maintenance personnel. Do not change elements while the power is still on.

#### c) A.C. Power Considerations

Before turn on the power, always check and insure that the mains voltage is within the required A.C. 100-240V and insure that the current rating load of the power socket meet the required specification.

#### d) A.C. Power Line Considerations

As an accessory of the machine, the A.C. power line should be a default one. If it is damaged, the A.C. power line can not be repaired, but must be replaced with a new one. The power line should be free of heavy objects during the machine's operation. Keep the power line away from the place where people ambulate frequently.

e) Connect the A.C. Power Line

While connect or disconnect the power line, you should hold the 3-pin plug with your hand. Insert the plug thoroughly into the socket to ensure good contact between the plug and socket. Pull the plug, not the line, when you need to disconnect to the mains.

f) Design Environments

The machine should be placed in a low-humidity, dust-free, and good-ventilation room without caustic gas or powerful magnetic interference. In addition, water sources, such as pools and water pipes, should be separated a distance from the machine.

Never cover or obstruct the openings of the machine, which are designed for ventilation and to prevent the device's interior from being too hot. When a single device is running, the shortest distance between its openings and the nearest object is 25cm; otherwise, when two devices or above are running at the same time, the shortest distance is 40 cm. Do not place the device on a soft surface, because that will result in adverse ventilation near the device's bottom openings. Too high temperature will lead to degraded performance or failure of the machine. Therefore, the device should be protected against any kind of heat sources like sunlight, ovens, or central heating equipment.

If the machine is set aside for a long time, it is recommended to disconnect the power line to mains and cover the device with a piece of soft cloth or plastic to prevent dust from entering.

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- Note:** Once one of the following events occurs, you are suggested to disconnect the power line with mains, and contact the distributor or ask a certificated maintenance worker for help.
- Liquid into the device;
  - The device sprinkled or drenched;
  - The device malfunctioning, giving off abnormal sound or odor;
  - The device falling onto the floor or its shell damaged;
  - Significant changes in the device's performance.
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### 3. WARRANTY AND SERVICE INFORMATION

a) Warranty

The nucleic acid purification system is warranted for a period of one month, from date of shipment from the company, to be free from defects in material and workmanship. The Bioer Co. shall be obligated, under this warranty, to exchange the nucleic acid purification system which proves to be defective as described herein.

The nucleic acid purification system is also warranted for a period of twelve

months, from date of shipment from the company, to be free from defects in material and workmanship. The Bioer Co.'s obligation under this warranty shall be limited to repair or exchange (at the Bioer Co.'s option) of the nucleic acid purification system which proves to be defective as described herein.

The buyer is responsible for sending the machine to the maintenance shop designated by the Bioer Co. on all warranty claims. The buyer is also responsible for the transportation expenses of the freight to the maintenance shop and the transportation expenses of the freight from the maintenance shop after it is repaired.

After the warranty comes due, the Bioer Co. reserves the right to charge for maintenance of a defective device.

#### b) Warranty Terms

The above warranty is not applicable to defective devices with incorrect use, abnormal operating conditions, improper application, and unauthorized maintenance or alteration.

*The Bioer Co. makes no express warranties other than those which are described herein. Any descriptions in sales promotion under specific conditions shall not create an express warranty that the goods shall conform to such description.*

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**Note:** Once it is opened, the package should be checked according to the packing list. If the buyer finds any items to be missing or damaged, do not hesitate to contact the distributor.

Please store the package and packing materials in a safe place in case of future device maintenance. The above warranty does not extend to goods damaged as a result of cheesy package.

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Aftersales services hotline:+86-571-87774558

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## **CHAPTER 1: Introduction**

This chapter briefly introduces the feature of nucleic acid purification system and its applications.

### **1. Features:**

This type of instrument adopts a magnetic bead extraction technique to extract and purify nucleic acid through precision transmission of singlechip controlled step-motor. It has the characteristics as follows: small volume, light weight, low noise, full-closed workaround; vivid VFD display; transparent working chamber for easy observing the work conditions; touch panel with beautiful appearance and easy for operation. It has powerful functions such as door open protection, position out of limit protection and warning, which ensure its safety and reliability. The instrument is designed for extracting DNA, RNA and mRNA in whole blood, sell and tissue, which saves a lot of time and labors in laboratory.

