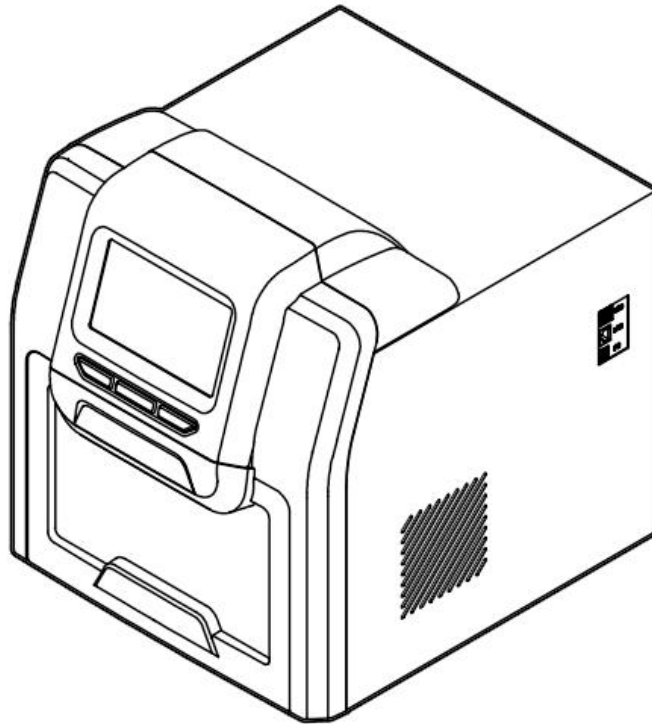# Operation Manual

V4.0

# Auto-Pure Series Nucleic Acid Purification System



## ALLSHENG

**Hangzhou Allsheng Instruments Co., Ltd.**

# Forewords

Thank you for purchasing Auto-Pure series Nucleic Acid Purification System. In order to use the instrument properly, please read carefully this manual before operating and keep it for future reference.

## Opening Check

Please check the instrument and Appendix with the packing list when you first open the package. If you find anything missing or incorrect, please contact the distributor.

# Safety Warnings and Guidelines

## 1　Warning

Please read this Manual carefully before operation.

⚠️ **Operation without reading the manual may cause damage or even electrical shock.**

## 2　Safety Tips

The operation, maintenance and repair of the Instrument should comply with the basic guidelines and cautions as below. Improper use of the instrument may cause damage to the system, inaccurate results, or potentially nullify warranties.

⚠️ **Indoor use only**

⚠️ **Read the Manual carefully before operation, only qualified and**

⚠️ **The operator should not open or repair the Instrument without Vendor's authorization, if not, there might be cause potential damages or injuries and affect the warranty.**

⚠ Before connecting to power, make sure the voltage used is same as the instrument required, and the maximum rated load should be sufficient for the instrument.

Please replace the power cord with same specs if the power cord is damaged. Please make sure there's nothing covered the power cord and keep it away from crowds when in use.

⚠ During operation, the surface temperature of heating block inside operation window could be very high. To avoid possible scald or boiling of the liquid, do not touch the metal part when operating.

⚠ The Instrument should be placed in a position with low humidity, less dust, and keep it away from water, sunshine and strong light source. Make sure of adequate ventilation, no corrosive gases, no strong magnetic interference and to avoid any heat sources.

⚠ Power off the instrument after operation and please disconnect the plug if long time no use of the instrument and cover it with something to prevent from dust.

⚠ Under the following circumstances, please disconnect the power immediately and contact with your distributor.

Liquids into the Instrument;

Drenched by rain or water

**Indicates disposal instruction.**

**DO NOT throw this unit into a municipal trash bin when this unit has reached the end of its lifetime.To ensure utmost protection of the global environment and minimize pollution,please recycle this unit.**

## 3    The maintenance of Instrument

The inner side of drawer should be cleaned periodically by the cloth with alcohol.

If there are any stains on the Instrument, clean them with cleansing cream.

## 4    The limiting condition of transportation and storage environment

Ambient temperature range: 10℃～35℃

Relative humidity : ≤70%

Atmosphere range: 500~1060hpa

No corrosive gas and a well-ventilated room.

# Contents

# Chapter 1 Brief Introduction

Auto-Pure series Nucleic Acid Purification System use the magnetic rod to adsorb, transfer and release magnetic particles to transfer the operating sample and in this way to purify DNA/RNA, protein and cell etc. The Purification system able to handle 1-20,1~24,1~32 or 1-48 samples simultaneously with special reagent kit or 96 well reaction plate, and when using the different reagent, would be able to extract DNA/RNA from animal or plant tissue, blood and body fluid etc.

Features

➢ Friendly interface with easy operation
➢ Touch screen with 3 shortcut key or mouse operation
➢ Heating function in Lysis and elution
➢ UV steriliza　tion
➢ Quiet operation without vibration
➢ One stop operation to avoid contamination
➢ Rapid extraction:10~60 minutes/time
➢ Premium magnetic particles leads to high yield
➢ Extendable Ethernet remote control and WiFi
➢ Extendable APP software for mobile phone and PAD w/android system

# Chapter 2　Specification

## 1. Normal operating conditions

Environmental Temperature: 10°C～35°C

Relative Humidity ≤70%

Input: AC 100～240V，50Hz/60Hz

## 2. Basic parameter & Performance

### Table 1 Basic parameter & Performance

| Model<br>Parameter | Auto-Pure<br>32A | Auto-Pure<br>48A | Auto-Pure<br>20A | Auto-Pure<br>20B | Auto-Pure<br>24D | Auto-Pure<br>24BT |
|---|---|---|---|---|---|---|
| Principle | Magnetic Particle Method | | | | | |
| Throughput | 1~32 | 1~48 | 1~20 | 1~20 | 1~24 | 1~24 |
| Kits | 96 Deep-well plate | 96 Deep-well plate | 2ml Kits | 5ml Kits | 10ml Kits+ 2ml tubes | 5ml Kits+ 2ml tubes |
| Sample Volume/μL | 50~1000 | 50~1000 | 50~3000 | 50~5000 | 50~10000 | 50~5000 |
| Stability | CV≤5% | | | | | |
| Lysis temp. | Ambient temperature ~120℃ | | | | | |
| Elution temp. | Ambient temperature ~120℃ | | | | | |
| Heating time | Heating time（Ambient temperature ~120℃）≤4 minutes | | | | | |
| Temperature Accuracy | ±1℃ | | | | | |
| Operation interface | 7-inch touch screen, 3 shortcut buttons and mouse is available | | | | | |
| Built-in protocol | 8 groups of preset protocols, 100 groups of protocols can be stored | | | | | |
| Protocol management | New, Edit, Delete, Save as | | | | | |
| Expansion interface | Standard USB, ethernet port and WIFI are available | | | | | |
| Network | Extensible Ethernet remote control, WiFi, 4G network | | | | | |
| Pollution control | UV light | | | | | |
| Exhaust way | By Fan | | | | | |
| Data storage | Available, with built-in SD card | | | | | |
| Max.input power | 450W | | | | | |

| Dimension (W×D×H) | 400mm×470mm×450mm | 400mm×520mm×450mm |
|---|---|---|
| Weight（kg） | 28kg | 30kg |

