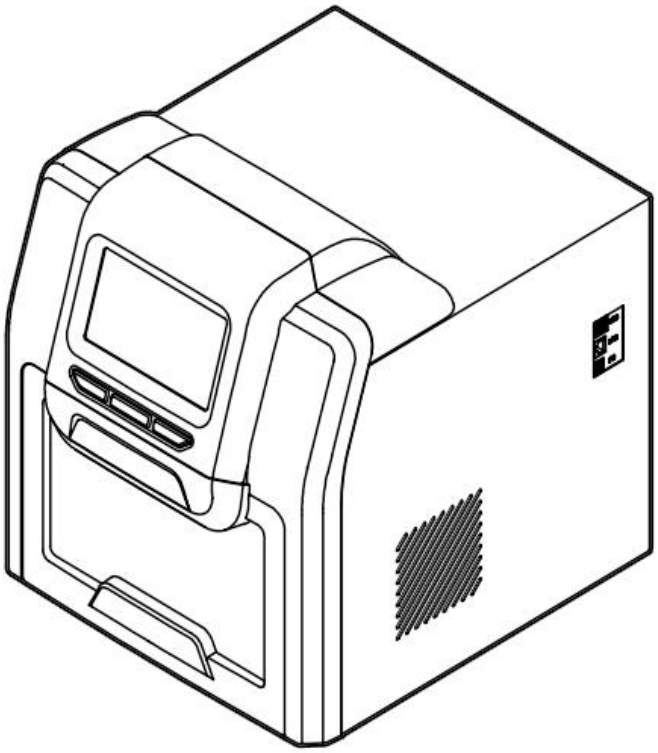
24-channel fully automatic nucleic acid extraction instrument（QP-AUT-24 ）

V3.0



Version modification Record:

Version No.	Date	Modification Description
V1.0	2019.1.22	➢ Initial Release
V2.0	2019.12.17	➢ Increase or decrease model
V2.1	2020.5.15	➢ Add usb disk accessory
V3.0	2020.7.10	➢ Add symbols

Forewords

Thank you for purchasing QP-AUT-24 Instrument 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 T

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

QP-AUT-24 Instrument 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 1~24 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%

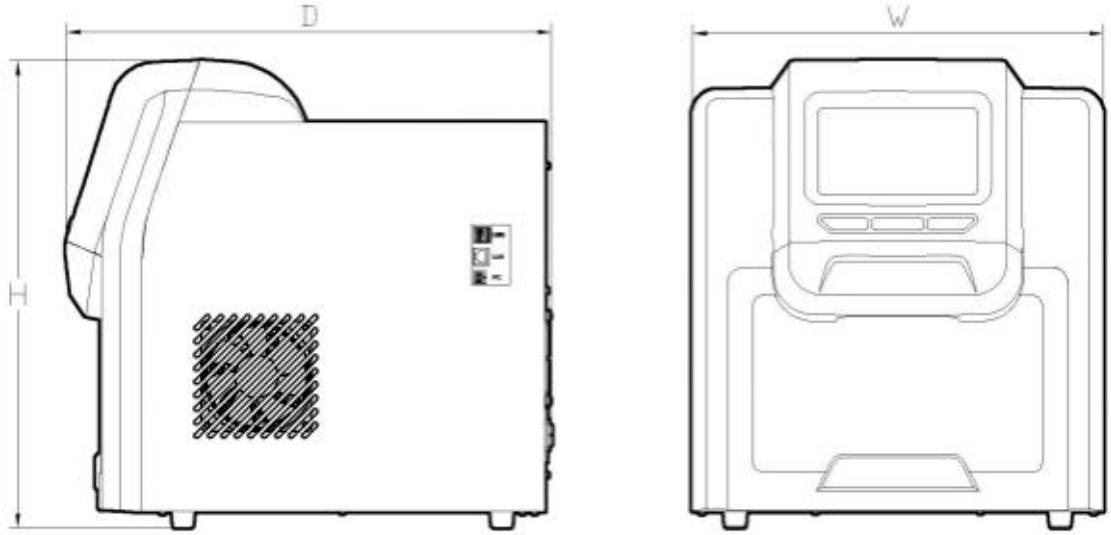
Input: AC 100～240V，50Hz/60Hz

2. Basic parameter & Performance

Table 1 Basic parameter & Performance

Model / Parameter	24-channel fully automatic nucleic acid extraction instrument
Principle	Magnetic Particle Method
Throughput	1~24
Kits	10ml Kits+ 2ml tubes
Sample Volume/μL	50~10000
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×520mm×450mm
Weight（kg）	30kg

3. Overall Dimension



Dimension（W×D×H）

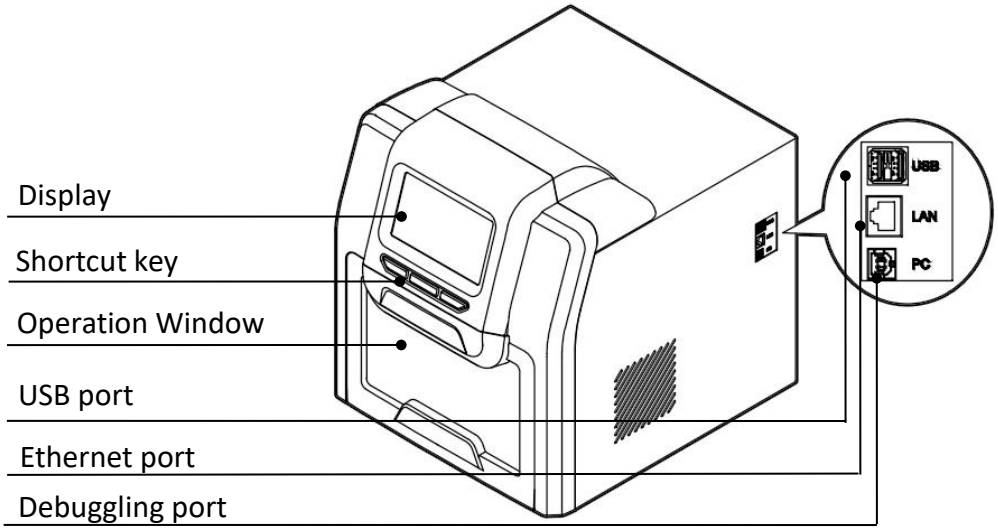
QP-AUT-24 Instrument：400mm×520mm×450mm

Chapter 3 Product Introduction

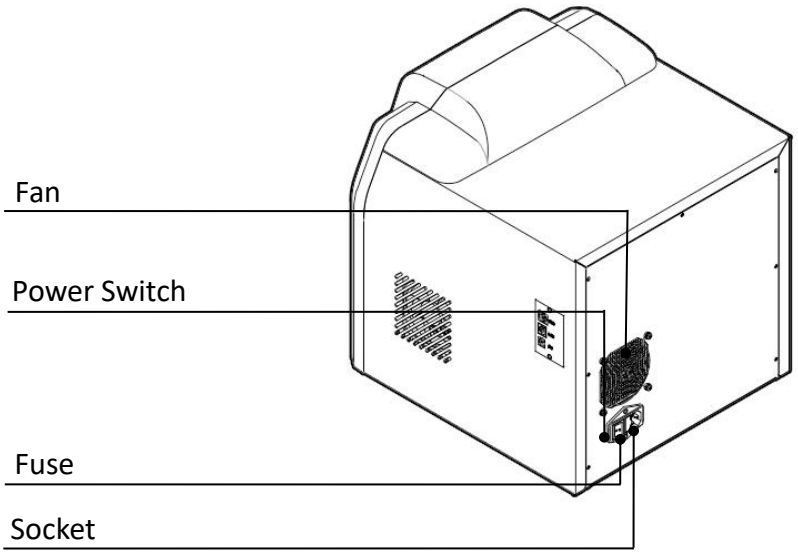
This chapter basically introduce the instrument structure, operation buttons, display panel as well as the preparations before operate. For the first time user, please make sure to read this chapter before start.

