

Fully-automatic Nucleic Acid Extractor

Model: Auto NA 96

Operation Manual











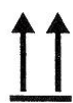




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Section I Index of Symbols

The label on the back of the instrument, the Operation Manual and other packaging material may contain the following symbols or abbreviations:

	Caution		For <i>in vitro</i> Diagnostic Use only
	Consult Instructions for Use		Manufacturer
	CE Marking		Manufacturing Date
	Authorised Representative in the European Community		Serial Number
	Fragile, handle with care		Separate Collection for Waste Electrical and Electronic Equipment
	This side up		Keep Dry
	Temperature Limitation		Keep Away from Sunlight
	Biological Risks		


Section II Notice


The copyright of this operation manual is owned by Ardent BioMed. Without the company's consent, no other individual or organization may copy, edit, or publish any content of this manual in any form.


When installing and using the instrument for the first time, please read the instruction manual carefully. **When using this instrument for the first time, be sure to open the door first and remove the sponges fixed on the mixing sleeve holder, otherwise our company shall not bear any responsibility for the damage caused to the instrument.**


Section III Introduction

3.1 Power considerations


 Before using the Fully-automatic Nucleic Acid Extractor (Model: Auto NA 96), the user must have a complete understanding of the use of the instrument. Before running the system, please read the instructions carefully.

 Note: If the user does not follow the instructions, any consequences caused by incorrect operation, our company will not assume any responsibility.


 Note: **When using this instrument for the first time, be sure to open the door first and remove the sponges fixed on the mixing sleeve holder, otherwise our company shall not bear any responsibility for the damage caused to the instrument.**


 Note: After unpacking the instrument, check the contents of the box according to the packing list. If find any items damaged or missing, please contact our company or the supplier. After acceptance, please fill out the installation feedback form and return it to our company for documentation and warranty. After unpacking the instrument, please save the packing materials for future use.


Our company shall not bear any responsibility for the damage to the instrument due to poor packaging during transportation to the maintenance department.


 Note: In the following cases, immediately unplug the power plug of the instrument from the power outlet, and contact the supplier or ask our company's professional maintenance personnel to handle:

- The instrument has been exposed to rain or water;
- Abnormal sound or odor when the instrument is working;
- The instrument has been dropped or the casing has been damaged;
- There is a significant change in the function of the instrument.

 Note: Do not treat this device as municipal waste. Specifically, you can inquire about local regulations on medical waste product disposal.

 Note: The waste liquid and waste products produced by the instrument shall be disposed of in accordance with the requirements of the competent administrative department or the environmental protection department.

 Note: This product shall be used by medical personnel who have been trained or have professional medical knowledge in the laboratory.

 Prohibited: Do not use in the presence or possible presence of flammable and explosive gases.

 Warning: This instrument has a voltage that is harmful to the human body.

Before opening the casing, please cut off the power of the instrument.

⚠ Warning: Do not place the instrument on a soft pad, to prevent the base from sinking into the pad and blocking the ventilation openings below.

⚠ Warning: Do not place the instrument close to the wall or stack other objects to avoid affecting the heat dissipation.

⚠ Warning: The instrument should be placed in a place with low humidity, less dust, and away from water sources (such as near pools, water pipes, etc.).

The room should be well ventilated and free from corrosive gases or strong magnetic fields. Do not use the instrument in direct sunlight, and keep it away from heating, stoves and any heating sources.

⊖ Prohibited: Do not use the handle on the safety door of the experimental chamber to drag when moving the instrument.

⚠ Warning: This instrument has a voltage that is harmful to the human body. Before opening the casing, please cut off the power of the instrument.

⚠ Warning: Please check carefully whether the power connection is firm. Be sure to hold the plug when inserting and removing the power cord.

Ensure that the plug is fully inserted into the socket, and do not pull the power cord hard when pulling out the plug.

3.2 Operation precautions

⊖ Prohibited: If a leakage of electricity is found, please cut off the power and stop using it.

⚠ Warning: Do not touch the power plug and switch with wet hands.

⚠ Warning: Before moving the instrument, please cut off the power before fixing the mixing rack with screws.

⚠ Warning: Make sure that the power cord does not pass through hot objects such as heaters.

⚠ Warning: When the instrument is not in use for a long time, please unplug it and cover the instrument with a soft cloth or plastic bag to prevent dust from entering.

⚠ Warning: Do not drop or damage the instrument, handle it carefully.

3.3 Notes on installation and working environment

⚠ Warning: When work is abnormal, please cut off the power and restart the system.

⚠ Warning: 1. Do not open the door when the instrument is running; 2. When the instrument is running, the surface of the heating bar may be hot. Do not touch it to avoid burns.

3.4 Cleaning and maintenance precautions

⊖ Prohibited: Do not clean during work. Do not use organic solvents such as concentrated alcohol to clean the surface of the instrument.

⚠ Warning: Non-Company personnel are not allowed to open the instrument to replace components or perform in-machine adjustment without authorization.

Operated by professional maintenance personnel. Do not replace components with the power cord connected.

⚠ Warning: Operators must not open the instrument, replace the original components or carry out the instrument without authorization from our company.

If the instrument needs to be opened, it must be approved by our company and completed by professionals, otherwise the warranty will not be given.

5.1 Appearance



Section V Product Information

Figure 5-1 Fully-automatic Nucleic Acid Extractor

5.2 Model and specifications

Product name: Fully-automatic Nucleic Acid Extractor

Model No.: Auto NA 96

Power supply	~198V~242V, 50Hz/60Hz, 450W
Dimensions	550mm×610mm×512mm
Weight	51Kg

5.3 Features

Screen operation	10-inch Android, Chinese/English system touch screen, easy to use and fast response
Precise control	Built-in android system, wireless connection to personal computer, stand-alone operation, providing stable automatic control system
Multi-mode operation	Scan, Quick Launch, View Steps mode
temperature control	Customized lysis and elution temperature according to requirements
Free programming	Powerful grade editing function to meet different reagent needs

Fast extraction	Short operating time, high throughput, and 96 samples can be extracted at the same time
Extraction efficiency	The purification scheme can be optimized according to different reagents to achieve higher extraction efficiency and purity
Stable and reliable	The whole process is automated to avoid differences and errors caused by manual operations, and the results are stable and repeatable.
Pollution prevention and control	Built-in UV disinfection function, can be disinfected regularly to prevent cross-contamination
Safe and reliable	The program will be temporarily paused after the safety door is opened, and the program can continue to run after the safety door is closed to avoid injury
Reagent open	Extraction with reagents from various manufacturers

5.4 Product performance index

Processing volume	30μl-1000μl
Sample throughput	1-96
Magnetic beads recovery rate	>95%
Well Plate type	96-well deep well plate
Extract the difference between wells	CV<3%
Magnetic rods	96 pieces
Heating temperature	Optional heating module (room temperature to + 120 °C)
Shock mixing	Multi-level adjustable
Reagent type	Magnetic Bead Open Platform
Extraction time	10-40 minutes / time (depending on the reagent used)
Operation interface	Chinese/EnglishAndroid system touch operation
Internal	Can store> 500 programs

procedures	
Program management	New, edit, and delete mode programs
UV irradiation	Have
flashlight	Have
Noise	<65dB

5.5 Main structure

It consists of a casing, a mechanical movement mechanism, an ultraviolet sterilization mechanism, a lighting lamp, a heating and temperature control mechanism, and a control system.

