



VNP-96 Full-automatic Nucleic Acids Extraction Instrument

— Instruction for Use



IVD Only for in vitro diagnosis

Version: B/0

Introduction

Thank you for purchasing Full-automatic nucleic acids extraction instrument. This instruction manual contains instrument functions and operating procedures, etc. To ensure proper use of the instrument, please read it carefully before operating the instrument. Please keep it properly for quick reading when you encounter a problem.

Instrument name: Full-automatic nucleic acids extraction instrument

Instrument model: VNP-96

Instruction manual preparation/revision date: September 3rd, 2021

Instruction manual version: B/0

The production date of this instrument: See the label of the instrument host for details

Service life: 5 years

Registrant/Manufacturer: Nanjing Vazyme Medical Technology Co., Ltd.

Address: Floor 1-3, Building C2, Red Maple Park of Technological Industry, Kechuang Road, Economy & Technology Development Zone, Nanjing, China.

Statement

Nanjing Vazyme Medical Technology Co., Ltd. does not make any form of guarantee for this information, including (but not limited to) its implied guarantee of marketability and suitability for a specific purpose.

Nanjing Vazyme Medical Technology Co., Ltd. is responsible for the safety, reliability and performance of the instrument under the following circumstances:

- 1) The assembly operation, expansion, re-adjustment, improvement and repair are all carried out by personnel approved by Nanjing Vazyme Medical Technology Co., Ltd.;
- 2) Operate the instrument according to the instruction manual;
- 3) The related electrical equipment complies with national standards.

Nanjing Vazyme Medical Technology Co., Ltd. won't be responsible for the safety, reliability and performance of the instrument under the following circumstances:

- 1) The product has reached the end of life;
- 2) The components are disassembled, stretched, and re-adjustment;
- 3) The product is not used correctly in accordance with the instruction manual.

Return process

- 1) Obtain the right to return. Contact with customer service department of Nanjing Vazyme Medical Technology Co., Ltd. and offer the product serial number that has been marked on the outer shipping box. If the serial number is not clearly identifiable, returns will not be accepted. Please indicate the product model and serial number and briefly describe the reason for return.

- 2) Freight: The user shall bear the freight (including customs fees) when the instrument is shipped to Vazyme Medical Technology Co., Ltd. for repair.

After sales service

After sales service company: Nanjing Vazyme Medical Technology Co., Ltd.

After sales service company address: Floor 1-3, Building C2, Red Maple Park of Technological Industry, Kechuang Road, Economy & Technology Development Zone, Nanjing, China.

Postal code: 210028

Tel: 025-84365701

After sales service hot line: 400-969-0586

E-mail: sales@vazyme.com

Website: www.vazymemedical.com

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Chapter 1 Instruction Manual Overview

1.1 Overview

This manual introduces the purpose, function and operation method of the Full-automatic nucleic acids extraction instrument (hereinafter referred to as the extraction instrument). Before using the extraction instrument, please read and understand the contents carefully to ensure that the extraction instrument can be used correctly, exert its optimal performance, and ensure the safety of the operator.





1.2 Promise

All illustrations provided in this manual are only examples, please do not use them for other purposes. The graphics, settings or data in the illustration may be different from the actual instrument.

1.3 Symbol Description




· Safety symbols

The table 1-1 lists the safety symbols used in this manual. The symbols and words are used together:

Table 1-1 Safety symbols		
Symbol	Meaning	User notice
	Warning	Remind the user to follow the corresponding instructions in this manual, otherwise it may cause personal injury.
	Biohazard	Remind users to follow the corresponding instructions in this manual, otherwise there is a danger of biological infection.
	Caution	Remind the user to follow the instructions in this manual, otherwise it may damage the system or affect the test results.
	Notice	Used to explain important information in the operation steps or other content that needs to be reminded of the user.

· Common symbols


The symbols that may be seen on the extraction instrument and their meanings are described in the following table 1-2. If the label is blurred or falls off, please contact the Vazyme customer service department for replacement:

Table 1-2 Common symbols	
	Biohazard
	Notice
	Caution High Temperature

The pictures in this manual are only used as illustrations or examples, not for other purposes.


1.4 Safety Caution

In order to use this extraction instrument safely, please read the following safety precautions carefully. Any operation that violates the following safety precautions may cause system damage and personal injury.

	Warning: If the user does not follow the instructions of Nanjing Vazyme Medical Technology Co., Ltd. to use this extraction instrument, the protective measures provided by this system may fail, and the risk of loss will be greatly increased.
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· Prevent electric shock

To prevent electric shock, please observe the following precautions.




Warning:

When the main power switch of the instrument is turned on, unauthorized maintenance personnel must not open the control box.

Spilled reagents and samples inside the instrument may cause the instrument to malfunction and cause electric shock. Please do not place samples and reagents on the instrument. In case of spillage, please turn off the power immediately and contact Vazyme service department.

· Prevent personal injury from moving parts



Warning:


When the instrument is running, do not touch moving parts, such as fans.

When the instrument is running, do not put your fingers or hands into the open parts.

When the instrument is running, please do not place any part of your body or clothes/hair on the track of moving parts.

· Biological risk prevention

In order to effectively protect against biological risk, please observe the following precautions.




Biohazard:

Improper use of samples may result in infection. Do not touch the sample directly with your hands. Please be sure to wear gloves and overalls during operation to prevent infection, and wear protective glasses when necessary.

If the sample accidentally touches the skin, please handle it immediately in accordance with the user's working standards and consult a doctor.

· Instrument Treatment


Please follow the requirements below to dispose of the discarded extraction instrument.



Warning:

Some substances in the discarded extraction instrument are subject to pollution regulations. Please follow the local waste disposal standards to dispose of the discarded extraction instrument.


· Electrical interface requirements



Warning:

Accessory equipment connected to the analog and digital interfaces must comply with the relevant IEC standards (e.g., IEC 62368-1 Audio/video, information equipment standard or IEC 60601-1 medical equipment standard). If you have any questions regarding these requirements, consult your sales representative.


· Avoid scalding



Warning:

When the surface of the heating module inside the instrument is not cooled during normal operation and after the experiment, its surface temperature is very high, which may cause scalding; therefore, it is strictly prohibited to touch any part of the body during the whole operation to avoid scalding.

· Power electrical interface requirements



Warning:

Do not place the equipment where it is difficult to operate the power switch and socket. In case of emergency accidents, the power supply can be disconnected at the first time.

· UV lamp protection requirements




Warning:

When turning on the UV lamp, please avoid looking directly at the UV lamp.

Please close the cabin door and evacuate the UV lamp irradiation area to prevent skin damage caused by long-term UV irradiation.

1.5 Electromagnetic Compatibility Description



Warning:

It is forbidden to use this equipment near strong radiation (such as unshielded radio frequency sources), otherwise it may interfere with the normal operation of the equipment.

Note:

1) If you need, our company can provide the electromagnetic compatibility information of the instrument.

2) The user is responsible for ensuring the electromagnetic compatibility environment of the instrument so that the instrument can work normally.

3) This instrument meets the emission and immunity requirements specified in this part of GB/T18268.

4) The electromagnetic compatibility index of this instrument completely complies with the requirements of GB/T 18268.1 2010 *Electromagnetic Equipment for Measurement, Control and Laboratory Use -EMC Requirements-Part 1: General Requirements*.

5) It is recommended to evaluate the electromagnetic compatibility environment before using the equipment.

Chapter 2 Brief Introduction

2.1 Working Principle

The VNP-96 Full-automatic nucleic acids extraction instrument is used in the automatic extraction and purification system of DNA/RNA, protein and cells. Through the adsorption, transfer and release of magnetic beads by the magnetic rod and magnetic rod sleeve, the transfer of magnetic beads/sample is realized and complete automatic extraction and purification operations. The operation is automated, fast, and simple. Using a 96-well deep-well plate, 1 to 96 samples can be operated simultaneously (Using a 24-well deep-well plate, 1 to 24 samples can be operated simultaneously). With different kinds of magnetic beads nucleic acids extraction reagents, samples of human blood and body fluids can be extracted. Mainly used for the extraction and purification of nucleic acids in human samples.

2.2 Intended Use

For extraction and purification of nucleic acids from clinical samples.

2.3 Contraindications

No.

2.4 Instrument Structure

The Full-automatic nucleic acids extraction instrument is composed of moving parts, temperature control parts, electrical control system and display screen.

2.5 Instrument Characteristics

- ▶ Humanized operation---Chinese and English interface operation, convenient operation.
- ▶ Stable operation---touch screen and can be connected to an external mouse, the program has powerful editing functions.
- ▶ Heating function---realize lysis heating and elution heating.
- ▶ Self-sterilization---with UV sterilization function, reduce the probability of laboratory Pollution.
- ▶ Stable operation---the instrument runs quietly and the whole machine has no vibration.
- ▶ Safe and reliable---fully automatic reagents with disposable consumables to reduce operator exposure to harmful reagents.
- ▶ Fast extraction---short operation time, 10~60 min/time.
- ▶ High-quality consumables---choose high-quality materials and processes, with low beads loss and high yield.