1. Structure

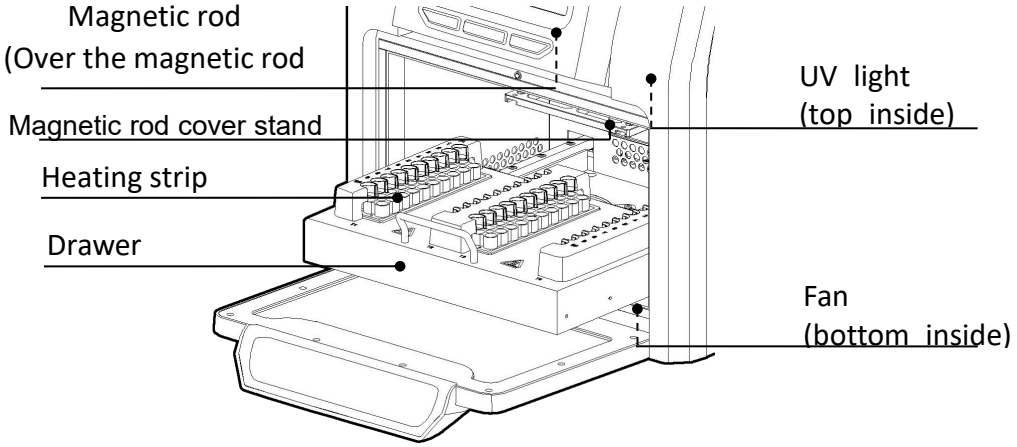
1.1. Front



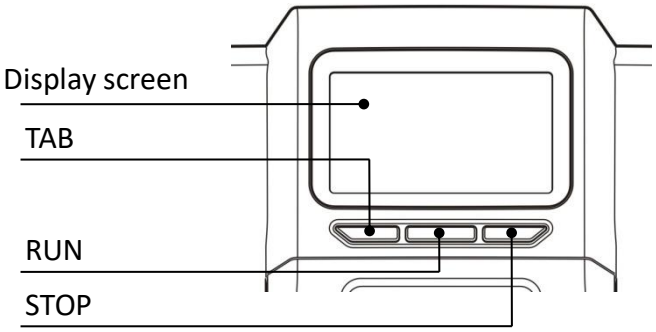
1.2. Back



1.3. QP-AUT-24 Inside view



2. Operation panel



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

TAB: Select for the shortcut program

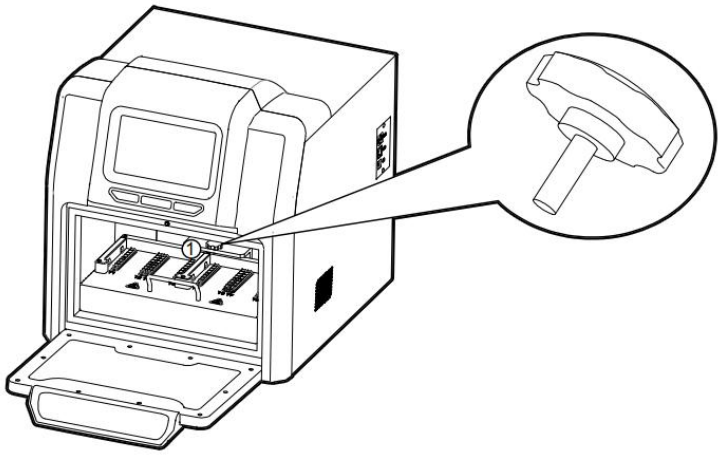
RUN: Run for the shortcut program

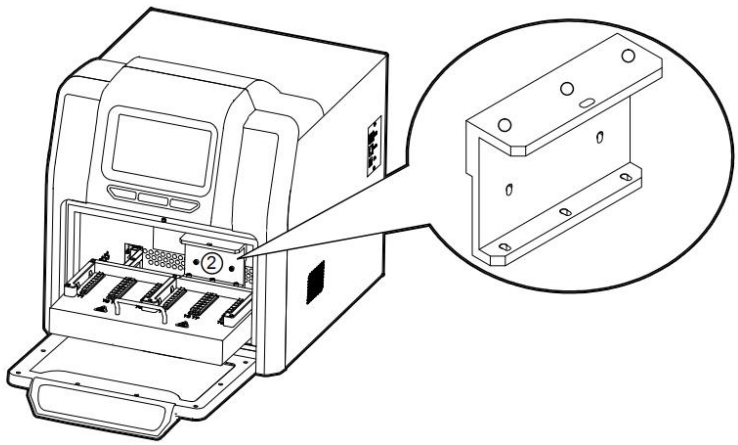
STOP: Stop operating

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.

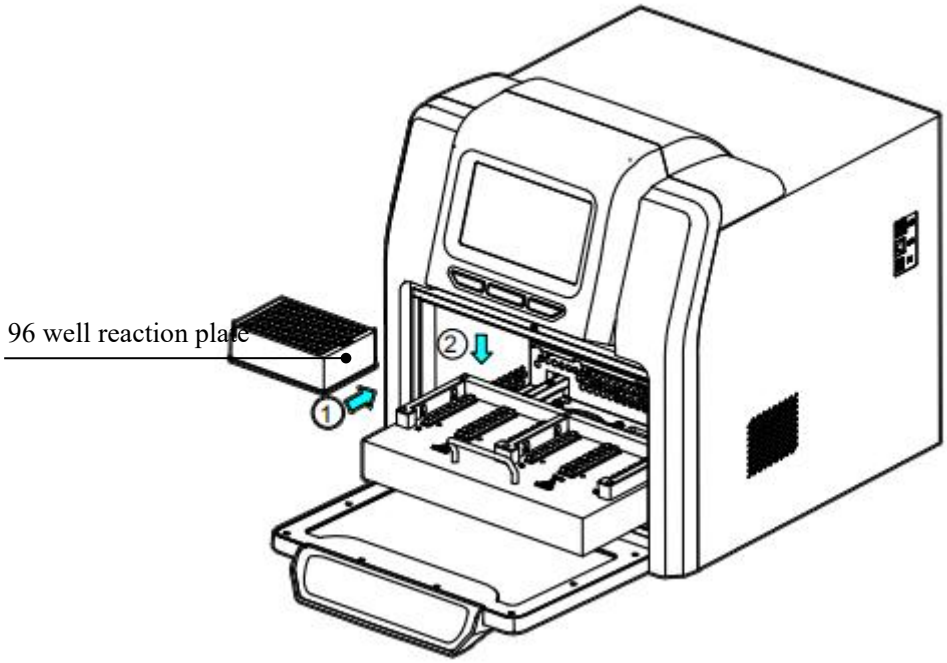
2. Connect the power

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 96 well reaction plate on QP-AUT-24 Instrument.

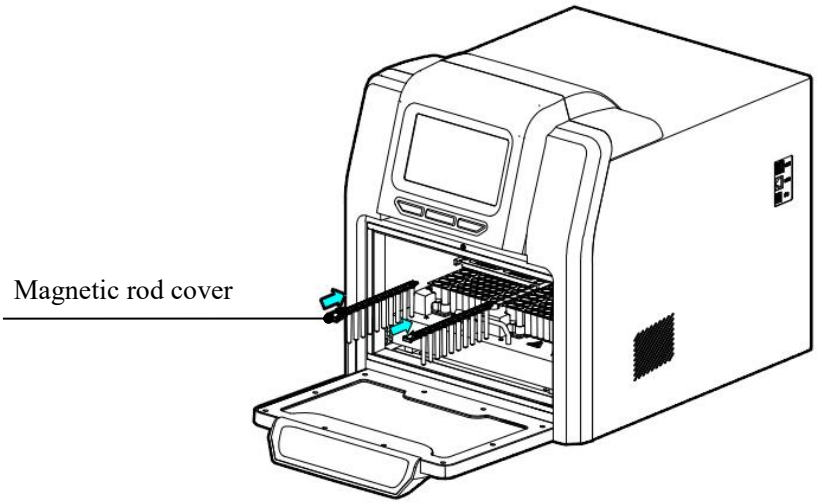
Take out the drawer and put the 96 well reaction plate which already filled with samples mounted on the locating slot, make sure the plate with chamfering should be on the left side, then push back the drawer slowly.