5.6 Scope of application

It is widely used in routine scientific research, genomics, food safety, disease diagnosis, forensic identification and other fields.

Using this instrument, you only need to add samples and magnetic bead method automatic nucleic acid extraction reagents to 96-well plates, select or edit the appropriate program and execute it. With different types of magnetic bead method nucleic acid extraction reagents, you can extract DNA and RNA in samples such as animal and plant tissues, blood, body fluids, and criminal materials quickly.

5.7 Working principle

The instrument uses matching nucleic acid extraction reagents to automatically complete sample nucleic acid extraction.

5.8 Limitations of detection methods

This instrument is used in conjunction with a nucleic acid extraction kit. It is only used for nucleic acid extraction and has no measurement or diagnostic functions.

Section VI Operation process

6.1 Installation

6.1.1 Unpacking and inspection

After unpacking the instrument, check the contents of the box according to the packing list (the parts in the box include: fully-automatic nucleic acid extractor host, power cord, fully-automatic nucleic acid extractor instruction manual, packaging bag, certificate, packing list). If find any items damaged or missing, please contact our company or our authorized dealer. Please keep the original packaging material.

6.1.2 Instrument installation site

This instrument is only suitable for indoor installation, and the room is well ventilated, no corrosive gas, and no strong magnetic field interference. Do not place the instrument in a humid or dusty place; do not place the instrument on a soft pad, to prevent the base from sinking into the pad and blocking the ventilation openings below; the openings on the instrument are provided for ventilation and heat dissipation, do not place the instrument close to the wall or stack other objects, do not block or cover these ventilation holes. When the instrument is running, the distance between the ventilation holes of the instrument and the nearest object should not be less than 25cm, so as not to affect the heat dissipation; do not use the instrument in direct sunlight, and keep away from heating, stoves and any heating sources.

After the instrument is installed, before turning on the power, be sure to open the door first and remove the sponges fixed on the mixing sleeve holder, Otherwise our company shall not bear any responsibility for the damage caused to the instrument.

In order to avoid electric shock, the input power cord of the instrument must be reliably grounded. This instrument uses a three-pin plug and can only be used with this type of power socket to ensure safety.

6.1.3 Power source

A. Power requirements

Before connecting the AC power supply, make sure that the voltage of the power supply is equal to the voltage required by the instrument (tolerance of $\pm 10\%$ is allowed), and that the rated load of the power outlet is not less than the requirements of the instrument.

B. Pay attention to the power cord

This instrument should usually use the power cord that came with it. If the power cord is damaged, it must be replaced without repair. When replacing it, you must use the same type and specifications of the power cord instead. Do not put anything on the power cord during use. Do not place the power cord where people move around.

C. Plug and unplug the power cord

When plugging and unplugging the power cord, be sure to hold the plug. When inserting the plug, make sure that the plug is fully inserted into the socket. Do not pull the power cord hard when pulling out the plug.

6.2 Instructions for use

6.2.1 Working environment requirements

Considering the safety and performance reasons of the instrument, the environment in which the Auto NA 96 fully-automatic nucleic acid extractor is installed and the working environment of the instrument should meet the following scientific conditions:

- A. non-explosive environment;
- B. The general working environment temperature is 10 ° C ~ 40 ° C. If the temperature requirements of the experiment are high, the ambient temperature of the instrument must be 20 ° C ~ 30 ° C;
- C. The relative humidity should be less than 80%.

6.2.2 Preparation for use

 Note:

In the first operation, it is necessary to check whether the transport fixing screw has been removed (please refer to the disassembly instructions), otherwise we will not bear any responsibility for the damage caused to the instrument.

Section VII Operation Guide

7.1 Starting up

After turning on the switch on the back of fully-automatic nucleic acid extractor, the instrument will start to boot and enters the system, and the instrument will start to initialize, reset and self-test the motion module. This process takes about 1 to 2 minutes. After the system is turned on, the system resets. Once it is completed, the instrument rings for 2s to enter the main menu interface.

The main operation interface includes 5 main menus including "Program Select", "Program Setting", "System Setting", "UV Light", and "Help", as shown in Figure 7-1.

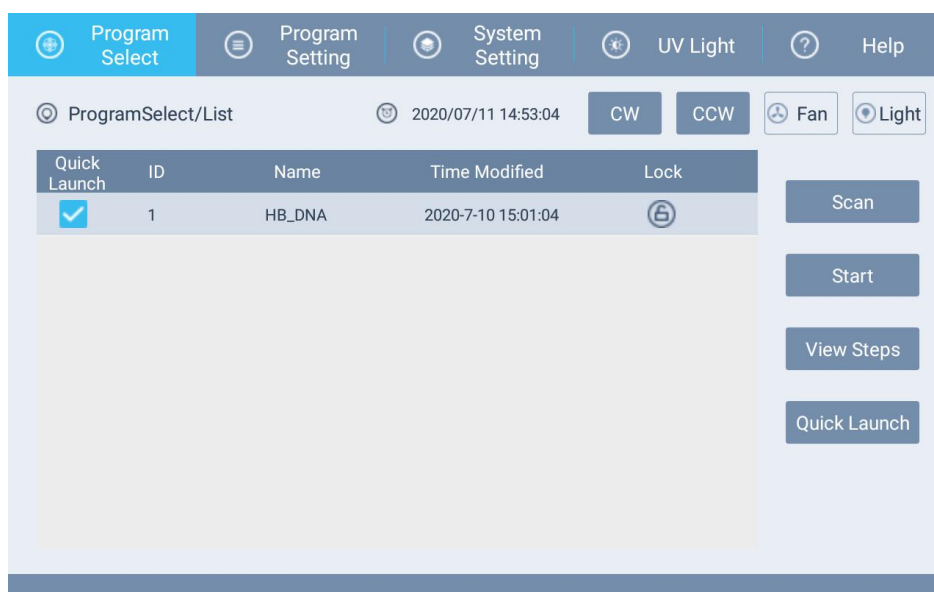


Figure 7-1

7.2 Program Select

The main menu of program operation contains 4 function buttons: "Scan", "Start", "View Steps" and "Quick Launch". All programs in the system are listed in the program list on the left.

Scan: Run the corresponding program by scanning the program name on the reagent kit with the scanning gun.