## 3. Overall Dimension
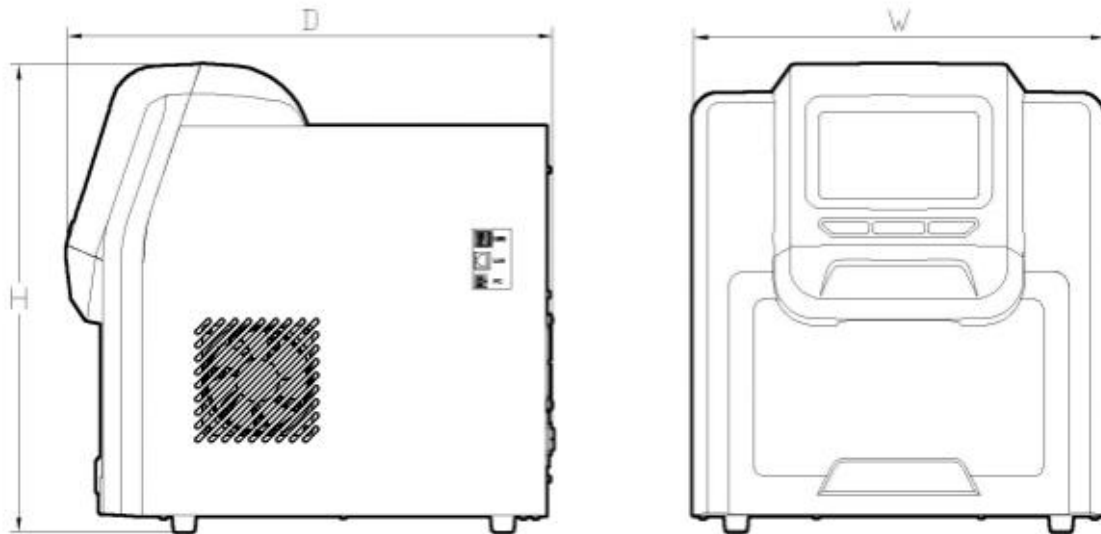


Dimension（W×D×H）

Auto-Pure 32A：    400mm×470mm×450mm

Auto-Pure 48A：    400mm×470mm×450mm

Auto-Pure 20A：    400mm×520mm×450mm

Auto-Pure 20B：    400mm×520mm×450mm

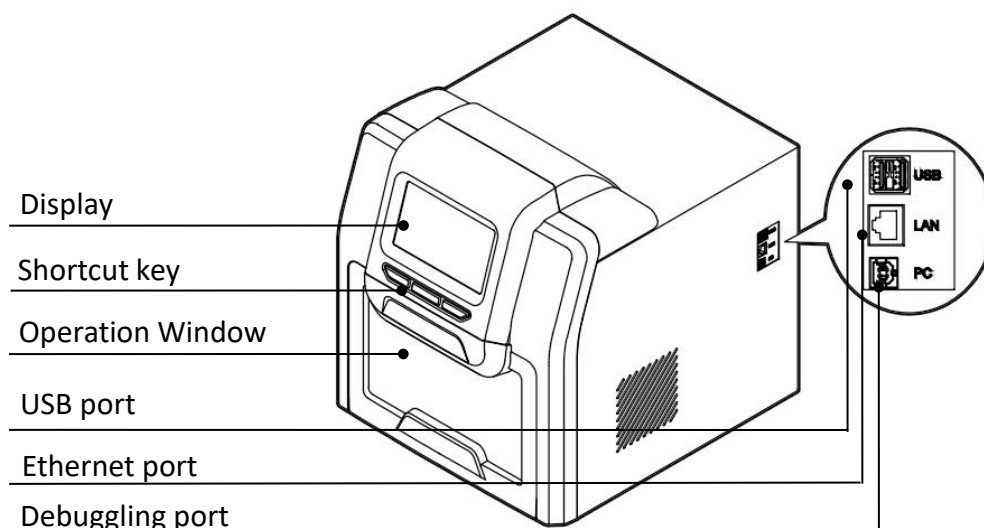Auto-Pure 24D：    400mm×520mm×450mm

Auto-Pure 24BT：  400mm×520mm×450mm
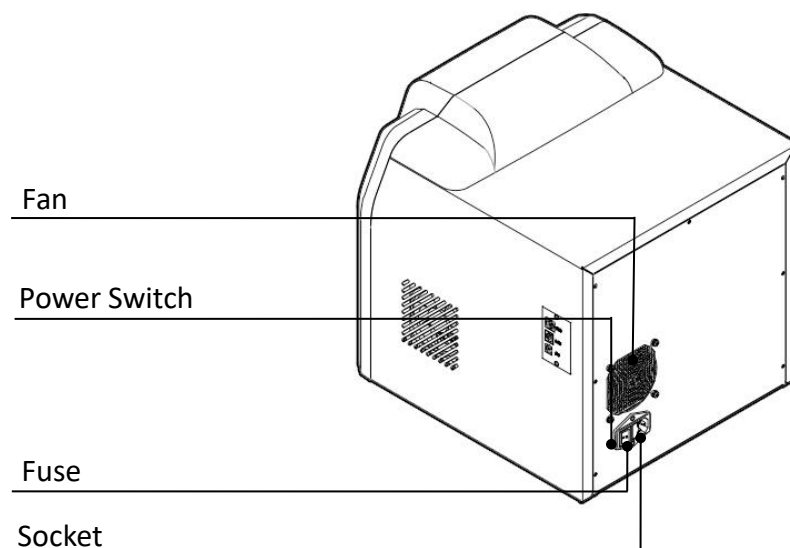
# Chapter 3 Product Introduction

This chapter basically introduce the instrument structure, operation buttons, display panel as well as the preparations before operate. For the first time user, please make sure to read this chapter before start.
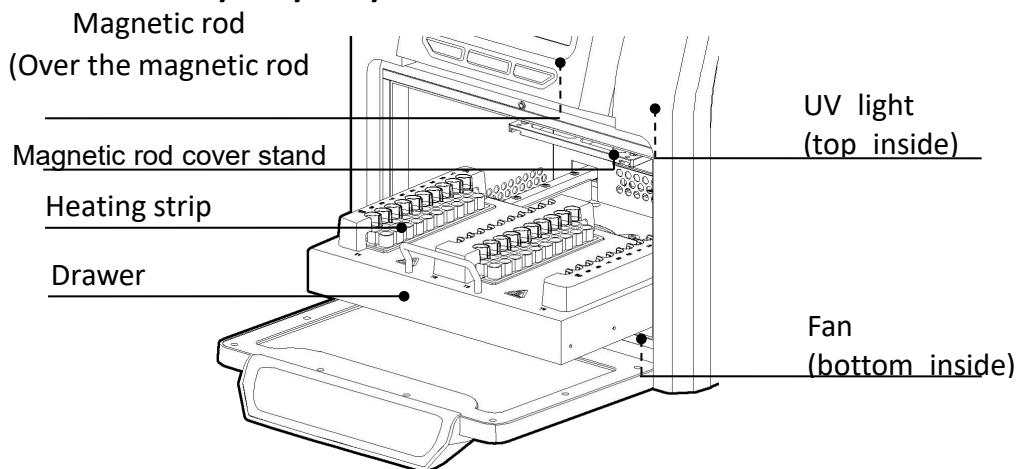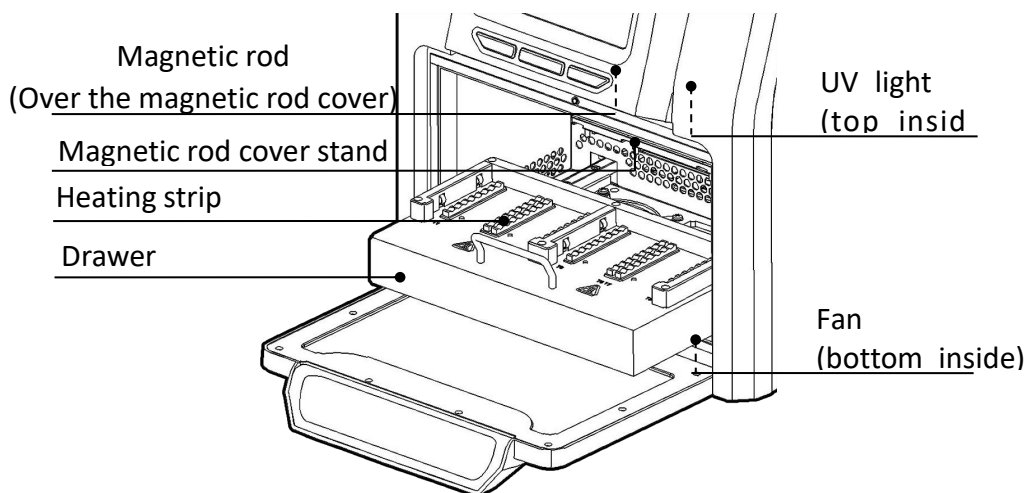
## 1. Structure

### 1.1. Front



Display

Shortcut key

Operation Window

USB port

Ethernet port

Debuggling port

### 1.2. Back



Fan

Power Switch

Fuse

Socket

### 1.3. Auto-Pure 20A/20B/24D/24BT Inside view

Magnetic rod
(Over the magnetic rod

UV light
(top inside)

Magnetic rod cover stand

Heating strip

Drawer

Fan
(bottom inside)

**Note: The only difference between the experiment module of above products is the shape of the heating strip.**

### 1.4. Auto-Pure 32A/48A Inside view

Magnetic rod
(Over the magnetic rod cover)

UV light
(top insid

Magnetic rod cover stand

Heating strip

Drawer

Fan
(bottom inside)

**Note: The only difference between the experiment module of above products is the shape of the heating strip.**

## 2. Operation panel

Display screen

TAB

RUN
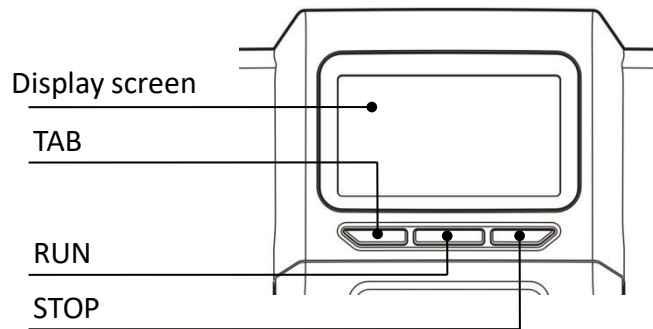
STOP

**Display screen:** Operate by touch screen or mouse which connect with USB

port

**TAB:** Select for the shortcut program

**RUN:** Run for the shortcut program

**STOP:** Stop operating

# Chapter 4 Operation

## 1. Preparation

Take out the instrument from packing carton and tear off the tape on the edge of operation window, then open it and take out the foam. First please screw out the fixed screw of position ① as below .Second please screw out the screw of position ② then you can take out the baffle and release the moving component.
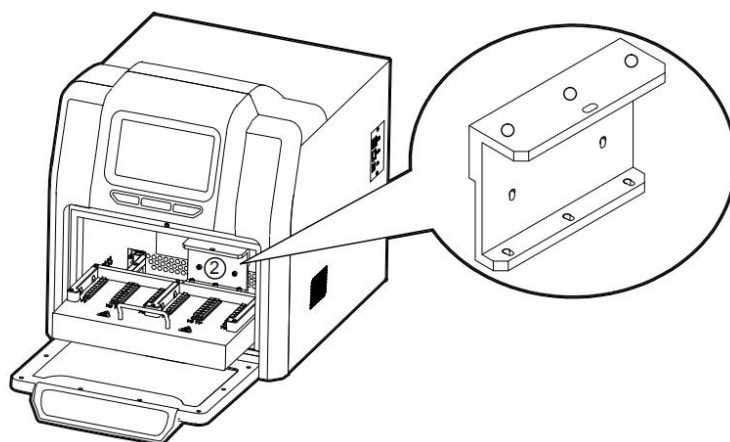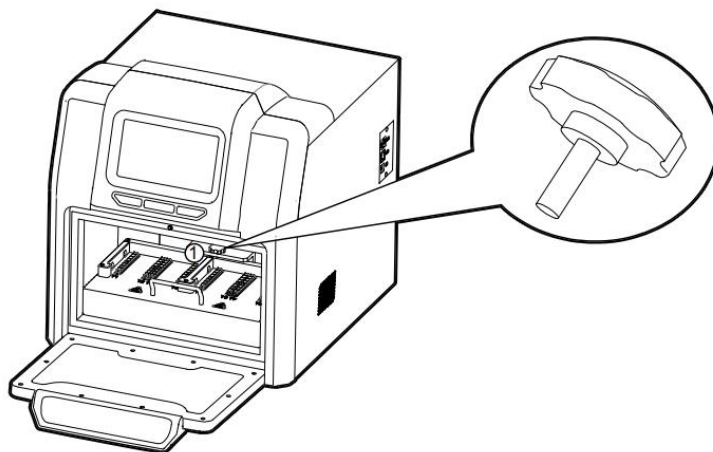
**Note: Be careful in operating or the magnetic rod will be broken.**

## 2.  Connect the power

Connect one end of power cord to the instrument socket and the other to power (AC100~240V), then turn on the power switch.

