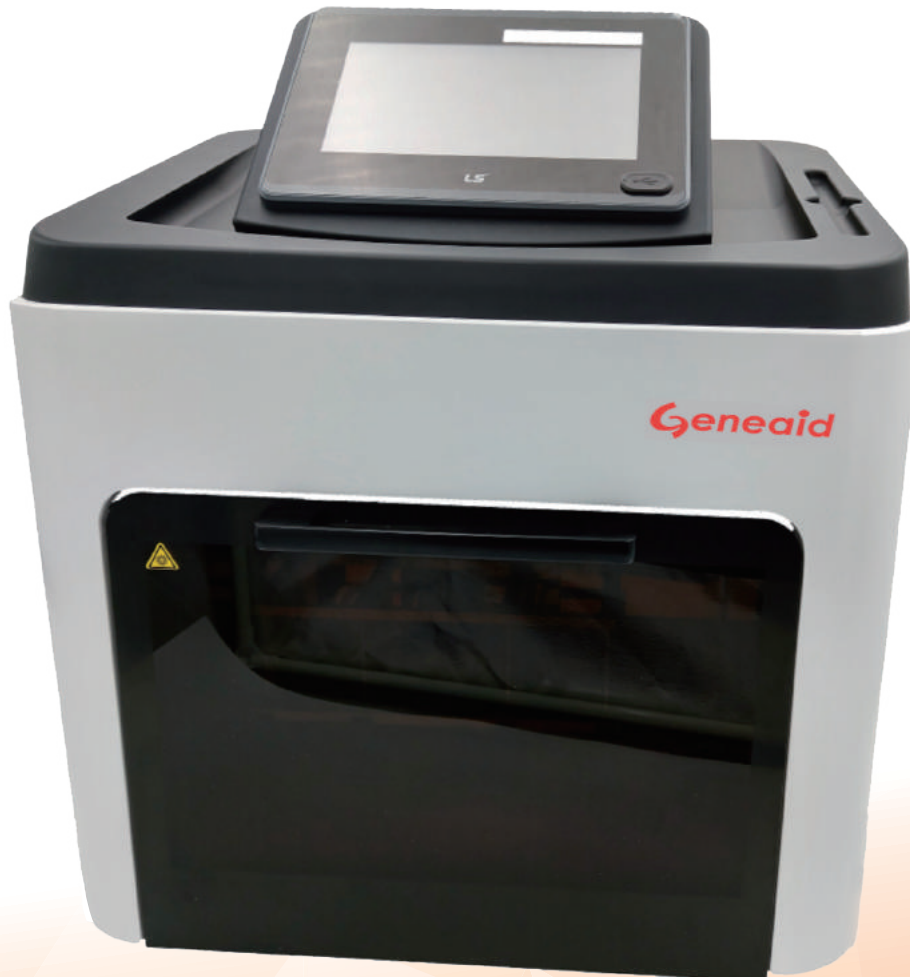


**Geneaid**



*Instruction Manual*

# **SYNC Nucleic Acids Extraction System**

Catalog No.: S032  
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## 1.1 About SYNC Nucleic Acids Extraction System

Thank you for purchasing SYNC Nucleic Acids Extraction System for your laboratory. This guide contains important information regarding the safe use of the SYNC Nucleic Acids Extraction System. Please read this manual carefully, before starting to operate the instrument for the first time, especially the Safety Information.

If there is any question about how to install or operate it, please contact our certified representatives / agents or email our technical support center.

## 1.2 Technology Introduction

### 1.2.1 Principle

SYNC Nucleic Acids Extraction System utilizes the unique characteristic of magnetic beads bonding with nucleic acid under a specific environment to purify the target nucleic acid samples. The purification protocol includes four basic steps: sample lysis, nucleic acid binding, wash and elution. Using SYNC Nucleic Acids Extraction System, the majority of nucleic acid purification processes will be done automatically inside of SYNC Nucleic Acids Extraction System, it dramatically reduce the human error and use the lab force much more efficiently.

During the purification process, a 8-link rod comb, which is attached to the tip comb rack, moves up and down repeatedly to mix the reagents by creating turbulences in the 96 Deep- Well Plate. When the permanent magnetic rods are insert into the rod combs, the assembly lowers into the solution to collect the magnetic beads at the bottom of the comb. The whole assembly then move to a different Well and the magnetic beads are then release by retracting the permanent magnetic rods. SYNC Nucleic Acids Extraction System equips an exclusive temperature control module that perfectly connect with the 96 Deep-Well Plate to enhance the lysis and elution efficiency.

### 1.2.2 Applications

SYNC Nucleic Acids Extraction System purifies DNA and RNA from a variety of samples which are essential and broadly used in molecular biology, genetic screening, sequencing, food safety, forensic, etc.




## 1.3 Safety Information

### 1.3.1 Attention

This chapter presents safety information that you need to be familiar with and strictly follow before you operate, maintain or service this instrument. If you failed to follow the safety information, or neglected the warning in this user manual, it might cause damage to the instrument. Please note that operating the instrument outside its intended use might lead to personnel injury and material loss.

For your safety and those of others, follow the guidelines provided in the following pages concerning the use of the SYNC Nucleic Acids Extraction System purification system.

Geneaid Biotech Ltd .will not be held liable for any errors, damage, or other unexpected events resulting from miscarried following safety guideline.

<b>Safety</b>	The meanings of safety precaution marks are as follows:	
<b>Warning</b>	“ <b>WARNING</b> ” indicates a dangerous condition that may lead to death or serious injury	
<b>Biohazard</b>		This symbol is used to indicate that certain precautions must be taken when working with potentially infectious material.
<b>Caution</b>		This symbol is used to indicate that non-compliance with instructions or procedures may lead to physical injury or even death or could cause damage to the instrument.
<b>Important</b>	“ <b>IMPORTANT</b> ” shows the important notes for usage, as well as prohibited actions.	
<b>Note</b>	“ <b>NOTE</b> ” indicates the notes, procedures that should be obeyed and supplementary information for use.	
<b>Hot surface</b>		This symbol is used to label potentially hot instrument surfaces.