### **2. Applications**

This type of instrument is designed to separate or purify nucleic acid, protein and tissue in molecular biological lab or clinical lab.

## CHAPTER 2: SPECIFICATIONS

This chapter describes the nucleic acid purification system' operation, transportation and storage conditions, basic parameters, performance and functions.

### 1. Normal Working Conditions

Ambient temperature: 5°C ~ 35°C

Relative humidity: ≤ 70%

Power supply: AC100-240V 500W 50-60Hz

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**Note:** Before power-on, please check whether the above working conditions are satisfied. Pay special attention to the power line's reliable grounding.

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### 2. Transportation and Storage Conditions

Ambient temperature: -20°C ~ +55°C

Relative humidity: ≤ 80%

### 3. Basic Parameters

Model Parameter	NPA-32
Sample Number	32 samples
magnetic sticks (fixed)	4×8
volume	50~1000μl
Collecting efficiency of magnetic beads	>98%
Suitable size of magnetic bead	0.2~1.0μm
Dimension (mm)	440×380×450 (L×W×H)
Net Weight	20kg



#### 4. Performance

Work temperature: Room temperature

Max. motor speed: 400rpm

Max. dwelling time: 99m59s

Number of programs (instrument): 20

#### 5. Software Functions

File editing and saving

File review, modify and delete

Pause of program running

Stop of program running

Sound alarm

Failure protection and alarm

UV-lamp control

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**Note:** The above software functions are for reference only. The Bioer Co. reserves the right to modify the software functions without notice.

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## CHAPTER 3: PREPARATIONS

This chapter introduces nucleic acid purification system's mechanical structure, the keyboard and each button's functions, and some preparations before power-on. Before any operation, please read this chapter carefully and make sure you are familiar with the steps introduced.

### 1. Structure Description



### Back of Nucleic Acid Purification System



- |             |           |                                      |            |
|-------------|-----------|--------------------------------------|------------|
| ① Case body | ② Display | ③ Conductive rubber<br>(touch panel) | ④ Workroom |
| ⑤ Block     | ⑥ Lid     | ⑦ Socket (with fuse)                 | ⑧ Switch   |
| ⑨ RS232     | ⑩ Label   |                                      |            |

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**Note:** The fuse specifications are as follows: F 250V 3A  $\varnothing 5 \times 20$ . The fuse should be replaced by one that meets those specifications. If you need certificated fuses, please contact the distributor or manufacturer.

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## 2. Touch Panel Diagram



## 3. Introduction of pressing keys



“Start/Stop” press to start program running, when program is running, press to stop running and back to main menu.



“Function key” press to select/set file number.



“Function key” press to select/set file number.



“Function key” ( Confirmation/Pause ) ,in file setting, press to accept the current setting and run the program. When program is running, press to stop running program and press one more time to restart file running.



“Return” press to back to last level menu.

#### 4. Check-up before Power-on

Before switch the power on, please check and ensure that:

- 1) Supply voltage falls within the specified limits (refer to Chapter 2);
- 2) The plug has been inserted into the power socket reliably;
- 3) The grounding of the power line is reliable;
- 4) Make sure that the 96 wells micro- plate is put in the right place.

#### 5. How to place 96- well deep- plate

- a) There are four locking blocks in the 96-well deep-plate. Two locking blocks in one side have one small bump each with limit, while another two locking blocks in another side have corresponding small bumps without limit, but there is a slotted block in the middle;
- b) Please slope the 96-well deep-plate slightly when place it, and input its borders into the locking block with small limited bumps, then press another side of the plate downwards, so that the slotted block with flexibility will keep off; Finally, the flexible slotted block will compress the micro-plate tightly after the plate is input.
- c) Note: please make sure that the 96-well deep-plate is placed in leveling condition before power on.

#### 6. Power on procedure

Turn on the power of Nucleic Acid Purification system, the LCD will display 'self- test please waiting. That means the device is under self-testing, which will last for about 10 seconds. Please wait patiently. If the self-testing is past, the main menu will be displayed, and the device is ready for operations such as file edit, review, modify, or delete.

#### 7. Connect to PC (tablet)

Using USB or Bluetooth for instrument and PC (tablet) connection. Need to check the connection status (display in right corner of main menu) before experiment, if not connected, make the Bluetooth pairing between instrument and PC (tablet), then click the instrument icon and display the search instrument interface, click OK to connect the instrument, as shown in the following figure.