4. Install the magnetic rod cover

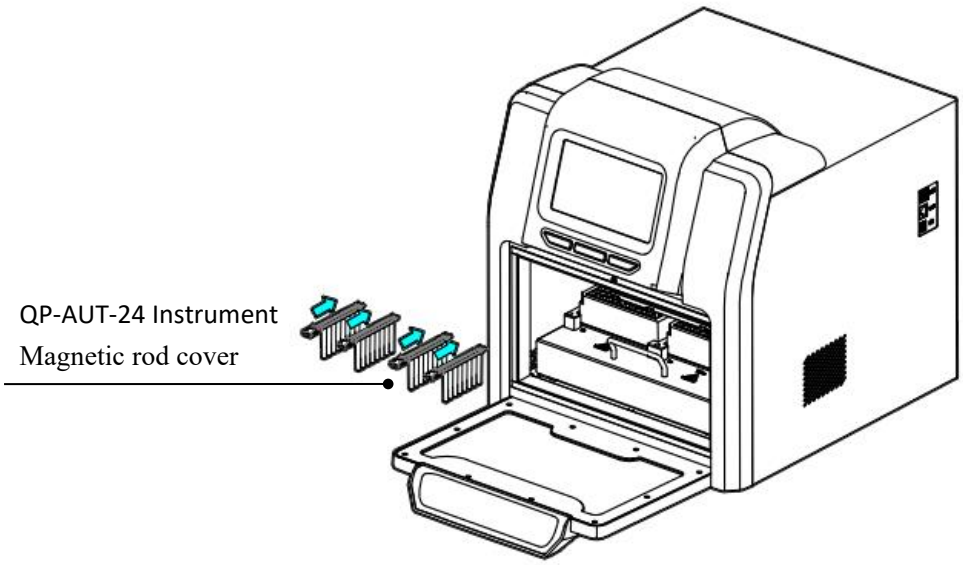
4.1 Install the magnetic rod cover for QP-AUT-24 Instrument

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



4.2 Install the magnetic rod cover for QP-AUT-24 Instrument

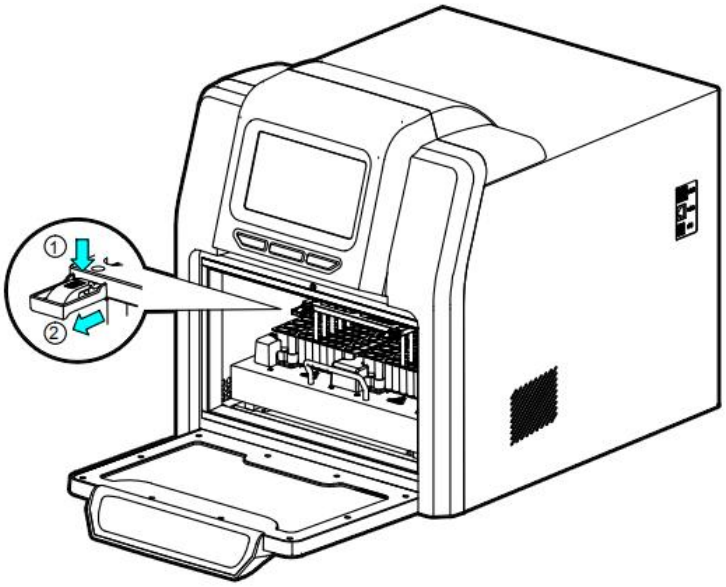
Insert the magnetic rod cover completely on the mounting groove, and the installation quantity depends on the reagent kit number.



Note: Magnetic rod cover for QP-AUT-24 Instrument at most is 4pcs.The installation method is same.

5. Remove magnetic rod cover

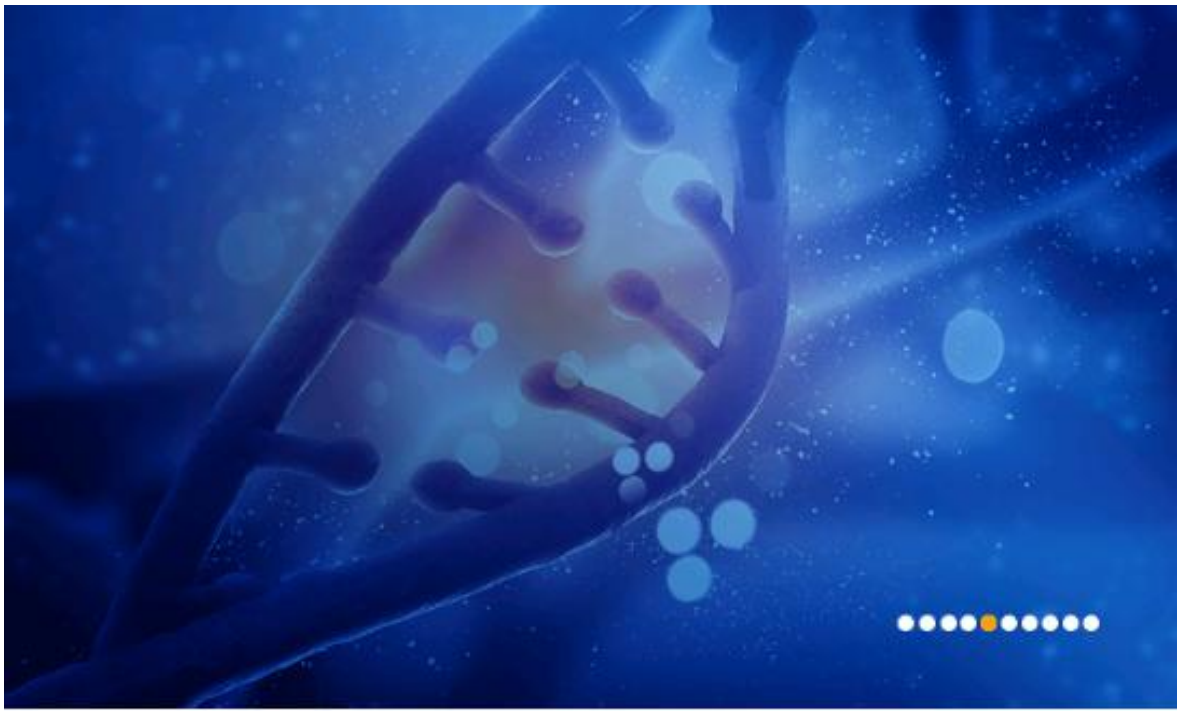
Press the button and take out the magnetic rod cover as per below photo.



