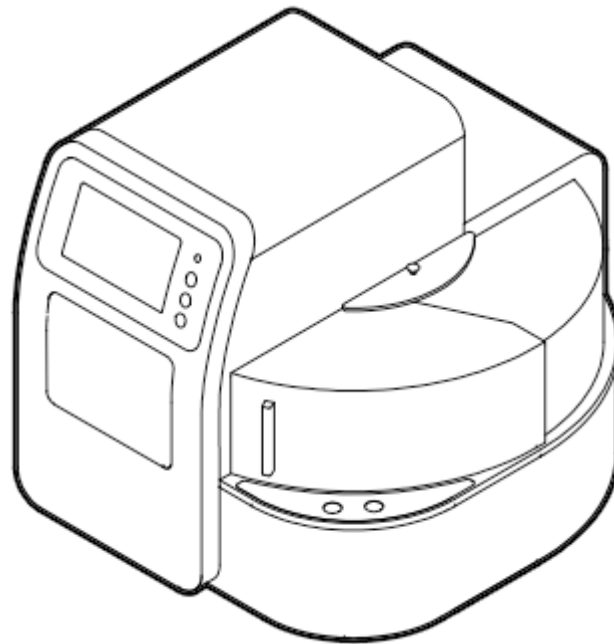# Operation Manual
V1.4


# PurePrep 96
# Nucleic Acid Purification System

# Revision history

| Version number | Description of revision | Date revision | Revised by |
|---|---|---|---|
| V1.0 | Initial release version | 21-06-2019 | Xu Tao |
| V1.1 | Increase of the temperature rise time index | 23-08-2019 | Xu Tao |
| V1.2 | Addition of the U-disk accessories | 15-05-2020 | Xu Tao |
| V1.3 | Namen instrument en adres aangepast | 7-1-2021 | John R. |
| V1.4 | Aanpassing tekst en layout | 7-1-2021 | Marlieke D. |
| | | | |
| | | | |

# Foreword

Thank you for purchasing our PurePrep 96 Nucleic Acid Purification System. This manual describes the function and operation of the instrument. In order to use the instrument properly, please read this manual carefully beforehand. Keep it as reference book to solve possible difficulties you may encounter.

## Check before first use

Please check the instrument and accessories according to the packing list when you first open the packing case. If anything is wrong or missing, please contact the supplier or service point.

MolGen BV
Kazemat 23, Veenendaal, The Netherlands
Website: www.molgen.com
E-mail: info@molgen.com

Outside EU, please contact:

# Safety Warnings and Guidelines

## Important information for safe use

Users should have a clear understanding of how to use this instrument before operation, please read this manual carefully prior to operation.

⚠️ Any improper operation may cause injuries or electric shocks. Please read the manual carefully and operate safely according to the guidelines.

## Security

The operation and maintenance of the instrument should comply with the basic guidelines and warnings below. Incorrect operation or maintenance will have effect on life expectancy, performance, and safety features of the instrument.

⚠️ The instrument is generally an indoor instrument which conforms to the class GB 4793.1 standard.

⚠️ Please read this manual carefully before operation. The device must be used by experienced personnel with certified training.

⚠️ The operator should not repair the instrument in case any injury or out of warranty. If service required, please contact MolGen or your local supplier for repair.

⚠️ Before powering on, please make sure the voltage of the power supply is consistent with the required voltage. And make sure the rated load of the power outlet is not less than required by the instrument.
If the power cord is damaged, replace it with the same type and specification power cord. Do not cover anything on the instruments when using. Insert and pull the power line with hand gently and make sure the plug completely inserts to the jack.

⚠️ The temperature of the heating block is high, please do not touch it during the operation in case any injury.

⚠ The instrument should be kept in an area with minimal dust, away from wet areas and direct sunlight. In additional the installation location should have sufficient ventilation, but away from electromagnetic interference and heat sources. The vents on this instrument are designed for ventilation. Do not cover them, as they may overheat. When many instruments are used at the same time, the distance between each instrument should be more than 100cm.

⚠ Power off when not in use. If the instrument will not be used for a long period of time, cover it with a cloth or plastic to protect it from dust.

⚠ Disconnect the power cord from the jack at once in the following cases, and contact your local supplier or MolGen:

- Liquid enters into the Instrument;
- Instrument was rained or watered;
- Abnormal operation: such as abnormal sound or smell;
- Instrument was dropped or the outer shell is damaged;
- The function has obviously changed.

## Maintenance

The instrument should be cleaned regularly using a soft cloth with a small amount of alcohol. If there are any stains on the surface of the instrument, wipe it with soft cloth with cleansing cream.

## Transportation and storage requirements

Ambient temperature: 10℃ ~ 35℃
Relative humidity: ≤70%
Atmosphere pressure range: 500 ~ 1060hpa
Locate it in a well-ventilated room, away from corrosive gas.

# Table of contents

# Chapter 1.  Introduction

The PurePrep 96 nucleic acid purification instrument is a newly launched automatic extraction and purification system for DNA/RNA, proteins and cells. It uses specialized magnetic separation technology and can be used for many different matrices. Some examples of matrices used are blood, cultured cells or bacteria, tissues, cell-free body fluids and plant samples. The PurePrep 96 can be used in high-throughput flows, as users can extract DNA/RNA from 1~96 samples simultaneously with various kits. It has an open and multiple functions design to provide more methods for reagent optimization. The operation is very simple, to be used without a computer, and controlled using a 7 inch touch screen.

## 1.1. Application

This instrument is suitable for the extraction and purification of nucleic acids in animal and plant tissues, blood and body fluids and other samples (mainly used in human body samples). Some notable applications are for research purposes in the seed, plant breeding, animal sciences and agrotechnology industries. Additionally, the PurePrep 96 is used for research and testing for COVID-19.

## 1.2. Contraindication

No contraindication.

## 1.3. Service Life

Service life of the instrument is five years. For the production date, please see the label on back of the instrument.

# Chapter 2. Specifications

## 2.1. Working Conditions

Environmental Temperature: 10°C～35°C
Relative Humidity: ≤70%
Input Voltage: AC 100～240V, 50Hz/60Hz

## 2.2. Basic Parameters

| Model<br>Parameters | PurePrep 96 |
|---|---|
| Principle | Magnetic Particle Method, Magnet type |
| Sample Volume | 50μL—1000μL |
| Throughput | 96 |
| Stability | CV≤5% |
| Extraction time | 10～60min/run |
| Temperature control module | Ambient temperature ~ 120℃ for lysis and elution |
| Heating time | Heating time（Ambient temperature ~120℃）≤7 minutes |
| Temp. Accuracy | ±1℃ |
| Vibrate and mix | 10 different speeds and options |
| Operation | 7 inch color touch screen, mouse can be connected |
| Programs | 8 groups of programs can be preset, and can store 100 groups of programs |
| Program management | Includes create, edit, delete protocol modes |
| Extension interface | With USB port and Ethernet port |
| Network | Extended Ethernet remote control, WiFi function,4G |
| Power Supply | AC100-240V, 50Hz/60Hz, 450VA |

## 2.3. Overall Dimensions

The below figure (fig 1) shows the dimensions of the PurePrep 96. The units are in mm.
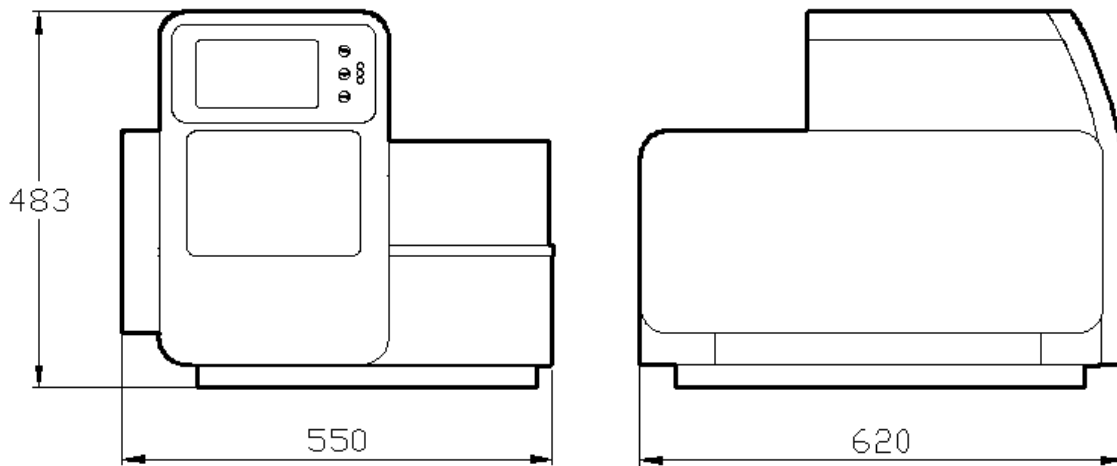


Fig 1

# Chapter 3. Basic Operating Instructions

This chapter mainly introduces structures, basic operation keys, displays, as well as preparations before starting up. Please read this chapter carefully before using this instrument.
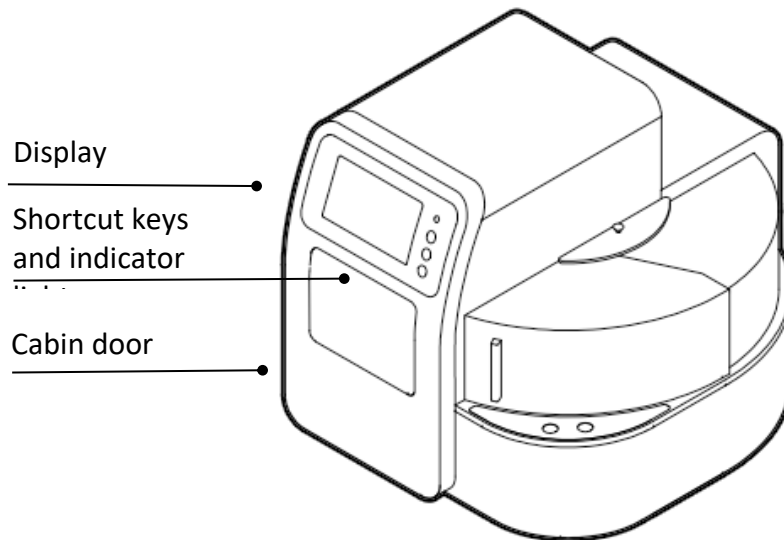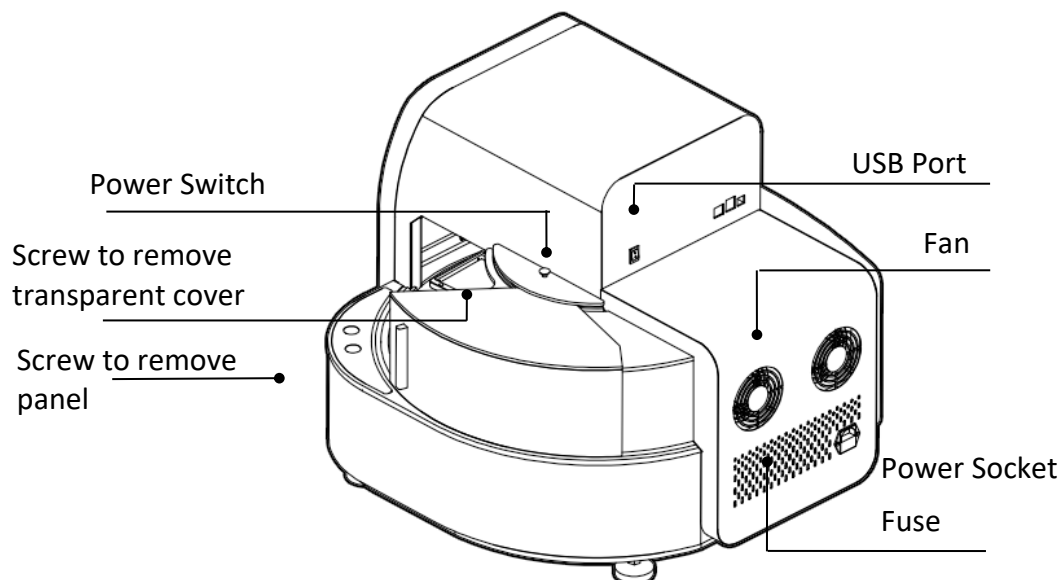
## 3.1. Structures

### 3.1.1. Front

Display

Shortcut keys and indicator lights

Cabin door

Fig 1

### 3.1.2. Back

Power Switch

Screw to remove transparent cover

Screw to remove panel

USB Port

Fan

Power Socket

Fuse

Fig 3

### 3.1.3. Cabin Door

The cabin door of the PurePrep 96 can be opened which is convenient for cleaning and maintenance.