## 1.4 Important Instructions

### 1.4.1 Read First!

For your safety and those of others, follow carefully the guidelines provided in the following pages concerning the use of the SYNC Nucleic Acids Extraction System.

### 1.4.2 About Instrument

#### 1.4.2.1 Warning:

Make sure the instrument is installed in a well ventilated environment and away from any water source.

Make sure the power source is matching the rating, labeled on the instrument.

Turn off, remove the power cord and cover the instrument before a period of non-use or any transportation.

The power cord is one of the emergency power supply control, please do not place the power cord in a location hard to reach.

If you heard or smelled anything during the operation, please immediately disconnect the power and contact your local representative / agent.

#### 1.4.2.2 Caution:

Never attempt to remodel the SYNC Nucleic Acids Extraction System without the manufacturer's permission.

Do not place or drop objects on the SYNC Nucleic Acids Extraction System. Also, refrain from bumping or knocking it. Repairs to the SYNC Nucleic Acids Extraction System should be only performed by representatives / agents that are specifically authorized, and with original spare parts that are certified by the Geneaid Biotech Ltd.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

### 1.4.3 About Reagent Kits

#### 1.4.3.1 Caution:

When handling any of the kits, refer to the respective handbook.

Reagents in each kit should be handled by observing the safety information and precautions regarding the kit.

Extraction should be performed in an appropriate laboratory or workspace.

#### Note:

Reagent kits will be generally not supplied with the SYNC Nucleic Acids Extraction System. Please contact Geneaid Biotech for purchasing extraction kits.

### 1.4.4 About Samples

#### 1.4.4.1 Biohazard:

Always wear appropriate gloves, a mask, and safety goggles etc. when handling any infectious samples.

### 1.4.5 About Infectious Wastes

When handling or disposing of infectious materials, follow the laboratory guideline or the law regarding infectious waste to perform proper incineration, fusion, sterilization, and/or disinfection.

When you use a third party to dispose of it, outsource this work an operator licensed to handle medical waste subject to special control, and give them the manifest of the medical waste at the same time.

## 2 INTENDED USE & SPECIFICATIONS

### 2.1 Intended Use

This product and any of its accessories is for the extended use of nucleic acid extraction, purification isolation in molecular biology research laboratories and clinical diagnosis laboratories.

### 2.2 Specifications

#### 2.2.1 Product Specifications

<b>Model Name</b>	<b>SYNC Nucleic Acids Extraction System</b>
<b>Instrument Type</b>	Bench-top automated Nucleic Acid Extractor
<b>Sample Processing</b>	1 - 32 samples perbatch
<b>Consumable</b>	2.2 ml 96 Deep-WellPlate
<b>Collection Efficiency</b>	100 copies/ml, positive detecting rates >95%
<b>Inter-WellPurification Accuracy</b>	CV <3%
<b>Heat Block Temperature</b>	Room temperature to 80°C



<b>Mixing Speed</b>	3 adjustable speeds
<b>Mixing Depth</b>	Adjustable, based on reagent volume
<b>Reagent Type</b>	Magnetic Beads
<b>Control Interface</b>	10-inch touch panel
<b>Protocol</b>	4 preset protocols; 16 user-defined protocols
<b>Decontamination</b>	Built-in Alight
<b>Fuse</b>	F3.15A

## 2.3 Environment Requirements

### 2.3.1 Operating

<b>Environment temperature:</b>	15 -30°C
<b>Relative humidity:</b>	<80%
<b>Power rating:</b>	AC 100-240V,750VA,UPS optional

### 2.3.2 Storage

<b>Environment temperature:</b>	-20 - 55°C
<b>Relative humidity:</b>	<80%

### 2.3.3 Transportation

<b>Environment temperature:</b>	-20 - 55°C
<b>Relative humidity:</b>	<80%

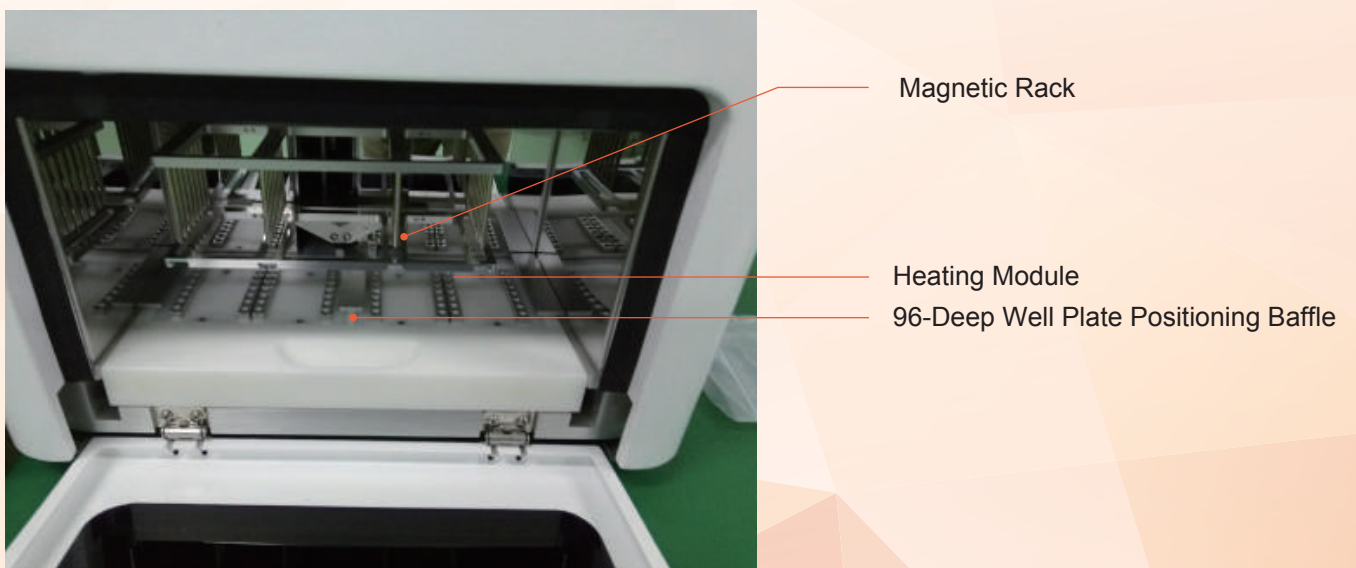
## 3.1 Front view



## 3.2 Rear view



## 3.2 Inside view





## 4.1 Composition of the SYNC Nucleic Acids Extraction System

### 4.1.1 Packaging

Check that the following parts are included in the package. Contact your local representative if you notice any missing part(s).