Chapter 3 Properties

3.1 Normal Working Conditions

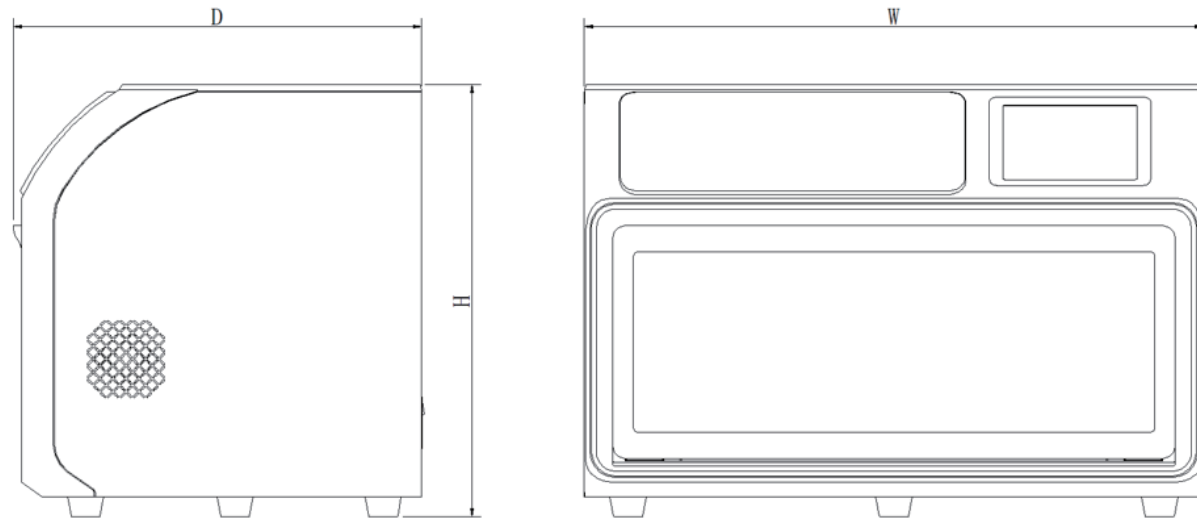
Ambient temperature:10℃ ~ 40℃
Relative humidity:10% ~ 90%
Atmospheric pressure: 80kPa ~ 106kPa

3.2 Basic Parameters and Performance

Table 3-1 Performance parameter table

Parameter	Model	VNP-96
Principle		Magnetic Beads-based Method
Sample throughput		96-well deep-well plate: 1~96 24-well deep-well plate: 1~24
Kit		96-well deep well plate or 24-well deep-well plate
Processing volume /μL		96-well deep-well plate: 20~1000 μl 24-well deep-well plate: 200 ul~5 ml
Difference between purification repeats		CV≤5%
Heating temperature		Room temperature~120℃
Temperature accuracy		±1℃
Operation interface		8-inch color touch screen, can be connected to external mouse
Internal procedures		1000 programs can be stored
Program management		New, edit, save as, delete, mode program
Instrument interface		3 type A USB, 1 Ethernet port, 1 DB9 debugging interface
Network		Wi-Fi function
Disinfection		UV disinfection
Maximum input power		AC 100~240 V, 50Hz/60Hz ,500 W
Dimensions (W×D×H)		750 mm×495 mm×525 mm
Weight (kg)		70 kg
Location		Indoor use
Altitude		≤ 2000m
Mains supply voltage fluctuations		≤ ±10%
Overvoltage category		II
Pollution degree		2
Degree of ingress protection		IPX0

3.3 Outline Dimensional Drawing



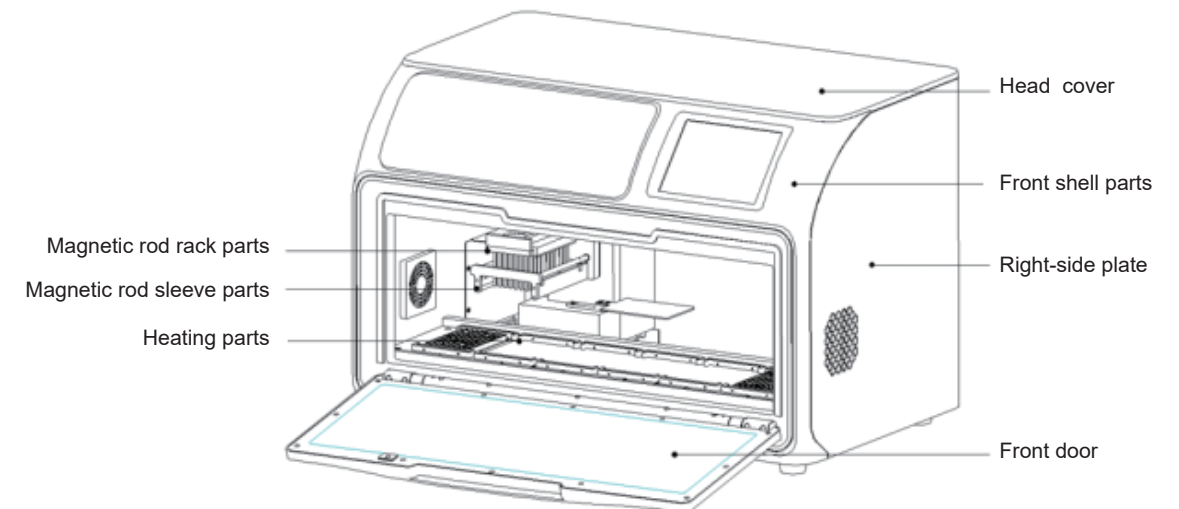
Dimensions(W×D×H)
VNP-96: 750 mm×495 mm×525 mm

Chapter 4 Basic Operation Instructions

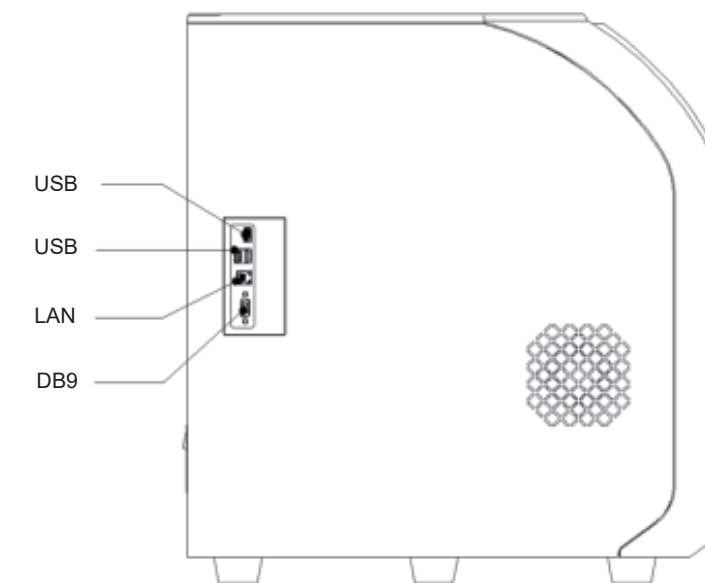
This chapter mainly introduces the structure and display content of the instrument and the preparation work before starting up. When using this instrument for the first time, you should be familiar with the contents of this chapter before starting up.

4.1 Structure Schematic

Extraction instrument is composed of front shell parts, rack parts, X moving parts, magnetic rod rack parts, operation chamber parts and heating parts, etc.

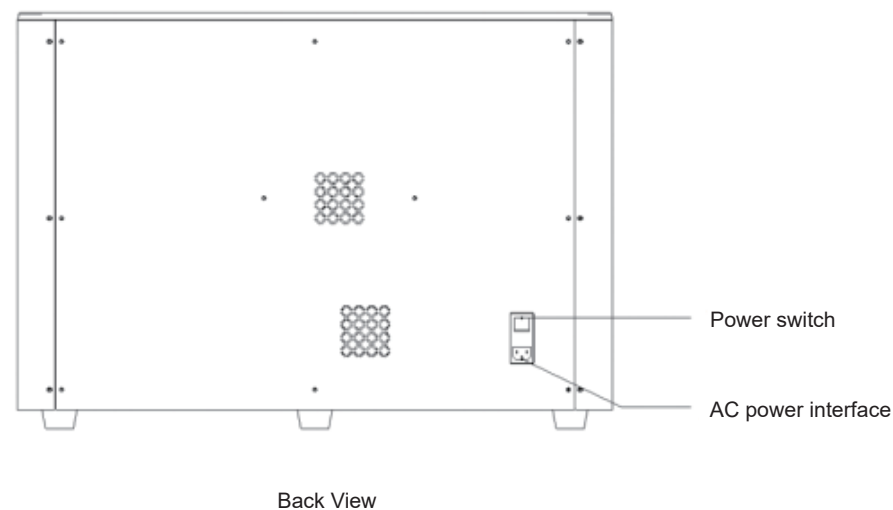


Front View



Left-side View

Chapter 5 Operation Guides



5.1 Preparation Before Use

Take the extraction instrument out of the box. Remove the tape on the edge of the door, open the door and remove the foam. After opening the outer package of the instrument, open the front door assembly parts and remove the shock-absorbing foam between the magnetic rod rack and the magnetic rod sleeve.

Note: Be careful during the dismantling process, do not hit the magnetic rods, otherwise the magnetic rods will be damaged!

5.2 Connect the Power Supply

Take out the power cord from the packing box. Connect one end of the power cord to the power socket on the back of the instrument, and the other end to the AC power socket (AC 100~240V can work normally). Turn on the power switch on the back of the instrument to start the instrument.