## CHAPTER 4: OPERATION GUIDE

In this chapter, we explain in details how to edit, review, modify or delete a file, as well as how to run or stop the file. Meanwhile, we will introduce the meaning of the protection interface which appears during the file running.

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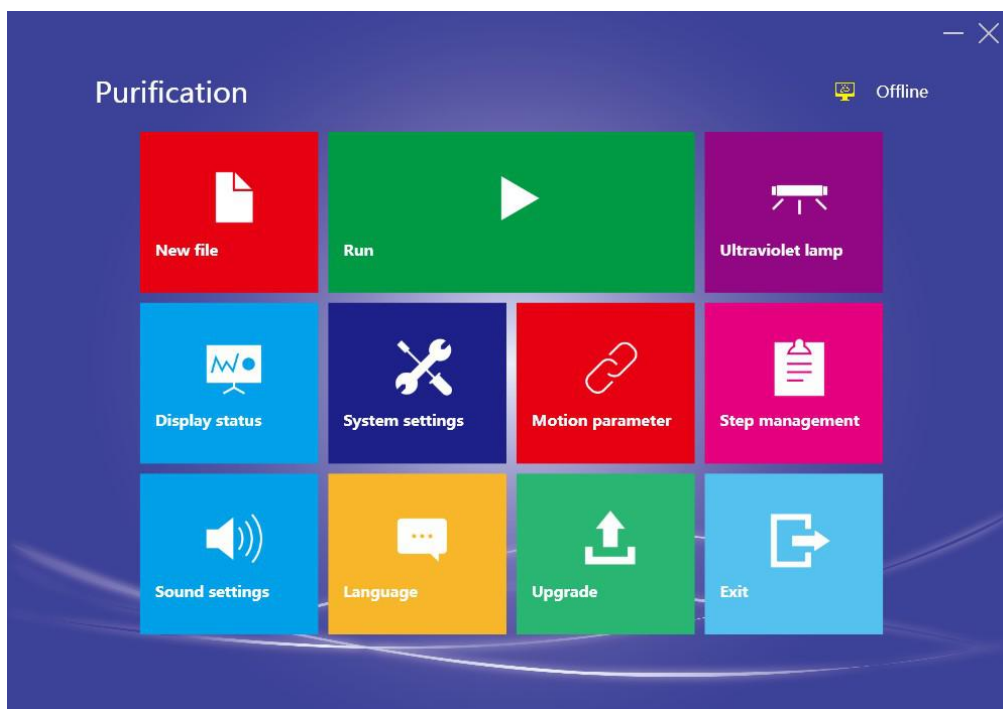
**Warning!** Please turn off the power immediately and contact the distributor, if an abnormal sound or display appears after power-on, or if there is a failure alarm and display in the process of self-testing.

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☺ **Are you ready? Let's begin!**

### 1. Main menu

Click Purification program icon in the desktop and into the nucleic acid operation interface, it has the following features: New file, Run, UV-lamp, Display status, System settings, Motion parameter, Step management, Sound settings, Language, Upgrade, Exit, the instrument connection status display in the right corner of interface.