### 4.1.2 Instrument

Quantity:

- Instrument 1x
- Power Cord 1x
- User Manual 1x

Please make sure all components are free of damages as soon as you get the system. If any damage is found, please contact your local representative for support.

**Note:**

Geneaid Biotech’s global warranty does not cover transportation damages or improper handling and operation.

### 4.1.3 Extraction Kits



#### Magnetic Beads Virus DNA/RNA Extraction Plate Kit (MVP096)

**Note:**

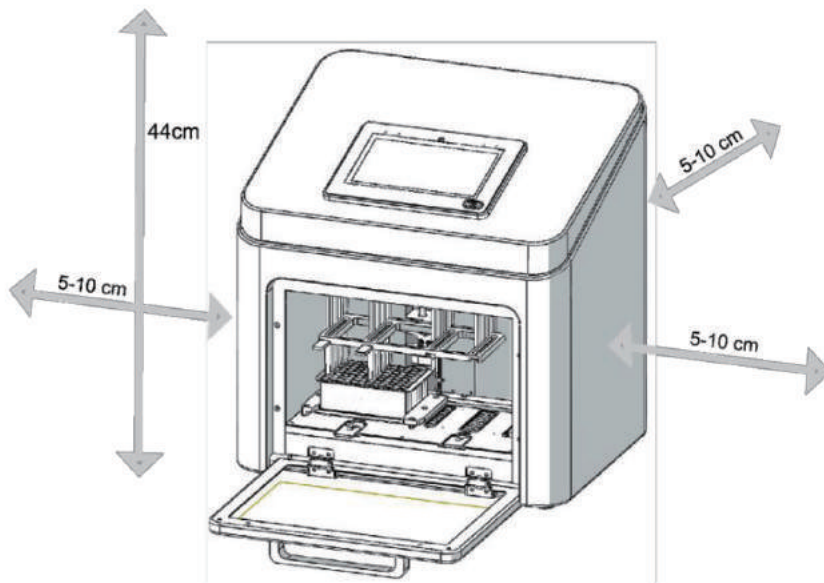
Extraction kits have to be purchased separately. Please contact your local representative / agent for further information.

The contents of extraction kits are various. Refer to the Reagent Kit Handbook, enclosed in the reagent box, for further details.

## 4.2 Composition of the SYNC Nucleic Acids Extraction System

### 4.2.1 SYNC Nucleic Acids Extraction System Operating Environment

Use the SYNC Nucleic Acids Extraction System in an environment that meets the following conditions:



The space for the allocation of SYNC Nucleic Acids Extraction System must secure 5-10 cm distance from the instrument to the wall.

- A location where power can be provided.
- A location with a temperature between 10 - 40°C, and a humidity of < 80%RH (non-condensing)
- A location with a stable temperature (Warming a cold room suddenly or moving the instrument from a room with low temperature to a warm room may cause condensation inside the device, which might result in abnormal extraction!)
- A location that is flat and stable, without external vibrations
- A location away from direct sunlight (If necessary, block the sunlight by closing curtains or blinds)
- A location which is well ventilated and not dusty
- A location far from objects which generate strong magnetic fields, as motors, transformers, TV, audio speakers, magnets, etc. (Bringing the SYNC Nucleic Acids Extraction System close to any type of magnetic field may cause a malfunction.)

#### **Warning:**

Do not use the SYNC Nucleic Acids Extraction System in an environment where it is wet or can be splashed with water. It may cause a device failure, fire, or electric shock.

When relocating the SYNC Nucleic Acids Extraction System, disconnect the plug from the outlet first. If the power cable is damaged, this may cause a device failure, fire, injury, or electric shock.

#### **Caution:**

Do not use the SYNC Nucleic Acids Extraction System in an unstable place such as a slanted surface or a place subject to vibrations. It may cause injury or device failure.

Do not use the SYNC Nucleic Acids Extraction System in direct sunlight or close to a heating device. It may shorten the life of the SYNC Nucleic Acids Extraction System, or cause trouble.

Items		Conditions
Temperature (°C)	During operation	10-40
Humidity(RH)	During operation	<80%
Max.wet bulb temperature (°C)	During operation	29 (non-condensing)
	During down time	29 (non-condensing)
Temperature gradient(°C/hr)		12 or less (non-condensing)
Humidity gradient (RH/day)		30 or less (non-condensing)
Altitude, operating(m)		1600 or less

### 4.3 Initial Setting

#### 4.3.1 SYNC Nucleic Acids Extraction System Settings

(1) Open the packing box and take out the instrument and related accessories.

Important:

The SYNC Nucleic Acids Extraction System has a weight of more than 25kgs.

It should be lift and moved by two persons. Hold the moving handler of the instrument from two sides to move it out of the transportation box.



Do not hold the door or the plastic outer covering while transporting the instrument.