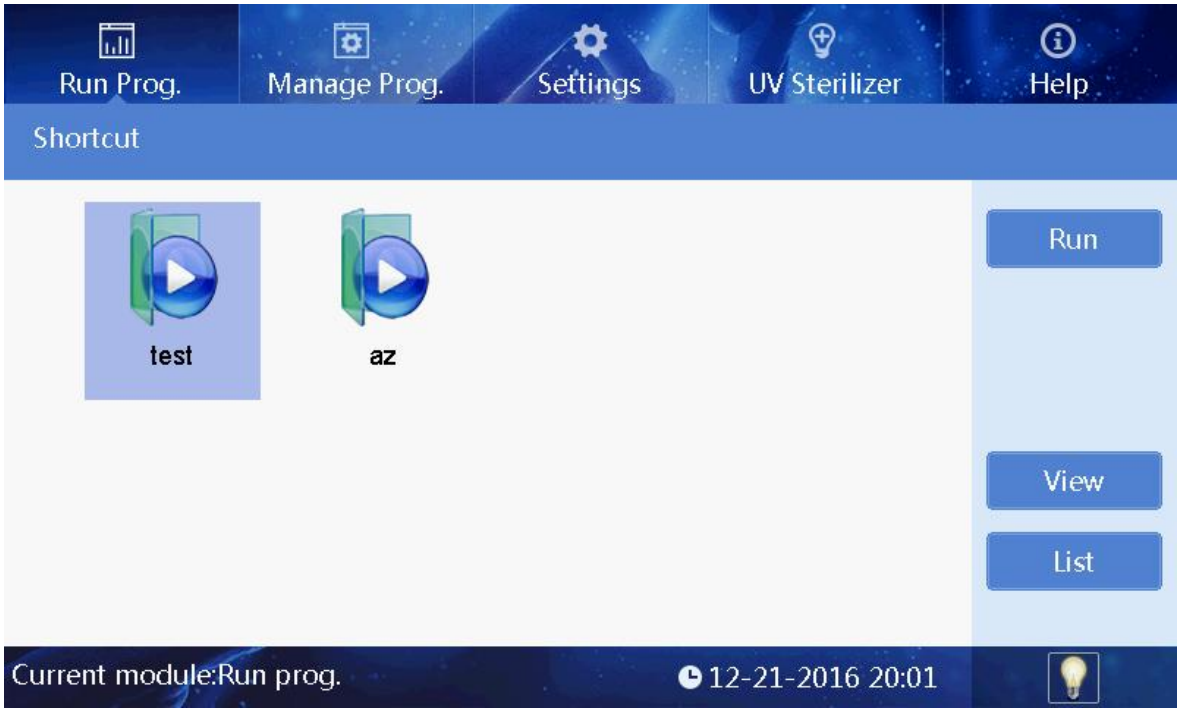
6. Operation

7.1 Start-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:



7.2 Program Run

7.3 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.

QP-AUT-24 Instrument 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.

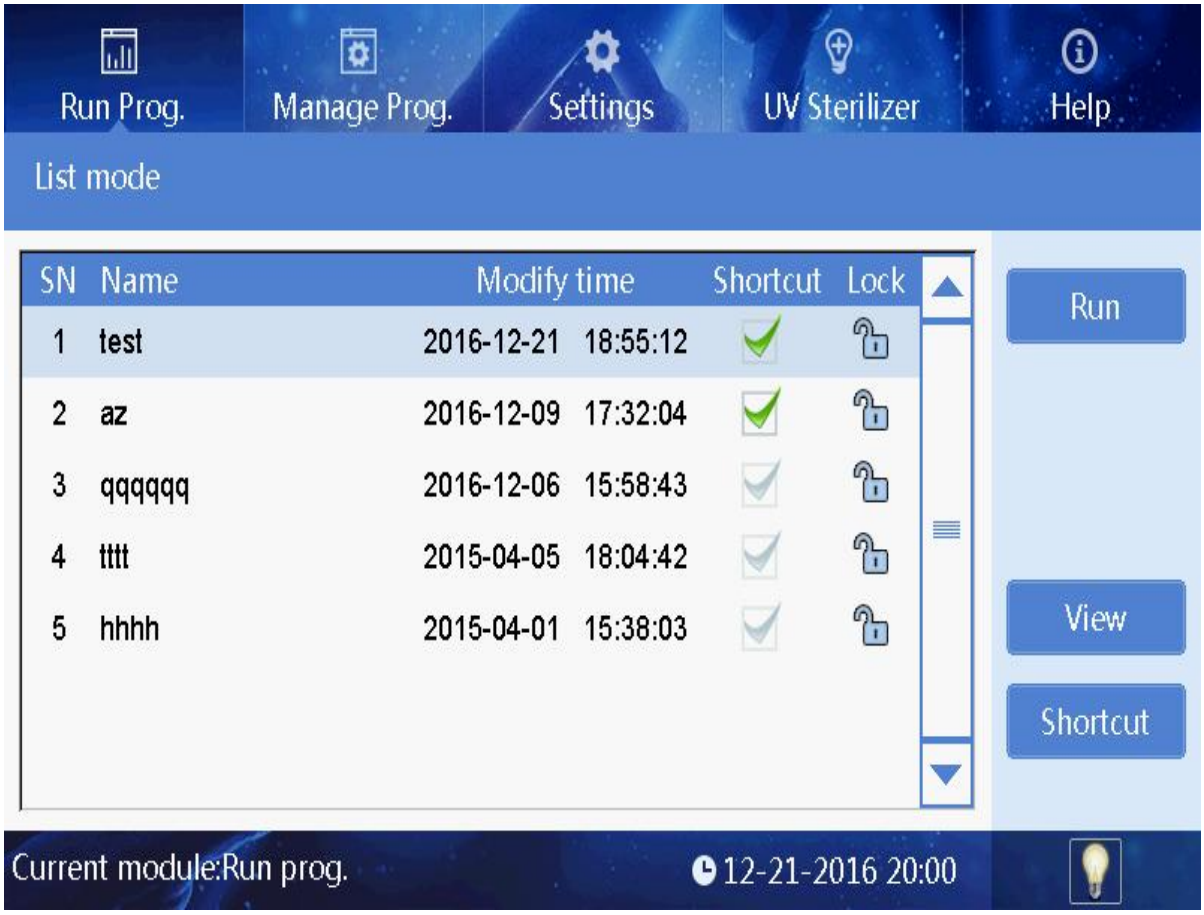
Click "Pause" to pause or continue the program.

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.

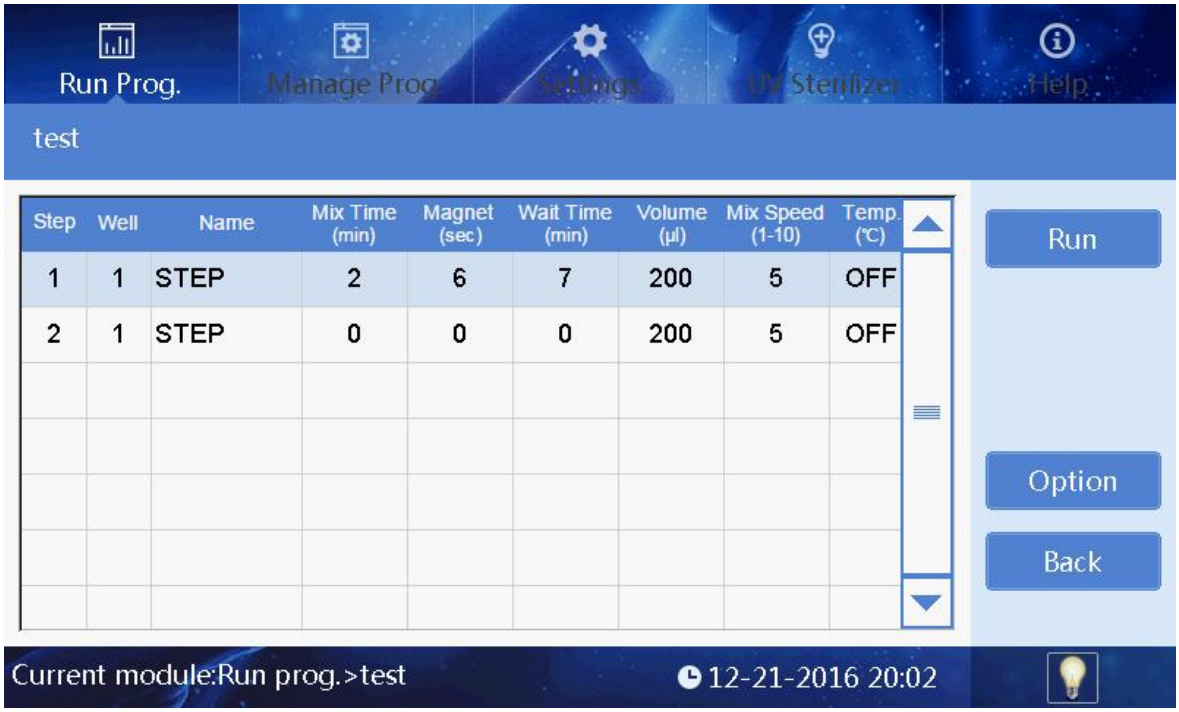
7.3.1 List mode



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.



Click “Run” to enter the running interface.

Click “Option” to view the parameter setting of the program.