Start: Click the program to be run, and then click the "Run" button to run the selected program directly.

View Steps: Click the corresponding program name, and then click "View" to see the details of the selected program.

Quick Launch: When a shortcut is selected in the program list, the selected program will be displayed in the list through the shortcut mode view.

7.3 Scan Select

Select "Scan" under "Program Select" to enter the code scan run interface, as shown in Figure 7-2. Use the scan gun to scan the program name on the reagent kit to display the detailed information of the program in the list on the left, after confirming that there are no errors, click "Start" to start running the program.

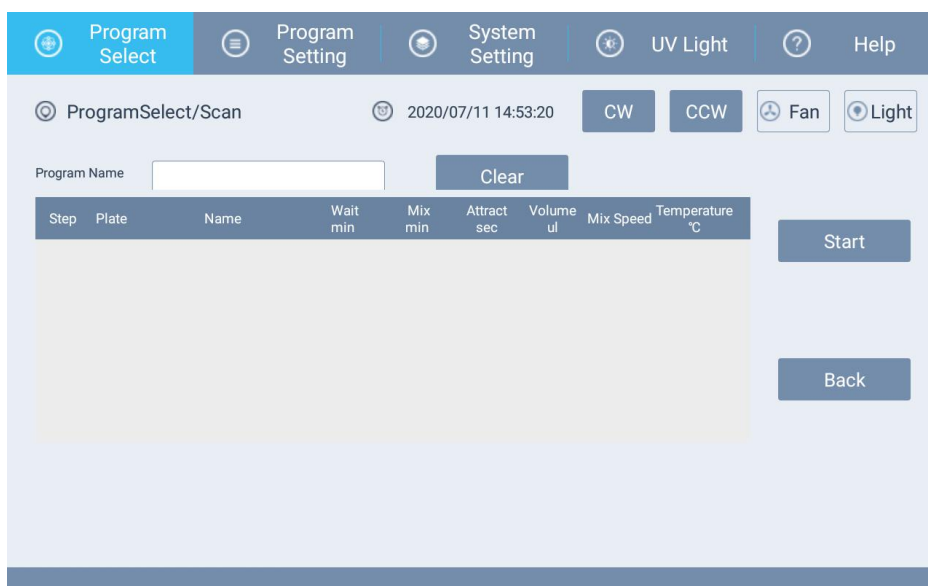


Figure 7-2

7.4 View Steps running programs

After selecting the program in the program list, click "View Steps" under the "Program Select" menu to enter the program view interface as shown in Figure 7-3. The detailed

steps of the current program are shown on the left, and click "Start" on the right to run the current program. When a step is selected in the interface, click "Start", the program will run from the current step.



Figure 7-3

7.5 Shortcut running program

Click "Quick Launch" under the "Program Select" menu to enter the shortcut running interface as shown in Figure 7-4. The detailed steps of the current program are shown on the left. Click "Start" on the right to run the current program. Left view list shows the programs selected for "Quick Launch". Select the program to be run in the view, and then click "Start" to run the current program.

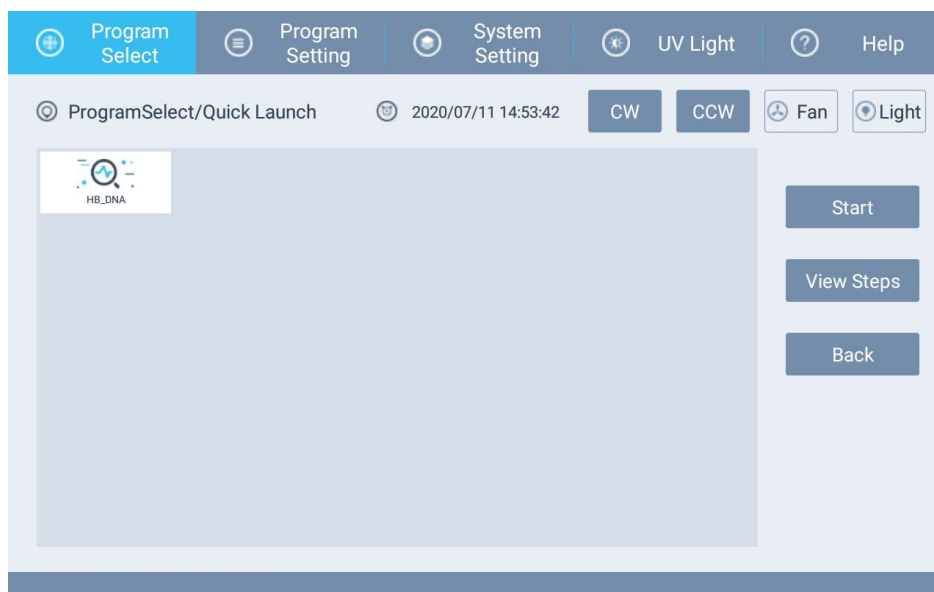


Figure 7-4

7.6 Program running

After selecting a program in the program list, select "Strat" under the "Program Menu" to enter the operation interface, as shown in Figure 7-5.



Figure 7-5

Select "Start" to run this program.

Select "Pause" to pause or resume this experiment.

Select "Continue" to run a suspended experiment.

Select "Stop" to cancel the running of this program.

Select "Back" to return to the main interface.

When running, one of the 1 to 8 positions flashes, indicating that the current position is running. The lower left side shows the progress of the program, the corresponding remaining time, and the status of the program. The right side shows the details of the current steps of the program and real-time temperature of the heating module.

 Note:

1. During the program running or the test, do not open the front safety door. If the safety door is opened, the program or the test will stop immediately and will resume only when the safety door is closed.
2. When no program is running, the system will not respond to "Pause" and "Stop" buttons.
3. When a program is running, the system will only respond to "Pause" and "Stop" buttons until the program is completed.
4. When a program is paused, the system will only respond to "Continue" and "Stop" buttons.
5. To reset a running program, press "Pause" and then press "Stop".

7.7 Program setting

Select "Program setting" in the main operation interface as shown in Figure 3-6, and all programs will be displayed on the left. You can choose to add programs, edit programs,

and delete programs.

New: Create a new program.

Edit: Select a program and click "Edit" to edit the program.

Delete: Select a program and click "Delete" to delete the program.

Rename: Select a program and click "Rename" to rename the program.

Delete All: Select programs and click "Delete All" to delete all programs.