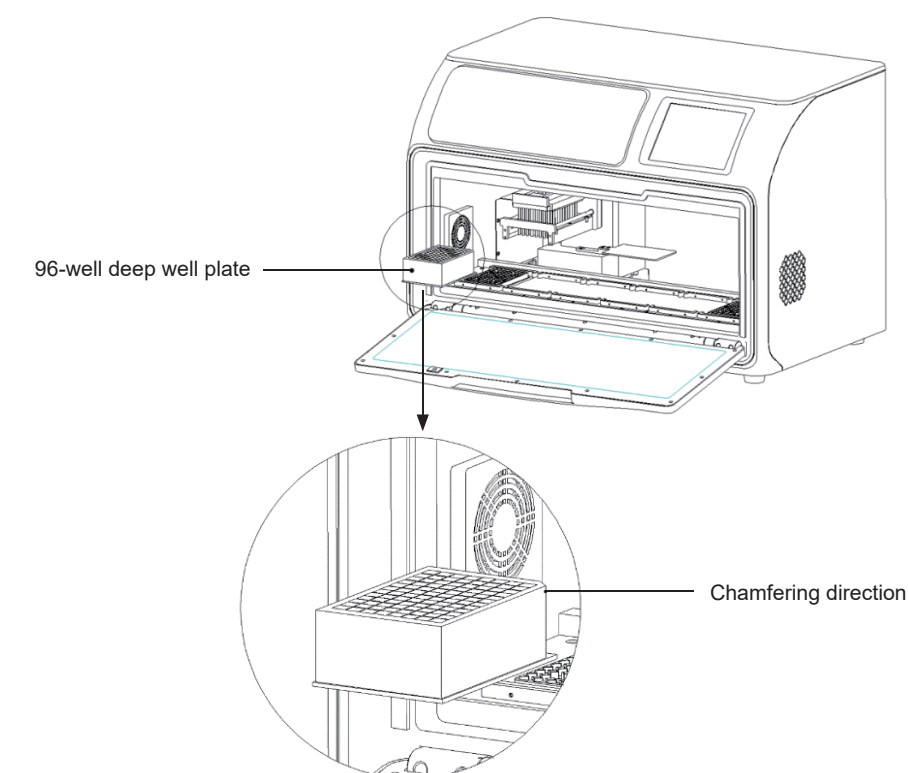


Note:

The power supply protection grounding is required to be good. Measurement method: switch the multimeter to the AC voltage range, connect the two test leads to the ground wire (PE) and the neutral wire (N) of the power socket respectively. The voltage between the PE and the N is required to be less than 5V. There is no obvious fluctuation, and the voltage is not within this range, indicating that the power supply is poorly grounded.

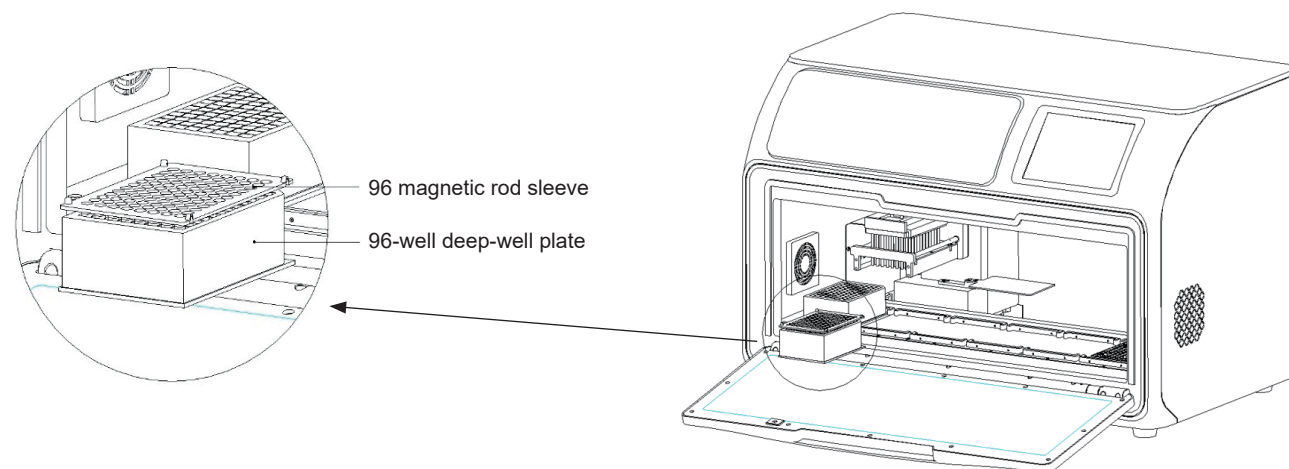
5.3 Install 96-well Deep-well Plate

Open the cabin door, tear off the surface packaging film of the 96-well deep-well plate, and place the 96-well deep-well plate with the sample into the positioning slot. Please place the 6 groups of 96-well deep-well plates in the corresponding position strictly according to the instruction for use. Pay attention to the orientation of the 96-well deep-well plate, the chamfering direction of the deep-well plate is shown in the figure below.



5.4 Install the Magnetic Rod Sleeve

Insert the magnetic rod sleeve into the fixing slot of the magnetic rod sleeve rack in the direction of the arrow, and insert it to the end. The number of magnetic rod sleeves can be determined according to the number of kits. Tear off the surface packaging film of the 96-well deep-well plate. Insert the 96 magnetic rod sleeve into the 96-well deep-well plate, and pay attention to the well position and insert it to the bottom. Then put them into the magnetic beads reagent position (refer to 5.6.5.8 for the magnetic beads reagent position setting), as shown in the figure below.

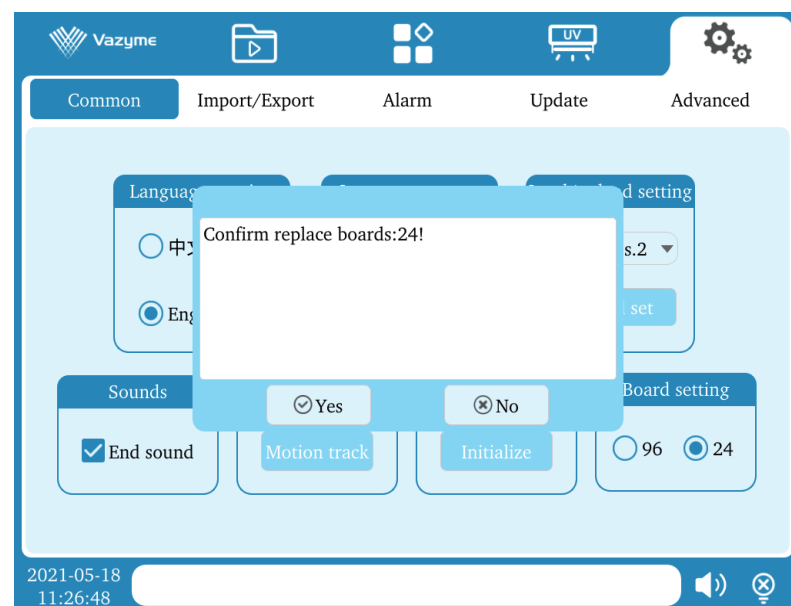


5.5 Replace 24-well Deep-well Plate

This instrument is suitable for 24-well deep-well plate and 96-well deep-well plate. The default setting is for 96-well deep-well plate. Refer to the following instructions for 24-well Deep-well Plate.

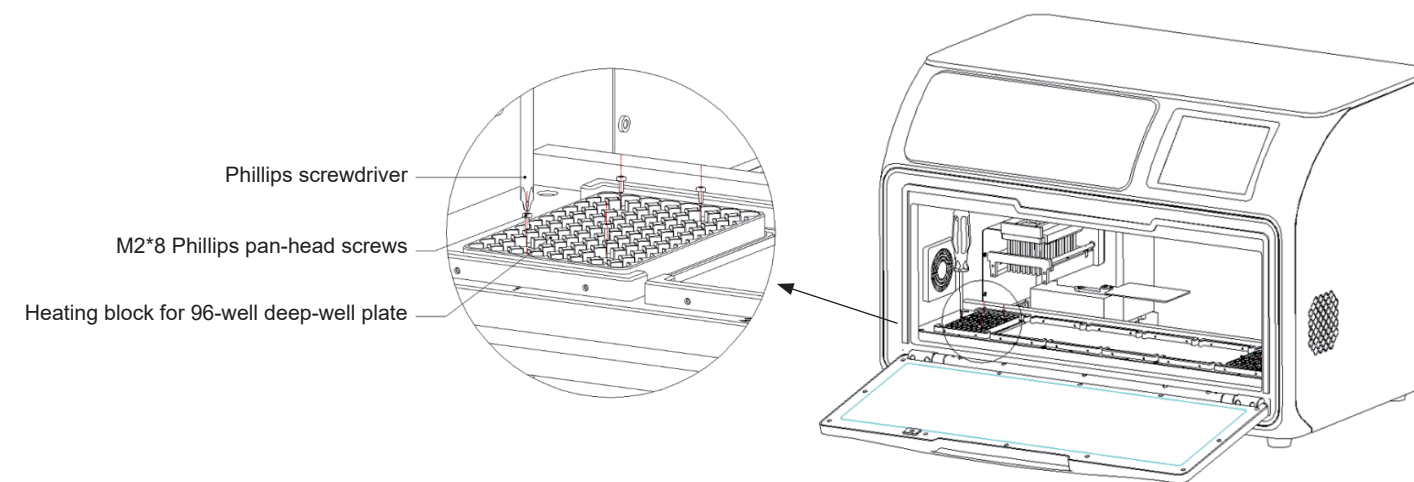
5.5.1 Install heating block for 24-well deep-well plate

1) Turn on the power switch, press Interface System Setting>Common>Board Setting, click 24 >Yes.