## 3.  Install the reagent kit

### 3.1 Install the customized reagent kit for Auto-Pure 20A & Auto-Pure 20B.

Open the drawer and mount the customized reagent kit on the heating strip, make sure the sample well marked with 1 should be on the left side, then push back the drawer slowly.



Customized reagent kit
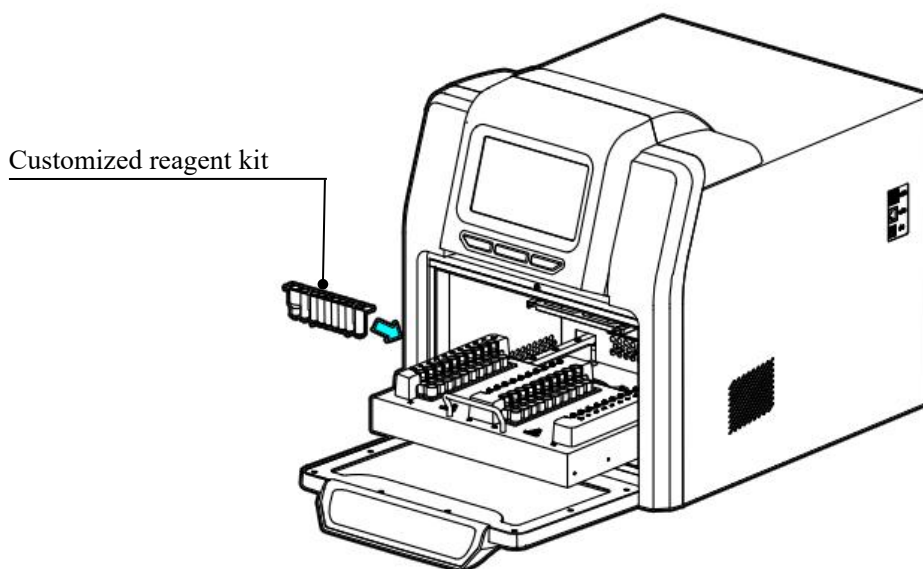
**Note: The shape of customized reagent kit of above products is different, while the installation is the same.**

### 3.2 Install the customized reagent kit for Auto-Pure 24D/24BT

Open the drawer and place the kits with sample on the kits tray, then put the kits tray to the drawer and press the kits with hand to make sure the kits fits the heating strip well , then push back the drawer slowly and close the door.

Customized
reagents kits

Kits tray

drawer

door
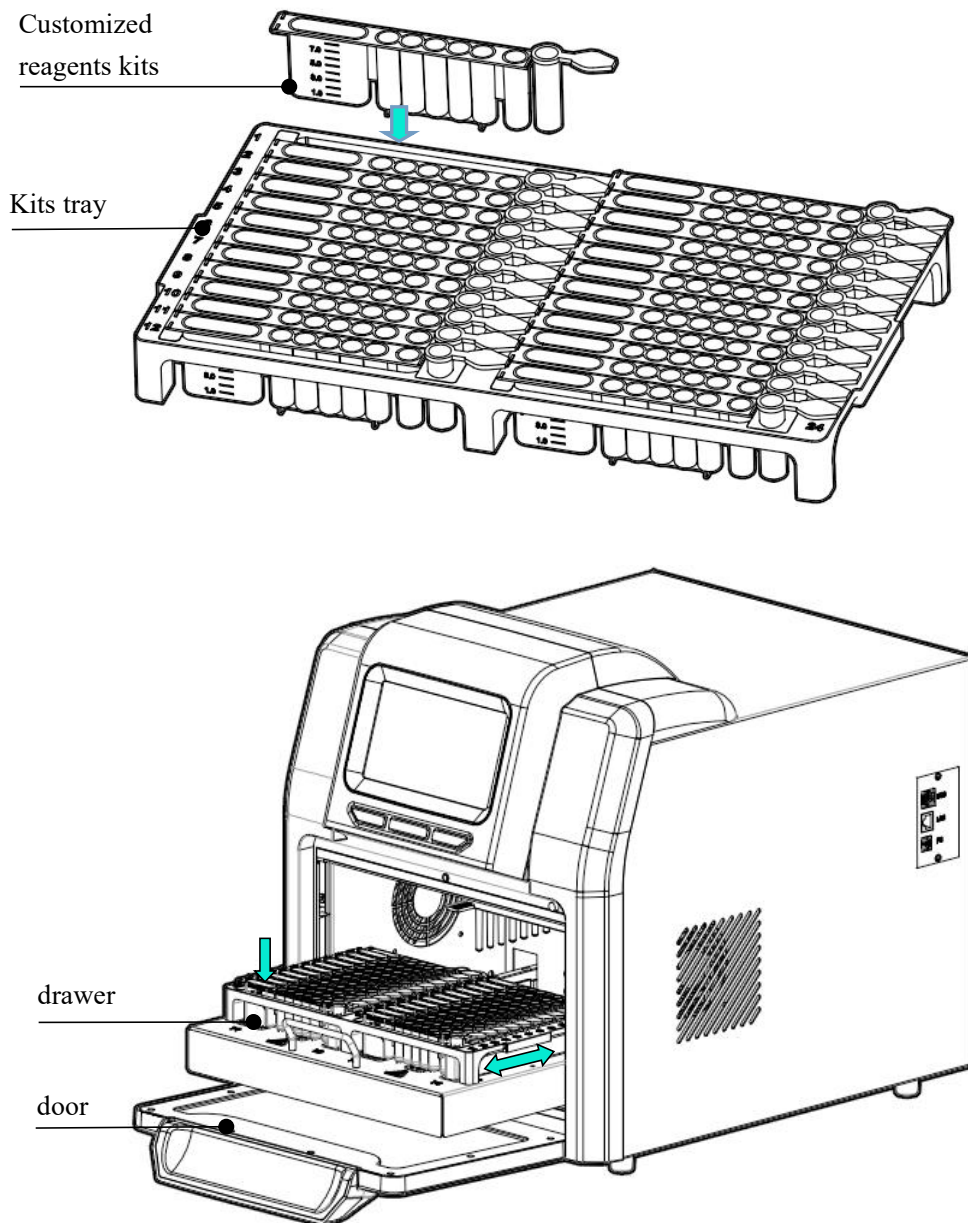
### 3.3 Install the 96 well reaction plate on Auto-Pure 32A.

Take out the drawer and put the 96 well reaction plate which already filled with samples mounted on the locating slot, make sure the plate with chamfering should be on the left side, then push back the drawer slowly.

96 well reaction plate
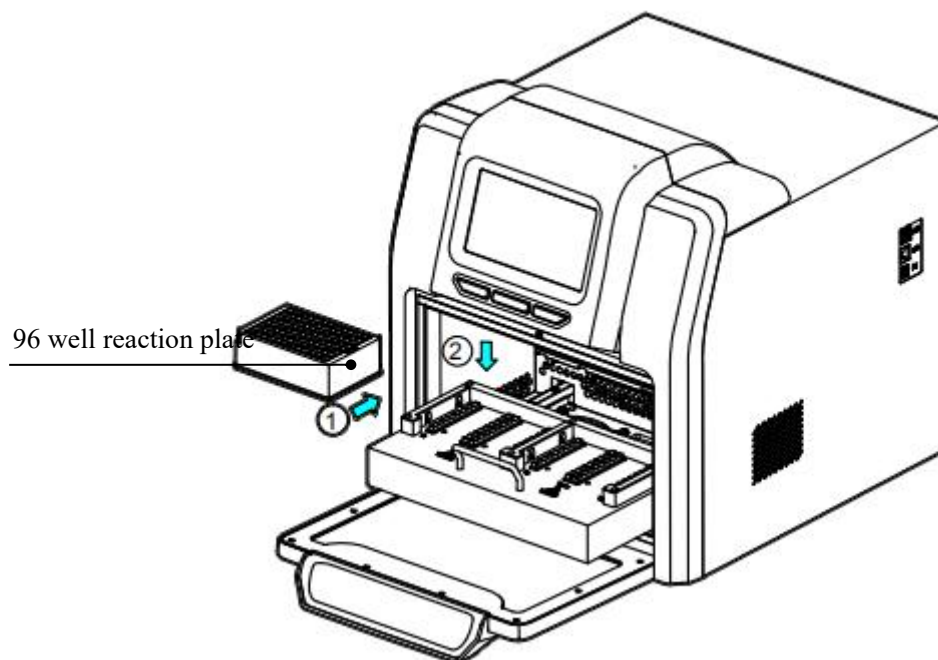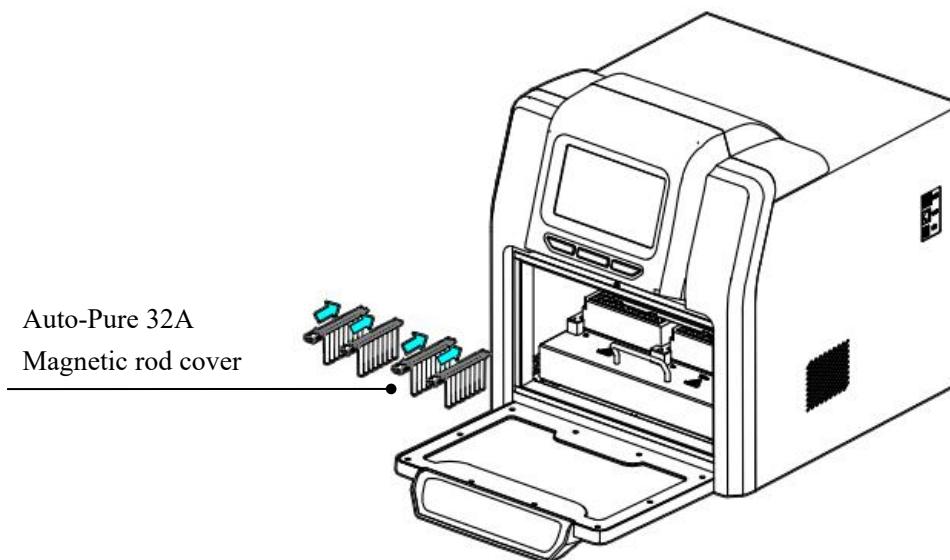
## 4.  Install the magnetic rod cover