Cabin door

Magnetic rod
Magnetic rod's tip

Heating plate
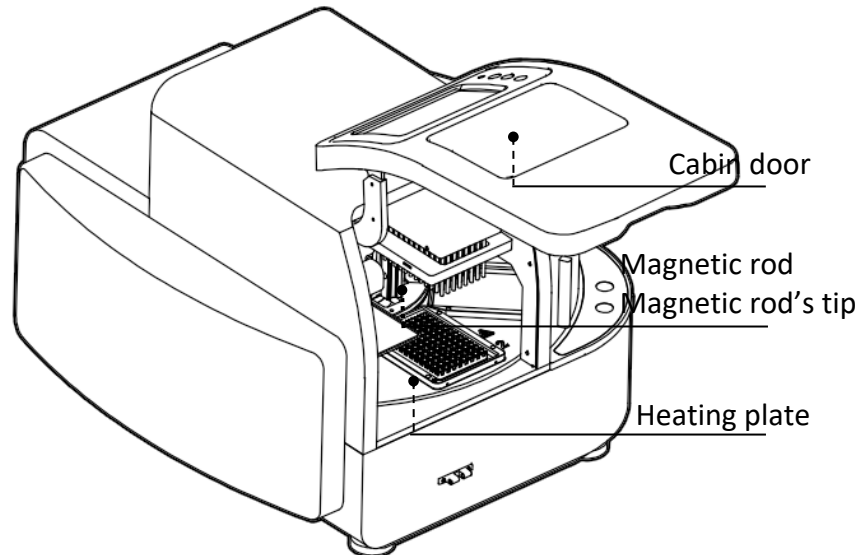
Fig 4

### 3.1.4. Transparent Cover

The transparent cover is on the right side of the instrument, which assists in placing or taking out plates. The cover can be removed which makes it convenient matching with automatic liquid transfer workstation.



Screw for quick removal

Transparent cover
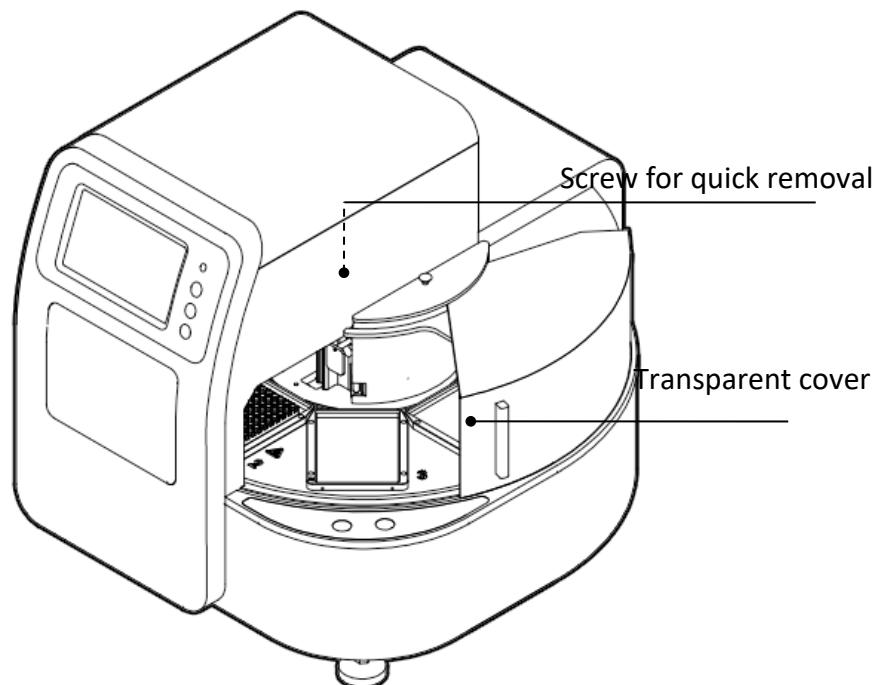
Fig 5
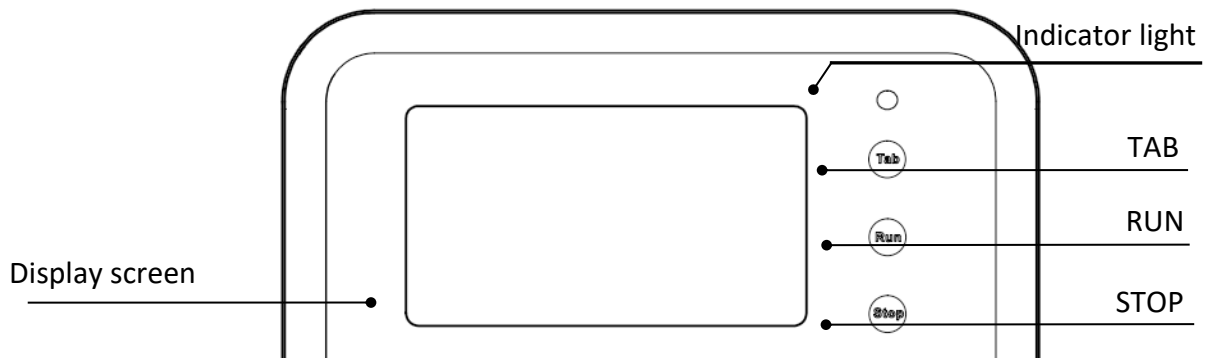
## 3.1.5. Touch Screen



Fig 6

Display screen: Touch screen, mouse also can be connected for operation.
TAB: Select shortcut program.
RUN: Start the shortcut program and run the instrument.
STOP: Stop the operation.

# Chapter 4.  Operations

## 4.1. Power Connection

The power necessary for the PurePrep 96 is AC 100 ~ 240V.

## 4.2. Kits Installation

Open the cabin door, press the position button (figure 7) to turn the rotary table and place all the plates on their proper position of the rotary table. The PurePrep 96 is suitable for 96-well plates.

Position button
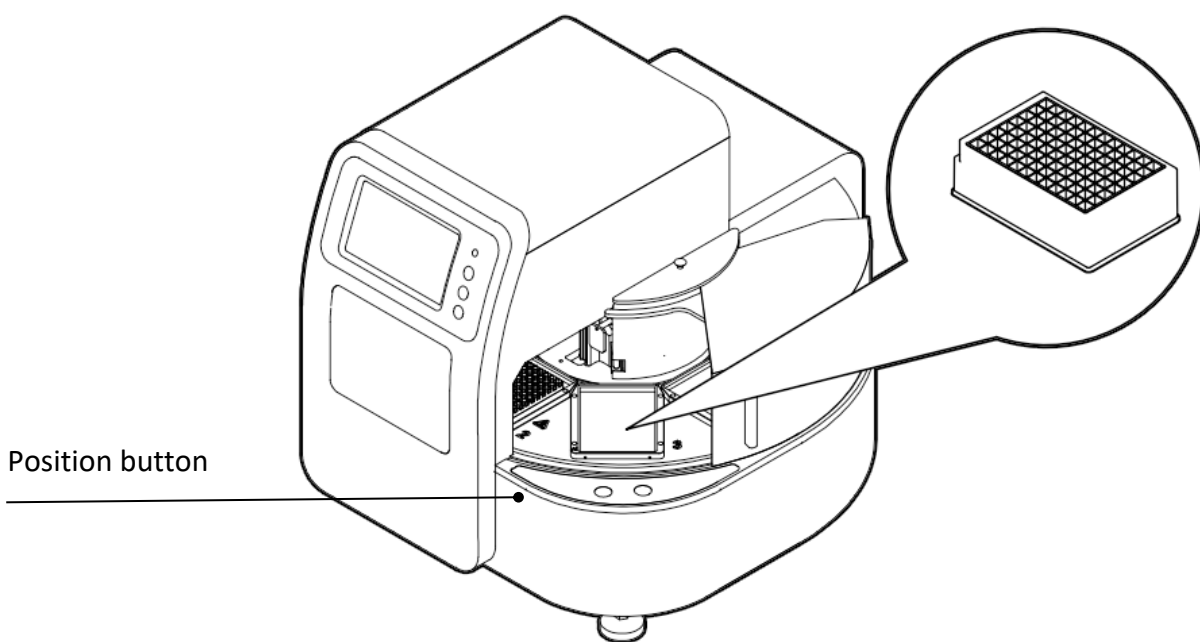
Fig 7

## 4.3. Detailed Operations

### 4.3.1. Start-up Interface

Make sure the front door and the plastic side door are closed beforehand, and turn on the machine using the power button on the back of the machine. On the display screen, the start-up interface will show up (see figure 8).



Fig 8

After some time loading, it will enter into "Run Prog." interface.

## 4.3.2. Run Program Interface
This interface including two modes: "shortcut mode" and "list mode", as shown in below Fig 9 and Fig 10.
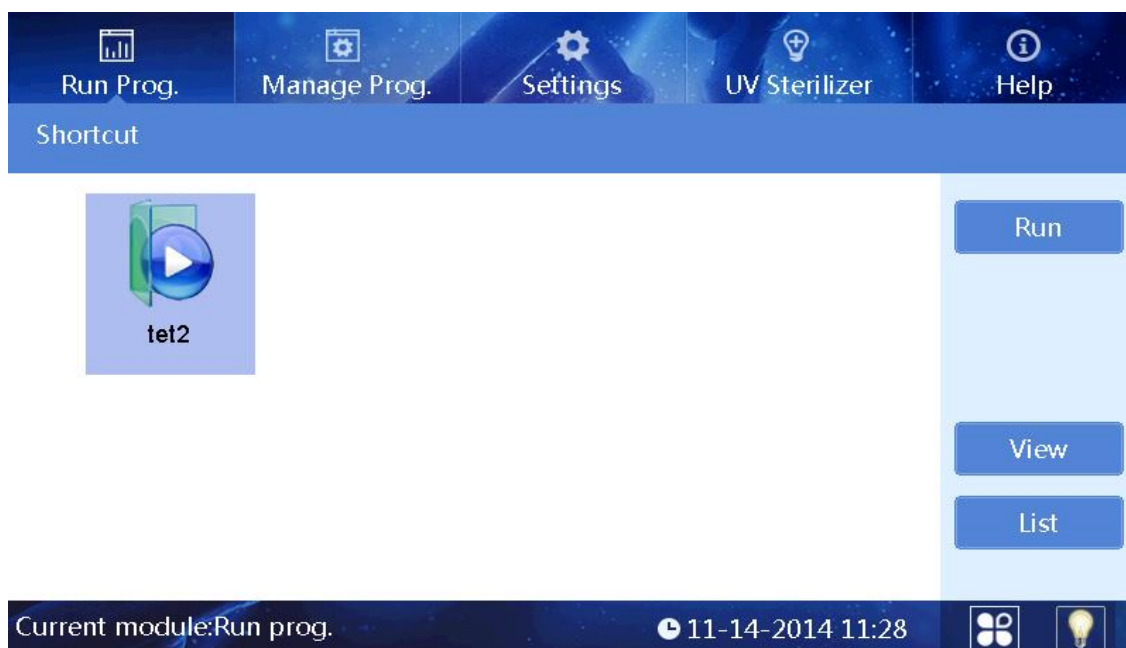