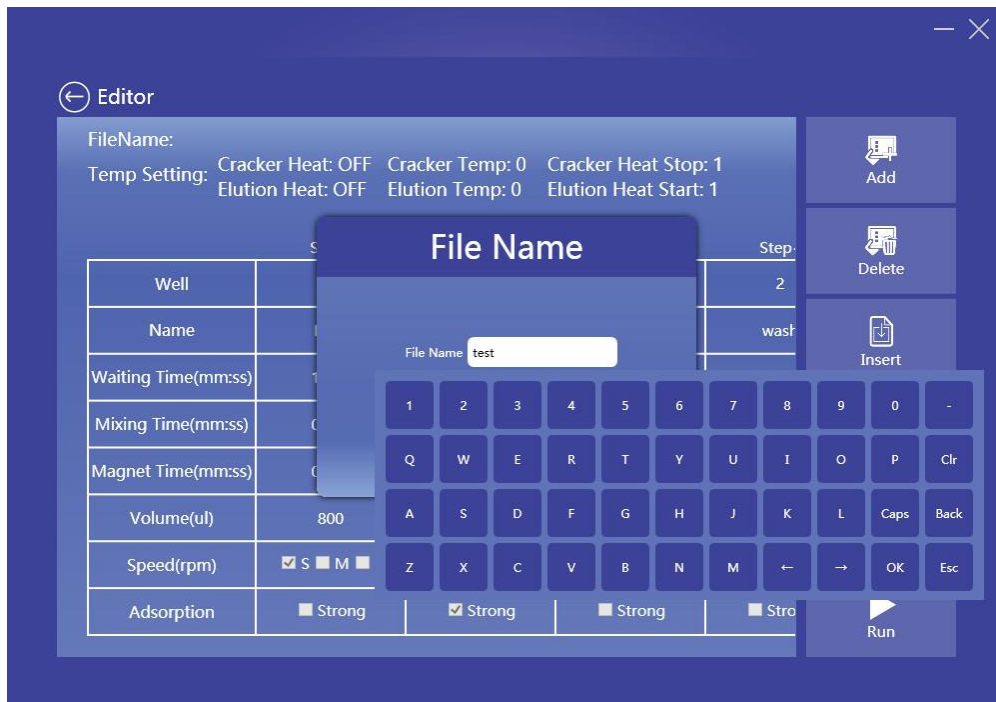


## 2. Create new file

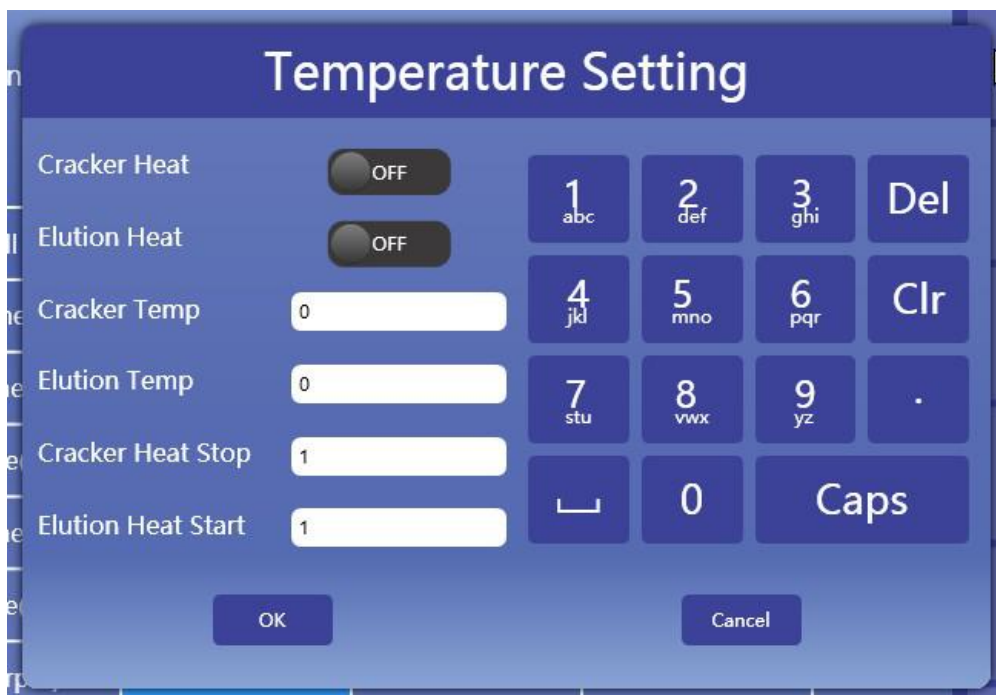
Click new file to create the new experiment program, the left side of interface display all the step's information, including Well, Name, Waiting Time, Mixing Time, Magnet Time, Volume, Speed, Adsorption mode, the right side display step editor icon, including Add, Delete, Insert, Save, Temp Setting. When the settings were completed, click Run icon to start the experiment program. Click Editor icon in left corner back to the main menu.



Click Save icon into the file saving interface, input the file's name and save.