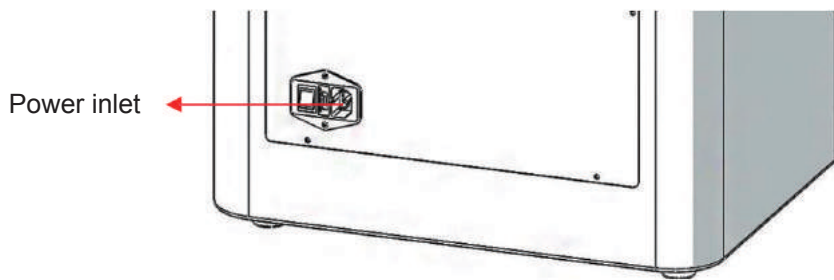
**Caution:**

Improper handling of the movement of the SYNC Nucleic Acids Extraction System will lead to instrument damages. For correct and safe use of the SYNC Nucleic Acids Extraction System, install it in a location that is close to electrical outlet and has enough space for installation and operation from the main switch.

Important:

Keep the shipping box and fixing block, they are needed for transporting the SYNC Nucleic Acids Extraction System.

(2) Connect power cord to the instrument.



## 4.4 Notes for Transportation / Shipping

### 4.4.1 SYNC Nucleic Acids Extraction System Transportation

When transporting / shipping the SYNC Nucleic Acids Extraction System to a new location, perform the following tasks:

1. Disconnect the plug from the outlet and remove all attached parts (Power Cord) from the instrument.

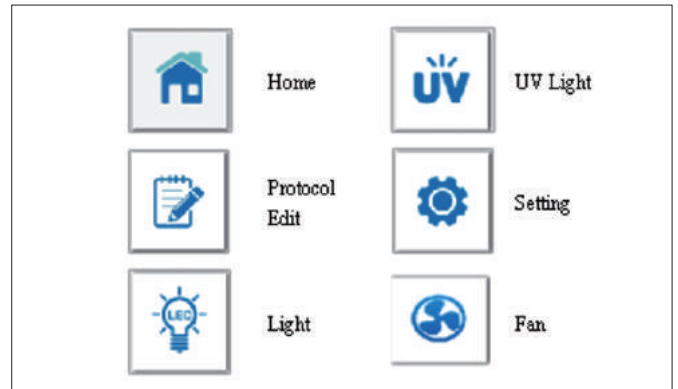
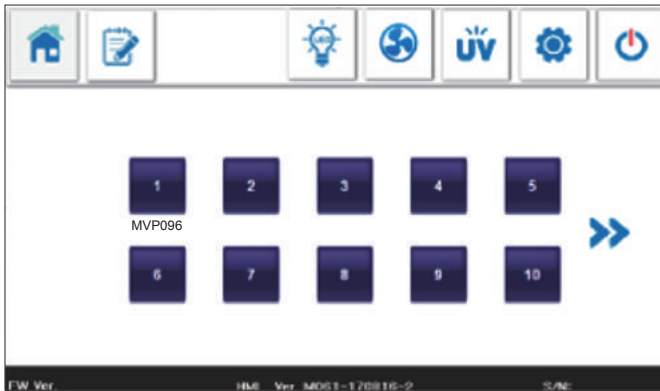
**Warning:**

If the power cable is damaged, this may cause a device failure, fire, injury, or electric shock.

2. Pack the SYNC Nucleic Acids Extraction System, including accessories in its original shipping box or some other equivalent parcel.

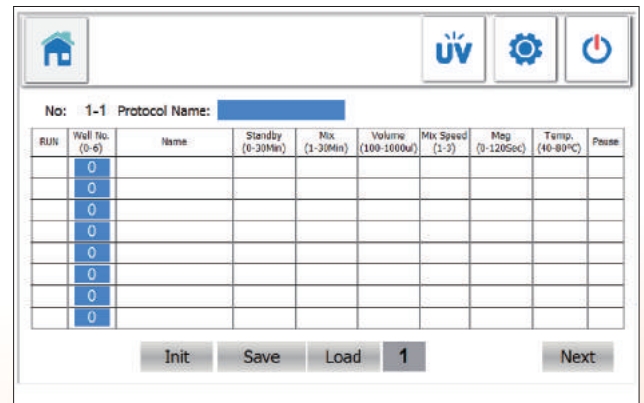
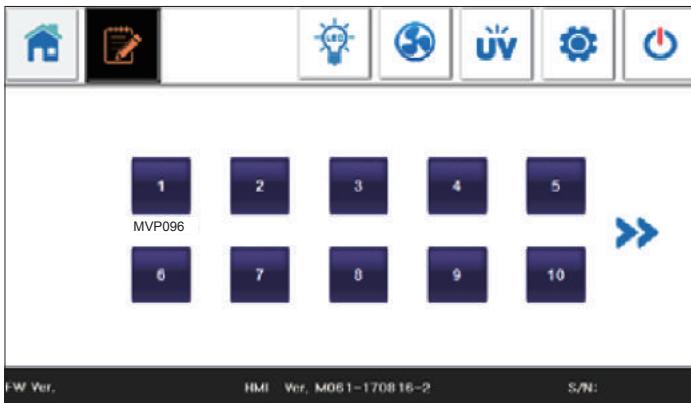
## 4.5 Functional Descriptions

### 4.5.1 Main Menu



### 4.5.2 Protocol Edit

After pressing , the icon will change into , and you can select “1” to “12” to edit your protocol.



### 4.5.3 LED Light


After pressing button, the icon will change into , the instrument's light will turn off.