Fig 9
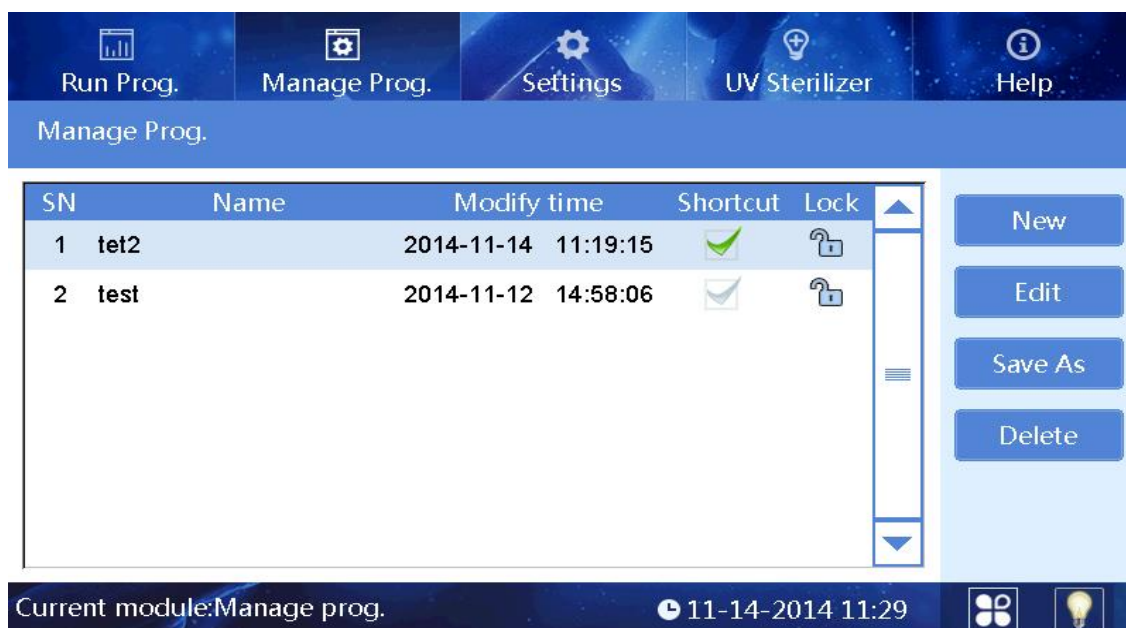


Fig 10

In the "List mode" interface, if a program is selected/activated in "Shortcut" column, the icon of the program can be displayed on shortcut interface. A maximum of eight programs can be activated as shortcut at the same time.

"SN", "Name", "Modify time" and "Lock" are non-editable options.

### 4.3.3. Run Interface

In "List mode" or "Shortcut" mode, select the required program and click "Run" to enter the run interface.

When starting a run, the instrument will first detect whether there is are plates on the rotary table. If no plate is found, the program will prompt to confirm whether the following steps can be continued, as shown in the figures 11 and 12 below.
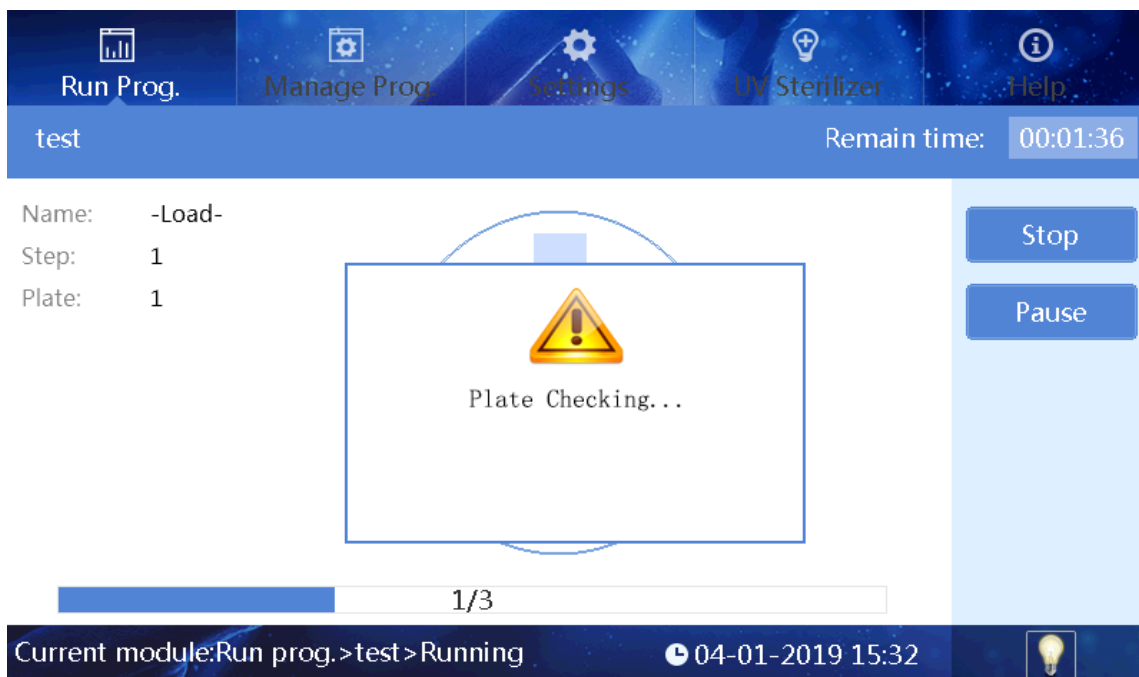


Fig 11



Fig 12

The instrument will install magnetic rod sleeves automatically. If rod sleeves are already installed on the current magnetic rod sleeve rack, "Sleeve loaded, continue?" will pop up (see figure 13). If no magnetic rod sleeve is detected after installing the magnetic rod sleeve, "No sleeve, continue?" will appear (see figure 14).
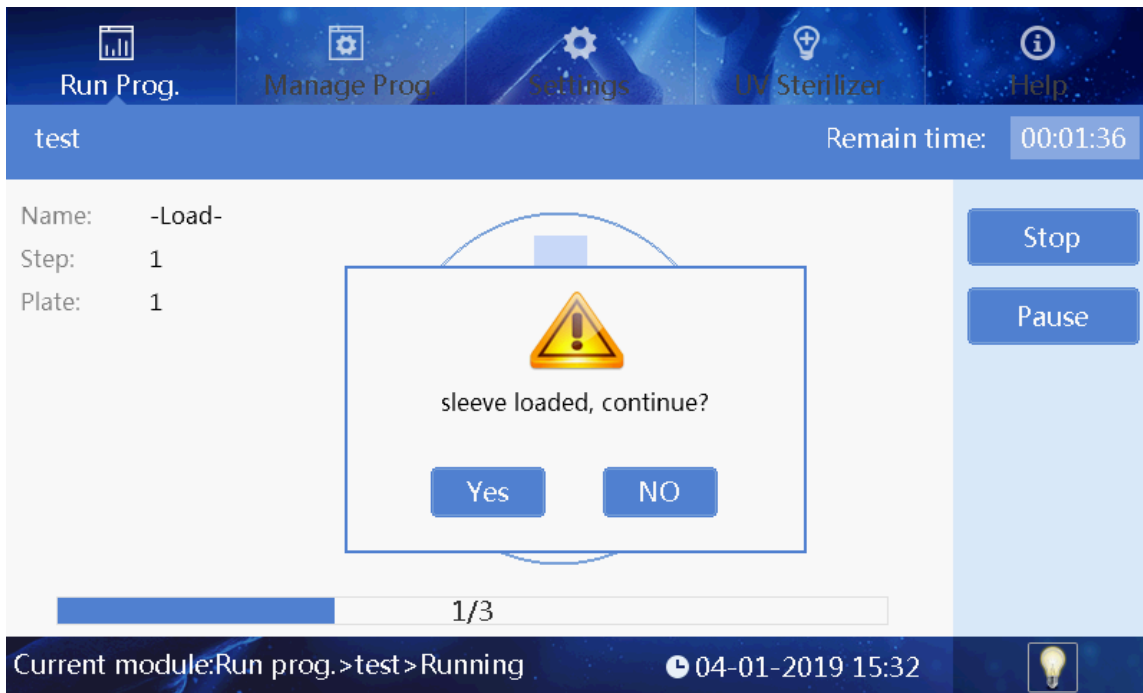