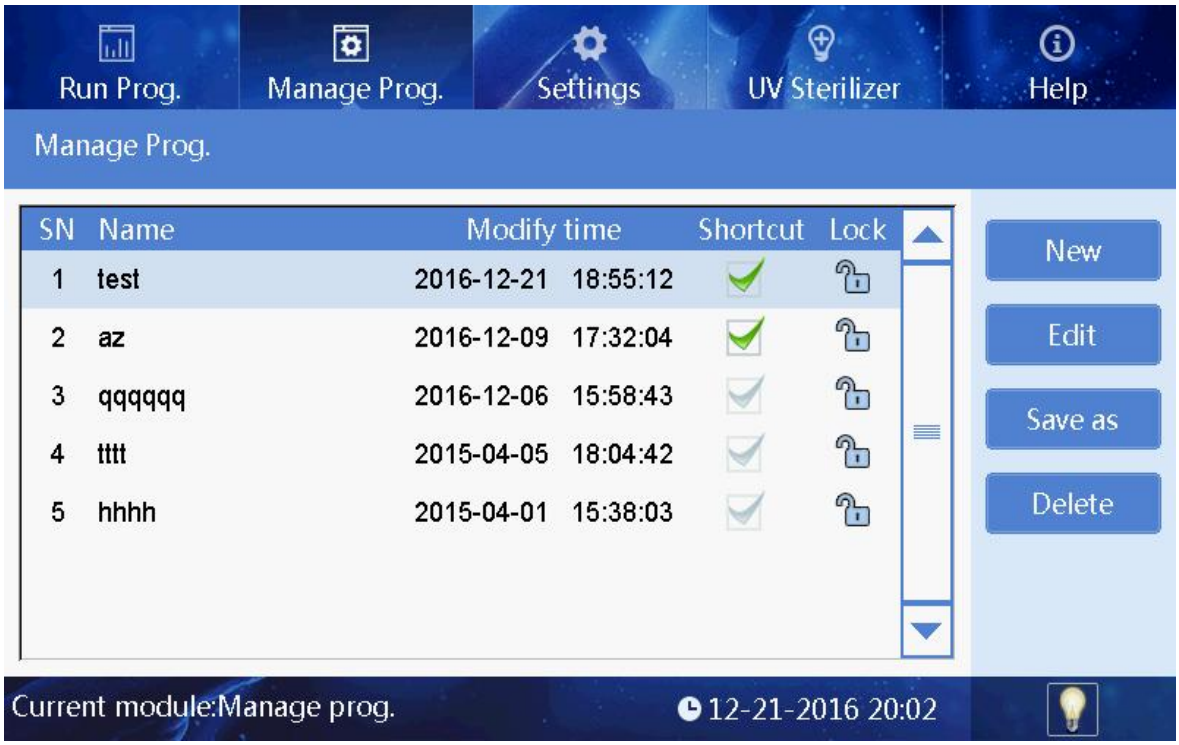
Click “Back” to previous interface.

7.3.2 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.

7.4 Program Management

Click “Manage prog” into the surface of program management



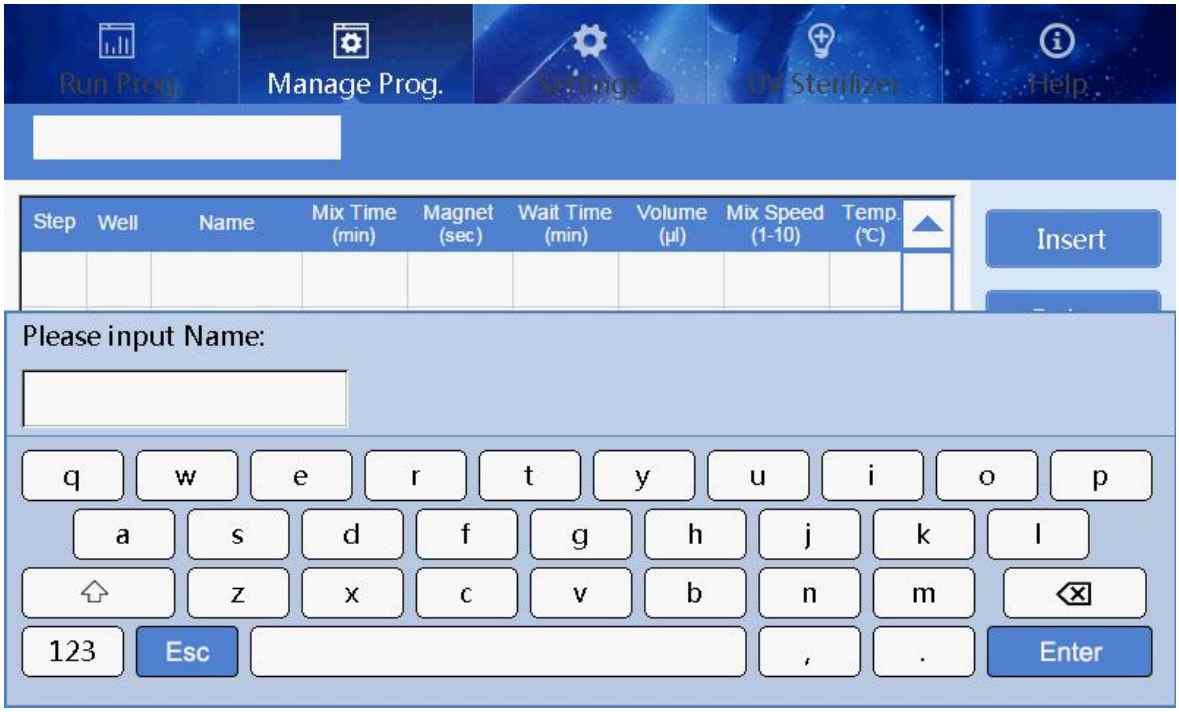
7.4.1 Shortcut operation

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

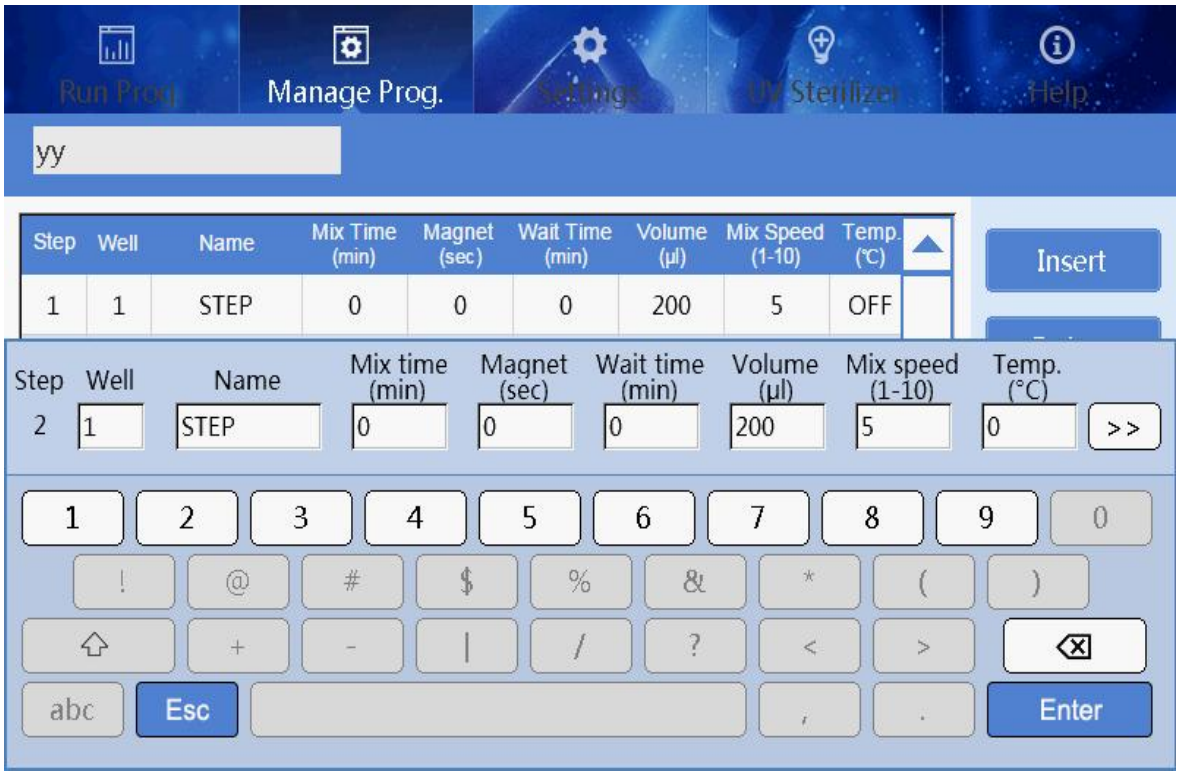
In the list of “Lock”, if the icon is “ ”, the program can not be edited, deleted and saved as; if the icon is “ ”, the program can be edited, deleted and saved as.