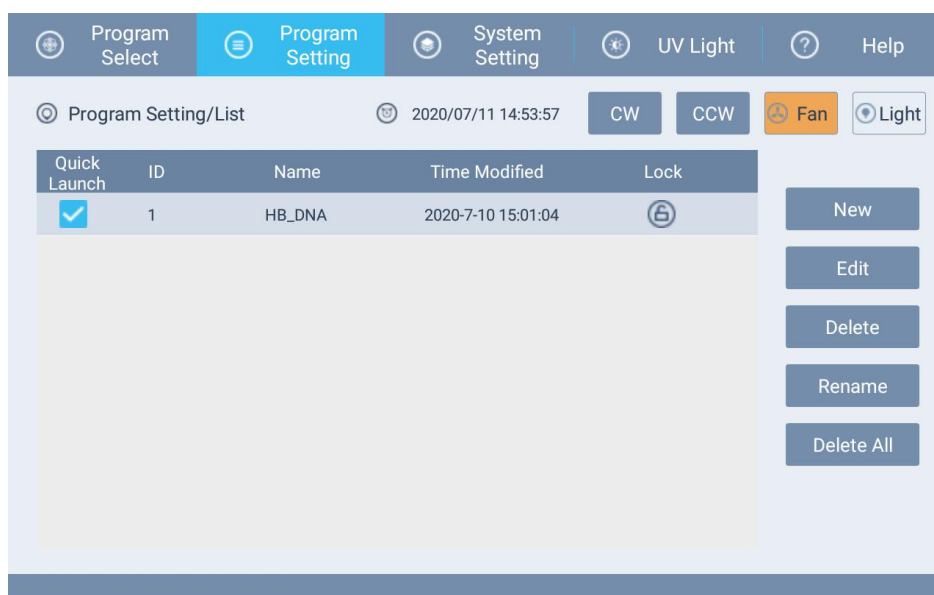
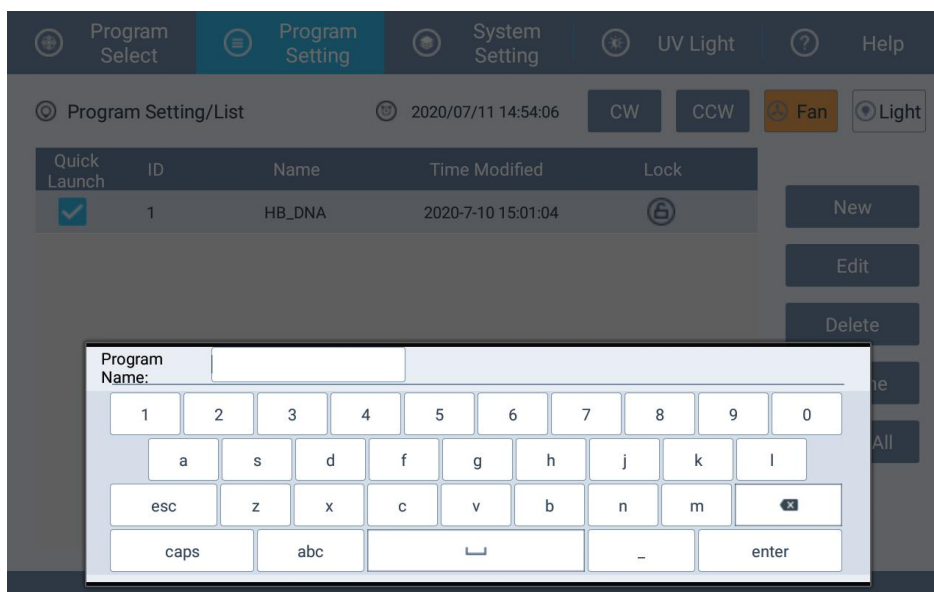


Figure 7-6

Click "Program Setting" to enter the program editing interface, as shown in Figure 7-6.

7.8 Create a new program

Select the "Program Setting" menu in the main operation interface, click "New" to enter the following interface, as shown in Figure 7-7, enter the program name, click the "enter" button to create a new program, click the "esc" button to cancel new



program.

Figure 7-7

7.9 Edit program

Select the "Program Setting" menu in the main operation interface, click "Edit" to enter the program editing interface, as shown in Figure 7-8. Each step of the program is listed on the left. You can add, edit, and delete steps. When adding a single step, the new step will be inserted as the first step if no step is selected. If a step is selected, the new step will be inserted after the selected step.

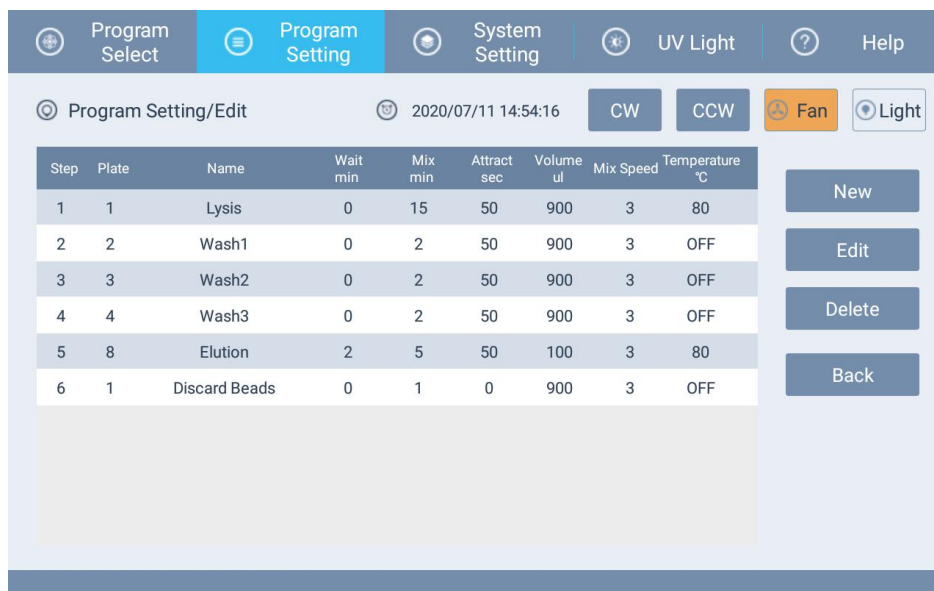


Figure 7-8

Select the step to be edited, and then click "Edit" to enter the single-step program editing state, as shown in Figure 7-9.