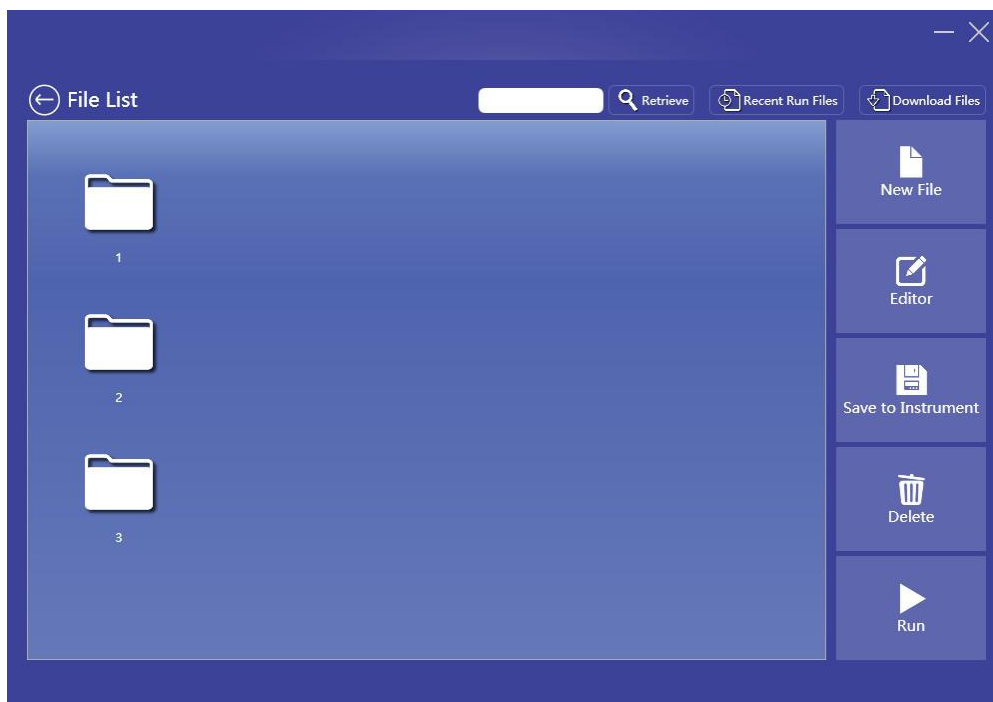
Click Temp setting icon into the temp setting interface, including the setting items, Cracker Heat, Elution Heat, Cracker Temp, Elution Temp, Cracker Heat Stop, Elution Heat Start. Click OK back to experiment program editor interface after finish the settings.





### 3. Run experiment program

Click Run icon into the file list interface, the left side shows all the experiment program files, the right side shows the file operation icon, including New File, Editor, Save to Instrument, Delete, Run, the right corner shows the Search, Recent Run Files, Download Files, Click File list back to the main menu.



Download files shows the experiment program files which saved in instrument, select and click download, the program files were saved to PC (Tablet).

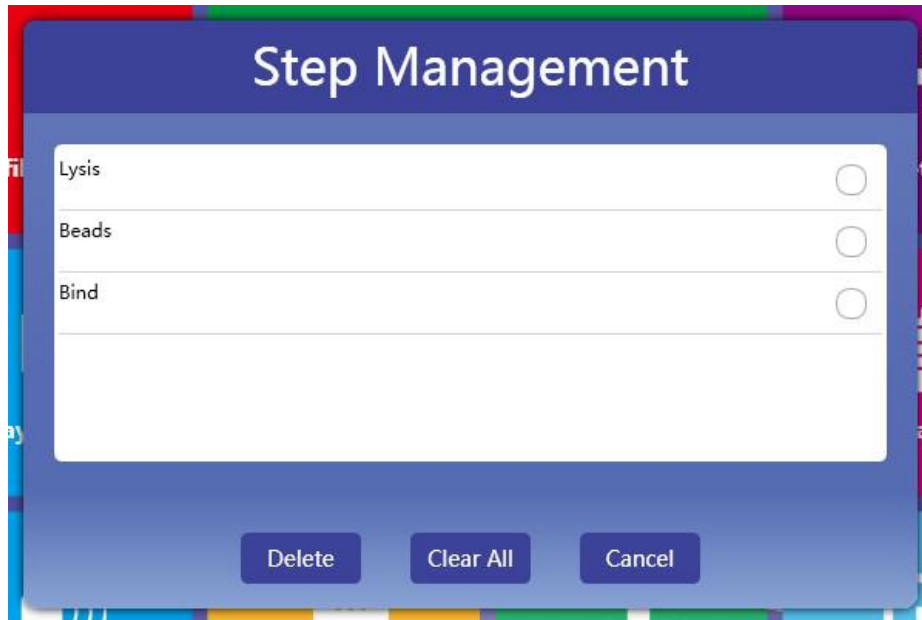


Click Run icon the instrument start running experiment program file and display running interface, the left side shows the current step, including ....., the right side shows the column which in heating progress, shows ..., the pause and stop icon in the right corner of interface, click to pause or stop the running program.