### 4.1 Install the magnetic rod cover for 20A/20B/24D/24BT

Insert the magnetic rod cover completely on the mounting groove, and the installation quantity depends on the reagent kit number.
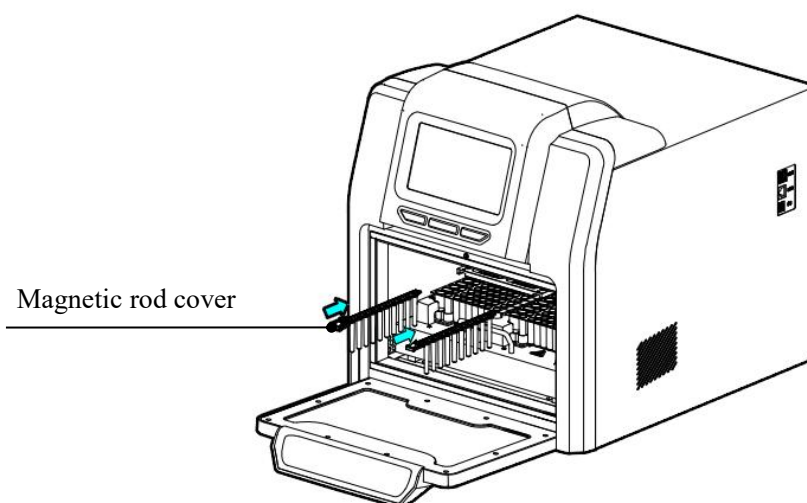


Magnetic rod cover

### 4.2 Install the magnetic rod cover for Auto-Pure 32A/48A

Insert the magnetic rod cover completely on the mounting groove, and the installation quantity depends on the reagent kit number.



Auto-Pure 32A
Magnetic rod cover

Note: Magnetic rod cover for Auto-Pure32A at most is 4pcs, for Auto-Pure at most is 6pcs.The installation method is same.
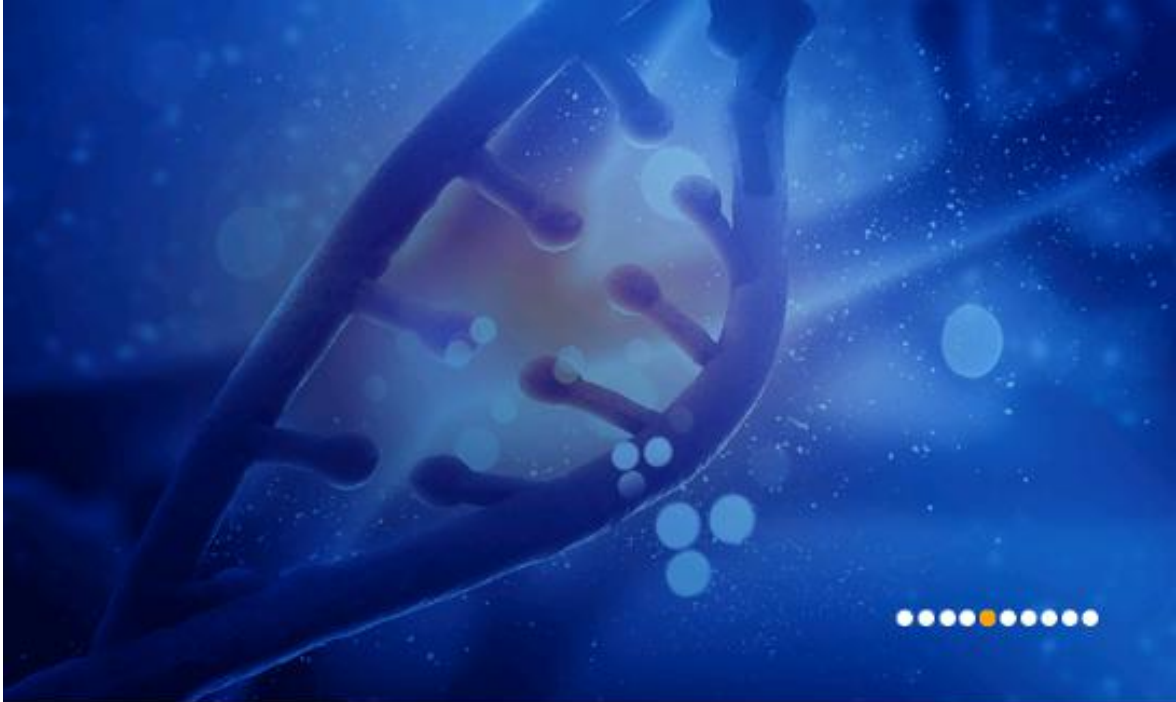
## 5. Remove magnetic rod cover

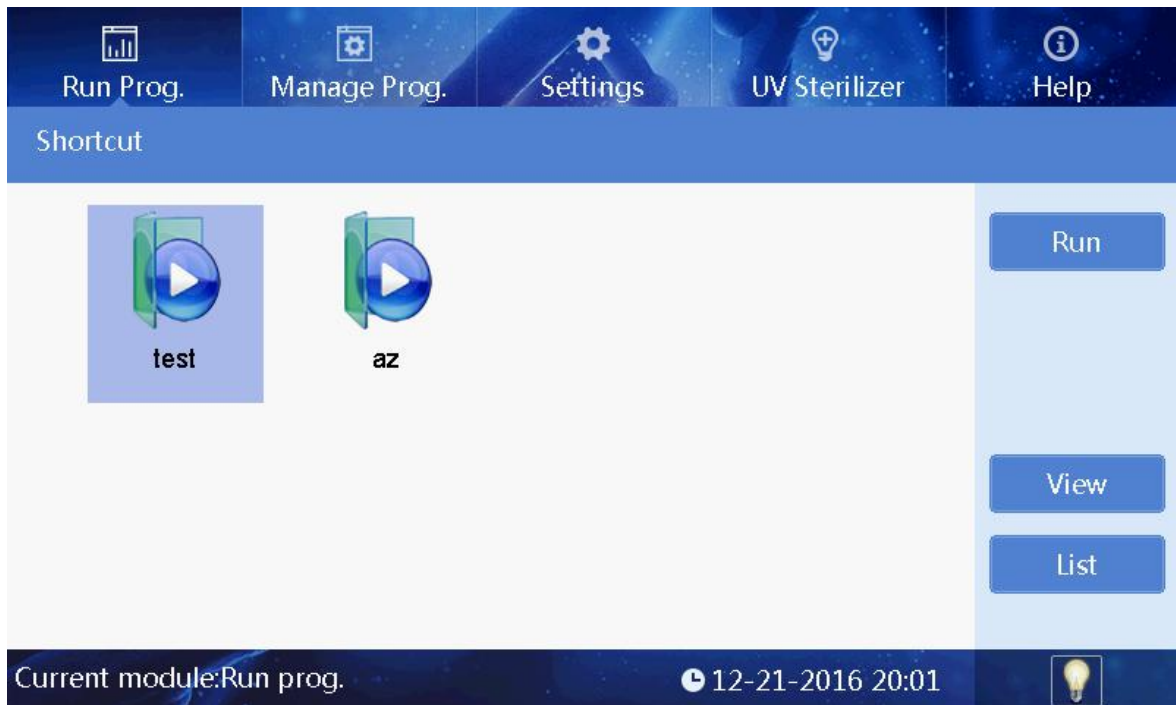Press the button and take out the magnetic rod cover as per below photo.

—12—
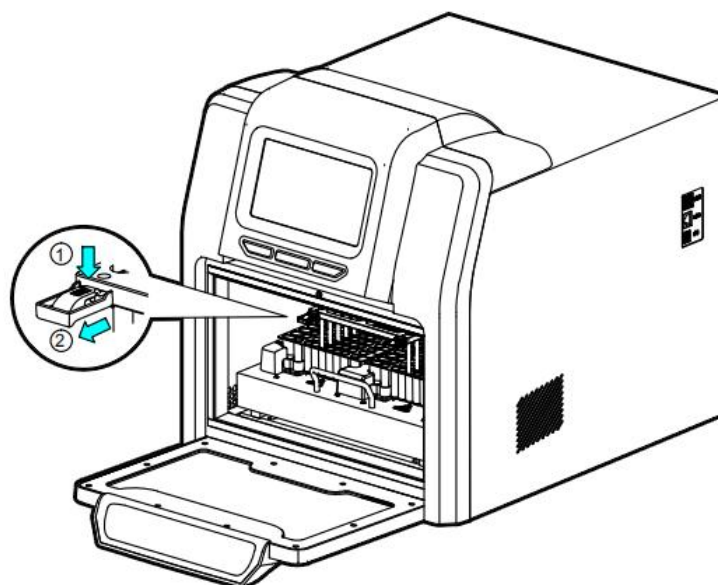
# 6. Operation

## 6.1Start-up Interface

Turn on the instrument and make sure the drawer is closed before start, the screen will display the start-up interface.