7.4.2 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.



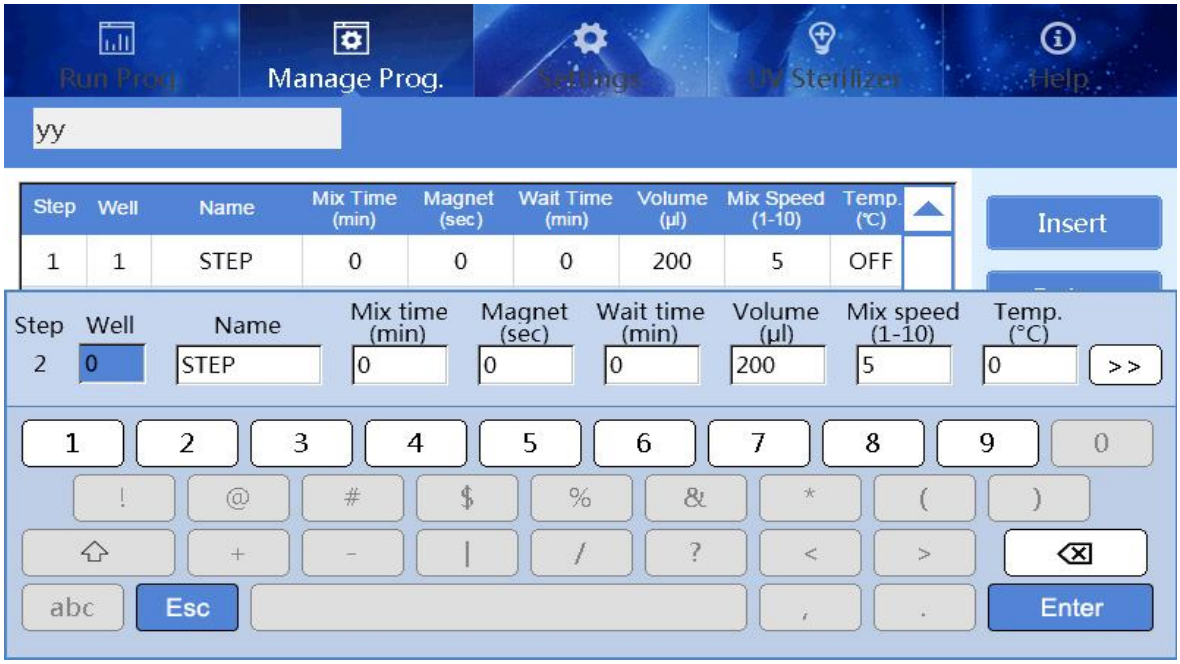
Click “Insert” to add a new step.

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.



QP-AUT-24 Instrument only well location 1 & 6 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.

7.4.3 Program Management--Edit

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

7.4.4 Program Management-Save as

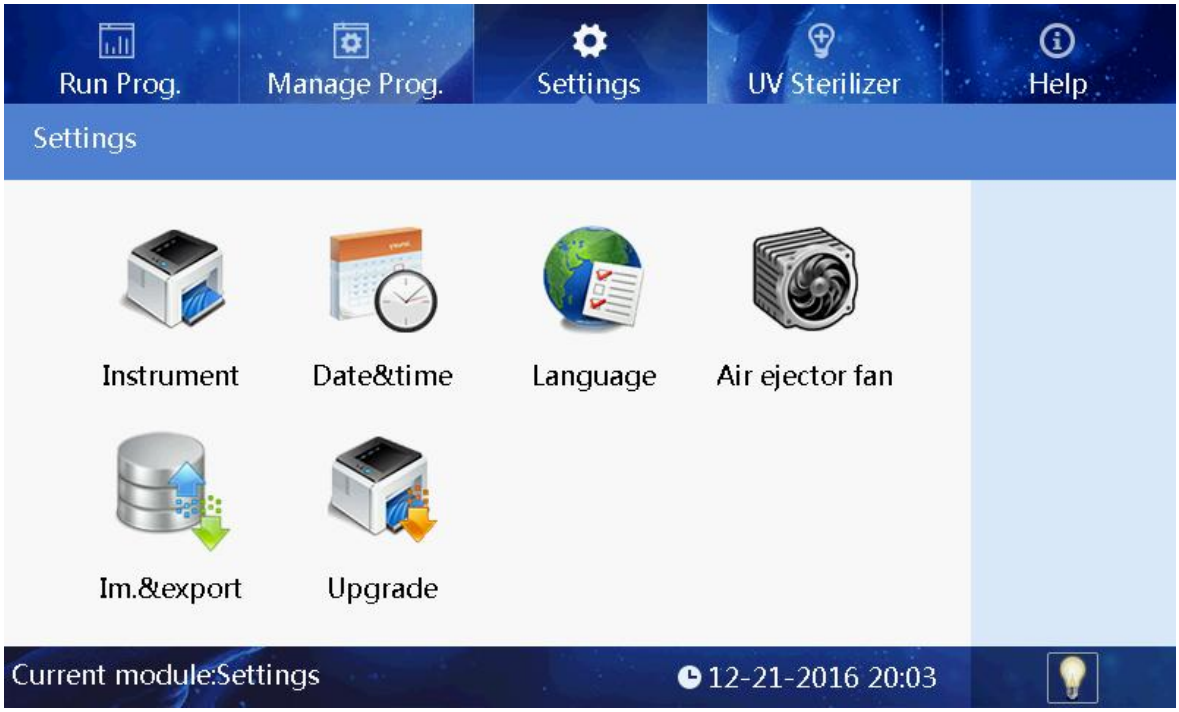
Under the "Manage prog." interface to make selection, Click "Save as" and then input a new program name, click "Enter" to save the current program, or "ESC" to not save.

7.4.5 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.

7.5 System Setting

Click "Settings" and enter into the System Setting surface



7.5.1 System Setting-Instrument Setting

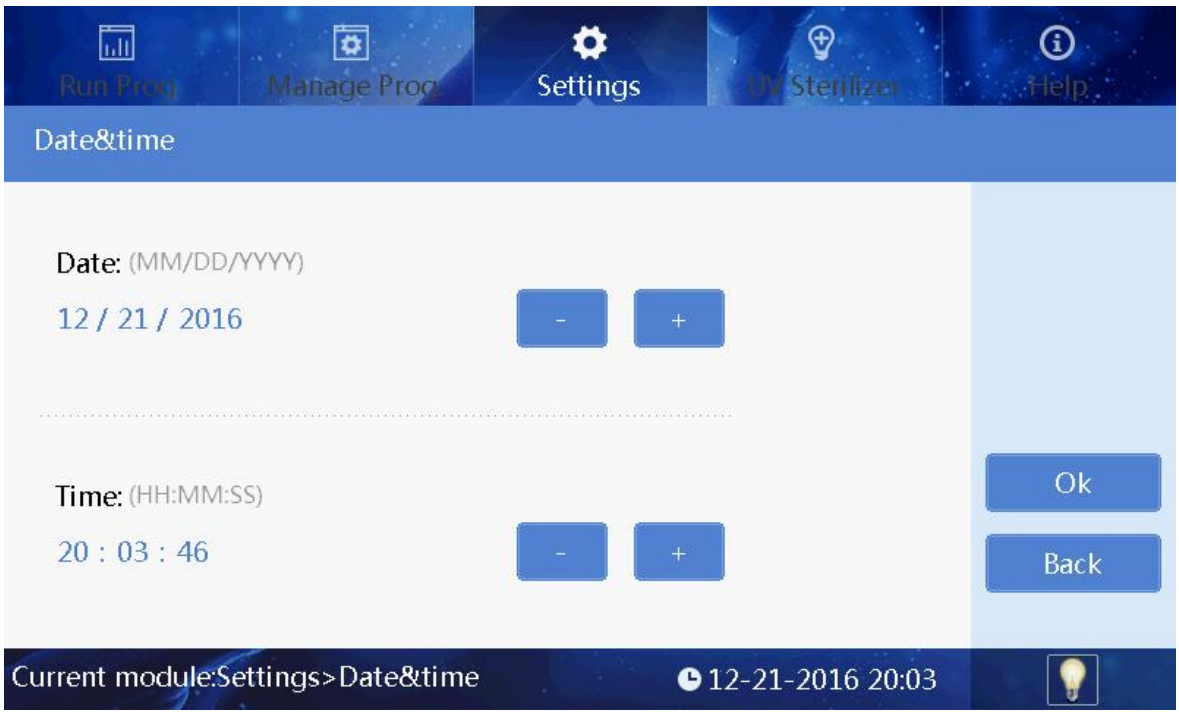
Click “Instrument” to input the right password and then enter the setting interface to set the parameter of instrument.