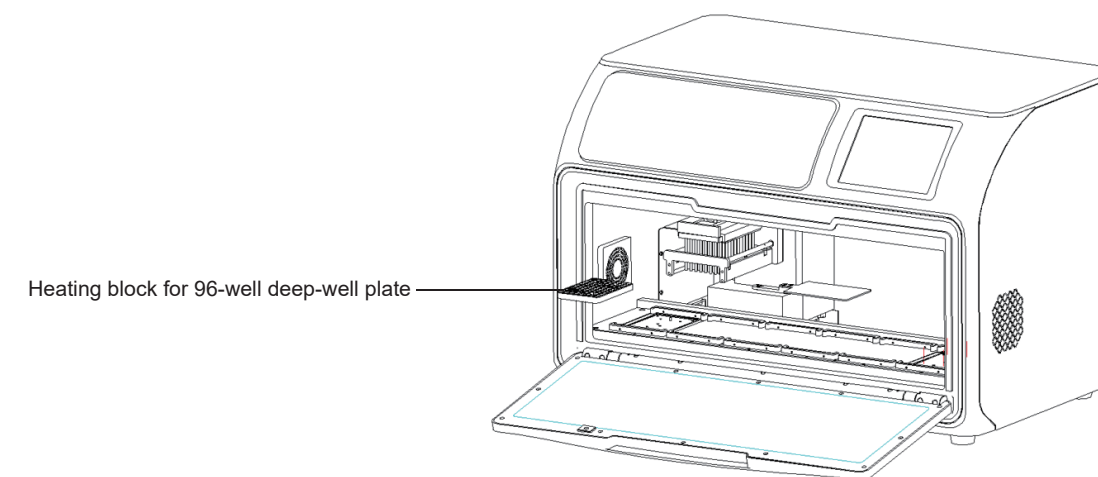
2) After the moving parts stop, open the door and take out all the 96-well deep-well plates.

3) Use a Phillips screwdriver to remove the 4 M2*8 Phillips pan-head screws of the heating block for 96-well deep-well plate at position 1, as shown in the figure below.

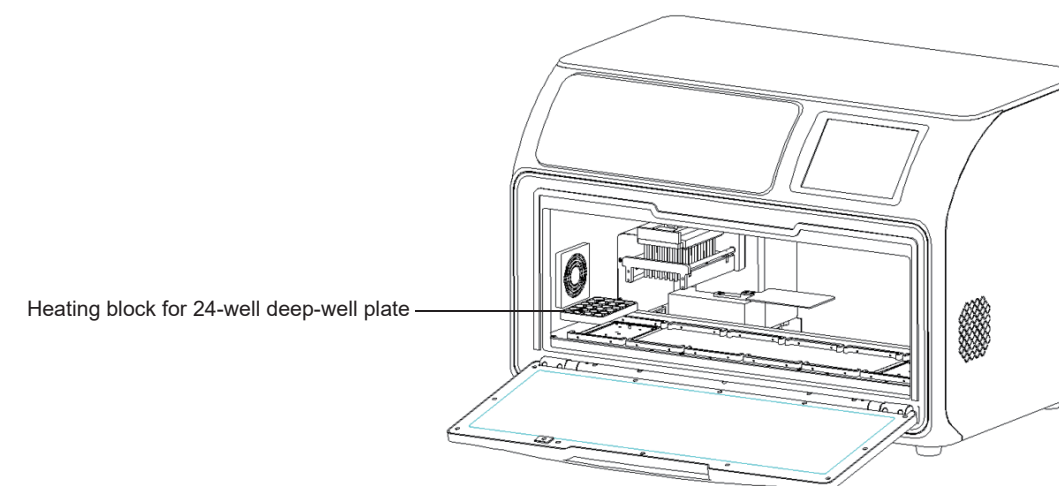


4) Remove the heating block for 96-well deep-well plate at position 1.

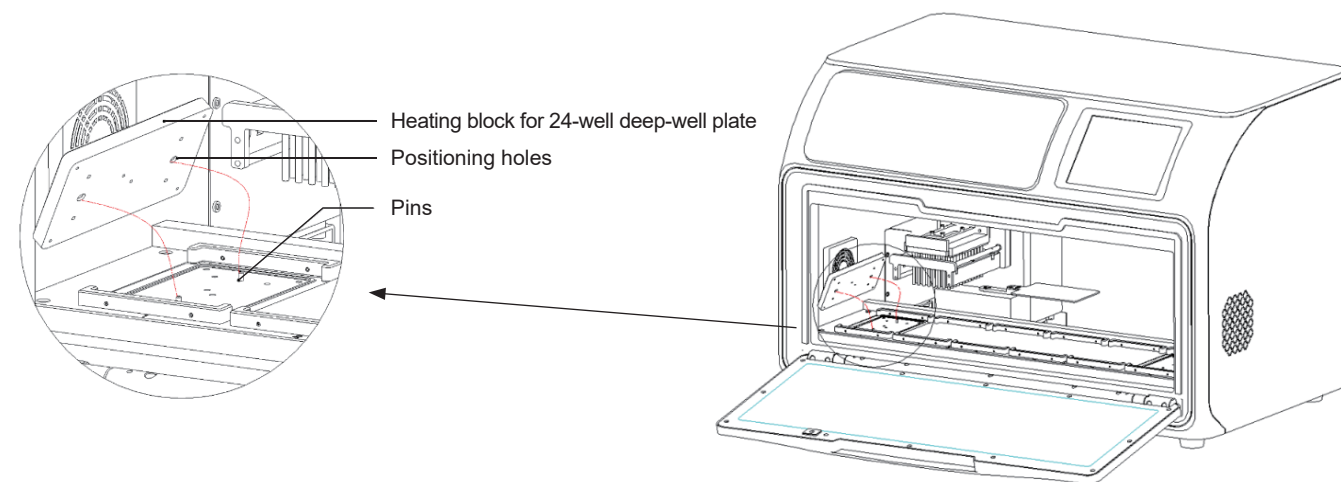
Note: Do not operate when the heating block is at high temperature.



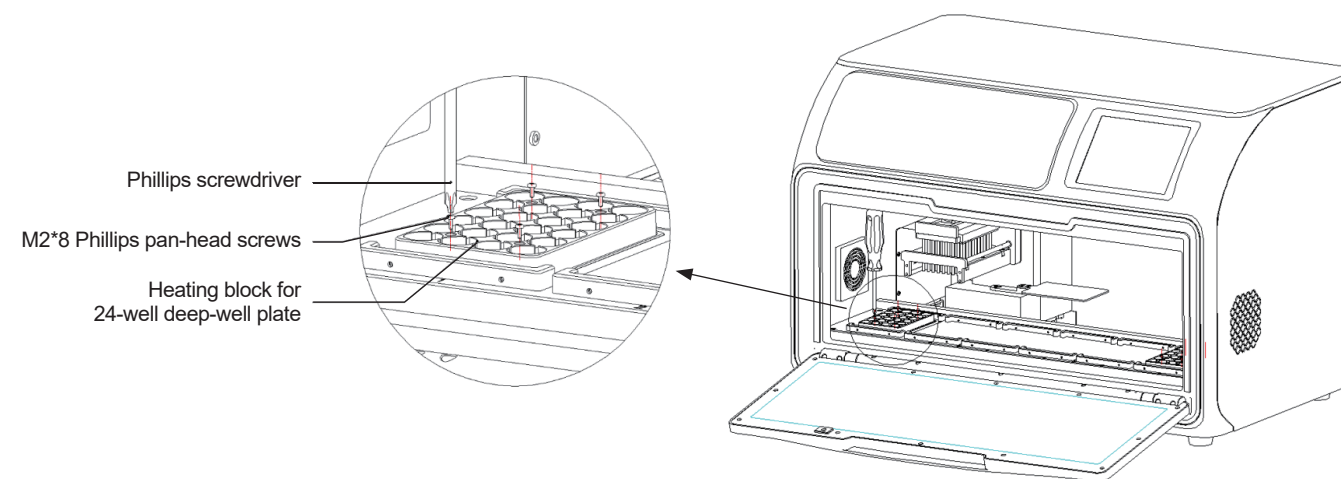
5) Place heating block for 24-well deep-well plate at position 1.



Note that the two positioning holes at the bottom of the heating block must be aligned with the pins and placed flat, as shown in the figure below.