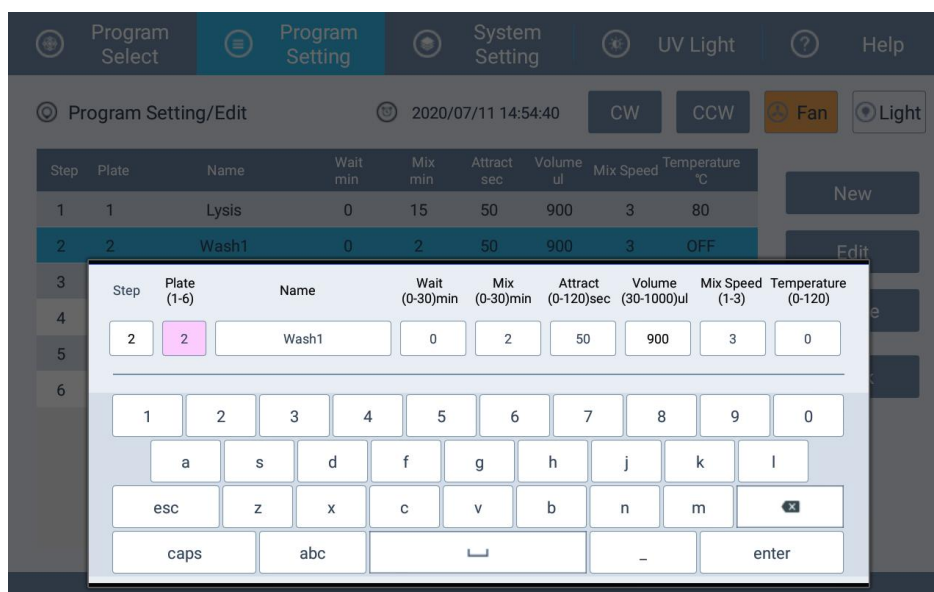


Figure 7-9

Parameter Description

Step: the current step number in the program;

Well: there are eight positions to choose from, according to the experimental requirements, select the position;

Name: The maximum length of this step name cannot exceed 10 characters;

Wait(0-30)min: The duration (in minutes) needed for the liquid to evaporate after the mixing sleeve is suspended in the air, adjustable from 0 to 30 minutes;

Mix(0-30)min: The duration (in minutes) needed for mixing the liquid by the mixing sleeve, adjustable from 0 to 30 minutes;

Attract (0-120): The duration (in seconds) needed for magnetic attraction using magnetic rods, adjustable from 0 to 120 seconds. It is recommended that the magnetic absorption time is set at 30 seconds;

Volume (30-1000) μ : The volume of the liquid in the wells of the 96-well deep well plate are to be entered into the program. The mixing sleeve will adjust the distance of the shock mixing or magnetic shock according to these volumes. If the volume is greater than 900 μ l, it is recommended to set the volume to 900 μ l.

Mix speed(1-3): Control the mixing speed of the mixing sleeve, there are three speeds to choose from: 1, 2, and 3, 3 is the fastest;

Temperature (1-120): Set the temperature of the current step. Setting the temperature to 0 means no heating, and the temperature cannot exceed 120 °C.

Editing steps


In the "Well" option, there are eight positions to choose from, which are "1", "2", "3", "4", "5", "6", "7", "8" positions, which correspond to any 8 positions of 1 to 8 columns of the 96-well deep well plate. Click the position and select the position to be run.


In the "Name", "Mix(0-30)min", " Attract(1-120)sec ", "Wait(0-30)", "Volume (30-1000) μ " and "Temperature(0-120)" options, select the option you want to edit, enter text or numbers, You can only enter numbers for " Mix(0-30)min ", " Attract (0-120) sec ", " Wait(0-30)min ", "Volume(30-1000)" and " Temperature(0-120)".

In the "Mix speed(1-3)" option, there are three speeds to choose from, which are "1", "2", "3", and "3" is the fastest.

After editing, click the "Enter" button to exit the editing state. Select the "esc" button to exit editing if need to cancel.

If an item is empty, it will prompt that there are empty items.

 **Warning:** When the heating function is in use during the program run, do not touch the heating bar to avoid burns!

 **Note:** When you click "Back" in the program editing interface, the program will be automatically saved.

7.10 Remove Program

Select the program you want to delete, and then click the "Delete" button to delete the selected program.

7.11 System Setting

The main menu of the instrument management has “Time” setting, “Instrument” setting, program “Import / Export”, “Software upgrade” and “Language” setting function and language setting. The interface is shown in Figure 7-10. When entering each sub-function interface, the password input box will pop up, and enter the correct password “910” to enter the corresponding interface.

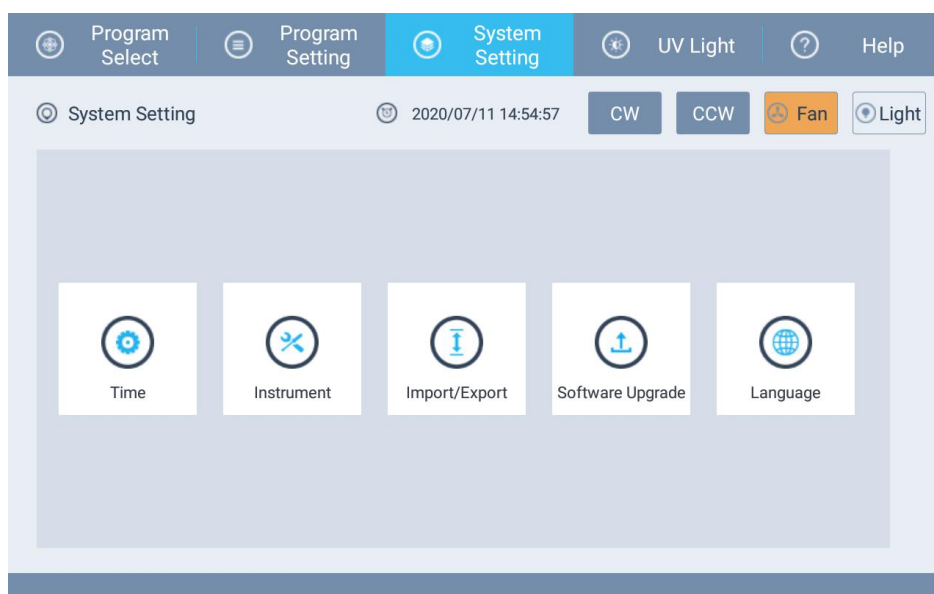


Figure 7-10

7.12 “Time” setting

System time can be set flexibly in the time setting interface. After setting the time, click "Save" to save the set time.

7.13 “Instrument” setting

Motion parameters of the instrument can be set in the instrument setting interface. General users do not need to set it.

7.14 Program “Import / Export”

Insert the USB disk into the USB interface of the instrument, you can import the system's existing program to the USB disk for saving; at the same time, after editing

the program in the computer, you can import the program to the instrument through the USB disk. The interface is shown in Figure 7-11. All programs that can be exported are displayed on the left. After the program is successfully imported, all programs will also be updated to the program list on the left. You can export selected programs through the multi-select, or you can export all programs directly.