Fig 13
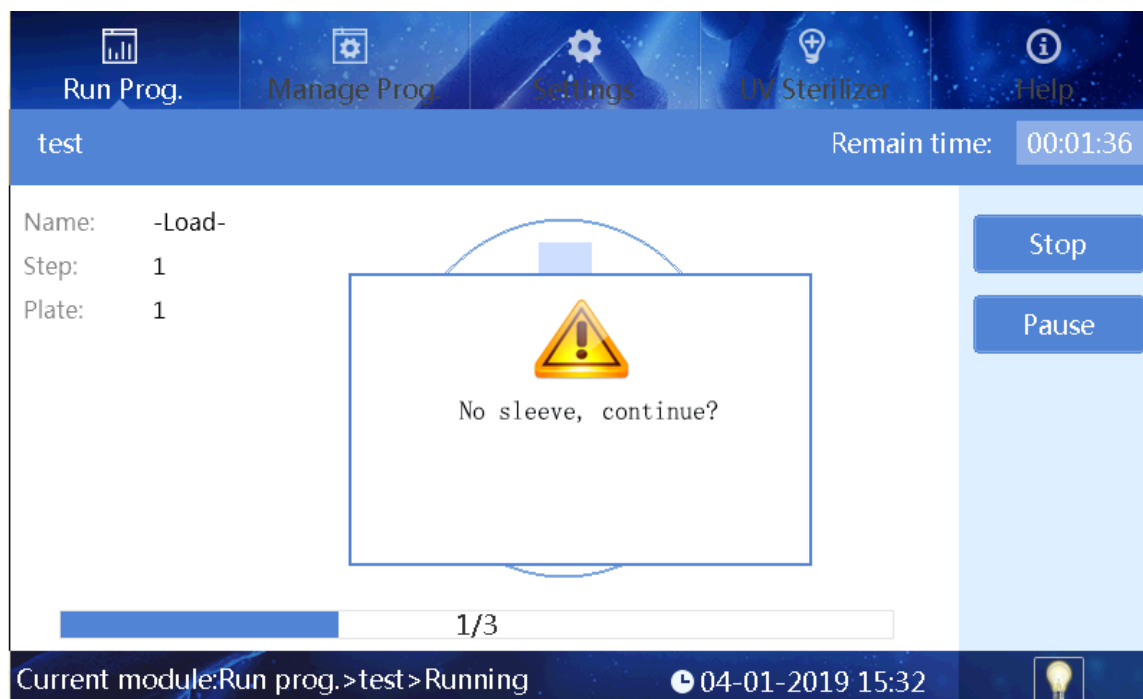

Fig 14

After the magnetic rod sleeve is successfully installed, the instrument automatically performs the following steps (see figure 15).
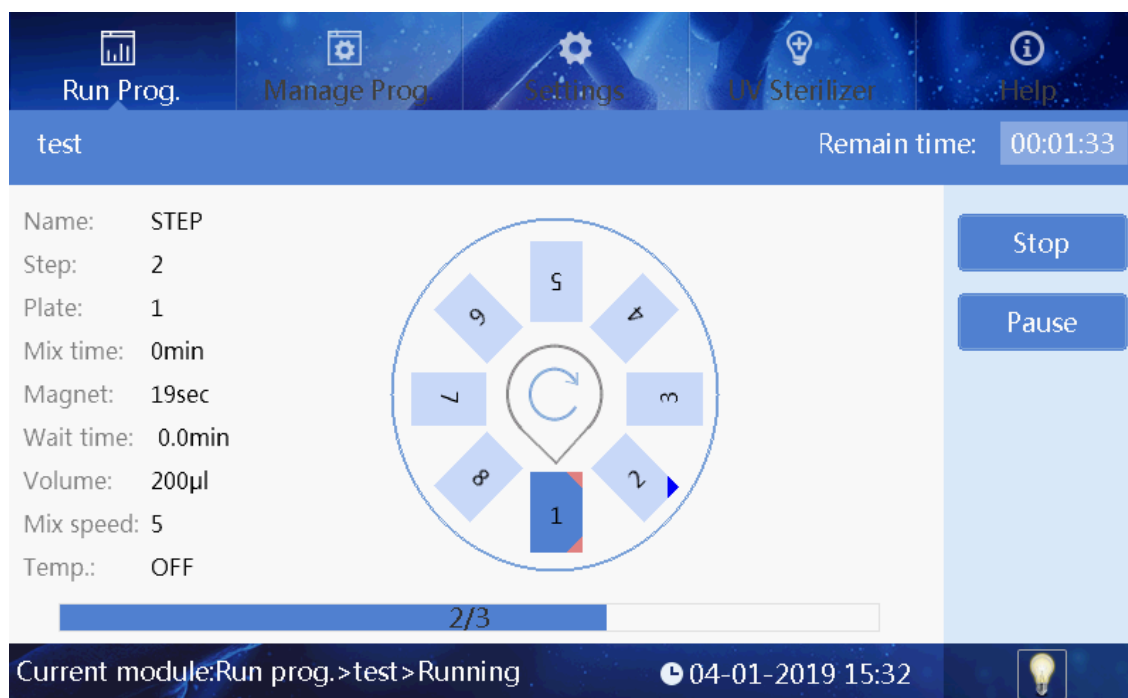


Fig 15

In the running interface, users can stop, pause, continue or run the program again. Plate number 1 (dark blue in figure 15) is the working plate, the red corner mark on it means the plate is running or already finished running, while the blue corner mark means the plate is ready to run. One corner mark means one run and two means two runs.

After the completion of the operation, the No. 8 plate position will be automatically pushed to the transparent cover on the right side.

## 4.3.4. View

Select the required program (in the list mode or shortcut mode) and click the "View" button to enter the view interface (see figure 16). Users can view all parameter settings of the program.
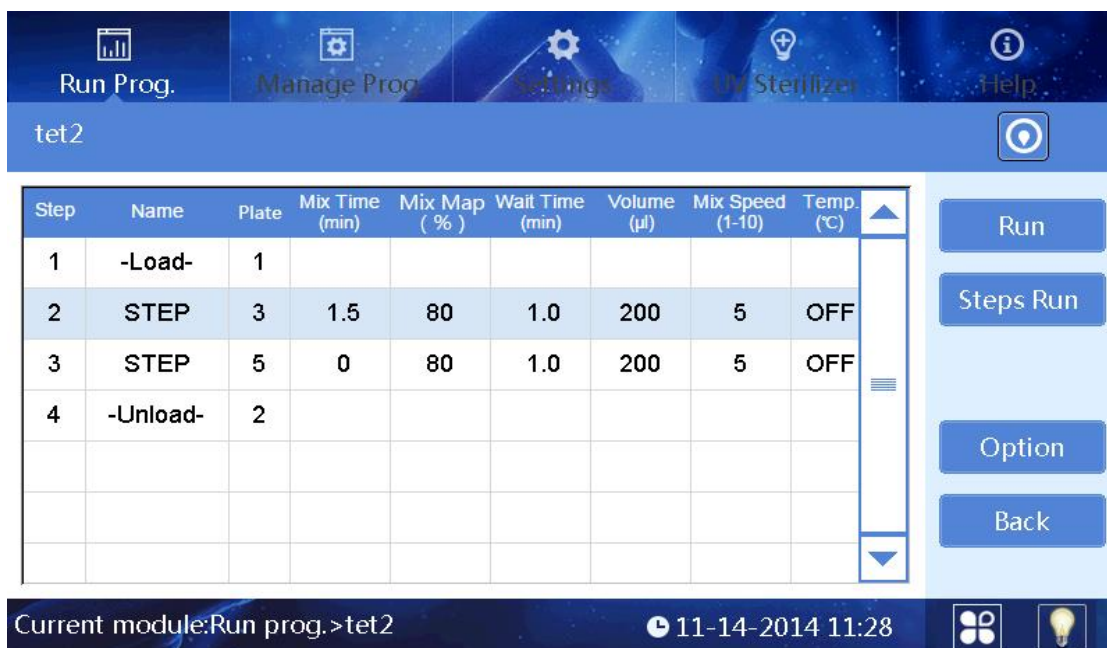


Fig 16

Users can click the button     in the upper right corner to switch to the graphic display. The highlighted row indicates the plate position which corresponds to the selected step (see figure 17). If you press "Steps Run", the program will run starting from currently selected step.
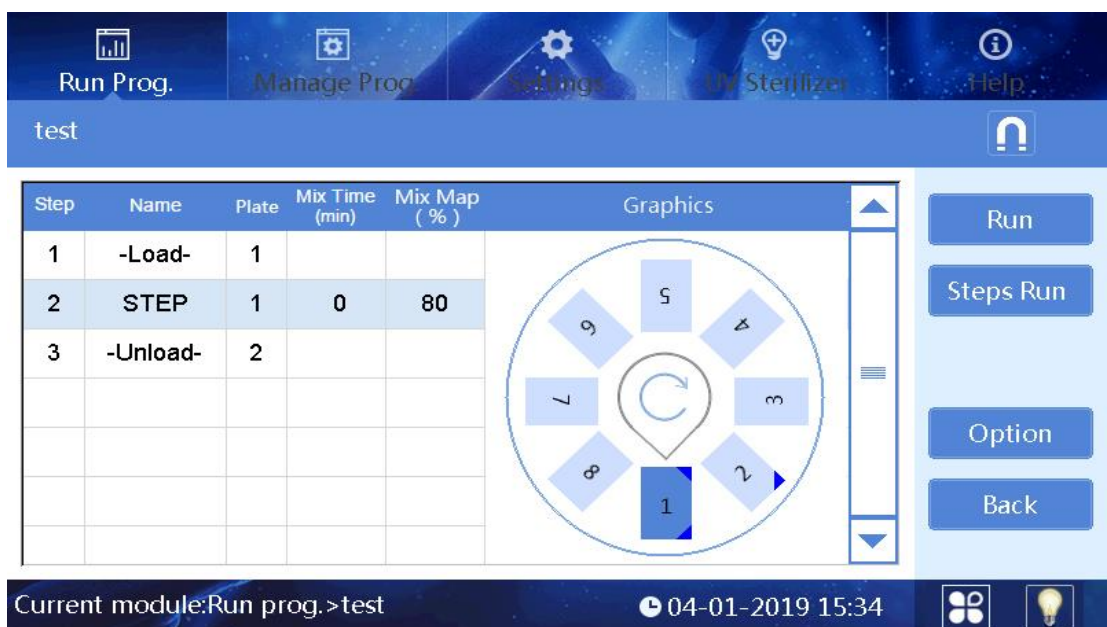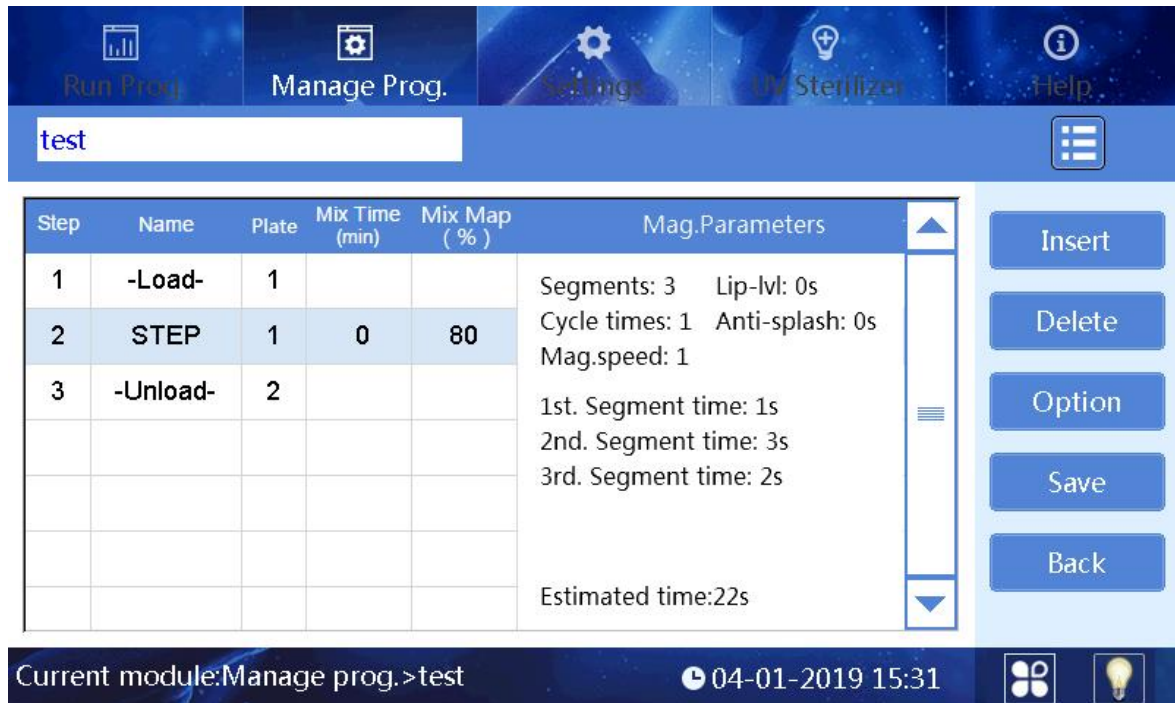