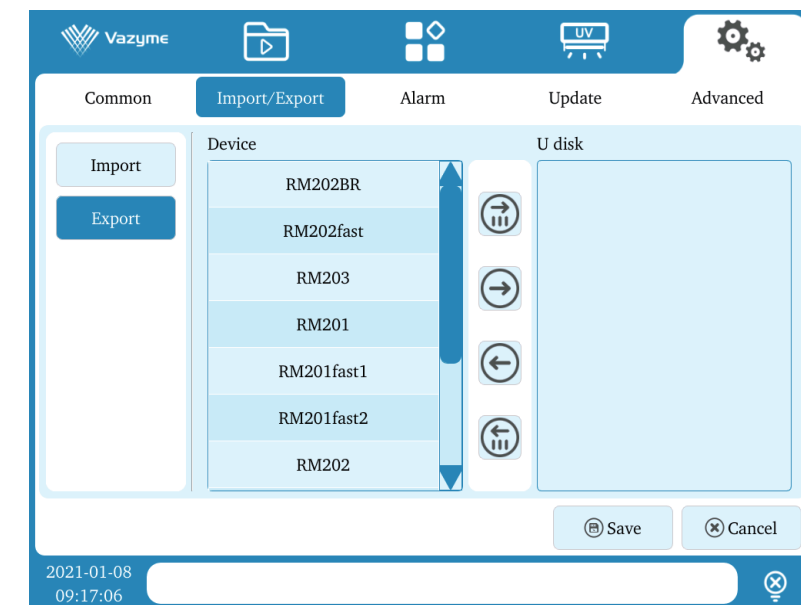
6) Use a Phillips screwdriver to install 4 M2*8 Phillips pan-head screws on the heating block for 24-well deep-well plate at position 1, as shown in the figure below.



7) The installation method of the heating block for 24-well deep-well plate at position 6 is the same as the above step 3 to 6.

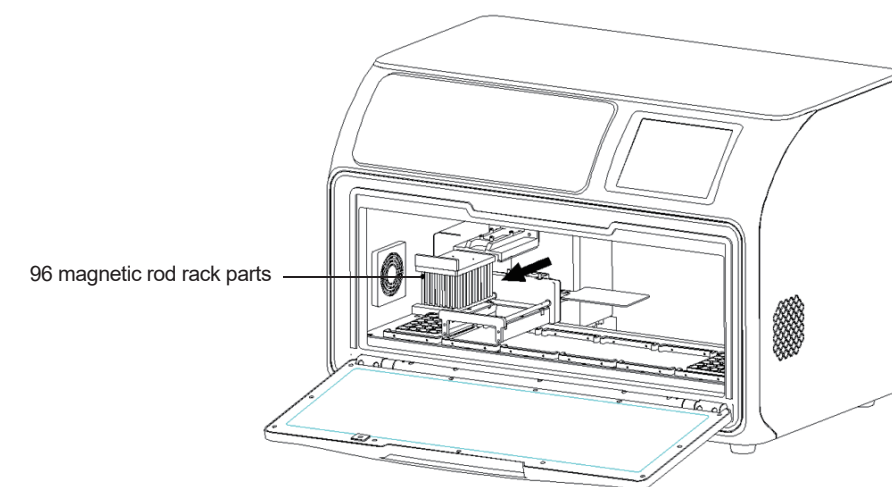
5.5.2 Install magnetic rod rack for 24-well deep-well plate

1) After replacing the heating blocks at position 1 and position 6, click to Confirm on the software interface as shown in the figure below.



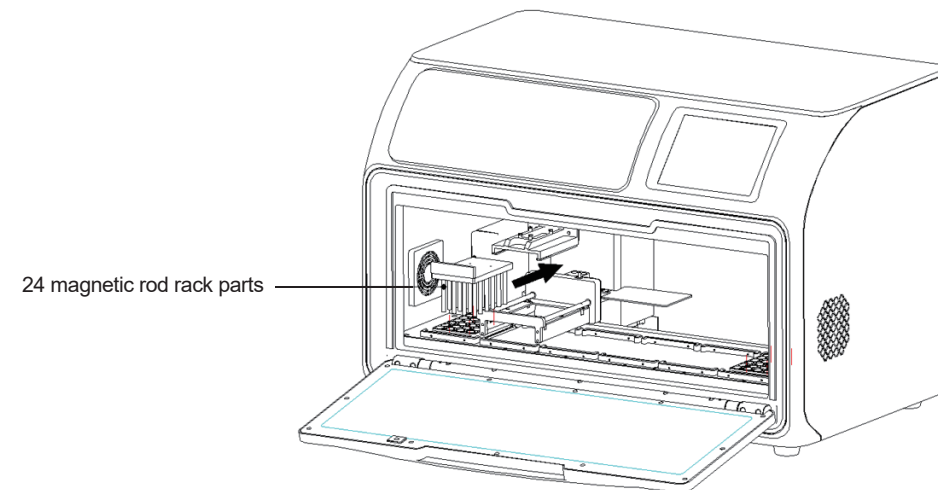
2) Pull the magnetic rod rack parts for 96-well deep-well plate until they are completely removed.

Note: Do not hit the other parts of the instrument, and be careful not to damage the magnetic rod.

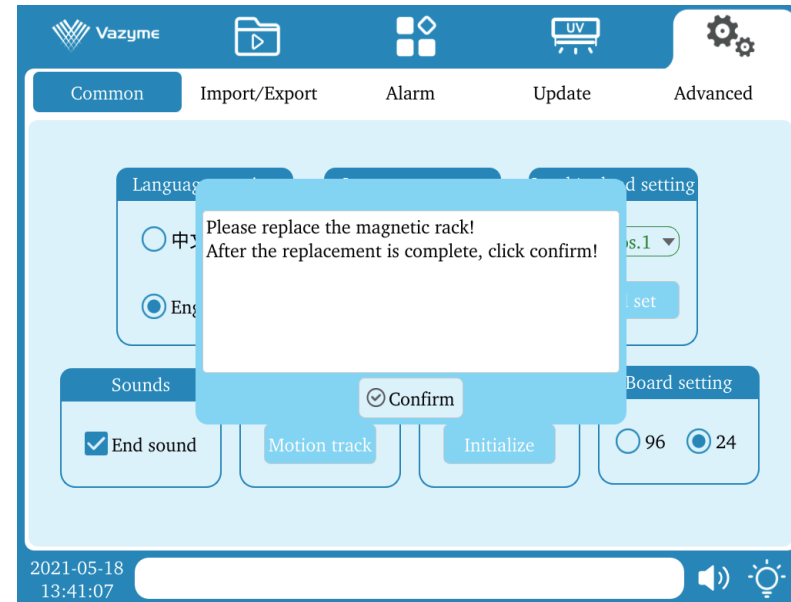


3) Insert the magnetic rod rack parts for 96-well deep-well plate until you hear a click sound.

Note: Do not hit the other parts of the instrument, and be careful not to damage the magnetic rod.



4) Click confirm and close the door.



5.5.3 Install 24-well deep-well plate

Refer to step 5.3 for the installation of 24-well deep-well plates in sequence on the non-magnetic beads reagent plate position.

5.5.4 Install magnetic rod sleeve for 24-well deep-well plate

Refer to step 5.4 for the installation of magnetic rod sleeve for 24-well deep-well plates.

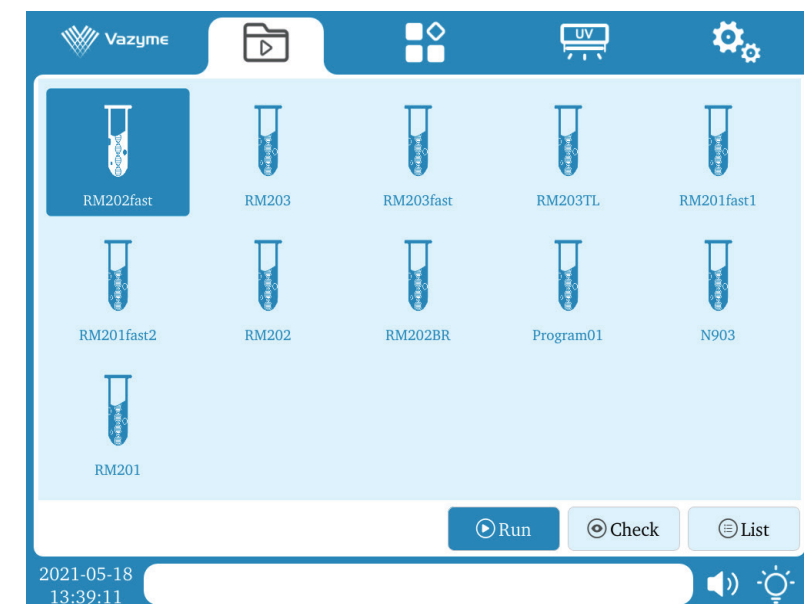
5.6 Operating Instrument

5.6.1 Startup interface

Please close the cabin door. After turning on the power switch, the display screen shows the following startup interface.



Then enter the program running shortcut mode interface.