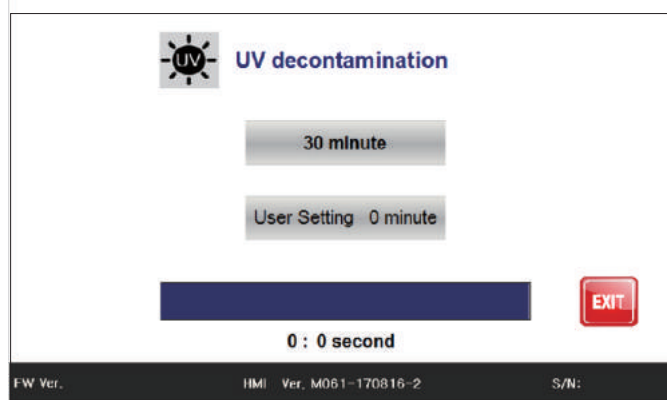





## 4.5 Functional Descriptions

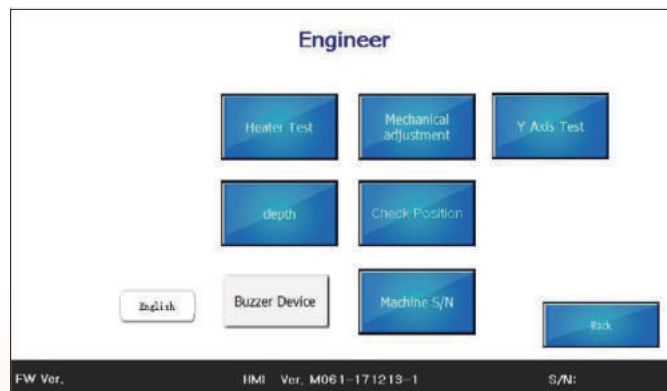
### 4.5.1 Main Menu

After pressing  button, Press <30 minutes> to start a default 30 minutes decontamination process or press <User setting> to set a desired time.




### 4.5.5 Settings


After pressing  button, you can do the instrument adjustment / check / test.

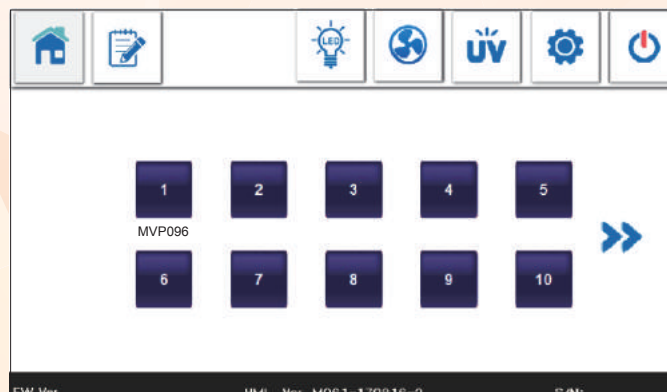


### 4.5.6 Sleeping mode

After pressing  button, the instrument will get into the "sleeping mode". If you want to wake up the instrument, touch the screen again.

Note:

Before getting into the sleeping mode, please press  button first to turn off the LED light.





## 5.1 Preparation

### 5.1.1 Biohazard:

Always wear appropriate gloves, a mask, and safety goggles during any biohazard us operations in extraction process.

Even when touching the device after any operation with biohazard risk, wear appropriate gloves and a mask since the device may be contaminated.

### 5.1.2 Important:

Before starting the extraction, put on appropriate gloves, a mask, and safety goggles if required by the operation. Be careful not to contaminate the sample material with sweat, saliva, etc., within the sample preparation steps.

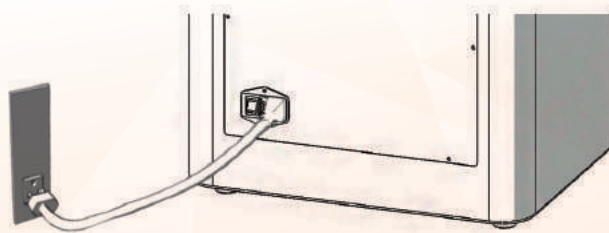
The following items are required for extraction operation:

- Gloves
  - Mask
  - Safety Goggles
  - Extraction Kit Handbook
- + Reagent Plates and Magnet sleeve (Provided in Reagent Kits)

## 5.2 Operation

### 5.2.1 Operation Procedure

- (1) Make sure that the power cable is securely connected to the **SYNC Nucleic Acids Extraction System**.
- (2) Connect the plug of the power cable to the outlet.

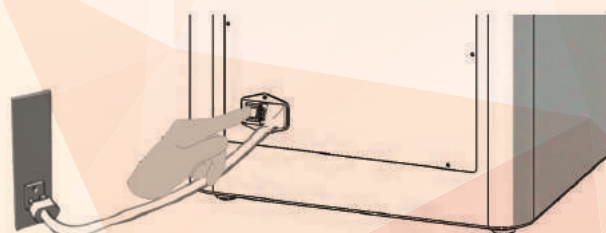


- (3) Turn the power switch on and wait for the Touch Panel to turn on and displaying “**SYNC Nucleic Acids Extraction System Initializing**”.

The system will process self-testing, and then go to steady mode.

**Note:**

The system will block main functions before the completion of self-testing process.



(4) Open the door and pull out the tray.

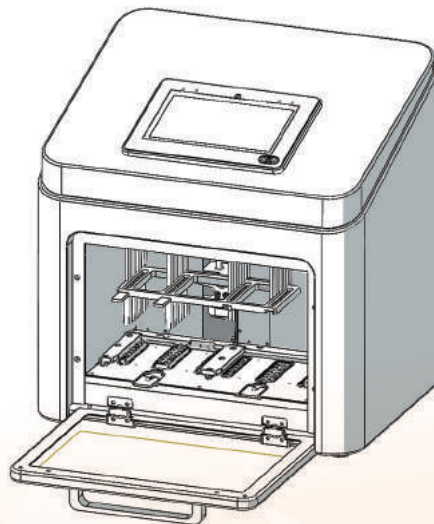


(5) Set up the Magnet sleeve on the mixing sleeve track.