Fig 17

Click the button 🔲 to open the magnetic parameter absorption interface which shows the magnetic parameters of the selected step (see figure 18). Clicking the button "Option" will display the settings of the program (see figure 19).
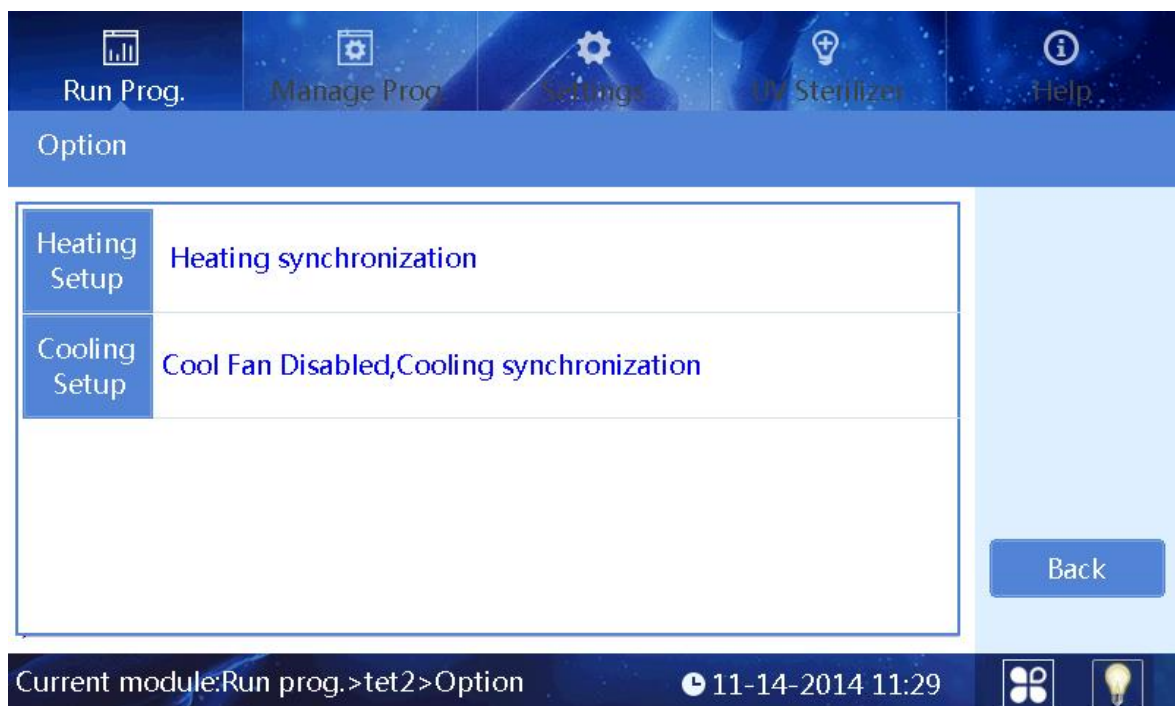


Fig 18



Fig 19

## 4.3.5. Manage Program

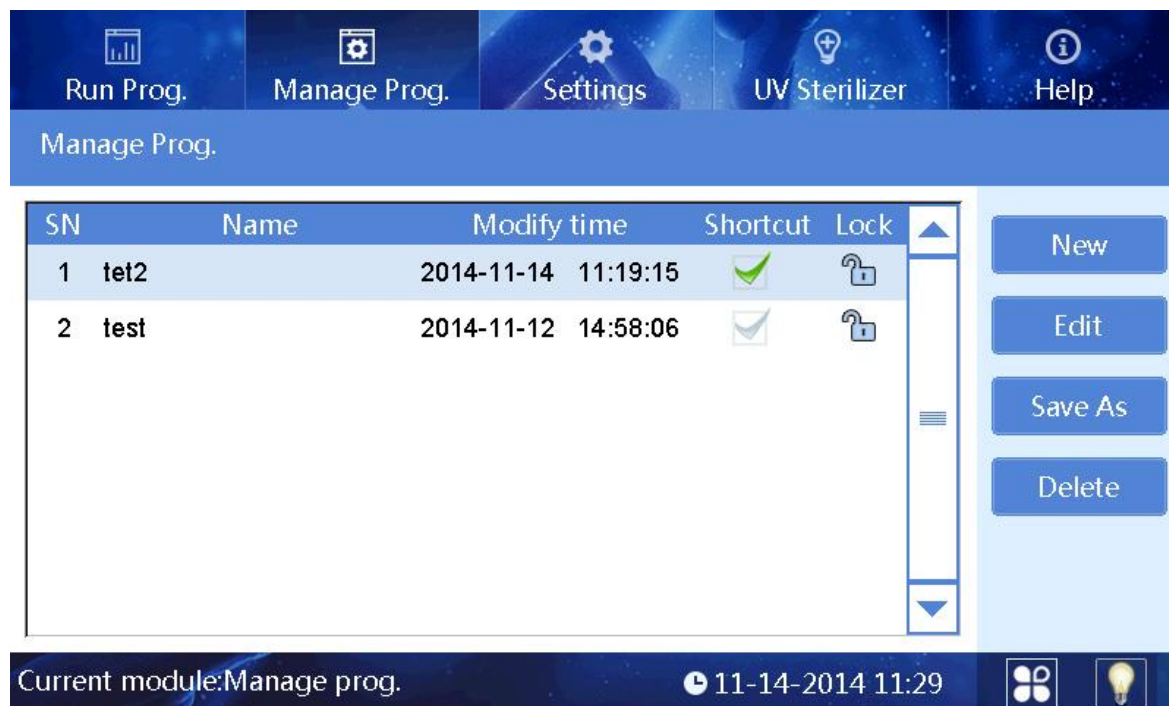Users can manage all programs in the "Manage Prog." interface.



Fig 20

### 4.3.5.1. Management Interface

The management interface is similar to the list interface in program operation, except that the lock column is a non-operable option in the program run interface while it's an operable option in the management interface. Click the lock icon to lock and unlock the program. Programs cannot be edited, saved or deleted if they are in the locked state.

### 4.3.5.2. New/Edit interface

When the users click the "New" or "Edit" button, the interface of figure 20 will appear. The main difference between the "New" interface and the "Edit" interface is whether the program name exists or not. This interface mainly includes five buttons: "Insert", "Delete", "Option", "Save" and "Back":

**Insert**: Click "Insert" to add a new program with default parameters next to the current selected program, the new program should be with a valid name.
**Delete**: Delete the selected program.
**Option**: Display high-level parameter settings which apply to the entire program scope.
**Save**: Save the program file, please note that a valid program name is necessary.
**Back**: Return to the previous display.

If you create a new program, or double-tap an existing program, it will show all the existing steps in the program. Double-tapping on a step gives you the display as seen in figure 21, where you can double-tap on each step to change settings.
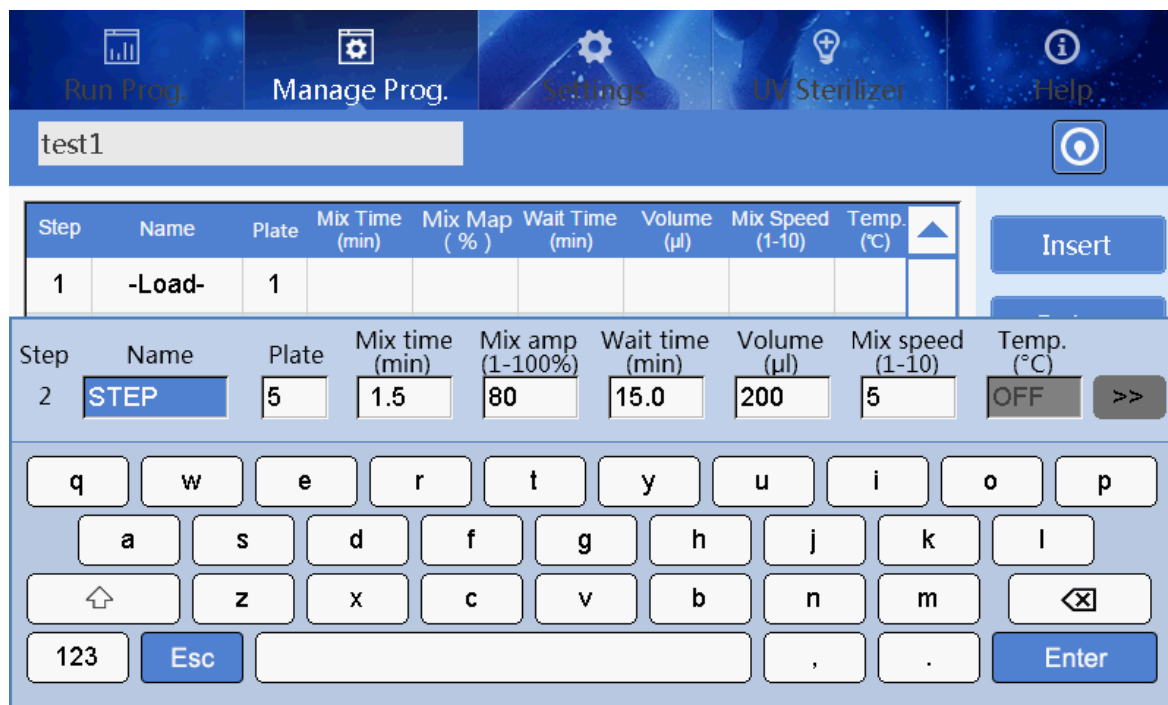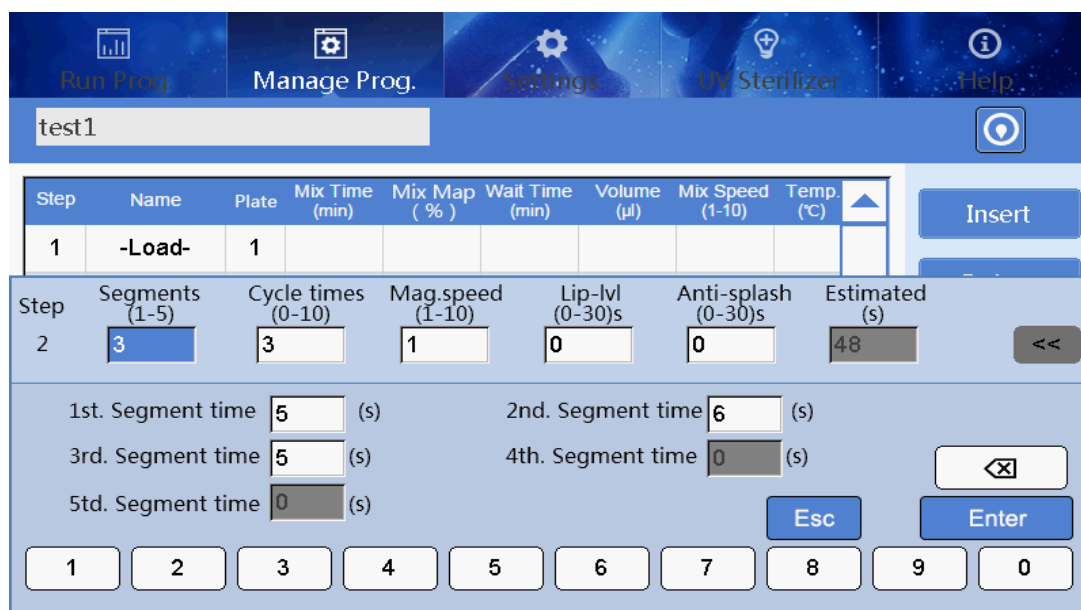


Fig 21

In this screen, you can alter parameters per step. The parameters are explained below:

- Plate: select a plate position for the coming operation
- Name: set a name of the step
- Mix time: the mixing time for the selected plate.
- Mix amp: mix amplitude, the range is from 1 to 100%.
- Wait time: interval time between two steps.
- Volume: The volume is automatically converted to the amplitude of mixing according to the formula.
- Mix speed: Ten kinds of mix speeds from 1 to 10. The higher the value is, the faster the mixing speed will be.
- Temp.: The temperature can be set according to actual requirements, only plate position No.2 and 8 can be set, as these have heating properties.
- Click " >> " to enter the parameter settings of magnetic absorption, see figure 22

Fig 22

When you enter the overview of the parameters in magnetic absorption, you can alter several settings. It is not advised to alter these, as any change can have a significant effect on operation efficiency. Only trained personnel can alter these settings. The parameters are explained below:

- Segments: The setting range is 0 ~ 5, it can stop magnetic absorption per segment, the magnetization function will be off if set it to 0.
- Cycle times: Times the magnetic absorption cycle is repeated.
- Mag.speed: The speed of magnetic absorption when the magnetic rod moves under liquid level. 1 is the slowest while 10 the fastest.
- Lip-lvl: The standing time for magnetic rods when they pull away, closing the liquid level after finishing magnetic absorption. This standing time is set to ensure the magnetic beads stay bound to the magnetic rods and sleeve, and the beads do not fall off due to liquid surface tension.
- Anti-splash: The standing time for the magnetic rods, pulling away from the liquid level after finishing magnetic absorption. This standing time is set to prevent cross contamination caused by liquid splashing or drops which can fall back into the liquid shortly after pulling away.
- N (1-5) Segment time: Independent magnetic absorption time of each segment, the maximum time can reach 999 seconds.
- Estimated: The estimated magnetic absorption time of the software. It can only be displayed on the next entry after exiting the interface.