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.

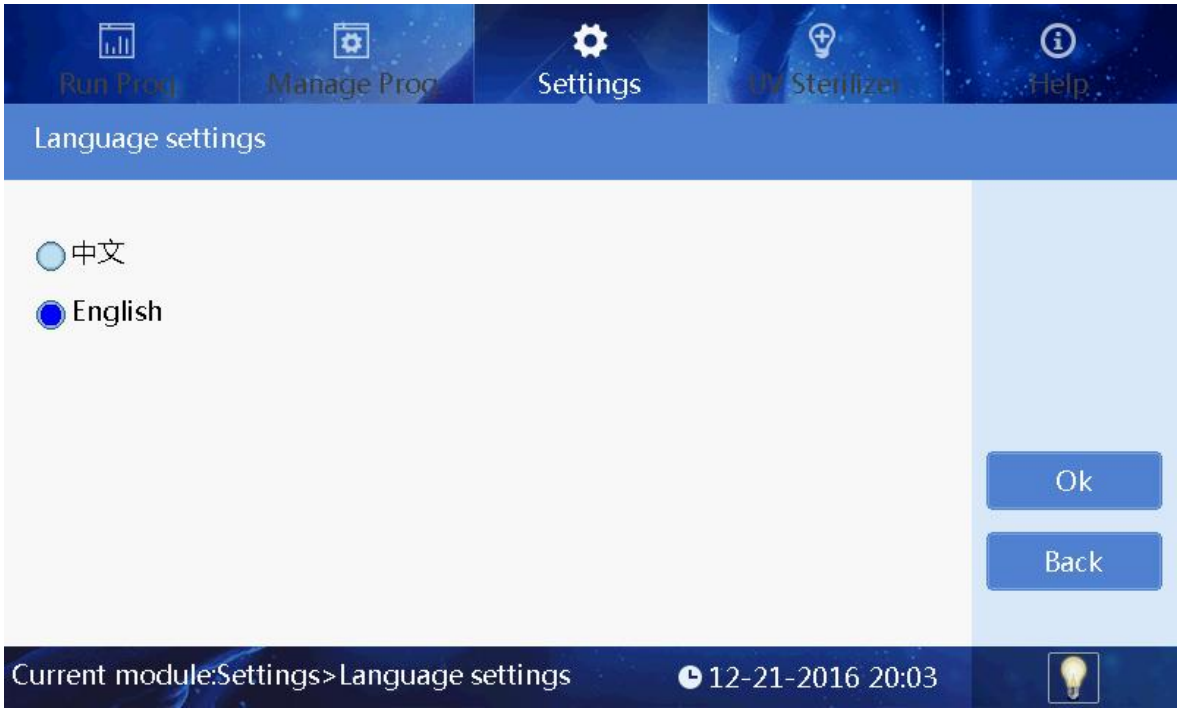
7.5.2 System Setting -- System Time

Click “Date & Time” to set system time by directly enter into number or click “+” “-”.



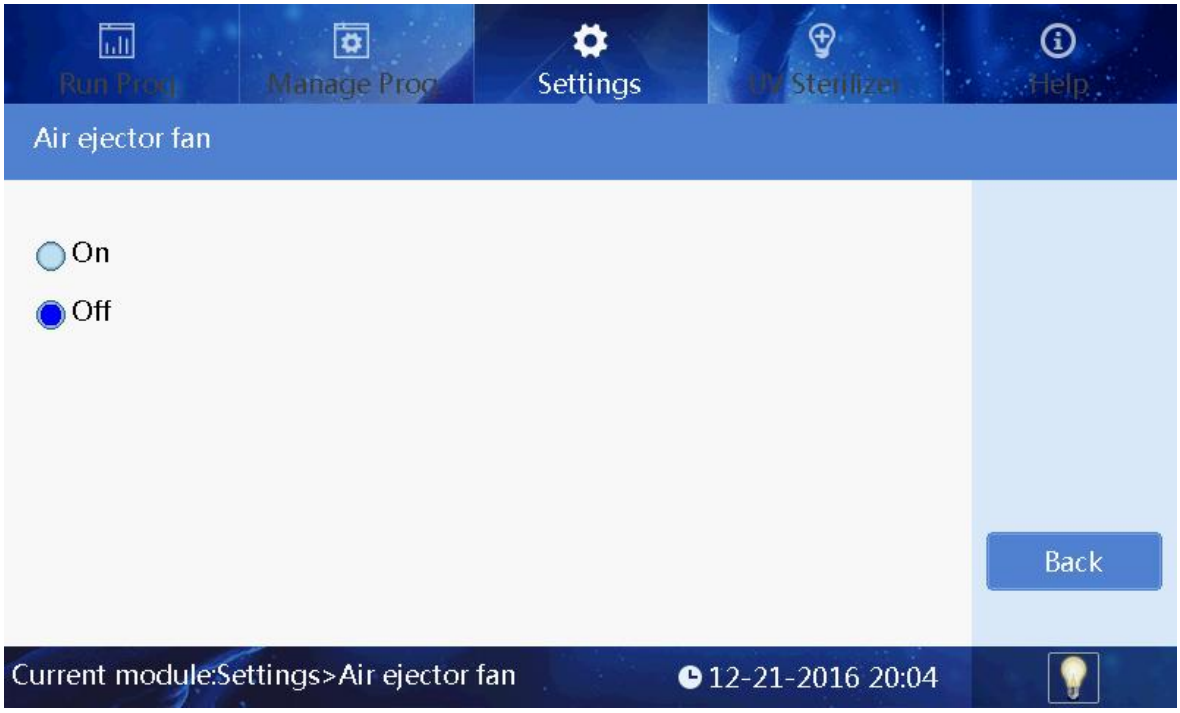
7.5.3 System Setting--Language

Click “Language Setting” to choose the language that you need.