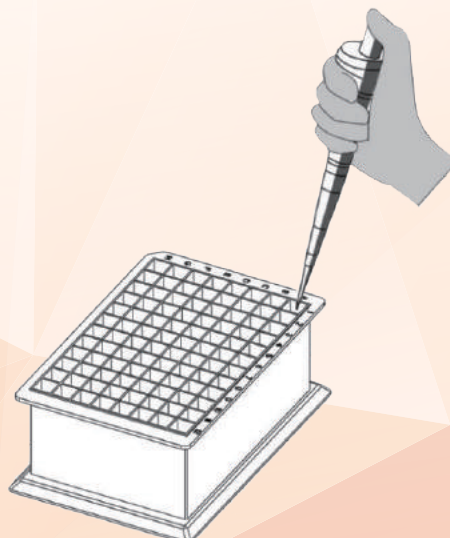


**Caution:**

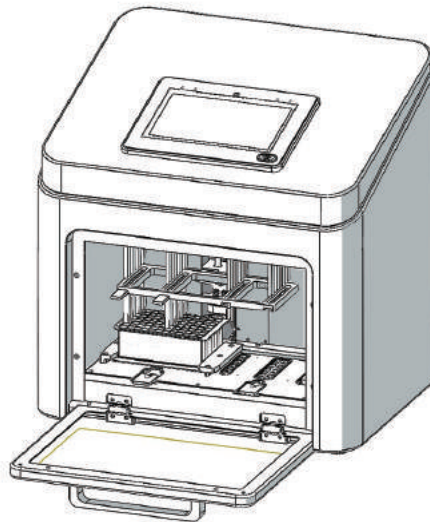
***Make sure the sleeves have entered completely!***



(6) Remove carefully the aluminum foil sealing membrane on the reagent plate. Add samples to Well 2 and Well 8.

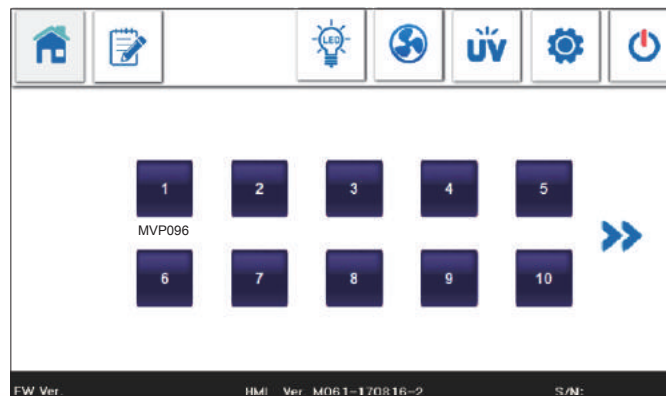


(7) Place the reagent plate(s) into the instrument.



(8) Close the door before starting the instrument!

(9) Select protocol



Select the pre-installed protocols, edit the pre-installed protocols or draft a protocol by yourself.

Now :

Time: 0 hr 0 min 0 sec    Remain Time: 0 hr 40 min 40 sec

No: 17-1 Protocol Name: **Blood**    0°C | 0°C

Run	Well No. (0-4)	Name	Standby (0-30Min)	Mix (1-30Min)	Volume (100-1000ul)	Mix Speed (1-3)	Mix (0-120Sec)	Temp. (40-80°C)	Pause
<input checked="" type="checkbox"/>	3	Transfer	0	1	900	3	60	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	1	Lysis	0	12	940	2	40	75	<input type="checkbox"/>
<input checked="" type="checkbox"/>	2	WASH 1	0	2	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	2	WASH 1	0	3	900	3	40	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	3	WASH 2	0	1	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	3	WASH 2	0	2	900	3	40	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	4	WASH 3	0	2	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	4	WASH 3	0	2	900	2	40	0	<input type="checkbox"/>

Please ensure all the parameters are correct before click on the next button    **Next**

(10) Press to start the extraction process.

**Note:**

The process time and remaining process time will be displayed on the screen.

(11) While the extraction procedure is finished, transfer the extracted products located at Well 6 and Well 12 into nuclease-free tubes.




**Note:**


Store the purified nucleic acid at 4°C (short-term, less than 10 days) or aliquot and store at -70°C (long-term) before performing any downstream analysis

(12) Discard the used consumables into biohazard waste.

(13) If you are not using the instrument in short-term, press  button to get into “sleeping mod

**5.2.2 Pause & Restart Procedures**


(1) If you want to stop / pause the procedure during the operation, please press  button.



Now :  
 Time: 0 hr 0 min 0 sec    Remain Time: 0 hr 40 min 40 sec 

No: 17-1 Protocol Name: **Blood**    0°C | 0°C

Run	Well No. (0-6)	Name	Standby (0-30Min)	Mix (1-30Min)	Volume (100-1000ul)	Mix Speed (1-3)	Mag (0-1205Sec)	Temp. (40-80°C)	Pause
<input checked="" type="checkbox"/>	3	Transfer	0	1	900	3	60	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	1	Lysis	0	12	940	2	40	75	<input type="checkbox"/>
<input checked="" type="checkbox"/>	2	WASH 1	0	2	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	2	WASH 1	0	3	900	3	40	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	3	WASH 2	0	1	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	3	WASH 2	0	2	900	3	40	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	4	WASH 3	0	2	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	4	WASH 3	0	2	900	2	40	0	<input type="checkbox"/>

Please ensure all the parameters are correct before click on the next button **Next**