### 4.3.5.3. Option

In the interface of creating or editing a program, click the "Option" to enter the option interface (seen in figure 23). The parameters displayed are applied to the whole program.
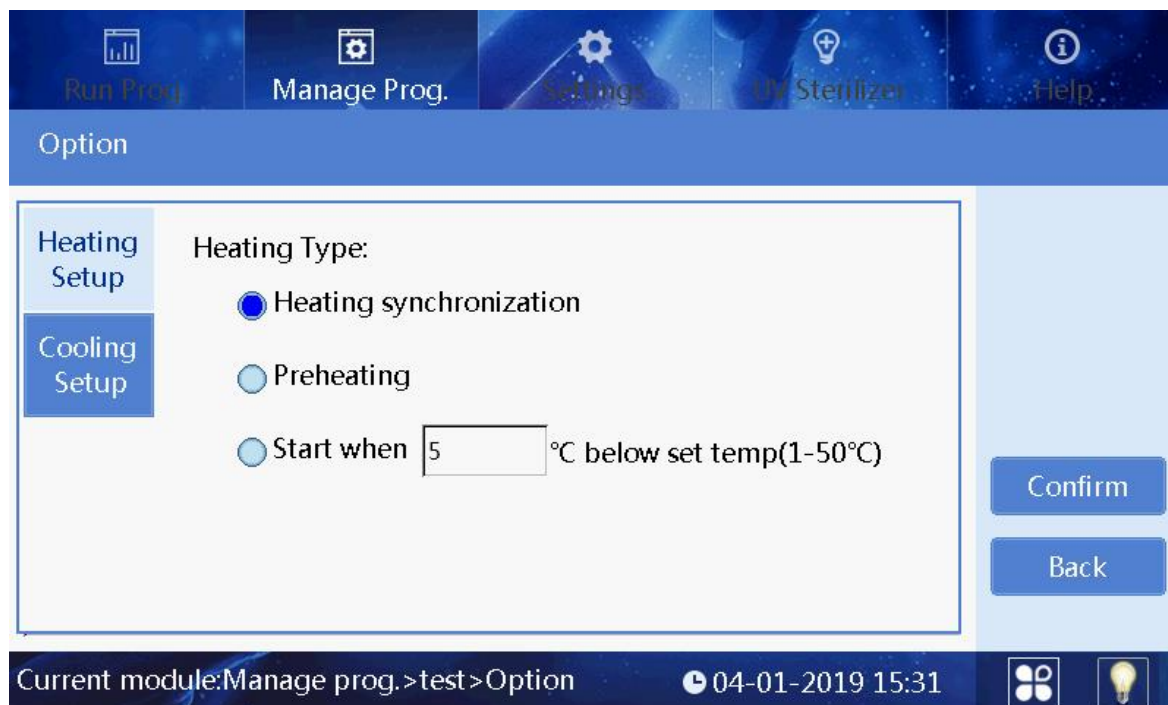


Fig 23

The following buttons and parameters are explained:

- Confirm: Save all settings and exit.
- Back: Don't save all settings and exit.
- Heating Setup: It is used to set the heating type.
- Heating synchronization: It indicates that the heating and magnetic rod sleeve action are synchronous.
- Preheating: It indicates that the heating board will rise to the set temperature first, and then the magnetic rod sleeve frame starts to work.
- Start when: It indicates that the magnetic rod sleeve frame starts to work when the temperature raised to the set temperature which is lower than the target temperature.
- Cooling Setup: It is used to set the cooling type.

### 4.3.5.4. Save As/Delete

In the "Manage prog" interface, click the save as button to save the file, and click the delete button to delete the file.

## 4.3.6. System Settings

In the "Settings" interface, "Instrument", "Date&time", "Language", "Air ejector fan", "Import&export" and "Upgrade" can be tapped to modify their respective settings (see figure 24). In the following chapters, the separate menus are elaborated upon.



Fig 24

### 4.3.6.1. System Date and Time

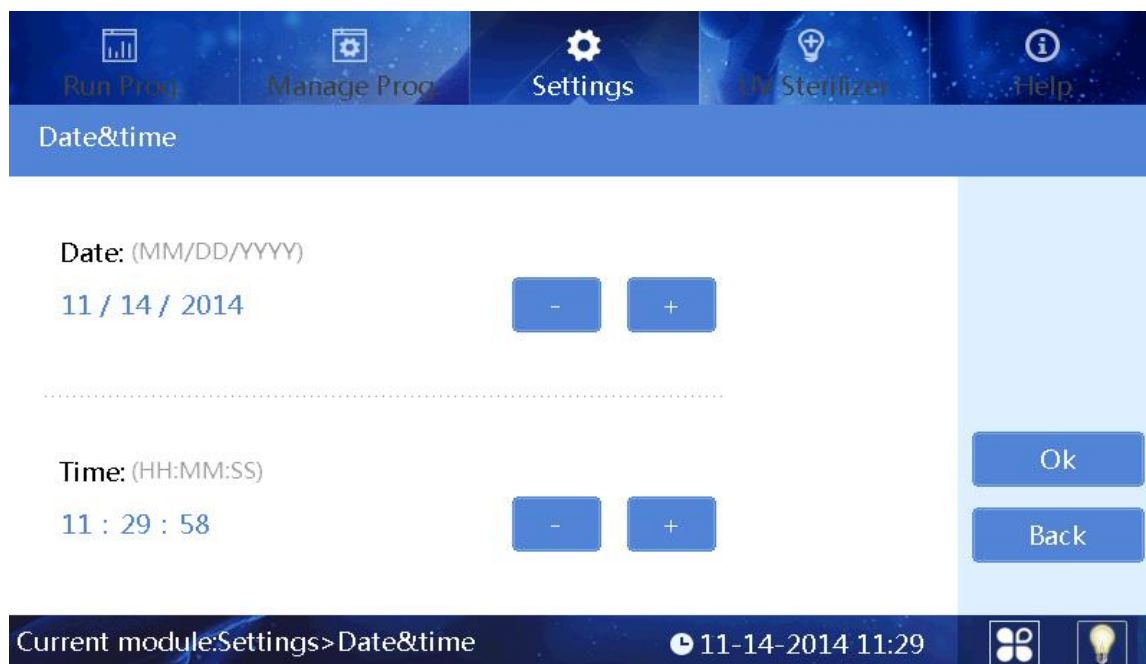Tap the "Date & time" button to enter the modification interface, as shown in figure 25.



Fig 25

The date and time can be adjusted using "+" or "-" buttons.

### 4.3.6.2. Language Settings

For language there are two options: Chinese and English (see figure 26). Select the desired language and press "OK" to save the modification.
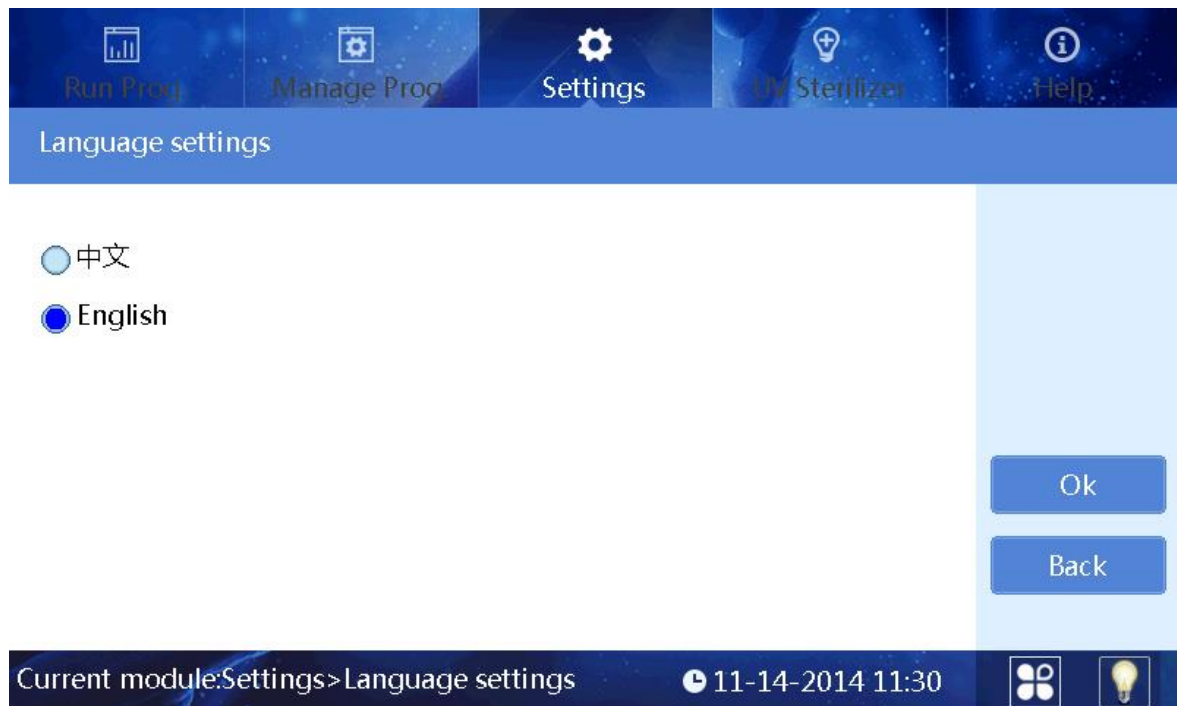


Fig 26

### 4.3.6.3. Fan

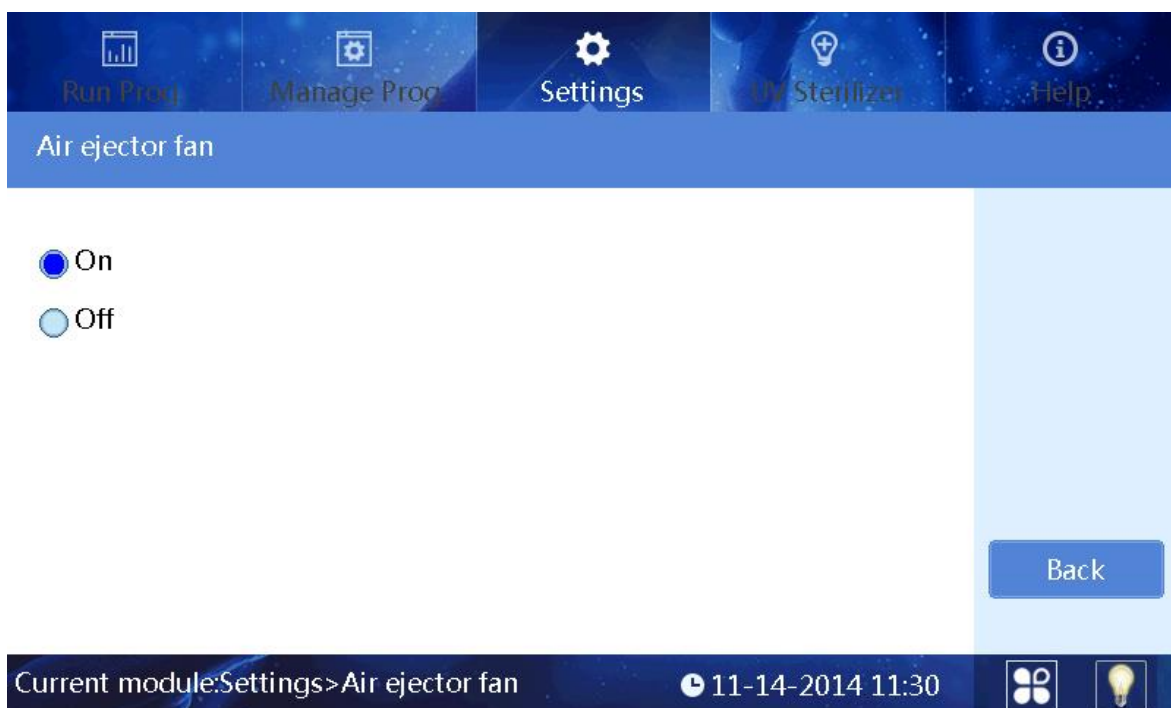In this menu, the air ejector fan can be turned off (see figure 27).