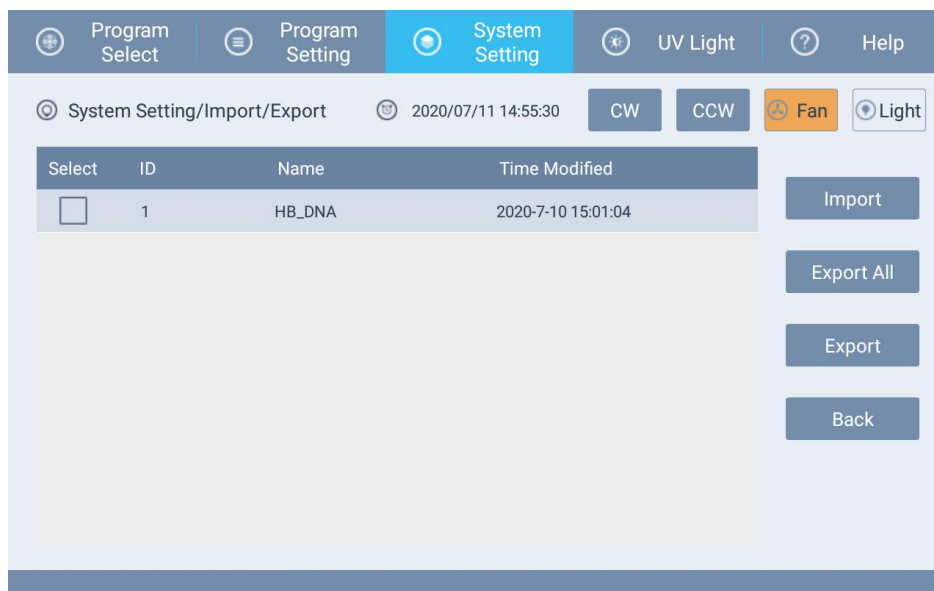


Figure 7-11

7.15 Software Upgrade

Insert the USB disk which has this system software App into the USB interface of the instrument, click the "Software Update" function and enter the password to enter the software upgrade interface, click "Install" and "Next" to complete the software installation automatically; if the system App is not found, it will prompt user.

7.16 “Language” setting

This system provides users with two choices of Chinese and English. After selecting the language, click "Save" to switch to the corresponding language.

7.17 UV Light

Select "UV Light" in the main operation interface, as shown in Figure 7-12. You can set the UV disinfection time on the left, and click "Start" to start the countdown to start disinfection. After the time is over, the UV light will turn off automatically. You can also stop disinfection actively by turning off the UV light during the process.

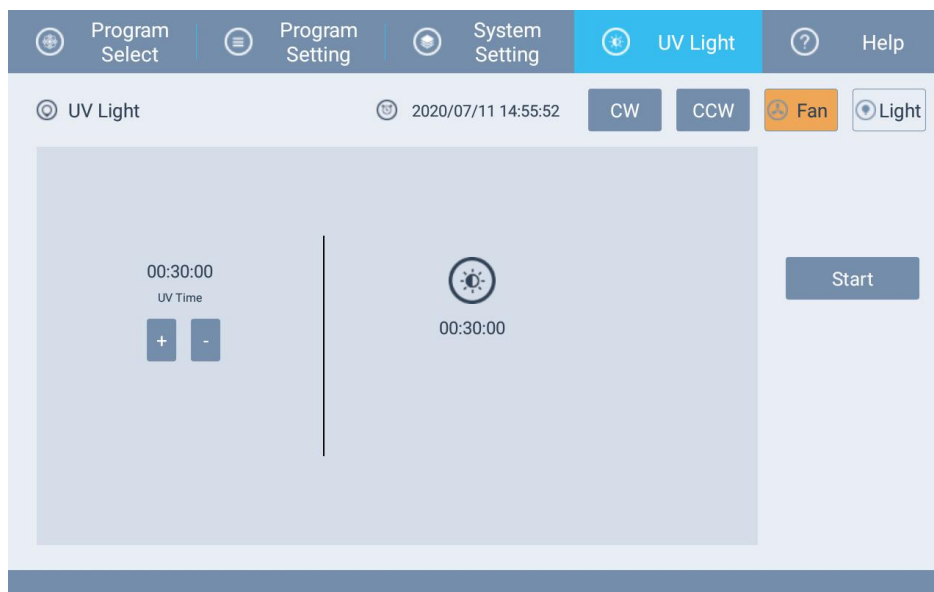


Figure 7-12

Note:

1) During UV disinfection, please do not open the front safety door. If the user opens the safety door at this time, the UV light will turn off automatically and the timer will pause. After closing the safety door, the timer will resume until the timer end.

2) When the disinfection is completed, the UV light will be turn off automatically, or the user may turn off the UV light manually depending on the actual situations.

3) During UV disinfection, all icons will stop responding except for the UV light icon. Other icons can only be used when the UV light is turned off.

Warning: The plexiglass of the front safety door acts as a shield from ultraviolet light. To avoid accidents, do not look directly at the ultraviolet light!

7.18 Help

The help interface explains several main menu functions, as shown in Figure 7-

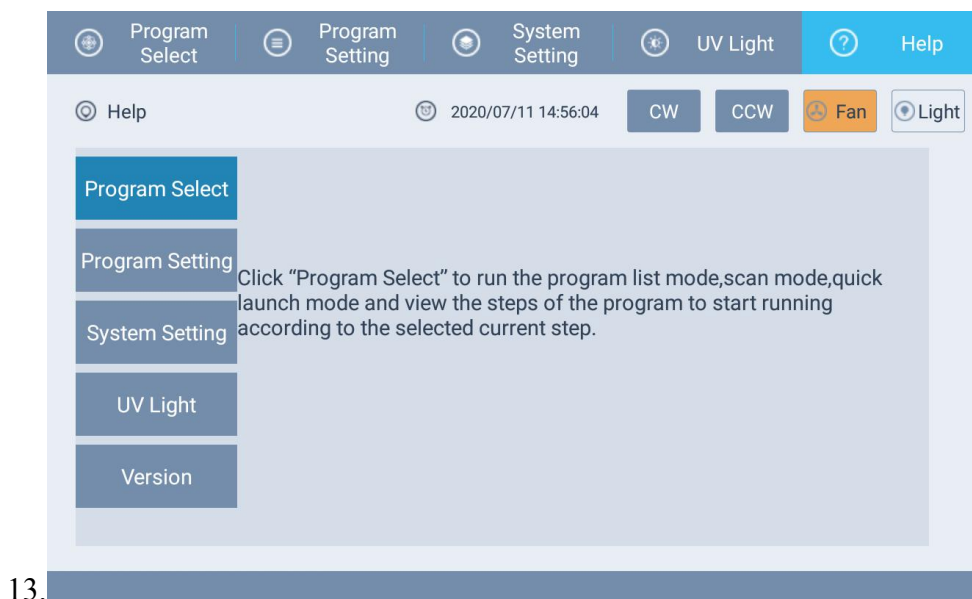


Figure 7-13

7.19 Turn off

After the operation of the instrument, please turn off the power and carry out daily cleaning.

Section VIII Safety Protection

- 1) When the instrument is in operation, please do not open the front safety door. If you want to open it forcibly, please pause the running program first.
- 2) During the experiment, the program will pause in the event when the safety door is opened. It will resume operation once the safety door is closed.
- 3) In the event of a sudden power failure during the running of the program, the system will initialize after power is back on. After initialization is completed, you will be asked to choose if you want to continue the previous program. Press "Yes" to resume the previous program. Press "No" to initialize the system, then select the program to run.