5.6.2 Program running

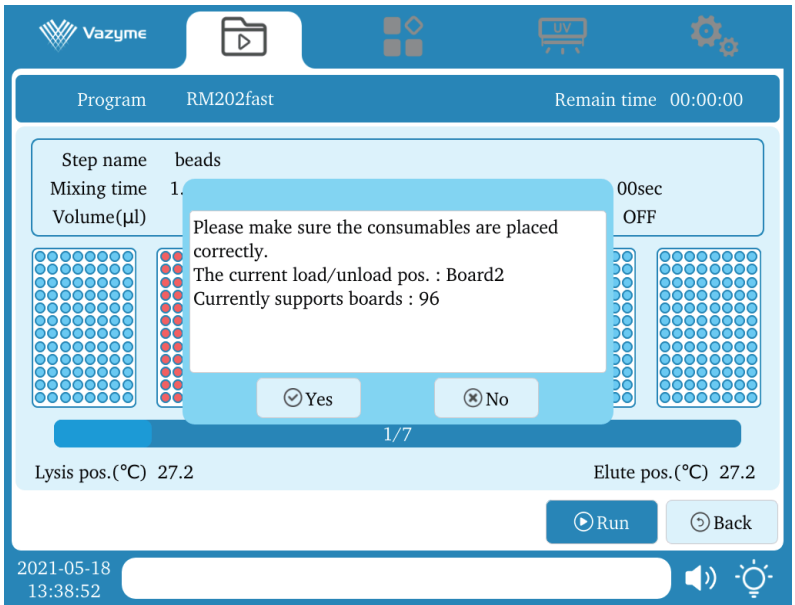
Before running the program, please enter the System Settings>Common interface to check whether the deep-well plate settings and loading/unloading positions are consistent with the actual needs of the users. If they are inconsistent, please refer to 5.6.5.4 and 5.6.5.8 for settings.

5.6.2.1 Shortcut mode

Select the program shortcut icon in the program running shortcut mode interface. Click the "Run" key. The instrument will run the selected program, and the running status interface will appear. A pop-up dialog box "Please make sure that the consumables are placed correctly" appears and click "Yes", the instrument will run the selected program.



VNP-96 running shortcut mode interface

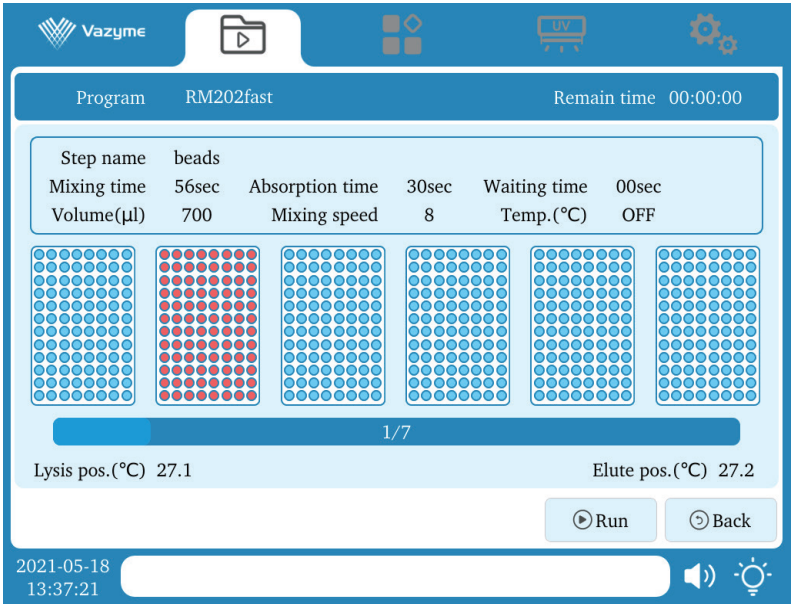


VNP-96 running status interface

The above side of the running interface shows the program name and the remaining running time. The middle part shows the relevant information of the current running step. When the program runs to a certain plate position, the corresponding plate position of the middle part figure is highlighted. The progress bar below shows the progress of the program running steps and the bottom shows the current temperature values of the lysis and elution heating channels.

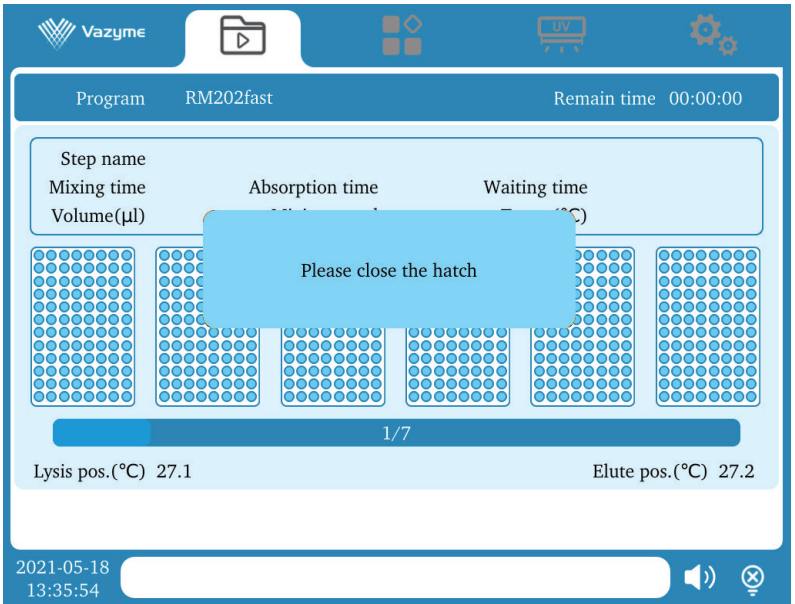
Click "Pause/Continue" to interrupt and continue the program. Click "Stop", the program will stop running and a stop prompt label will pop up. Click "Cancel", the program continues to run. Click "OK", the program returns to the initial position. Click "Run" key to continue this program.

Click "Back" to return to the previous menu.



running interface

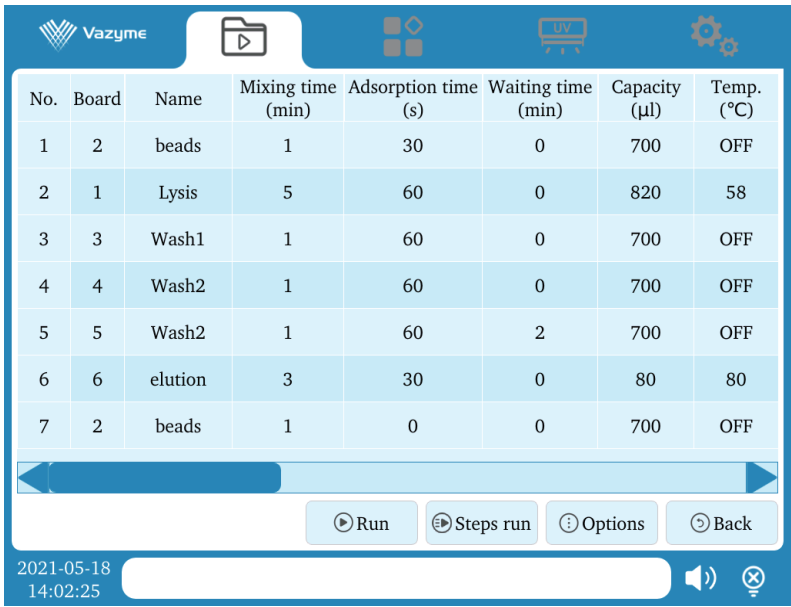
Note: If the instrument door is opened while the program is running, the following interface will be displayed. The operation of the instrument is suspended, and the instrument continues to operate after closing the instrument door again.



5.6.2.2 List mode



If there are many files, you can operate the scroll bar on the right to view.
Select the program you want to run. Click "Run". The instrument will run the selected program, and the running status interface will appear.
Click "Check" to enter the view interface. If there are multiple lines of commands, you can operate the scroll bar to view.



Click "Run" and the instrument will run the selected program, and the running status interface will appear.
Click "Steps run" to run the program from the selected step to the final step.
Click "Options" to view the related parameter settings of the program.
Click "Back" to return to the previous menu.

5.6.3 Program Management

Click "Program Management" to enter the "Program Management" interface.



5.6.3.1 Quick operation
Click the " " in the "Shortcut" column of the corresponding program. The icon " " appears, indicating that the program will appear in the shortcut list; if the icon is still " ", it indicates that the program does not appear in the shortcut list.
In the program lock column, the " " icon indicates that the program is locked and cannot be edited, deleted, or saved as; the " " icon indicates that the program is unlocked.

5.6.3.2 Program Management > Add
Click "Add" on the "Program Management" interface to enter the add interface.



Set the Program name, Plate position, Step name, Mixing time, Absorption time, Waiting time, Volume and Temperature parameters; the Mixing speed, Mixing position, Mixing amplitude, Absorption speed, Absorption position are displayed as default values, modification are generally not required. If the user has special needs, these parameters can be adjusted according to the actual situation.

VNP-96 only has the heating function for plate position 1 and 6; In the "Temperature" box, you can enter the temperature you want to set; if you enter the number "36" and a number below 36, it means that the well will not be heated when the program runs to this step.

When selecting other plate positions, the corresponding step line "Temperature" number box is not available.

Click "Delete" and a prompt label will pop up. Click "Yes" to delete the selected step; click "No" to stop deleting the selected step.

Click "Options" to set, "Temperature Control setting", " Absorption setting" and "Drying setting", which can make more open settings for the program.

Click "Save" and a prompt label will pop up. Click "Yes" to save the currently edited program; click "No" to stop saving the currently edited program.

Click "Back", if the newly added program has been saved, it will return to the "Program Management" interface. If the new program has not been saved, a prompt label will pop up. Click "Yes", the new program will be saved and return to the "Program Management" interface; click "No", the new program will not be saved and return to "Program Management" interface; click "Cancel" and stay on the newly added interface.

When there are multiple lines in the left side step column, you can view it by operating the scroll bar.