Fig 27

### 4.3.6.4. Import and Export

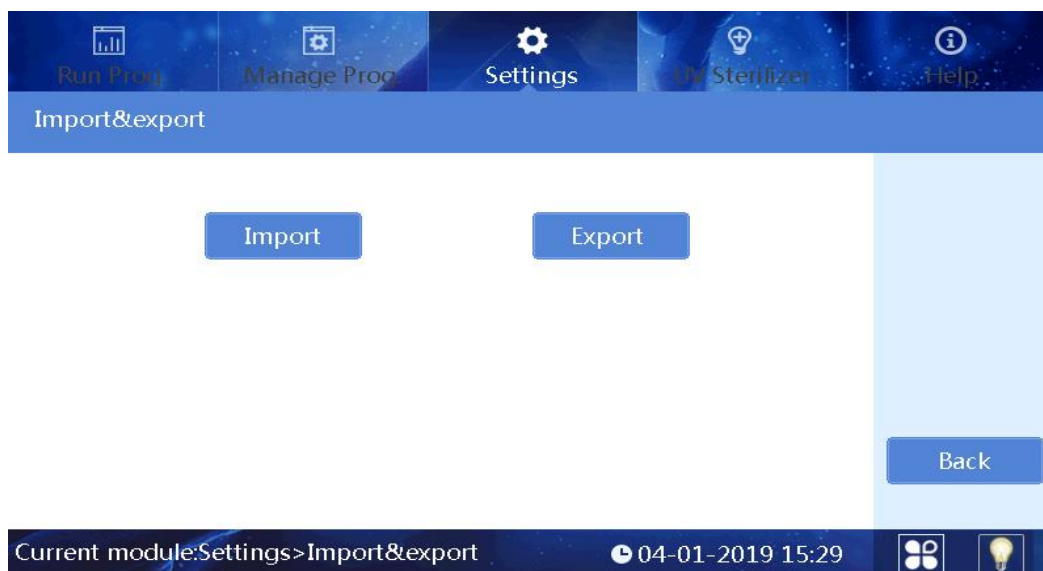In the "Import&export" menu, the below display (figure 28) is shown.



Fig 28

Press the "Import " to enter the USB directory where you can select the program required. Then press the "Ok" to import.

Press the "export" button to enter the system directory where you can select programs and then "Ok" to export files to the U disk.
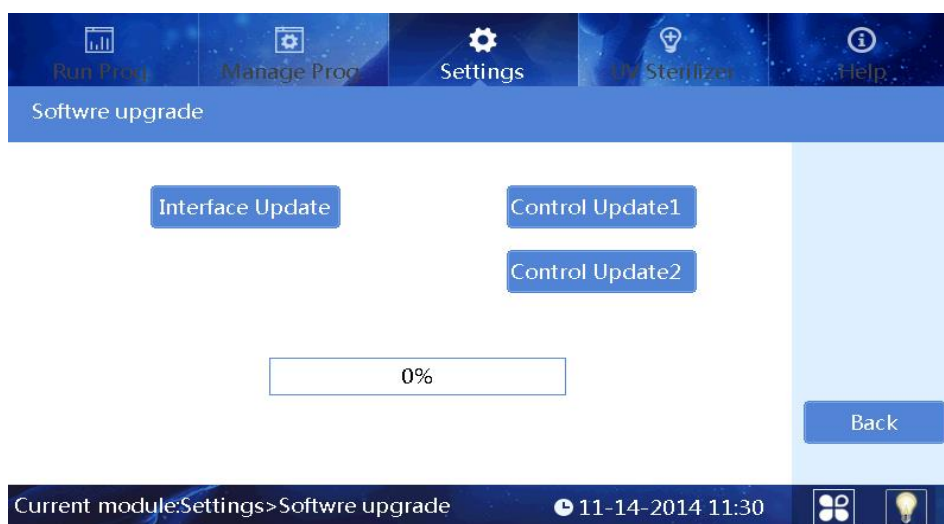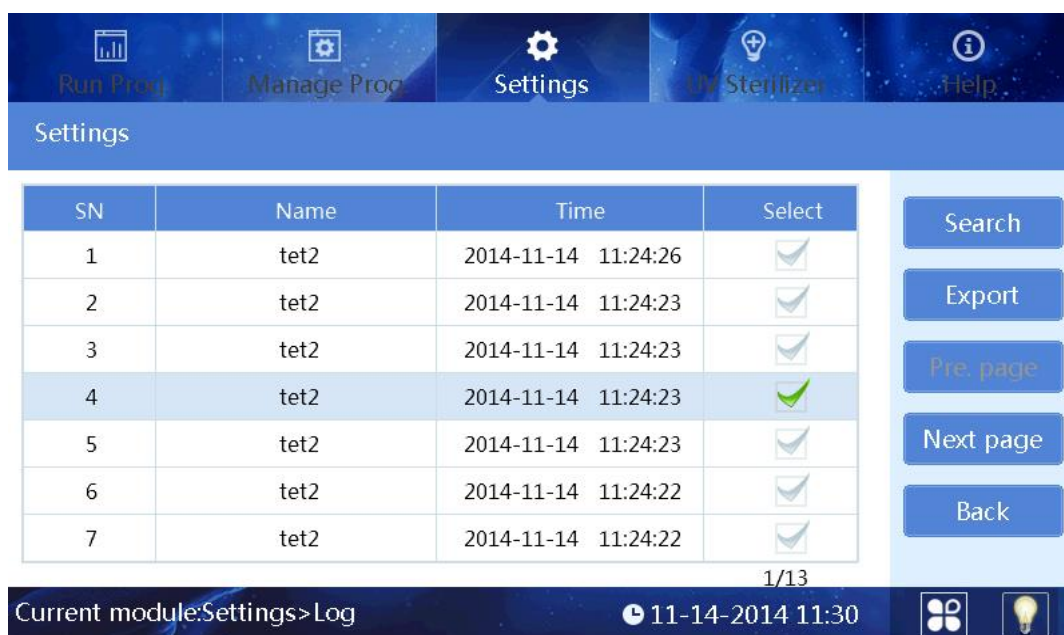
### 4.3.6.5. Software Upgrade



Fig 29

In the "Upgrade" menu, you are shown the interface seen in figure 29. Insert the USB with the latest software, and then upgrade the interface software or control software of the instrument.

### 4.3.6.6. Operation Record

Each run of the program automatically generates a running record. These can be seen in the "Log" interface (see figure 30).
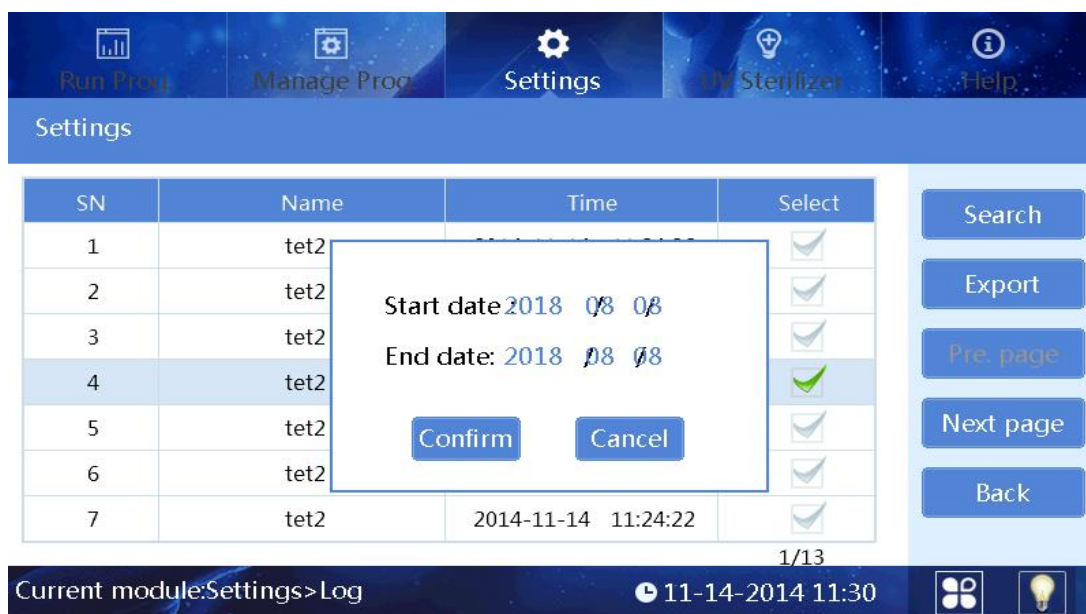


Fig 30

Users can find records of specific runs by using the "Search" button as seen in figure 31. Logs can be exported through the export key.



Fig 31

### 4.3.6. Lighting

At the right bottom of the screen, the [icon] icon indicates the lighting is on. Users can click the icon to switch [icon] between turning the light on and off.

### 4.3.7. Auxiliary function

The Plate position switch function and the sleeve automatic installation function can be used with this software. In the plate position switch interface [icon] as seen in figure 32 below, you can click to choose the plate that you want to switch it to the position at the right transparent window (position 2 in figure 32).