Section IX Product maintenance and care methods, storage, transportation

9.1 Maintenance

- 1) Please read the instructions carefully before using the instrument;
- 2) After the experiment, turn off the power source to the instrument. You can use 75% ethanol to clean the experimental chamber. During use, do not pour ethanol into the experimental chamber. Wipe with absorbent cotton. Once the ethanol has evaporated, turn on the UV light to disinfect for more than 30 minutes;

- 3) Clean the surface of the instrument and the experimental chamber regularly, and avoid the use of strong alkali, concentrated alcohol and organic solvent solutions;
- 4) Keep the experimental chamber dry and free of water stains and other objects;
- 5) Do not use the instrument in a dusty environment;
- 6) When using the instrument, please ensure ventilation around the instrument;
- 7) Please do not use the instrument when the voltage is unstable, too high or too low.
- 8) When the instrument is not in use for a long time, please unplug it and cover the instrument with a soft cloth or plastic bag to prevent dust from entering;
- 9) When the instrument is not in use, in order to ensure the stability of the instrument, it is recommended to turn on the instrument for dry run every 30 days.

⊖ Prohibition: Do not clean the experimental chamber or the surface of the instrument while the instrument is working.

9.2Store

When the instrument is not used for a long time, cut off the power supply first, fix the magnetic stand with the Phillips screws provided with the instrument, and then clean the external surface of the instrument with a clean wet cloth, and clean the experimental chamber with 75% ethanol. After the surface and the experimental chamber had dried, put the accessories such as equipment and power cords in the original packaging bag and box of the instrument for storage.

The packaged instrument should be stored in a cool, dry, and ventilated place indoors; avoid rain, direct sunlight, and strong electromagnetic interference; keep away from heating, stoves and any heating sources.

9.3Transport








- 1) The instrument is packed in a cardboard box for long-distance transportation;
- 2) **If the instrument needs to be transported, the transport screws must be installed before transporting under power off. (For disassembly and assembly, please refer to the disassembly and assembly instructions)**
- 3) Users are requested to keep the original packaging materials of the instrument for transportation of the instrument.

⚠ Note: **Before moving the instrument, please cut off the power.**

Section X Packaging List

Name	Quantity
Fully-automatic Nucleic Acid Extractor	1
Power Cord	1
Warranty Card	1
Cross Screwdriver	1
Packaging List	1
Certificate of Approval	1
Operation Manual	1

Section XI Explanation of Graphics, Symbols, Abbreviations, etc. used in labels

	Note: The prompt message requires the operator to confirm this step before proceeding to the next step. Otherwise, the instrument function will be affected.
	Note: Note that the project contains particularly important information, please read it carefully. If you do not follow the instructions, the instrument may not work properly.
	Warning: The warning message requires you to take special care in performing an operation step or method. If you do not follow the instructions correctly, it may prevent the instrument from working properly or cause injury to the operator.
	Prohibited: The operator is prohibited to perform this operation, otherwise it will cause damage to the instrument, malfunction, or injury to personnel.
	This symbol represents the date of manufacture for the device.
	This symbol represents the manufacturer for the device.
	This symbol represents the serial number for the device.

Section XII Maintenance and Troubleshooting

1.The free warranty period of this instrument is one year. The warranty period of the instrument due to technology or material failure or defect is 12 months from the date of shipment. It will be repaired free of charge, but the prerequisites are as follows:

- 1) All operations were performed in accordance with the instruction manual.
- 2) The instrument has only been used at the specified voltage.
- 3) The instrument has not been operated incorrectly or accidentally, and it is maintained in accordance to the maintenance guidelines.
- 4) The instrument has not been repaired by any other unauthorized manufacturer or agent.

2.This instrument is repaired for life. Our company's local distributors, repair stations and offices can provide you with thoughtful after-sales service, and the corresponding component costs will be charged outside the free warranty period.

3.Common troubleshooting and processing methods

Serial no.	Failure phenomenon	Troubleshoot	Approach
1	Screen does not display after turning on the power	Whether the power cord is plugged in	Re-plug the power cord
		Whether the fuse is intact	Replace the fuse
		Whether the switch indicator is on	Contact our company or the supplier
		Others	
2	The machine makes an abnormal sound	Whether the long screw fixing the mixing sleeve is not replace with short screws	Remove the fixing long screw and replace it with short screw
		Whether the mixing sleeve is inserted in place	Reinsert the mixing sleeve
		Whether the 96-well deep well plate is placed correctly	Reposition the deep well plate
3	Motor initialization failure	Others	Contact our company or the supplier
4	Temperature Module Failure	Others	Contact our company or the supplier
5	UV light is off	Whether the UV light is in good contact	Reinstall the light
		Is the UV light damaged	Replace the light
6	Magnet do not work properly	Not falling or rising	Pause the program and touch the "Stop" button to reset
		Others	Contact our company or the supplier
7	Magnet fall off	Whether the length of the magnet is different	Contact our company or the supplier
8	System crash down	Improper use or errors in operation	Cut off the power and restart the instrument

	or out of control.	Others	Contact our company or the supplier
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4. Replace the fuse

The fuse tube of the Auto NA 96 fully-automatic nucleic acid extractor is a 250v, 10A fuse tube. The fuse tube is installed under the power socket on the back of the instrument, and the user can replace it. When the fuse needs to be replaced, please follow the steps below:

- 1) Cut off the power and unplug the power cord;
- 2) Take out the fuse holder under the power socket;
- 3) Take out the fuse, check whether the fuse is damaged, if it is damaged, replace it with a new fuse;
- 4) Reinsert the fuse holder and turn on the power.

Section XIII Contact Information

Ardent BioMed expressed and implied warranties are conditioned upon full observance of manufacturer's published direction with respect to the use of Ardent BioMed products. Under no circumstance shall Ardent BioMed be held liable for any indirect or consequential damages


Appendix I: Experiment Manual

I. Main contents of the experiment manual

The purpose of writing this manual is to help users use Auto NA 96 fully-automatic nucleic acid extractor correctly and supporting reagents, master and operate the instrument as soon as possible.

II. Operation steps

Before performing nucleic acid extraction, please select the magnetic bead nucleic acid extraction reagent that is compatible with the Auto NA 96 fully-automatic nucleic acid extractor. General nucleic acid extraction reagents are divided into: lysate, magnetic bead solution, washing solution i, washing solution ii, washing solution iii, and Eluent, nucleic acid sedimentation aid and other components.