5.6.3.3 Program Management > Edit

In the "Program Management" interface, directly click the program name and click "Edit" to edit the program.

The related operations are as the same as "Program Management> Add" in section 5.6.3.2.

5.6.3.4 Program Management > Delete

In the "Program Management" interface, click the program name and click "Delete", a prompt label will pop up. Click "Yes" to delete the selected program; click "No" to stop deleting the selected program.

5.6.4 UV disinfection

Click "UV Disinfection" and enter UV disinfection interface. Enter numbers or click "+" "-" to adjust the disinfection time.



Click "Start", the UV lamp turns on and UV disinfection will start. The disinfection consumption time will count down.

Click "Stop" to turn off the UV lamp and stop disinfection.

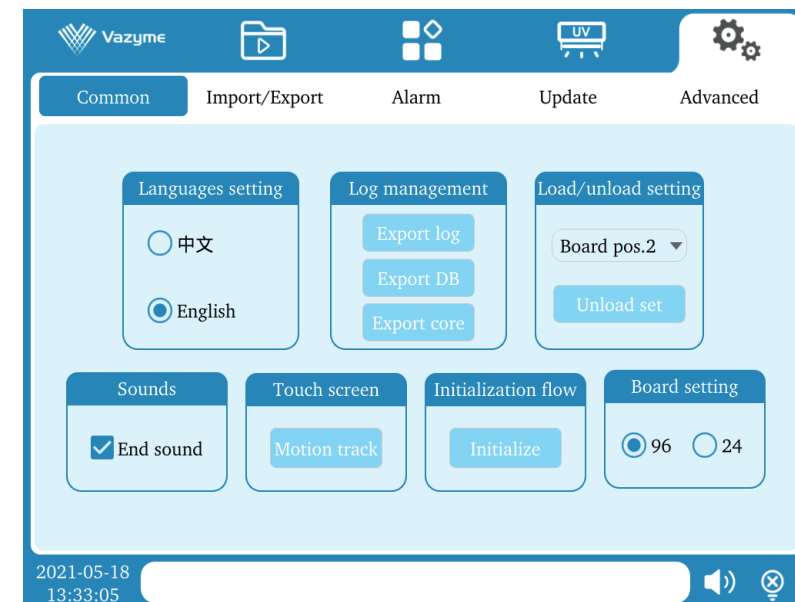
Click "Clear" to reset the countdown.

If the cabin door is opened during the disinfection process, the UV lamp will automatically turn off and disinfection will be suspended; close the cabin door, the UV lamp will be turned on, and disinfection will continue.

5.6.5 System settings

5.6.5.1 System settings > Common

Click "System Settings" to enter the "System Settings" interface. The "System Settings">"Common" interface is displayed by default. Enter the Common interface, you can set the language, log management, board setting, sounds, touch screen, initialization flow, load/unload setting.



5.6.5.2 System settings > Common > Languages setting

Switch the language to "Chinese/English", a pop-up confirmation dialog box appears. Click "Yes", the language switch will take effect; click "No" to cancel the switch.

5.6.5.3 System settings > Common > Log management

Insert the FAT32 USB flash disk into the left USB port, and click "Export log"/"Export DB" / "Export core" to perform the export operation.

5.6.5.4 System settings > Common > Load/unload setting

The Load/unload setting is set to Board position 2 by default. Click " Load/unload setting ", a drop-down box will pop up, you can select Board position 1 to Board position 6. Select the corresponding board position, and set the Load/unload setting.

5.6.5.5 System settings > Common > Sounds

The "End sound" can be set. Check it to start, and uncheck it to close.

5.6.5.6 System settings > Common > Touch screen

Click "Motion track" and a prompt dialog box will pop up. Follow the relevant prompts to operate the motion track.

5.6.5.7 System settings > Common > Initialization flow

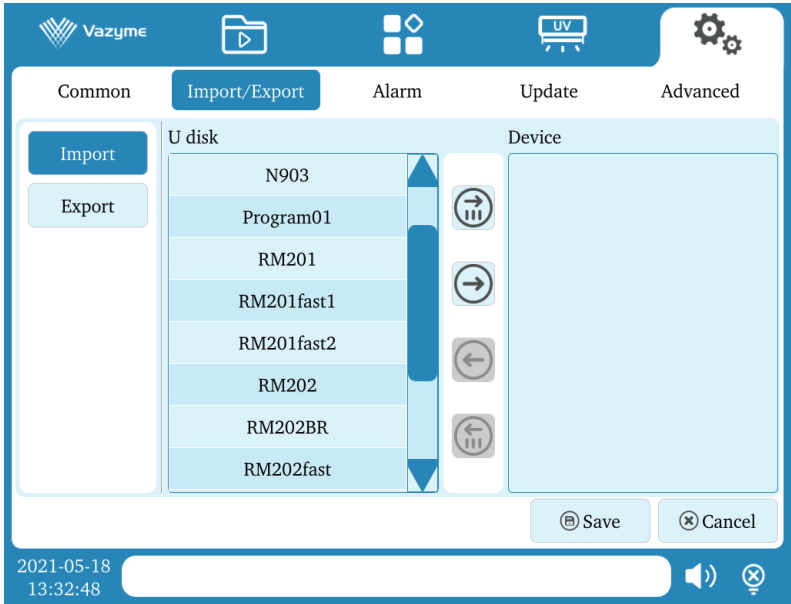
Click "Initialize" to perform initialization.

5.6.5.8 System settings > Common > Board setting

This instrument is suitable for 24-well deep-well plate and 96-well deep-well plate. The default setting is for 96-well deep-well plate. Click " Board Settings" for using 24-well deep-well plate. And operate as step 5.5.

5.6.5.9 System settings > Import/Export

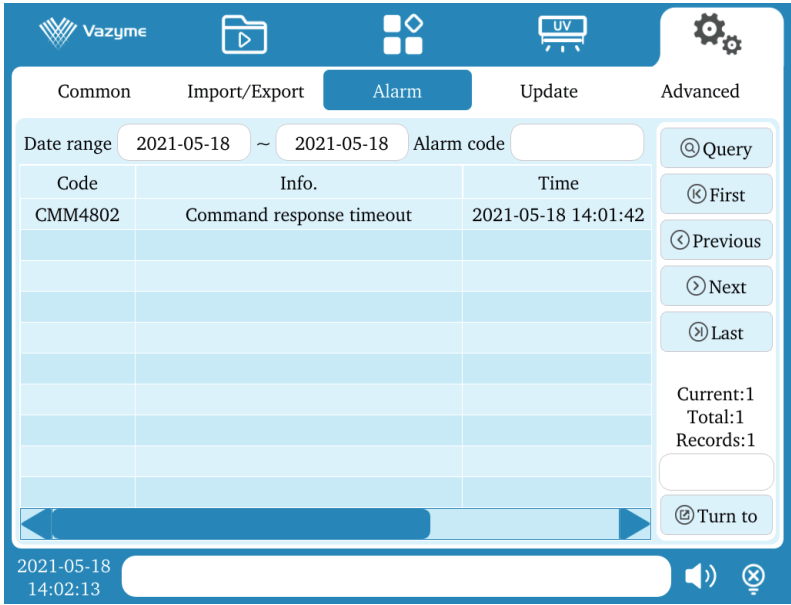
Click "Import/Export" and enter the corresponding interface. Insert a USB flash disk for related operations.



Insert the FAT32 USB flash disk to the USB flash disk interface. Click "Import" on the left, and the import list on the left shows the program files that can be imported to the USB flash disk. Select the file to be imported. Click "→", and click "Save". A single program file will be imported. Click "⌂", and click "Save". All the program files will be successfully imported into USB flash disk. Similarly, program files can be exported.

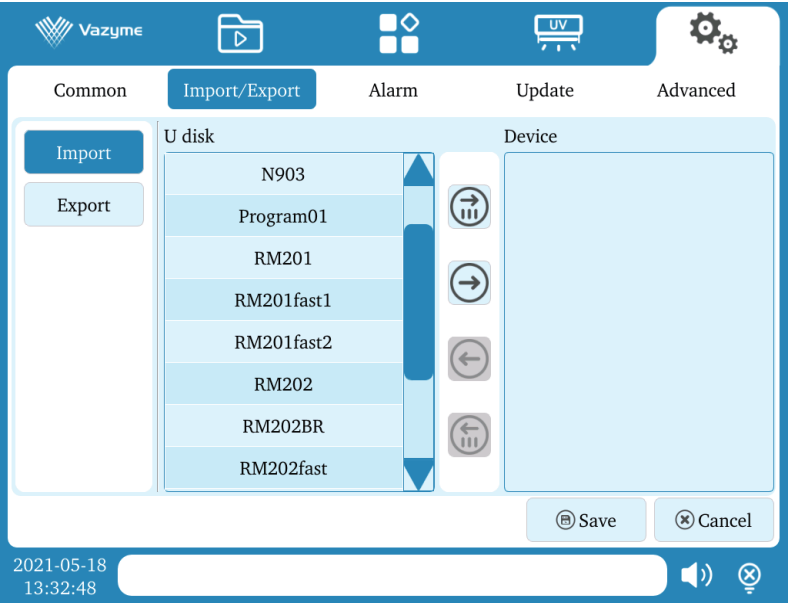
5.6.5.10 System settings > Alarm

Click "System Settings" > "Alarm" to enter the alarm query interface. For the alarm query, you can set the date range, alarm code, and query and screen alarm information.