Fig 32

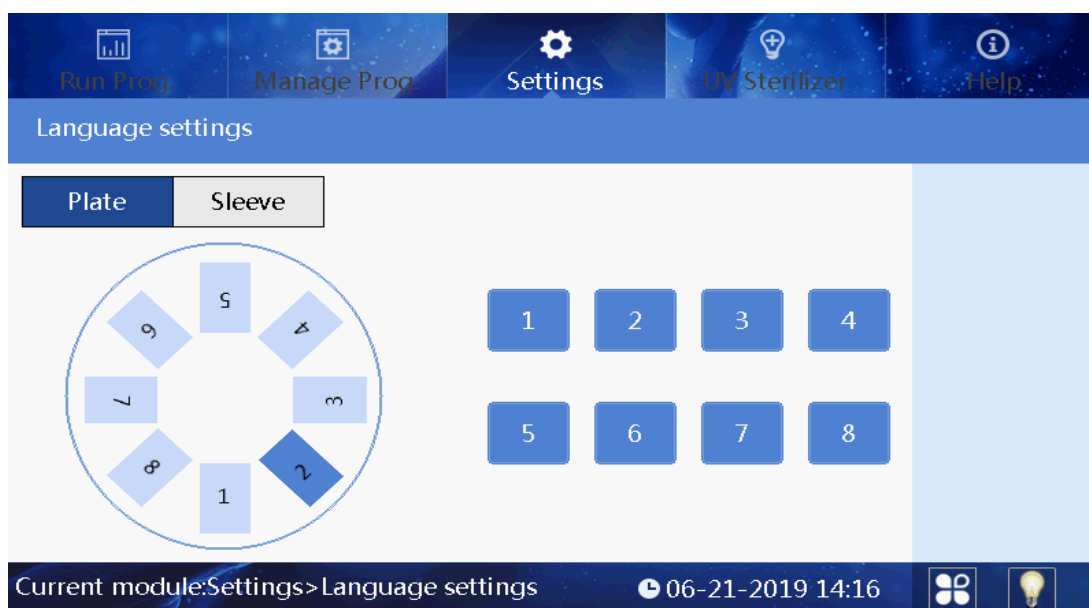Click the Sleeve button to choose the plate position in which you want to automatically install/uninstall the sleeve as seen in figure 33 below.
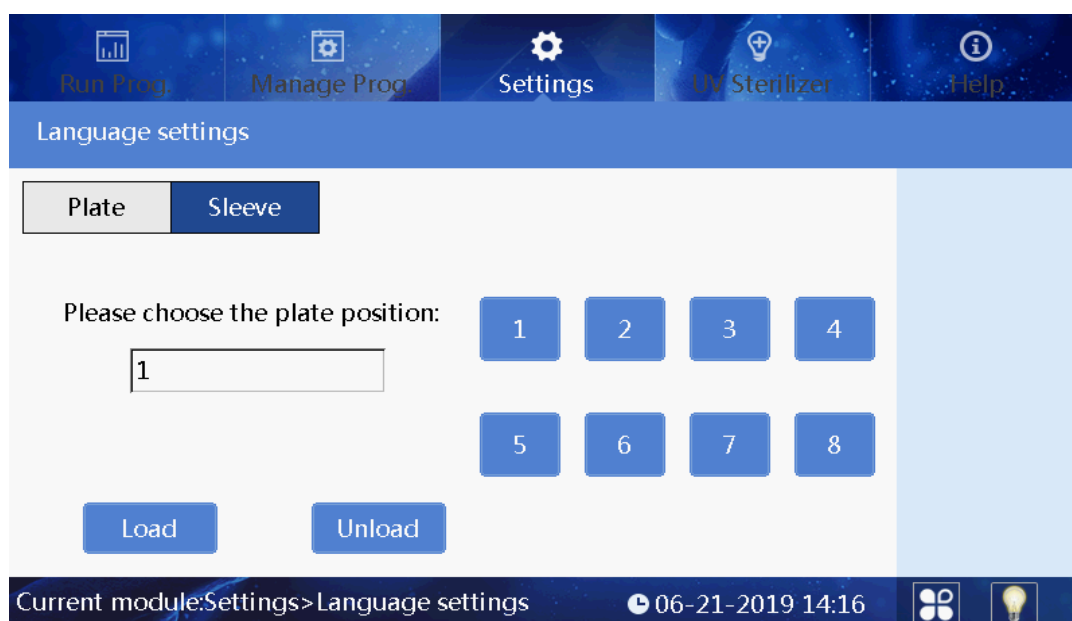

Fig 33

### 4.3.8. UV Sterilization

The UV sterilizer interface is mainly used for the opening and closing of the UV lamp. The time can be set by pressing "+" or "-" button. The program can automatically determine half of the set time to sterilize the half circle of the rotary table, with a minimum of 2 min, as shown in the figure below. The recommended time of sterilization is 30 minutes.



Fig 34

### 4.3.9. Help

The Help interface displays help information and version as shown in the figure below.



Fig 35

# Chapter 5.  Trouble Shooting

## 5.1. Troubleshooting

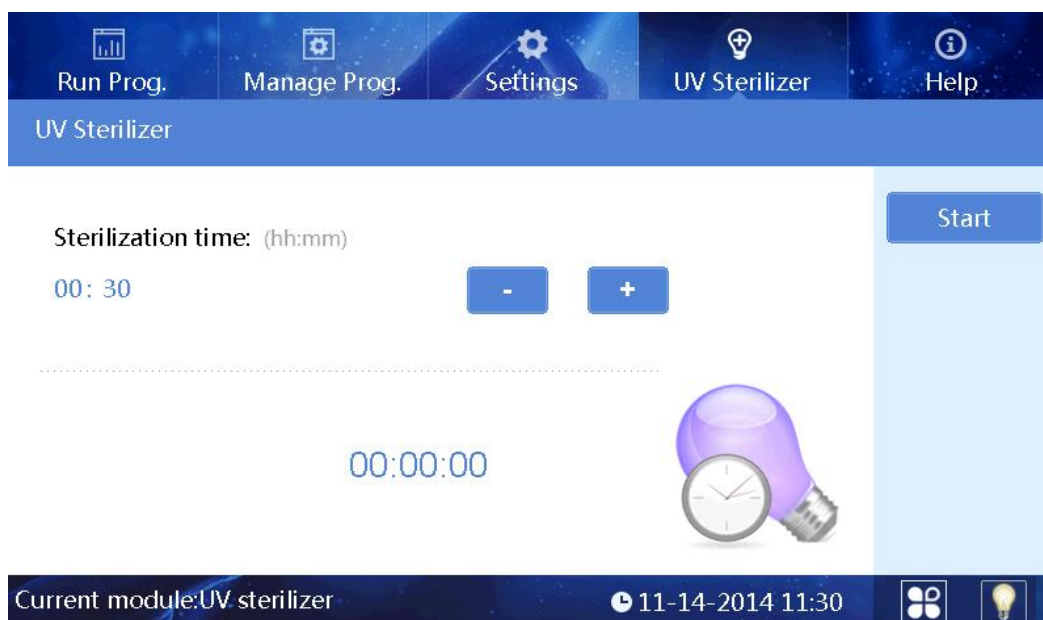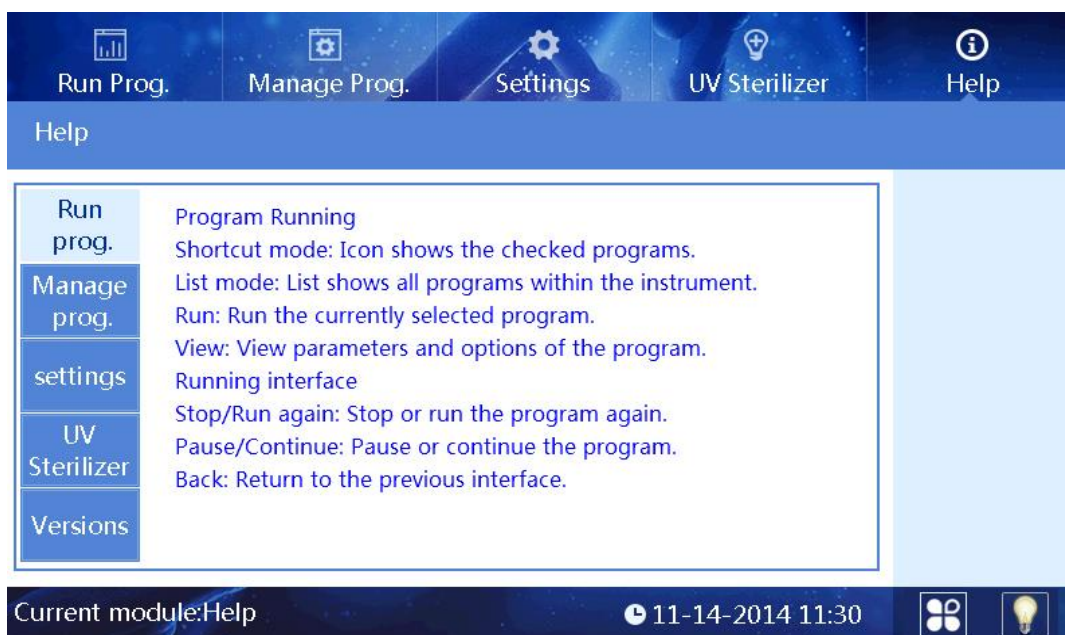| No. | Symptom | Cause | Further actions |
|---|---|---|---|
| 1 | No display after turning the system on | Power not connected | Check power |
| | | Switch failure | Replace switch |
| | | Fuse failure | Replace fuse (5X20 250V 8A) |
| | | Other | Contact with Supplier |
| 2 | No UV light | UV light failure | Replace light tube, otherwise contact with supplier |
| 3 | No light | Light failure | Replace light tube, otherwise contact with supplier |
| 4 | Doesn't stop automatically after opening the door | Sensor failure | Contact with supplier |
| 5 | Big variance between the actual and display temperature | Sensor failure | Contact with supplier |
| 6 | No heating in the heating strip | Sensor failure | Contact with supplier |
| | | Heater failure | |
| 7 | Instrument won't run | Controller failure | Contact with supplier |
| | | Motor failure | |
| 8 | Abnormal sound during working | Guide rail installed incorrect | Contact with supplier |
| | | Motor failure | |
| | | Synchronous belt abrasion | |
| 9 | Press button not working | Press button failure | Contact with supplier |

## 5.2. Software error alarm list

| Fault type | Fault name | Error |
|---|---|---|
| Temperature (code: 0) | T1 Overheat | E011 |
| | T1 Open circuit | E015 |
| | T1 Short circuit | E016 |
| Electric machinery stroke position (code:4) | Baffle motor sensor | E404 |
| | Rotary motor sensor damaged | E405 |
| | Lifting platform motor sensor damaged | E406 |
| | Push rod motor sensor damaged | E407 |
| | Motor position sensor of magnetic rod sleeve damaged | E425 |
| | Magnetic rod motor position sensor damaged | E415 |
| LCD, Crystal oscillator, Storage (code: 7) | The clock crystal fault | E702 |
| | Memory chip E2P damaged Setting parameters lost | E703 |
| | New instrument, instrument type hasn't been set | |
| | Position zero has not been calibrated, the instrument zero calibration is not in the 3 well will lead to the program does not working | |
| Communication (code: 8) | Moving parts online failure | E801 |
| | Rotary parts online failure | E802 |

# Chapter 6  Accessory

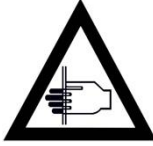| No. | Name | Specs. | Unit | Qty. | Remark |
|-----|------|--------|------|------|--------|
| 1 | Power cord | | PCS | 1 | |
| 2 | Mouse | Logitech | PCS | 1 | |
| 3 | USB disk | 8g | PCS | 1 | For upgrading software and transferring programs |

# Chapter 7. Abbreviations and Tags

## 7.1. Abbreviations

The following abbreviations are for reference and will appear in this operation manual.

| | |
|---|---|
| A | ampere |
| AC | alternating current |
| V | volt |
| Hz | Hertz |
| W | watt |
| USB | universal serial bus |
| SD | secure digital card |
| WiFi | wireless Fidelity |
| Kg | kilogram |
| mm | millimeter |
| μL | microliter |
| hpa | hectopascal |
| ℃ | degree Celsius |
| CV | stability |
| TAB | tab |
| RUN | run |
| STOP | stop |

## 7.2. Tags

The following marks will appear on the instrument

| | |
|---|---|
|  | Warning label |
|  | Heating label |
|  | Conformité Européenne, CE-marking |
|  | Be careful of hands, injury warning |

**Notes**