After start, it will enter into the shortcut mode as below:

## 6.2 Program Run

## 6.3 Shortcut mode

Under the shortcut mode, select the program needed and click "Run", it will enter into the program run interface.

The program can also be selected by press "Tab" button on the panel and then press "Run" for start or "Stop" for terminate.



Auto-Pure 20A Running interface

Auto-Pure 20B Running interface



Auto-Pure 24BT Running interface

Auto-Pure 24D Running interface



Auto-Pure 32A Running interface

Auto-Pure 48A Running interface

On the left side, it shows the current step info., when the exact reagent position start to run, then this position will be highlighted, and there will be temperature display on the position of heating function. The progress bar will display the progress and there's also left time display on the top right corner.

Click "Pause" to pause or continue the program.

Click "Stop", the program will stop and there will be check box. Click "Cancel", program will be continue and click "OK" the program run will be back to original place and the "Stop" button will change to "Run Again". Click "Run Again" to continue the program.

Click "Back" to return the previous menu.

**Remark: If the drawer is open during operation, there will be below message box and the device will stop to run, and the instrument will continue to run only after the drawer is closed.**
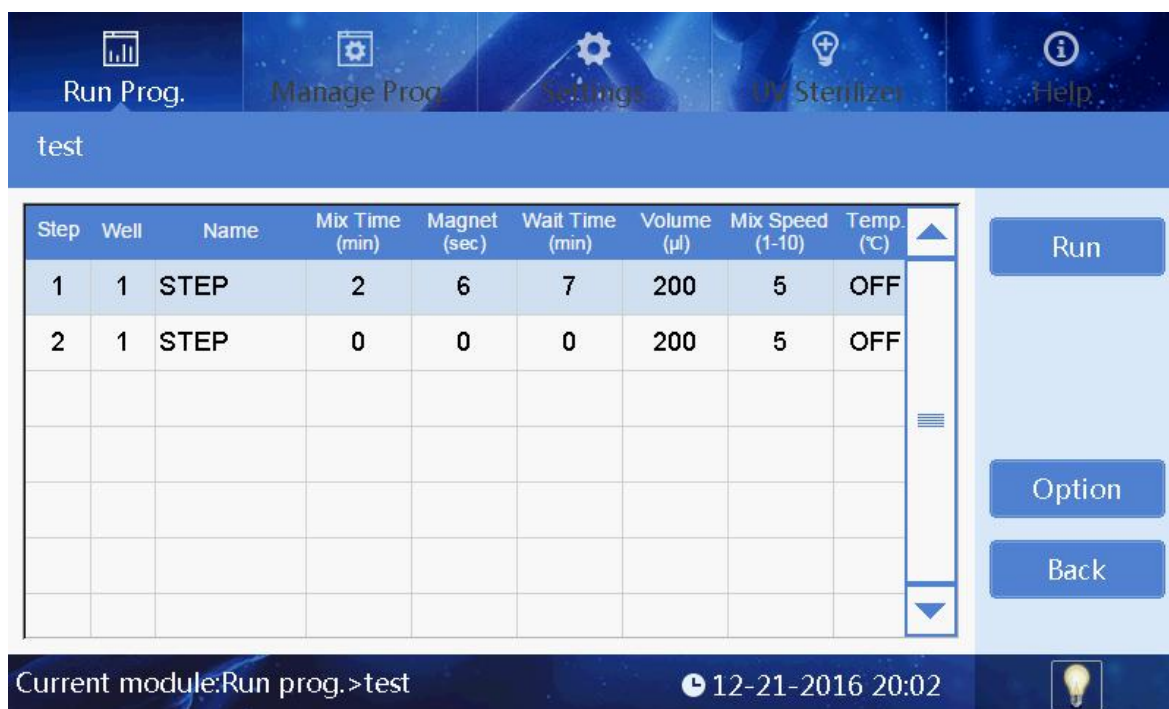
### 6.3.1 List mode
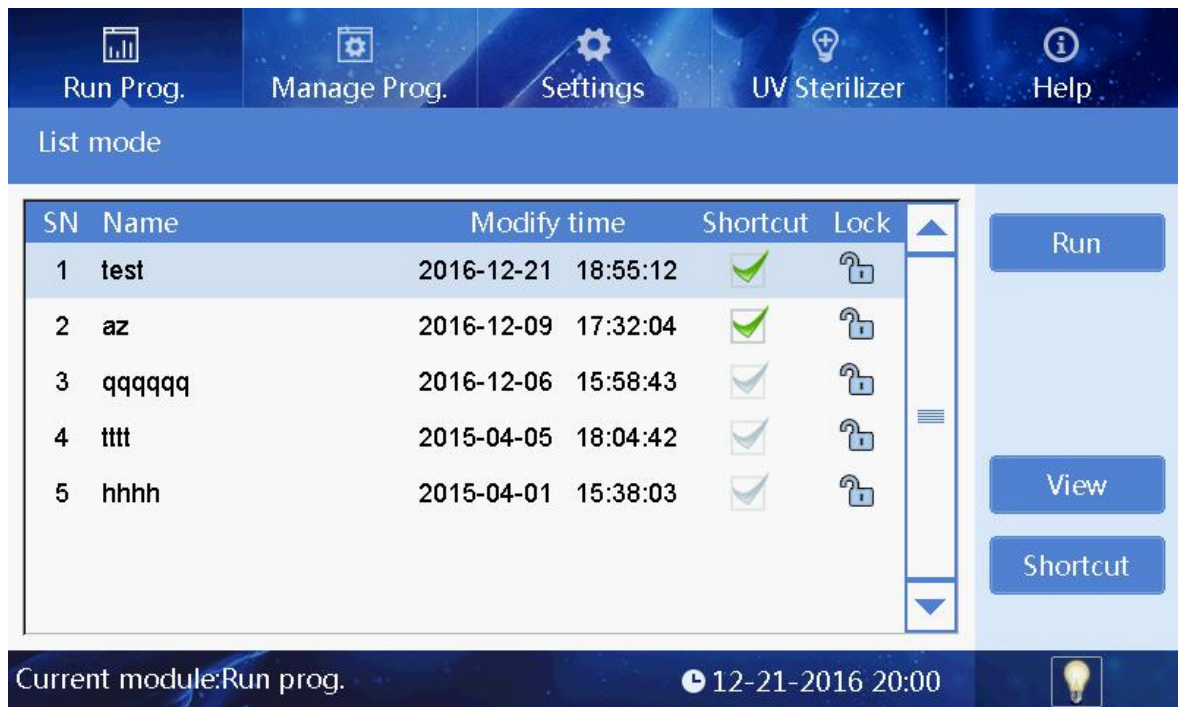


Users may review the file by scroll bar on the right side.

Select the program and click "Run" to enter into the run interface.

Click "View" to enter into the check interface.

| Step | Well | Name | Mix Time (min) | Magnet (sec) | Wait Time (min) | Volume (µl) | Mix Speed (1-10) | Temp. (℃) |
|------|------|------|------|------|------|------|------|------|
| 1 | 1 | STEP | 2 | 6 | 7 | 200 | 5 | OFF |
| 2 | 1 | STEP | 0 | 0 | 0 | 200 | 5 | OFF |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Current module:Run prog.>test          🕐 12-21-2016 20:02

Click "Run" to enter the running interface.

Click "Option" to view the parameter setting of the program.

Click "Back" to previous interface.

## 6.3.2  Lamp

At the bottom of interface, the icon "⬛" shows that the lamp is on,and the icon "⬛" shows that the lamp is off. Click this icon to change the state of the lamp.

## 6.4 Program Management

Click "Manage prog" into the surface of program management

| | | Run Prog. | Manage Prog. | Settings | UV Sterilizer | Help |
|---|---|---|---|---|---|---|

**Manage Prog.**

| SN | Name | Modify time | | Shortcut | Lock | | | New |
|---|---|---|---|---|---|---|---|---|
| 1 | test | 2016-12-21 | 18:55:12 | ✓ | 🔓 | | | Edit |
| 2 | az | 2016-12-09 | 17:32:04 | ✓ | 🔓 | | | Save as |
| 3 | qqqqqq | 2016-12-06 | 15:58:43 | ✓ | 🔓 | | | Delete |
| 4 | tttt | 2015-04-05 | 18:04:42 | ✓ | 🔓 | | | |
| 5 | hhhh | 2015-04-01 | 15:38:03 | ✓ | 🔓 | | | |

Current module:Manage prog.      🕐 12-21-2016 20:02

### 6.4.1   Shortcut operation

Click "√" of the program in the "Manage Prog." interface, the program will be displayed in the "Shortcut" list interface.

In the list of "Lock", if the icon is " 🔒 ", the program can not be edited, deleted and saved as; if the

icon is " 🔓 ", the program can be edited, deleted and saved as.