(2) To restart the procedure, press  button

Now :  
 Time: 0 hr 0 min 0 sec    Remain Time: 0 hr 40 min 40 sec  


No: 17-1 Protocol Name: **Blood**    0°C | 0°C

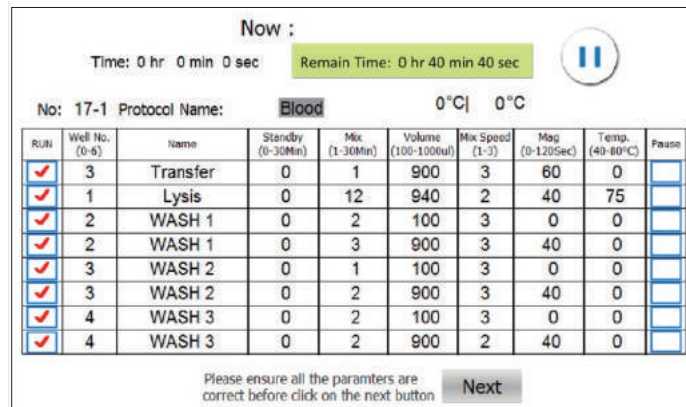
Run	Well No. (0-6)	Name	Standby (0-30Min)	Mix (1-30Min)	Volume (100-1000ul)	Mix Speed (1-3)	Mag (0-1205Sec)	Temp. (40-80°C)	Pause
<input checked="" type="checkbox"/>	3	Transfer	0	1	900	3	60	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	1	Lysis	0	12	940	2	40	75	<input type="checkbox"/>
<input checked="" type="checkbox"/>	2	WASH 1	0	2	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	2	WASH 1	0	3	900	3	40	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	3	WASH 2	0	1	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	3	WASH 2	0	2	900	3	40	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	4	WASH 3	0	2	100	3	0	0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	4	WASH 3	0	2	900	2	40	0	<input type="checkbox"/>


Please ensure all the parameters are correct before click on the next button **Next**

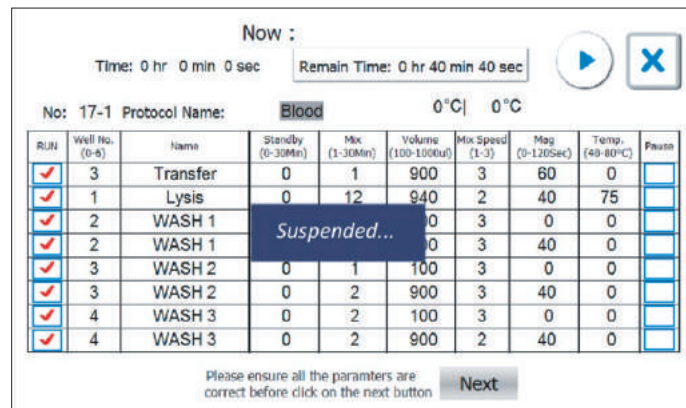


### 5.2.3 Stop the Process

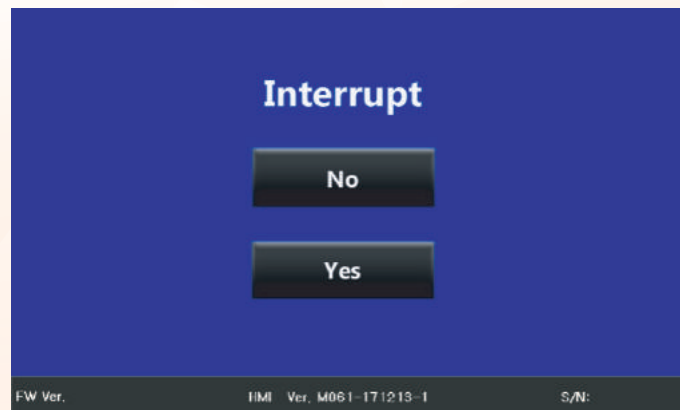
(1) During the process, if you want to stop/pause the procedure, please press  button.



(2) To stop the process, press  button.



(3) Press <Yes>, then the instrument will do the initializing.



### 5.2.4 After Extraction Process

(1) Transfer the extracted products located at Well 6 and Well 12 into nuclease-free tubes.

**Note:**



You can apply quality checking, do downstream study or storage them as what you expect.

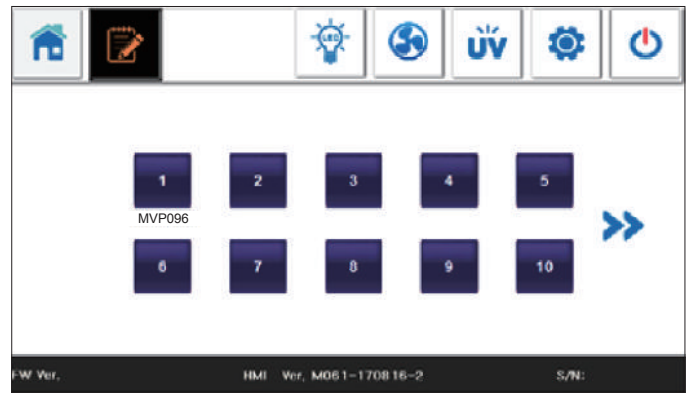
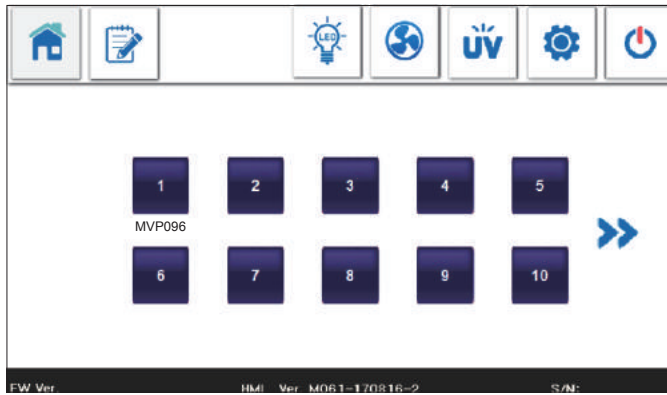
(2) Remove the used plastic disposables from the instrument and dispose them.

(3) Follow the suggested Maintenance Routines.