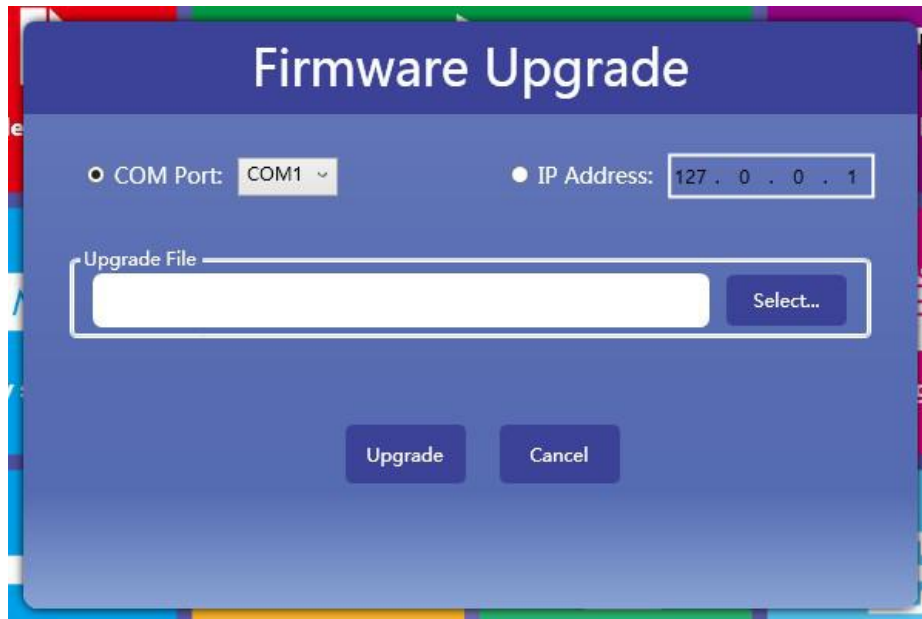
#### 4. Step Management

In main menu, click Step Management icon into step management interface, it shows all steps' name, and including delete/clear all function, click cancel back to main menu.



#### 5. Firmware Upgrade

In main menu, click Firmware Upgrade into the upgrade interface, when setting the COM port and IP address, select the \*.Bin for upgrade and click upgrade icon to start the upgrade progress, click Cancel icon back to main menu.



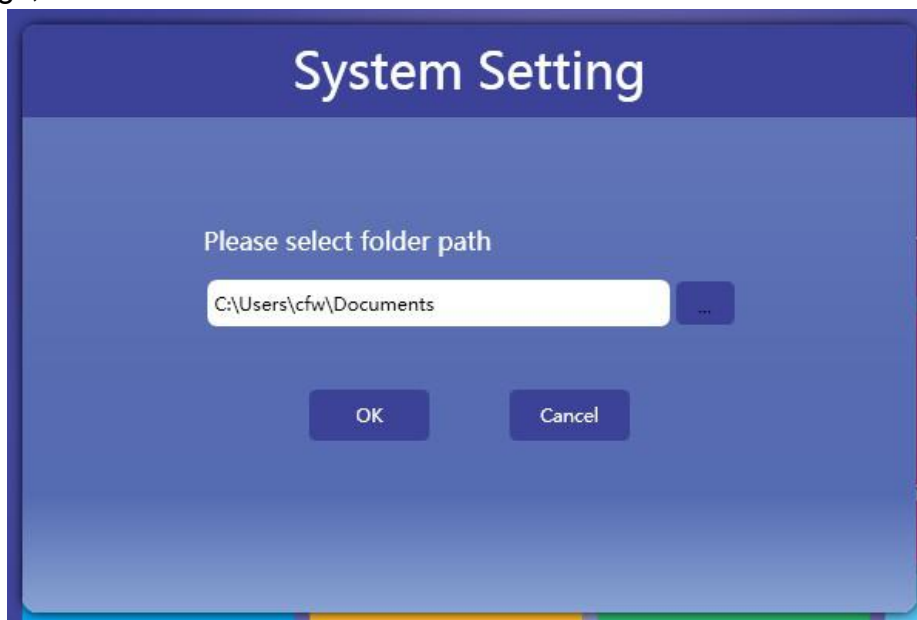
## 6. Sound Setting

In main menu, click Sound Setting into the setting interface, set Alarm Sound/Keyboard Sound/Complete Sound, then click OK or Cancel back to main menu.