## 6.4.2  Program Management--Insert

Click "Insert" under the "Manage prog." to enter into the "Insert" surface.
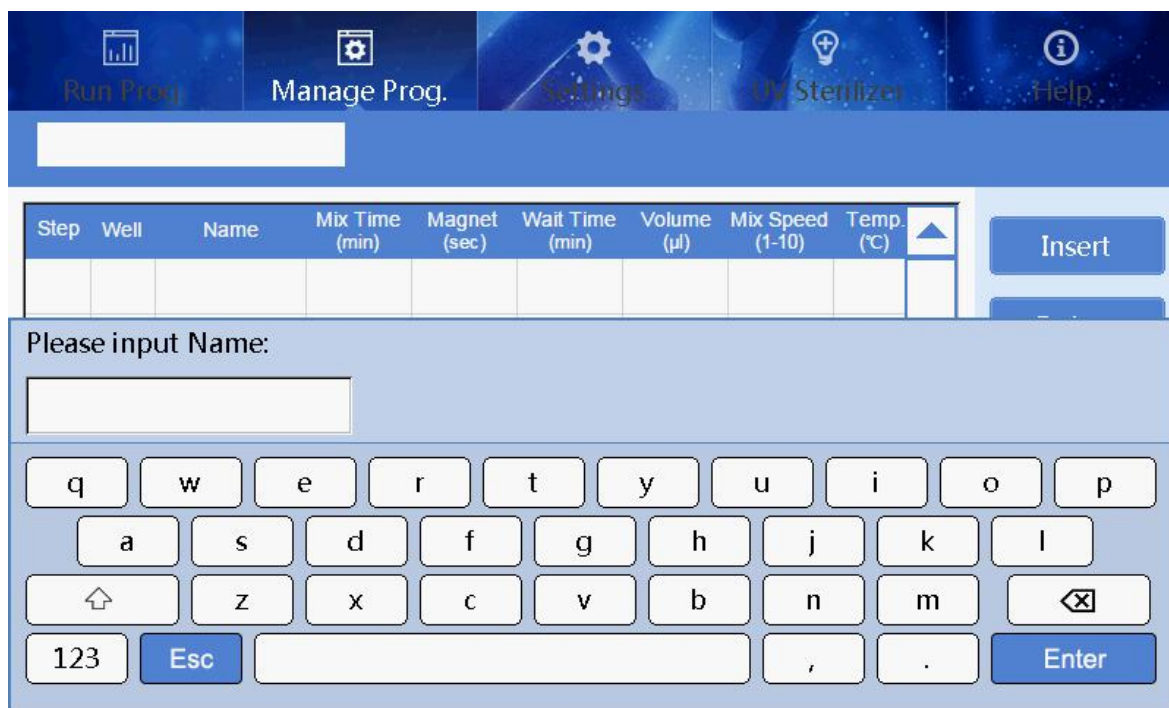


When new program, you should input the name of program in the first place.

Click "Insert" to add a new step.

Click "Well" to insert the well number, then input the program name, waiting time, mixing time, magnetic time and sample volume. At the end, please click the mixing speed to select the speed.

If input "0" for the position of well, insert step is pause, then only the name of step is able to edit., rest of parameters cannot be edit. Under this directive, magnetic rod and magnetic rod cover combined and rise.

If input "9" for the position of well, inset step is pause, then only the name of step is able to edit, rest of parameters cannot be edit. Under this directive, magnetic rod and magnetic rod cover rise but separate from each other. The magnetic rod cover is able to insert.

For Auto-Pure 20A, only well location 1, 2 & 9 have heating function.

For Auto-Pure 20B, only well location 1 & 7 have heating function.

For Auto-Pure 24BT, only well location 1 & 8 have heating function.

For Auto-Pure 24D, only well location 1 & 6 have heating function.

For Auto-Pure 32A, only well location 1 & 6 (Corresponding to the well location of 1,6,7 &12 for 96 well plate ) have heating function.

For Auto-Pure 48A, only well location 1,4 (Corresponding to the well location of 1,4,5,8,9 &12 for 96 well plate ) have heating function.

"Temperature" number box is available to input the temperature value that would like to set. If input the number of "37" or below, then the device won't heating when running to this step.

When selecting other wells location than the above, the corresponding step line "temperature" number box is not available .



Click " >> " to enter the extended parameter setting interface, it isn't necessary to set in normally

use, or you can reset if have special requirement. Click " << " back to the parameter setting interface.

Click "Delete" and then click "OK" to delete the last step; or click "Cancel" not to delete the last step.

Click "Option" to set "Heating block", "Temperature heating", "Temperature cooling", "Magnetic function" and "Dry function ", users may do the open setting for the protocol.

Click "Save" and then click "OK" to save the editing program; or click "Cancel" not to save the editing program.

Click "Back", if the new program has saved, then it will be back to "Management prog." interface. If not, Click "Yes" to save and back to "Management prog." interface.

Click "Cancel", it will be back to "Management prog" interface and without save.

Click "Cancel", it will stay in the "Insert" surface.

### 6.4.3  Program Management--Edit

Choose the program in the "Manage prog." interface, then click "Edit" enter into edit program.

Same step as "Insert" in 6.3.2

### 6.4.4  Program Management-Save as

Under the "Manage prog." interface to make selection, Click "Save as" and then input a new program name, click "Enter" to save the current program, or "ESC" to not save.

### 6.4.5  Program Management-Delete

Under the "Manage prog." interface to make selection, Click "Delete" and then click "Ok" to confirm the delete, or "Cancel" to not delete.

## 6.5    System Setting

Click "Settings" and enter into the System Setting surface



### 6.5.1  System Setting-Instrument Setting

Click "Instrument" to input the right password and then enter the setting interface to set the

parameter of instrument.



Remarks：Regularly, there's no need to set unless it's failed and need repair, as instrument has already finished setting before factory dispatch, and even if it's failed, this kind setting will be authorized by distributor or manufacturer.
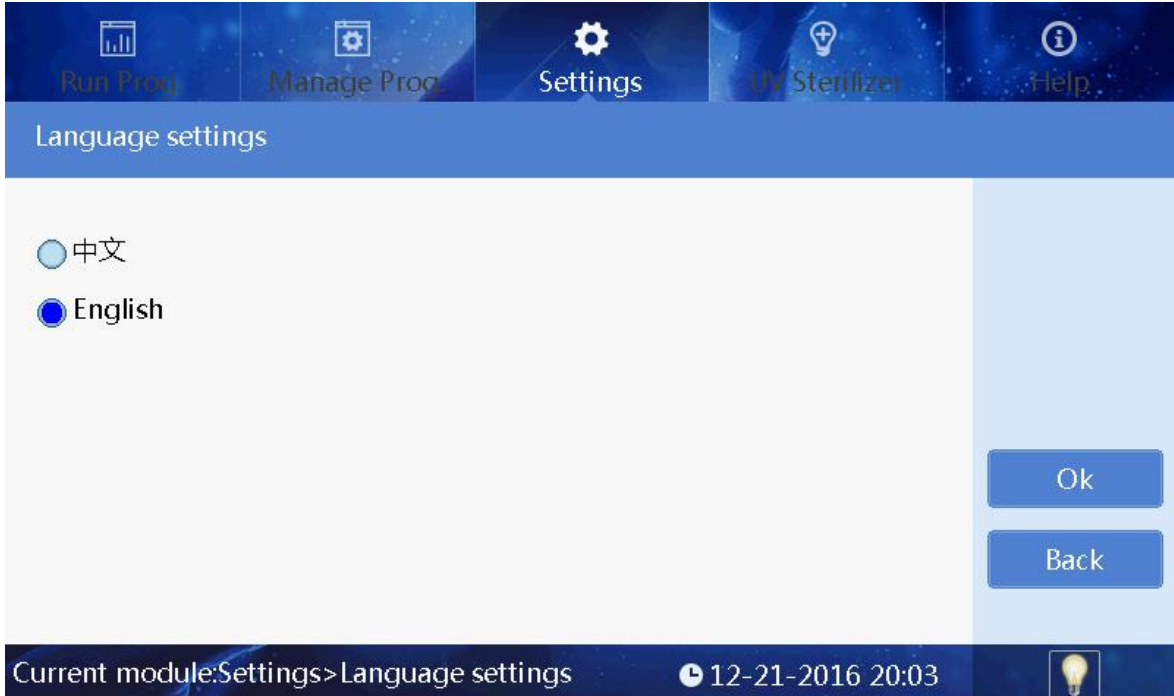
## 6.5.2  System Setting -- System Time

Click "Date & Time" to set system time by directly enter into number or click "+" "-".
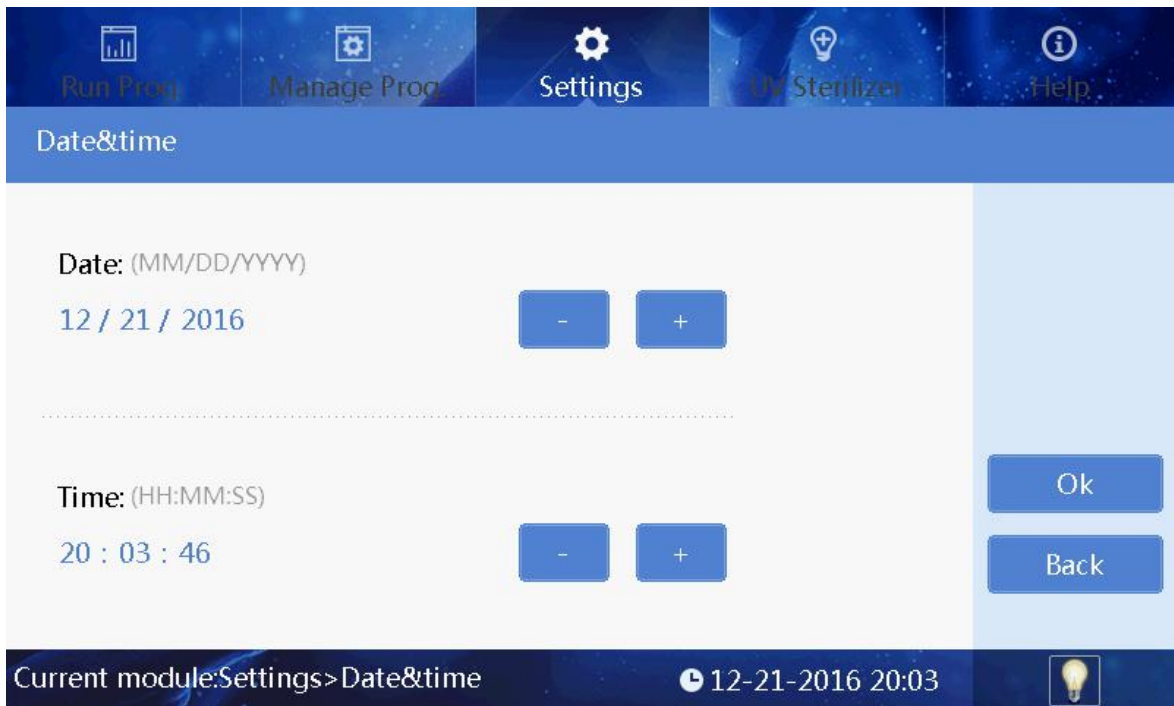
### 6.5.3  System Setting--Language