7.5.4 System Setting -- Fan

Click " Air Ejector Fan" to have the fan setting



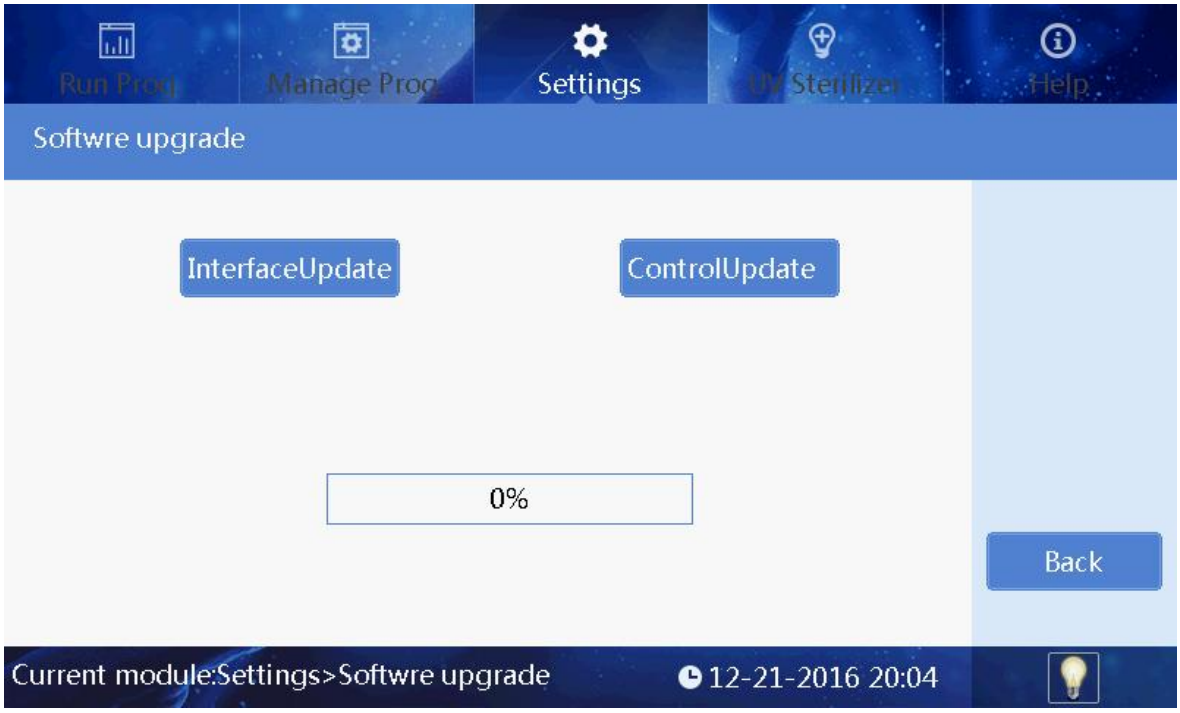
7.5.5 System Setting -- Import/Export

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

7.5.6 System Setting--Software upgrade

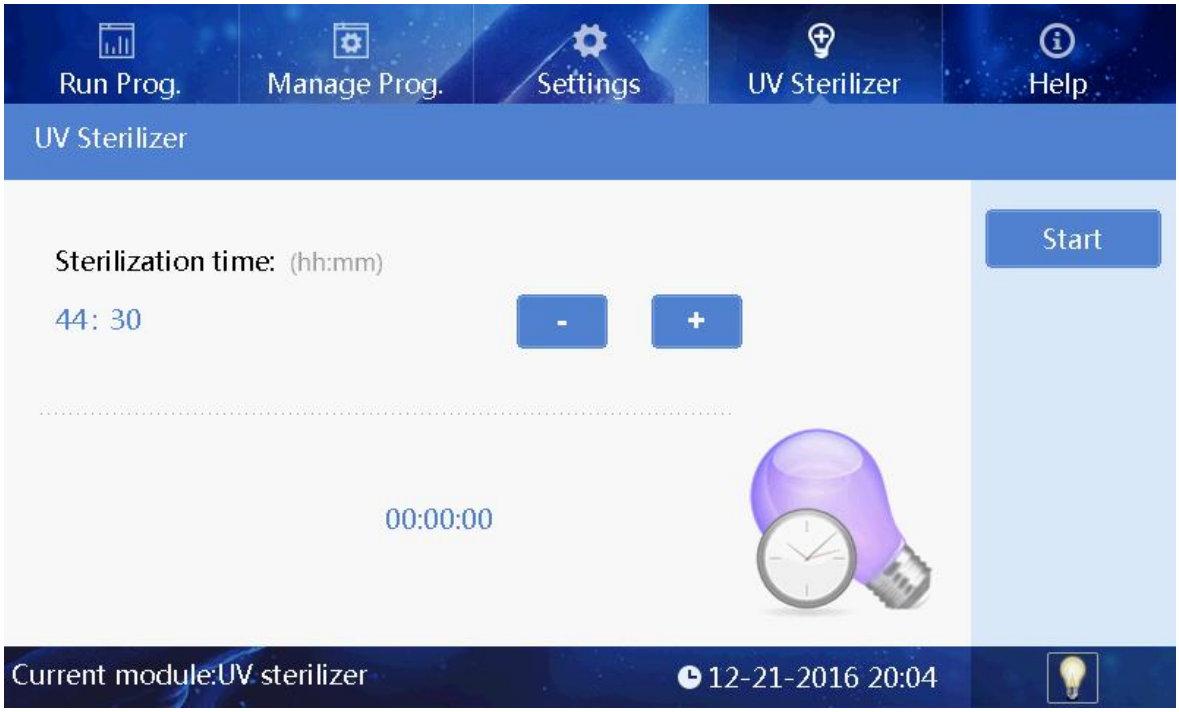
Click "Software upgrade" to input the right password enter the interface and then insert the U disk to

operation.



7.5.7 UV sterilization

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

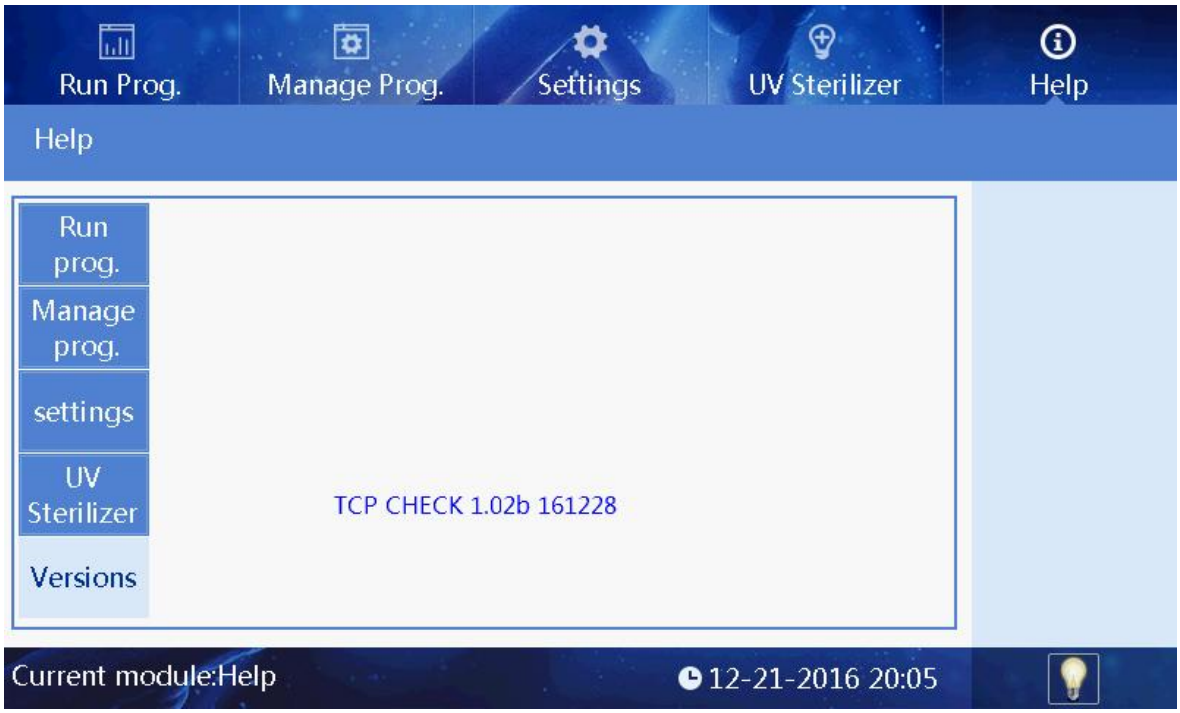


Click “Start” to open the UV light to start UV sterilization and time count down.
Click “Stop” to stop the UV sterilization.

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

7.6 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 Contact with distributor
3	No light	Light failure	Replace light tube 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
Temperature (code: 0)	T1,T2,T3,T4 Overheat	E011,E021,E031,E041
	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
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. QP-AUT-24 Instrument Spare parts list

No.	Item	Unit	Qty	Remark
1	Power line	PCS	1	
2	Mouse	PCS	1	
3	Allen wrench	PCS	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
	Indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area

Notes