5.6.5.11 System settings > Upgrade

Click "Upgrade" and ask the user to enter the corresponding password. After entering the interface, you need to insert a USB flash disk to perform related operations.



5.6.5.12 System settings > Advanced

Click "Advanced" and ask the user to enter a password. After the password is correct, you can enter the setting interface and modify the relevant parameters of the instrument.

Note: All instruments have been set up before leaving the factory, and users do not need to set again. When the instrument is malfunctioning and needs to be repaired and adjusted, the relevant settings shall be made by professional.

Chapter 6 Failure Analysis and Treatment

6.1 Failure Analysis and Treatment

No.	Fault Symptom	Cause Analysis	Treatment
1	The display screen does not light up after turning on the power switch	The power is not switched on	Check the power supply and turn it on
		Power switch is damaged	Replace the switch
		Fuse damage	Replace the fuse (F6AL250V)
		Others	Contact the seller or manufacturer
2	The UV lamp does not light up	UV lamp is broken	Replace the UV lamp Contact the seller or manufacturer
3	The lamp does not light up	The lamp is broken	Replace the lamp Contact the seller or manufacturer
4	After the door is opened, the instrument cannot be automatically suspended	Sensor switch is damaged	Contact the seller or manufacturer
5	The temperature display value is seriously inconsistent with the actual value	Sensor damaged	Contact the seller or manufacturer
6	The heating block of lysis/elution position does not heat	Sensor damaged	Contact the seller or manufacturer
		Heater damaged	
7	The instrument does not work	Controller damaged	Contact the seller or manufacturer
		Motor damaged	
8	Abnormal sound during operation	The rail is not installed properly	Contact the seller or manufacturer
		Motor damaged	
		The timing belt is damaged or the lead screw is worn	

6.2 Software Fault Alarm Table

Fault type	Fault name	Display symbols
Frame analysis error	First frame error	1101
	Frame type error	1102
	Frame serial number error	1103
	Frame sender error	1104
	Frame receiver error	1105
	Frame ID error	1106
	Frame sub ID error	1107
	Frame ACK identification error	1108
	Frame extended information error	1109
	Frame proof test value error	1110
	End of frame error	1111
	Frame transmission blocked	1112
	Frame reception blocked	1113
	Ack response list overflow	1114
	Ack response timeout	1115
	Parameter value verification failed	1116
	Parameter save failed	1117
	Motor setting error	1118
	Abnormal temperature value	1119
	Two heaters cannot be turned on at the same time	1120
	Abnormal temperature chip 1 read	1121
	Abnormal temperature chip 2 read	1122
System error	Movement restriction	1201
	Parameter abnormal	1202
	Command conflict	1203
	Command execution failed	1204
	System status abnormal	1205
Motor is not reset	Magnetic rod sleeve rack Z axis motor is not reset	1301
	Magnetic rod rack Z axis motor is not reset	1302
	Horizontal motion component X axis motor is not reset	1303
	Drip shield is not reset	1304
	Load motor is not reset	1305
Motor calibration failure	Magnetic rod sleeve rack Z axis motor calibration failure	1401
	Magnetic rod rack Z axis motor calibration failure	1402
	Horizontal motion component X axis motor calibration failure	1403
	Drip shield motor calibration failure	1404
	Load motor calibration failure	1405

Chapter 7 Parts List

Fault type	Fault name	Display symbols
Motor out of range	Magnetic rod sleeve rack Z axis motor out of range	1501
	Magnetic rod rack Z axis motor out of range	1502
	Horizontal motion component X axis motor out of range	1503
	Drip shield motor out of range	1504
	Load motor out of range	1505
Motor movement timeout	Magnetic rod sleeve rack Z axis motor movement timeout	1601
	Magnetic rod rack Z axis motor movement timeout	1602
	Horizontal motion component X axis motor movement timeout	1603
	Drip shield motor movement timeout	1604
	Load motor movement timeout	1605
Motor lost step	Magnetic rod sleeve rack Z axis motor lost step	1701
	Magnetic rod rack Z axis motor lost step	1702
	Horizontal motion component X axis motor lost step	1703
	Drip shield lost step	1704
	Load motor lost step	1705

7.1 Parts List

No.	Name	Number	Remark
1	Power line	1	Standard
2	Internal hexagonal wrench 5	1	Standard
3	Internal hexagonal wrench 4	1	Standard
4	96-well deep-well plate	6	Standard
5	96 magnetic rod sleeve	1	Standard
6	96 magnetic rod rack parts	1	Standard
7	Fuse	2	Standard
8	24 magnetic rod rack parts	1	Optional
9	24 heating block	2	Optional
10	Screw	8	Optional
11	Screwdriver	1	Optional
12	24-well deep-well plate	6	Optional
13	96 magnetic rod sleeve	1	Optional

Chapter 8 Maintenance and Transportation Storage

8.1 Instrument Maintenance

Wipe the outer surface of the instrument regularly with a cotton cloth soaked in 75% ethanol. The frequency is 1 time/week. Do not use strong bleaching agents ($\geq 0.5\%$ solution) or organic solvents, because they may damage the shell and touch screen of the detector.

If the surface of the instrument is stained, it can be cleaned with a soft cloth dipped in cleaning paste.

During the installation and use of the instrument, do not replace the power cord by yourself, if it is damaged, please contact your after-sales representative.

When the instrument fuse is damaged, be sure to disconnect the power supply for replacement, the specification fuse F6AL250V shall be used when replacing.

When the magnetic bar is damaged or broken, please keep the instrument powered off and contact the manufacturer for inspection and maintenance of it.

After the instrument has been used normally for a period of time, please pay attention to regularly contact the maintenance personnel for the inspection and maintenance of the thermal protector. It is recommended that the inspection time be half a year.

8.2 Transportation and Storage Environmental Restrictions

8.2.1 Transportation and Storage Environmental Restrictions

Ambient temperature range: $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$

Relative humidity range: $10\% \sim 90\%$

Atmospheric pressure range: $70\text{kPa} \sim 106\text{kPa}$

No corrosive gas and well ventilated room.

8.2.2 Installation, Transportation and Storage Environmental Requirements

A) Transportation, storage, installation requirements

① Requirements: The packed Full-automatic nucleic acids extraction instrument can be transported by general tools, during transportation; it must be protected from adverse environmental conditions such as severe impact, shock drop, rain and exposure.

② Storage conditions: After being packed, the Full-automatic nucleic acids extraction instrument shall be stored in a dry and well ventilated environment without direct sunlight, high temperature, mechanical vibration, corrosive gas. If it is taken out for use in the storage and transportation environment, it shall be placed under normal conditions for more than 24 hours. Full-automatic nucleic acids extraction instrument shall be handled with care, especially when moving or handling special attention shall be paid to prevent damage due to violent vibration.

③ Installation requirements Only the trained service personnel of Vazyme can carry out the installation. The operation, maintenance, installation or service operations not mentioned in the operation manual shall be carried out by trained service personnel of Vazyme. Please follow the installation instructions carefully.

B) According to desktop bearing requirements, please install the instrument on the console that can bear more than 70 kg

C) Operation conditions

- ① Operation beyond the specified range may lead to wrong test results or abnormal instrument function.
- ② Only use the instrument indoors, keep the operating environment dry and avoid overheating or humidity.
- ③ Ensure that the ventilation device of the instrument is clear without barrier.
- ④ Carry out instrument maintenance at specified intervals to maintain constant conditions for instrument operating.
- ⑤ Reserve at least 30 cm clearance around the instrument to facilitate the maintenance of operators.

D) Biological harmful substances

Infection caused by samples and related materials.

Exposure to related samples containing human origin materials can cause infection. All human origin sample related materials and mechanical components have potential biological hazards.

Please follow standard laboratory requirements, especially when handling biological harmful substances.

Keep the operation cabin door in the closed position during operation.

When the power supply of the instrument is turned on and the operation cabin door is opened for operation, the instrument shall be in maintenance state or closed state.

Ensure to take appropriate protective measures and wear safety glasses with protective cover, waterproof experimental clothes, disposable gloves, etc.

Please wear a face mask in case of splash.

If biohazardous materials spill, wipe them off immediately and treat them with disinfectant.

If the sample or waste liquid touches your skin, wash the skin immediately with soap and water and treat it with disinfectant. If necessary, consult the doctor concerned.

E) Please avoid long-term UV radiation

Please close the hatch door and evacuate the irradiated area of the UV lamp to prevent skin damage caused by long-term ultraviolet light exposure.

BASIC INFORMATION

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





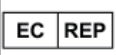















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APPROVAL DATE& MODIFICATION DATE OF INSTRUCTION FOR USE

September 3rd, 2021

SYMBOLS

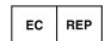
	CE Mark		Consult instructions for use		Stored at $-10 \sim 40^{\circ}\text{C}$		Keep away from sunlight
	Manufacturer		Use-by date		Humidity limitation		Fragile, handle with care
	Authorized representative in the European Community		Warning: Hot Surface		Atmospheric pressure limitation		Host stacking layer
	In vitro diagnostic medical device		Warning: Biological risks		Serial number		Power ON
	Catalogue number		Do not use if package is damaged		Disposal in a pollution-free manner		Power OFF
	Date of manufacture		General Warning(See user manual for details)		Keep dry		Upward



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