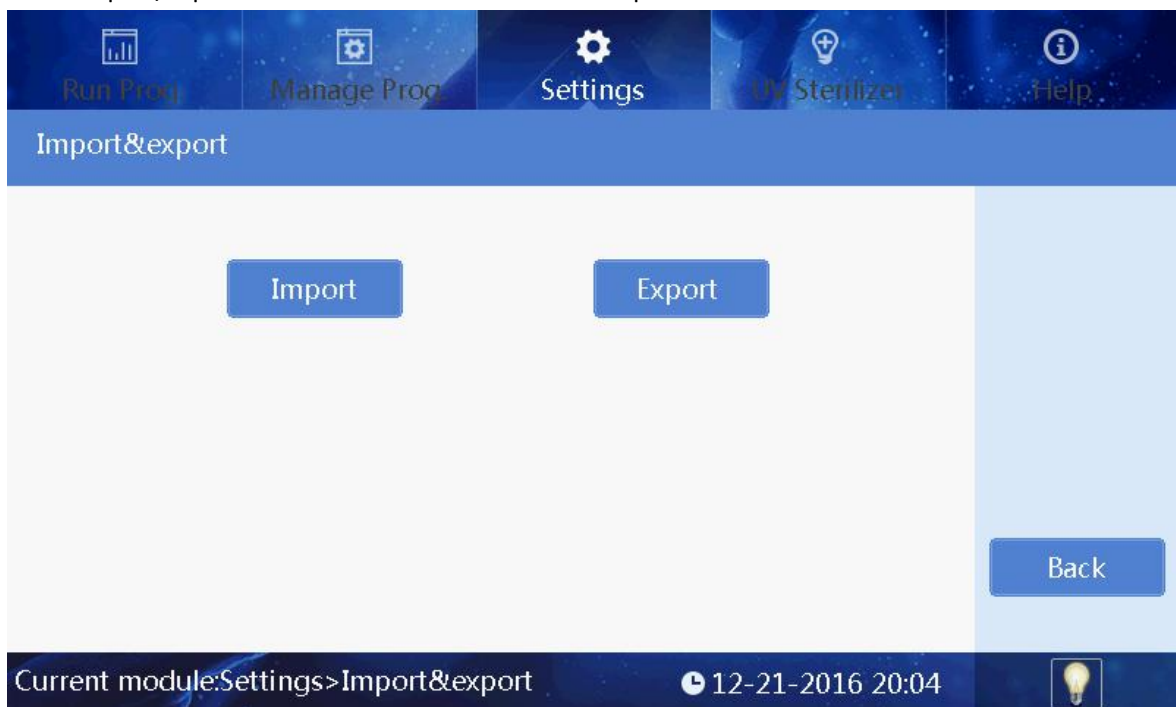Click "Language Setting" to choose the language that you need.



### 6.5.4  System Setting -- Fan

Click " Air Ejector Fan" to have the fan setting
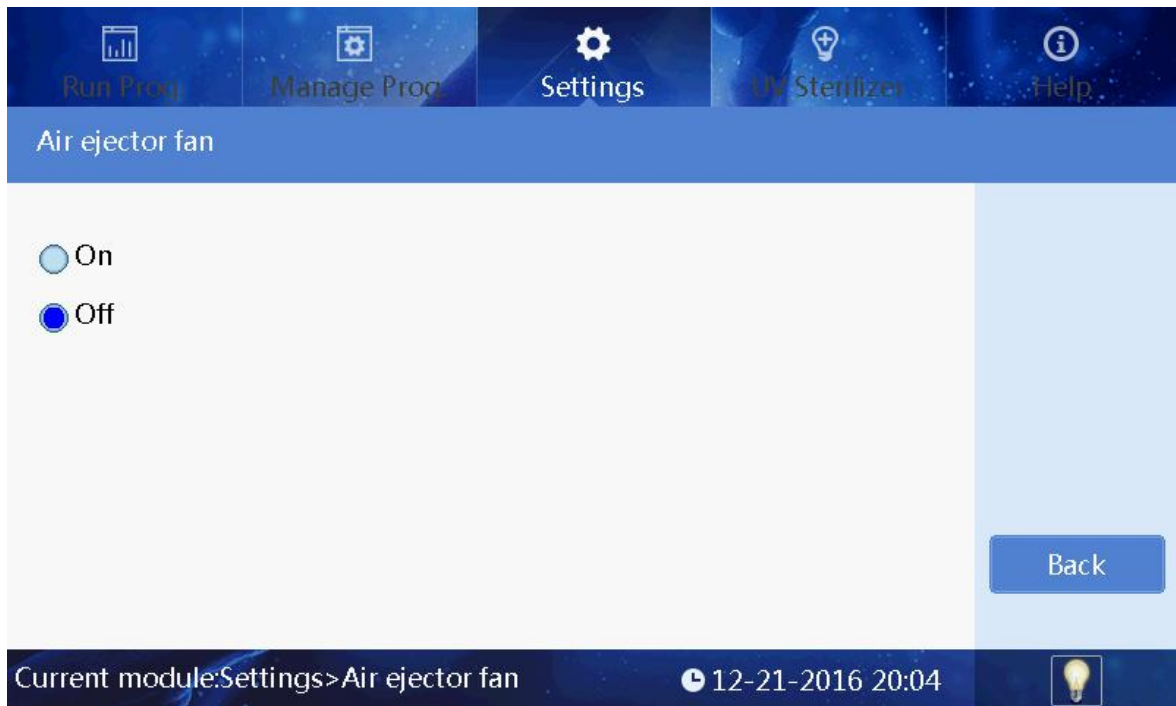
### 6.5.5  System Setting -- Import/Export

Click "Import/Export" and insert U disk to finish the step.



### 6.5.6  System Setting--Software upgrade

Click "Software upgrade" to input the right password enter the interface and then insert the U disk to operation.
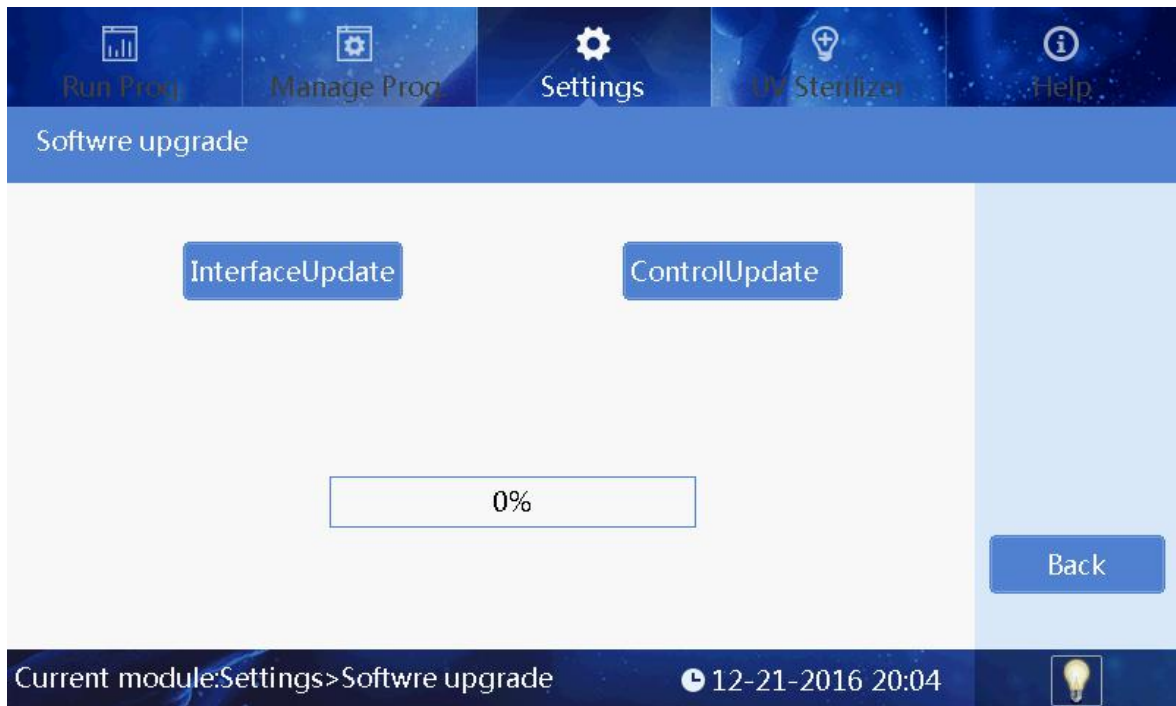
### 6.5.7  UV sterilization