 **Note: Nucleic acid extraction kits and consumables are purchased by the users..**

The role of each component:

ingredient	effect
Lysate	Lyse cells and release nucleic acids
Magnetic bead solution	Adsorbs nucleic acids released from cells
washing solution i, washing solution ii, washing solution iii	Wash away substances other than nucleic acids, such as proteins
Eluent	Elute the nucleic acids adsorbed on magnetic beads
Nucleic acid sedimentation aid	Increase nucleic acid precipitation rate when precipitating nucleic acids with ethanol

The composition and concentration of each component vary according to the classification of the sample to be extracted. Please select the appropriate nucleic acid extraction reagent strictly according to the classification of the sample.

1. Using the virus DNA magnetic bead extraction kit as an example to introduce DNA extraction operation.

1.1 Bring your own materials:

96-well deep well plate and mixing sleeve, micropipette with appropriate capacity, absolute ethanol

1.2 Preparation before use:

Before use, add absolute ethanol to wash solution I at a volume ratio of 3: 2; add absolute ethanol to wash solution II at a volume ratio of 1: 4.

1.3 Sample type:

Serum, plasma, tissue extract, oropharyngeal swab, acellular body fluid, virus culture fluid, urine, etc.

1.4 Composition of the kit (96t):

Lysis Buffer	15ml×1
Wash Buffer I	18ml×1
Wash Buffer II	6ml×1

Wash Buffer III	30ml×1
Elution Buffer (eluent)	5ml×1
Magnetic beads	1.2ml×1
Acryl Carrier	240μl×1
Proteinase K	550μl×1

1.5 Operation steps: (Take the extraction of viral DNA in serum as an example)

- A) Take 200μL of the sample to be extracted and add it to the first tray kit of the 96-well deep well plate
- B) The following table adds reagents to a 96-well deep well plate:

- ※ Mix each time before aspiration of the magnetic bead solution.
- ※ Place the elution solution in positions 8.

Position	Add reagent	Volume
1	[10 μl proteinase K + 4 μl nucleic acid sedimentation aid + 260 μl Lysate] Mix + 20 μl magnetic beads	550μl
2	Washing liquid 1 ethanol mixture	500μl
3	Washing liquid 2 ethanol mixture	500μl
4	Washing liquid 3	550μl
5	Blank	
6	Blank	
7	Blank	
8	Eluent	100μl

- C) Place the 96-well deep well plate into the fully-automatic nucleic acid extractor
- D) Insert the mixing sleeve into the mixing sleeve holder.
- E) Close the door of experimental chamber of the fully-automatic nucleic acid

extractor.

F) Edit the running program according to the following operation steps:

Experiment name	HB-DNA					
Prepare Note						
Step	1	2	3	4	5	6
Position	1	2	3	4	8	1
Name	Bind	W1	W2	W3	EB	Drop
waiting time	0min	0min	0min	0min	2min	0min
Mixing time	15min	2min	2min	0min	10min	1min
Magnetic attraction time	60sec	60sec	60sec	60sec	60sec	0sec
Mixing speed	2	2	2	2	2	2
Volume	534μl	500μl	500μl	550μl	100μl	500μl
Temperature	80℃	0℃	0℃	0℃	80℃	0℃

G) Turn on the fully-automatic nucleic acid extractor, enter the program editing interface, select "Add", and then select the newly created program for " Edit Program ". As shown in the table above. Fill in the program parameters listed in the table in f) and return after editing Main menu (for details, please refer to section 7.9 "Program editing").

H) Select the main interface and click "Program Running" to enter the program run interface. After selecting the program to be run, select "Run" to run the selected program (for details, refer to the section 7.6 "Program Run").

D) After the program is run, the extraction results are saved in the 8 plate position, and the liquid in the 8 plate position is sucked out and placed in the EP tube and store at -20 ° C.

II) Using the viral RNA magnetic bead extraction kit as an example to introduce RNA extraction operation

The method for extracting viral RNA is the same as that for extracting viral DNA. If using other manufacturers' reagents, please follow the reagent instructions.

The instrument saves the virus RNA extraction program, and the experimental program name is HB-RNA, as shown in the following table.

Experiment name	HB-RNA
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Prepare Note						
Step	1	2	3	4	5	6
Position	1	2	3	4	8	1
Name	Bind	W1	W2	W3	EB	Drop
waiting time	0min	0min	0min	0min	2min	0min
Mixing time	15min	2min	2min	0min	10min	1min
Magnetic attraction time	60sec	60sec	60sec	60sec	60sec	0sec
Mixing speed	2	2	2	2	2	2
Volume	534μl	500μl	500μl	550μl	100μl	500μl
Temperature	80℃	0℃	0℃	0℃	80℃	0℃

III. The experimental process and precautions

1. When using this instrument for the first time, be sure to open the door first and remove the sponges fixed on the mixing sleeve holder, and then power on for testing;

2. Check whether the instrument and power supply are intact, and then power on after confirming the intactness;

3. Place samples and reagents in 96-well deep plates according to experimental needs.

4. Put the 96-well deep-well plate into the experimental chamber, push the mixing sleeve into place, and check carefully whether it is in place. If it is not checked, it may cause abnormalities in the instrument and affect the experimental results;

ⓘ Tip: the mixing sleeve has been pushed into place

5. Close the safety door of the experimental chamber, edit the settings or select the program file directly to be run, and click "Run" to start running;

6. During the program running, if there is no abnormality or experimental needs, the experimenter should not open the safety door of the experimental chamber.

7. After a program runs normally, the buzzer emits intermittent long beeps to indicate the end of the experiment.

Appendix II: Electromagnetic Compatibility Information

Caution:

This unit complies with the requirements of IEC 60601-1-2. Medical electrical equipment is subject to special precautionary measures regarding EMC. It must be installed and operated in compliance with the specifications provided in the chapter "Electromagnetic compatibility" for the respective treatment center. Portable and mobile RF communications equipment may interfere with medical electrical equipment. Therefore, the use of mobile wireless phones in practice or hospital environments must be prohibited.

With video systems

Electromagnetic disturbances in the environment of the treatment center may result in reduced image quality. In such cases, it is advisable to repeat the exposure before saving the image. When a line drop occurs, the image data stored in the video camera may be lost. Deposit the picture and repeat the exposure. Image artifacts may possibly occur as a result of radio-frequency interference caused by the transmitters of e.g. radio services or radio amateurs.

Caution:

Electrostatic discharge from people can damage electronic components when the components are touched. Damaged components usually have to be replaced. Repairs must be performed by qualified personnel.

Measures to protect against ESD include:

- Procedures to avoid electrostatic charging via
 - Air conditioning
 - Air humidification
 - Conductive floor coverings
 - Non-synthetic clothing
- Discharging the electrostatic charges from your own body through contact with
 - The metallic device casing
 - A larger metallic object
 - Another grounded protective ground wire
- Wearing an anti-static band that creates a connection between the body and a protective ground wire. Areas at risk are indicated on the unit with the ESD warning label:

We recommend that all persons working with this system are made aware of the significance of the ESD warning label.

A training course should also be held to inform users about the physics of electrostatic

charges.