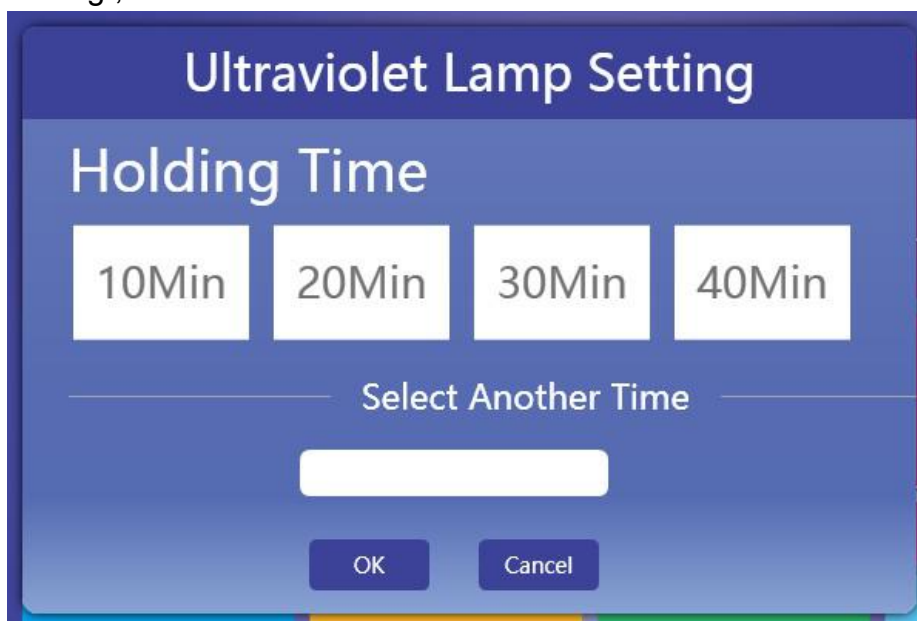
## 7. System Setting

In main menu, click System Setting into the setting interface, set folder path for saving the settings, then click OK or Cancel back to main menu.



## 8. Ultraviolet Lamp Setting

In main menu, click Ultraviolet Lamp Setting into the setting interface, set holding time for UV-lamp running, then click OK or Cancel back to main menu.



## 9. Language Setting

In main menu, click Language Setting into the setting interface, set Simplified Chinese or English, then click OK or Cancel back to main menu.



## CHAPTER 5:FAILURE ANALYSIS AND TROUBLESHOOTING

In this chapter, we briefly represent possible failures, reason analysis and troubleshooting.

### Failure analysis and troubleshooting:

No	Phenomenon	Reason analysis	Troubleshooting
1	No display after power-on	Disconnected power supply	Check power supply for correct connection
		Bad fuse	Replace it (F 250V 3A $\phi$ 5 $\times$ 20)
		Switch failure	Replace it
		Others	Contact distributor or manufacturer
2	Beeps after power on and the screen displays: <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">system error</div>	Self-testing error	Contact distributor or manufacturer
3	Beeps during file running, and the screen displays: <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">Location Out</div>	Moving part is out of position limit	Run the file again; Contact distributor or manufacturer
8	Abnormal characters displayed	Bad contact of chip with its socket	Contact distributor or manufacturer
		Chip malfunctioning	
9	Inactive keys	Switch of touch panel destroyed	Contact distributor or manufacturer

**Note:** During warranty terms, the user is forbidden to open the instrument to check. Please contact distributor or manufacturer if there is a need to open the device to check a failure listed in the above table.

# Annex1: Wiring Diagram

(The Bioer Co. reserves the right to modify this Wiring Diagram at any time without notice.)