Click "UV sterilization" and input number or click "+" "-"to set time.
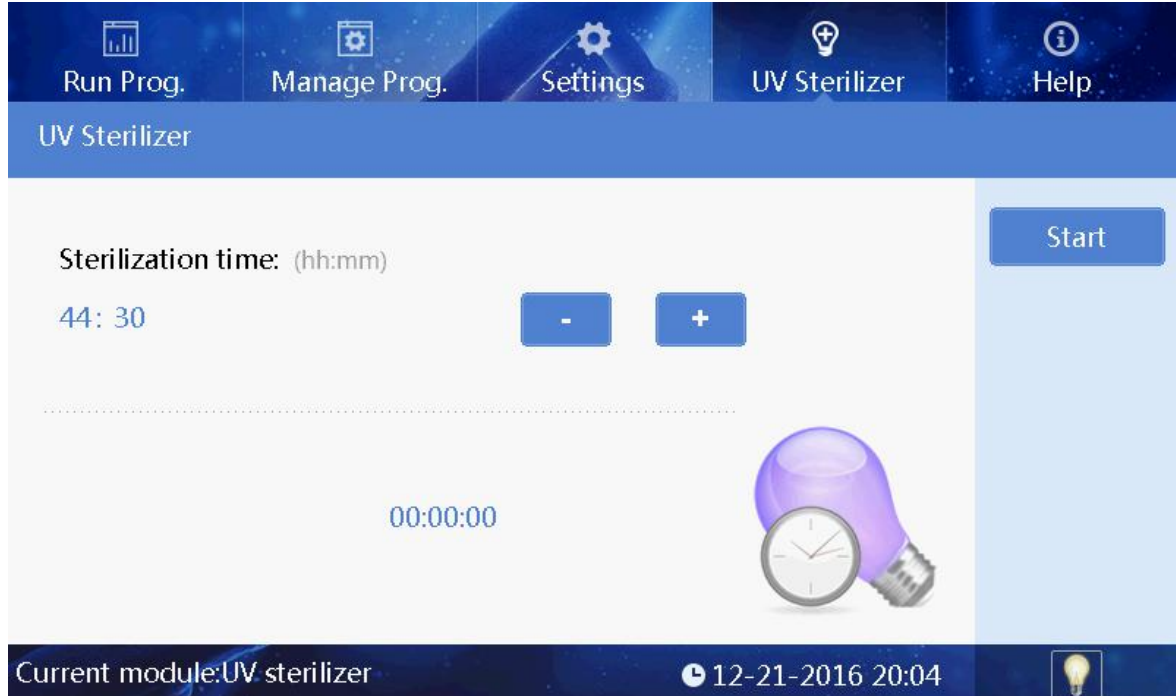


Click "Start" to open the UV light to start UV sterilization and time count down.
Click "Stop" to stop the UV sterilization.

During sterilization, the UV light will automatically stop when the drawer is open, and it will continue

after the drawer is closed.

## 6.6   Help

Click "Help" to check the help info.Help interface displays the relevant features and version information.

# Chapter 5 Troubleshooting

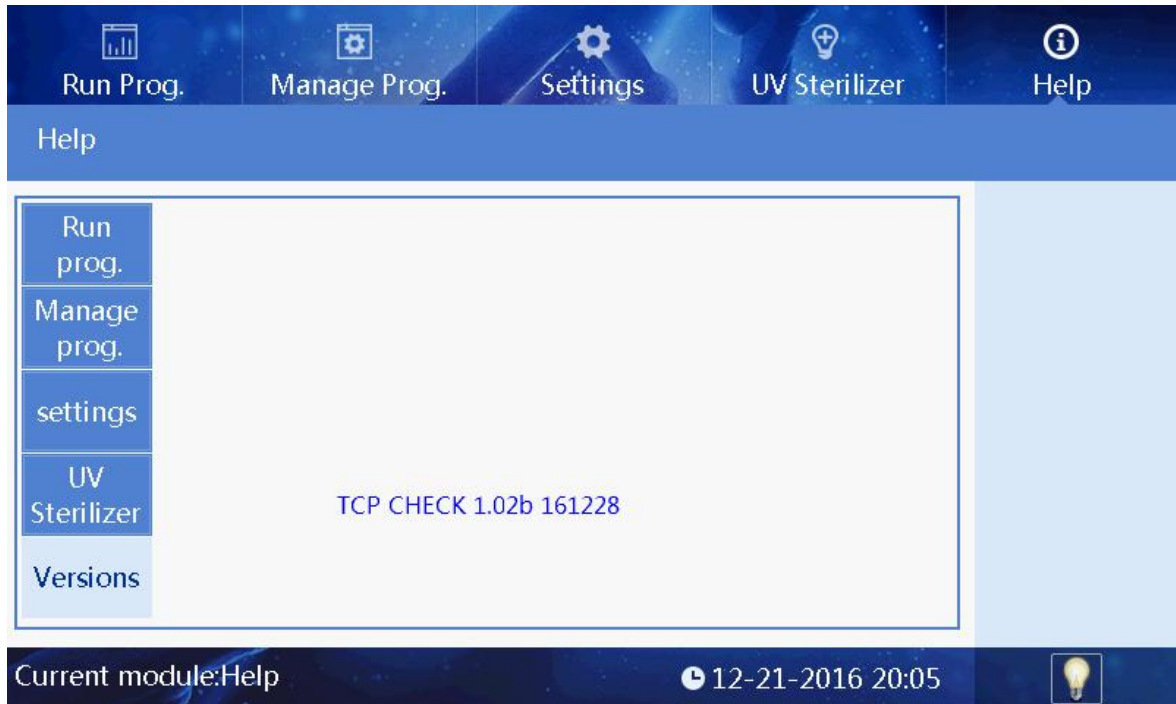| No | Fault phenomenon | Possible Causes | Solution |
|---|---|---|---|
| 1 | No display after switch on | Power not connected | Check power |
| | | Switch failure | Replace switch |
| | | Fuse failure | Replace fuse （5X20 250V 8A） |
| | | Others | Contact with Distributor |
| 2 | No UV light | UV light failure | Replace light tube<br>Contact with distributor |
| 3 | No light | Light failure | Replace light tube<br>Contact with distributor |
| 4 | Instrument not able to automatically stop after drawer is open | Sensor failure | Contact with distributor |
| 5 | Big variance between actual and display temperature | Sensor failure | Contact with distributor |
| 6 | No heating in heating strip | Sensor failure | Contact with distributor |
| | | SCR failure | |
| | | Heater failure | |
| 7 | Instrument can't run | Controller failure | Contact with distributor |
| | | Motor failure | |
| 8 | Abnormal sound during operation | guide rail install incorrect | Contact with distributor |
| | | Motor failure | |
| | | synchronous belt abrasion | |
| 9 | Press button failure | Press button failure | Contact with distributor |

## Software fault alarm list

| Fault type | Fault name | Error message | Model |
|---|---|---|---|
| Temperature (code: 0) | T1,T2,T3,T4,T5,T6, T7,T8 Overheat | E011,E021,E031,E041, E051,E061,E071,E081 | Auto-Pure 32A Auto-Pure 48A |
| | T1,T2,T3,T4,T5,T6, T7,T8 Drive circuit fault | E018,E028,E038,E048, E058,E068,E078,E088 | |
| | T1,T2,T3,T4,T5,T6, T7,T8 Open circuit | E015,E025,E035,E045, E055,E065,E075,E085 | |
| | T1,T2,T3,T4,T5,T6, T7,T8Short circuit | E016,E026,E036,E046, E056,E066,E076,E086 | |
| | T1,T2,T3,T4 Overheat | E011,E021,E031,E041 | Auto-Pure 20A Auto-Pure 20B Auto-Pure 24D Auto-Pure 24BT |
| | T1,T2,T3,T4 Drive circuit fault | E018,E028,E038,E048 | |
| | T1,T2,T3,T4 Open circuit | E015,E025,E035,E045 | |
| | T1,T2,T3,T4 Short circuit | E016,E026,E036,E046 | |
| | The drive circuit of exhaust fan fault | E019 | Auto-Pure 20A Auto-Pure 20B Auto-Pure 24D Auto-Pure 24BT Auto-Pure 32A Auto-Pure 48A |
| | The drive circuit of cooling fan fault | E009 | |
| Electric machinery (code: 1) | Electric machinery brake lock fault | E108 | |
| Electric machinery stroke position (code:4) | The left sensor | E403 | |
| | The sensor of magnetic bar cover on electric machinery position fault | E425 | |
| | The sensor of magnetic bar on electric machinery position fault | E415 | |
| LCD, Crystal oscillator, Storage (code: 7) | The clock crystal fault | E702 | |
| | The storage chip E2P fault, setting parameter lost | E703 | |
| Communication (code: 8) | Online failure | E801 | |

# Chapter 6 Spare Parts List

**1.    Auto-Pure 20A/20B Spare parts list**

| No. | Item | Unit | Qty | Remark |
|-----|------|------|-----|--------|
| 1 | Power line | PCS | 1 | |
| 2 | Mouse | PCS | 1 | |
| 3 | Kits tray | PCS | 2 | |
| 4 | Allen wrench | PCS | 1 | |
| 5 | U disk | PCS | 1 | For upgrading software and transferring programs |

**2.    Auto-Pure 32A/48A /24D/24BT Spare parts list**

| No. | Item | Unit | Qty | Remark |
|-----|------|------|-----|--------|
| 1 | Power line | pc | 1 | |
| 2 | Mouse | pc | 1 | |
| 3 | Allen wrench | pc | 1 | |
| 4 | U disk | PCS | 1 | For upgrading software and transferring programs |

# Chapter 7 Abbreviation and Symbols

1.  **Abbreviation**

Abbreviation used

| | |
|---|---|
| A | Ampere |
| AC | Alternating current |
| V | Volt |
| Hz | Hertz |
| W | Watt |
| USB | Universal Serial Bus |
| SD | Secure Digital Card |
| WiFi | WLAN |
| kg | Kilogram |
| mm | Millimeter |
| μL | Microlitre |
| hPa | Hectopascal |
| ℃ | Degree Centigrade |
| CV | Coefficient of variation of well |
| TAB | Switch |
| RUN | Operation |
| STOP | Stop |

## 2.  Symbols

Symbols used on device

| | |
|---|---|
| ⚠ | Warning |
| 🔥 | Heating |
| C E | Indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area |
| | |
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## Notes