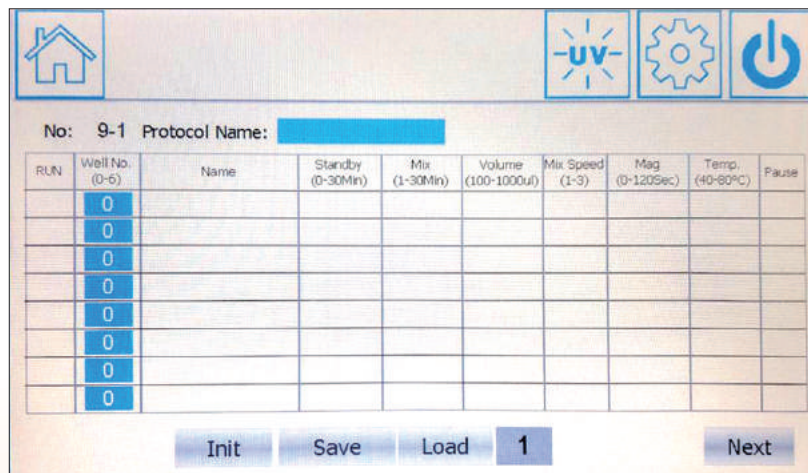
## 5.3 Protocol Editing

### 5.3.1 Editing Menu

(1) In the main menu, press  button, the icon will change into , and then you can select “1” to “12” to edit your protocol.



(2) Select desired procedure by press on the touch screen to edit, or create blank procedure.



The screenshot shows the protocol editing screen. At the top, there are three icons: a home icon, a UV icon, a gear icon, and a power icon. Below the icons, the text 'No: 9-1 Protocol Name:' is displayed. A table with the following columns is shown:

RUN	Well No. (0-6)	Name	Standby (0-30Min)	Mix (1-30Min)	Volume (100-1000ul)	Mix Speed (1-3)	Mag (0-120Sec)	Temp. (40-80°C)	Pause
	0								
	0								
	0								
	0								
	0								
	0								
	0								
	0								

At the bottom, there are four buttons: 'Init', 'Save', 'Load', and 'Next'. The 'Load' button is highlighted with a blue background and the number '1' is displayed next to it.

(3) Save a protocol, after enter the desired procedures, make sure the protocol number is not duplicated, and press<Save> to save the protocol.




Protocol Name	Accept both letters and numbers. Duplicated protocol name is not accepted, maximum 10 characters.
Well	Choose the Well for customized procedure.
Procedure Name	The description of the procedure. Accept both letters and numbers. Duplicated protocol name is not accepted, maximum 10 characters.
Standby	The time mixing sleeves stay above the reagent buffer. Normally used to dry the beads, after magnetic separation.
Mix	The time mixing sleeves will spend inside of the Well to mix.
Volume	The reagent buffer volume of each Well.
Mix Speed	The speed of mixing sleeves doing the mixing procedure, choose out of 3 different speeds.
Mag	The time for which the magnetic beads are absorbed by magnetic pillar.
Temperature	The temperature of Well 1 and Well 6.
Pause	The current procedure will pause after it is finished, before starting next procedure, please press <Start>.

## 6 CLEANING & MAINTENANCE

### 6.1 SYNC Nucleic Acids Extraction System Cleaning

- After every operation of purification, please properly remove used plastic consumables.
- At the end of every working day, please wipe clean any fluid that remains on the inside and outside of the instrument with damp cloth, use 75% ethanol and UV light to disinfect the surface.

**Note:**

Press  button to get into the UV light mode, and select the disinfecting time.

- Clean the instrument body by removing dust gently with a dry, soft cloth. If the outside of the SYNC Nucleic Acids Extraction System is heavily soiled, or if any samples that may cause infection are adhered to the outside of the SYNC Nucleic Acids Extraction System, wipe with a soft paper tissue, soaked with 0.5% sodium hypochlorite solution or ethanol.

### 6.2 SYNC Nucleic Acids Extraction System Maintenance

Two types of maintenance have to be performed on the SYNC Nucleic Acids Extraction System instrument, for details on each type of maintenance, see the list below:

Maintenance Type	Performed by	Schedule
<i>Routine</i> Cleaning instrument body(outside) Cleaning instrument body(inside)	User	Bi-weekly
<i>Preventive</i>	Service Engineer	Annually

## 7 TROUBLE SHOOTING

### No display after turned on the power switch.

Cause	Solution
Power disconnected	Check AC power cord connections at both ends. Or use the correct cords.
Blownfuse	Replace the fuse
Malfunction power switch	Malfunction power switch
Others	Contact your local representative /agent

### Touch Panelturns on when the power is on but the self- testing program does not run

Cause	Solution
Forget to remove the fixing block from instrument	Turn off the instrument and remove the ixing block.
Technical problem	Contact your local representative /agent

### The beeping alarm sound or “System error” message on the display

Cause	Solution
Self-check error	Contact your local representative /agent

### The beeping alarm sound or “System error” message on the display

Cause	Solution
Firmware installing failed	Contact your local representative /agent
Display connection failed	Contact your local representative /agent

### Cannot enter on the Touch Panel

Cause	Solution
Touch Panelmal function	Contact your local representative /agent

## 8.1 Company Information

### Geneaid Biotech Ltd.

Address: 16th floor, 112, Sintai 5th Road, Section 1, Shijr District, New Taipei City, Taiwan 22181

## 8.2 Manufacturer Information

### Geneaid Biotech Ltd.

Address: 16th floor, 112, Sintai 5th Road, Section 1, Shijr District, New Taipei City, Taiwan 22181

## 8.3 Technical Support

**Geneaid Biotech Ltd.** Before contacting the Technical Support, refer to “Troubleshooting” to check the problems. If the issue cannot be solved, contact your local representative / agent, or Geneaid Biotech Ltd.

# 9 WARRANTY INFORMATION

## 9.1 Product Warranty

- (1) The general warranty period is 12 months from the delivery day of the product
- (2) For further information about Warranty Expansion plans, contact your local representative / agent
- (3) Any part, which fails to function properly under normal use, if all warnings and cautions in this manual are observed, during the guarantee period will be free of charge replaced by Geneaid Biotech Ltd.
- (4) If the problem is due to the causes listed below, some charge may be applied for the repair, even within the warranty period
  - Any failures due to improper use or that are affected by other devices except for those approved by Geneaid Biotech Ltd.
  - Any malfunctions or damages during transportation or due to dropping of the product by a user.

**Geneaid**