Operation Manual

V1.4

MagnetaPure 16
Nucleic Acid Purification System



Dutscher

ENSEMBLE, AIDONS LA SCIENCE À PROGRESSER

Version modification Record:

Version No.	Date	Modification Description
V1.0	2021.06.01	➢ Initial Release
V1.1	2021.08.19	➢ Bluetooth name changed from SN to PN
V1.2	2021.12.03	➢ Modified the description of the log function
V1.3	2022.03.30	➢ Added IVDR related content
V1.4	2022.09.21	➢ Fig58 update

Foreword

Thank you for purchasing our Nucleic Acid Purification System MagnetaPure 16. This Manual describes the function and operation of the instrument. In order to use the instrument properly, please read this manual carefully before using. Keep it for later use when you meet with difficulties.

Opening Check

Please check the Instrument and Accessories according to the packing list when you first open the packing case. If anything wrong or missing, please contact the distributor or the manufacturer.

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Version No.: V1.4, Sept 2022

Safety Warnings and Guidelines

1. Important information for safe use

Users should have a clear understanding of how to use this instrument before operation, please read this manual carefully prior to operation.



Any improper operation may cause injured or electric shock. Please read the manual carefully and operate safely according to the guidelines.

2. Security

The operation and maintenance and repair of the instrument should comply with the basic guidelines and warnings below. Incorrect operation or maintenance will have effect on using life, performance, and safety features of the instrument.



The instrument is normal indoor instrument which conforms to class Ⅰ of GB 4793.1 standard.



Please read this manual carefully before operation. The device must be used by experienced personnel with appropriate training.



The operator should not repair the instrument in case any injury or out-of warranty. If service required, please contact manufacturer or your local distributor for repair.



Before powering on, please make sure the voltage of the power supply is consistent with the required voltage. And make sure the rated load of the power outlet is not less than required by the instrument.

If the power cord is damaged, replace it with the same type and specification power cord. Do not cover anything on the instruments when using. Insert and pull the power line with hand gently and make sure the plug completely insert to the jack.



Note: There is a risk of biological contamination in some links during the normal use of the instrument. Precautions should be noted when using:



All test samples, quality control products, standard products, etc., shall be considered infectious, and the personnel using these reagents shall be qualified; Gloves should be worn when contacting; All parts that have contacted with the test sample should be considered infectious, gloves should be worn when contacting.



Abandoned or used consumables are considered to be biohazardous and should be handled in accordance with local laws and regulations and relevant laboratory regulations.



The temperature of the heating block is high, please do not touch it during the operation in case any injury.



The instrument has a UV sterilization device inside. Please follow the following safety precautions when using the UV lamp:

- When the UV lamp is lit, do not look directly with the naked eye, do not let the ultraviolet radiation directly on the skin.
- The instrument door glass can block UV leakage. Please keep the door closed when using UV etc.



- If the door or glass of the door is damaged, please contact the manufacturer for repair. Do not continue to use.
- **<u>It is recommended to turn off the UV lamp at least five minutes after turning it on, otherwise the life of the UV lamp will decay faster.</u>**
- Do not touch the UV lamp by hand, which will damage or reduce the life of the UV lamp.



The instrument should be kept in an area with minimal dust, away from wet areas and direct sunlight. In additional the installation location should have sufficient ventilation, but away from electromagnetic interference and heat sources. The vent on this instrument are designed for ventilation. Do not cover them

in case overheat. When many instruments are used at the same time, the distance between each instrument should be more than 10cm.



Power off when not in use. If the instrument will not be used for a long period of time, cover it with a cloth or plastic to protect it from dust.



Disconnect the power cord from the jack at once in the following cases, and contact your local distributor or Dutscher:

- Liquid enters into the Instrument;
- Instrument was rained or watered.
- Abnormal operation: such as abnormal sound or smell.
- Instrument dropping or outer shell damaged.
- The function has obviously changed.

3. Maintenance

The instrument should be cleaned regularly using a soft cloth damp with small amount of alcohol.

If any stain on the surface of the instrument, wipe it with soft cloth damp with cleansing cream.

4. Transportation and storage requirements



Be sure to correctly install transportation fixtures and packing parts before transportation!

Ambient temperature: 10℃ ~ 40℃

Relative humidity: ≤80%

Atmosphere pressure range: 500 ~ 1060hpa

Locate it in a well-ventilated room, away from corrosive gas.

5. After-sales service

5.1. Warranty content

One month from the date of delivery, in case of faults due to material and manufacturing defects, our company will be responsible for replacement.

Twelve months from the date of delivery, provide warranty for faults due to material and manufacturing defects. During the warranty period, our company will selectively repair or replace instrument that are proved to be defective.

The products under warranty must be delivered by customer to the repair department designated by our company. The freight of the instrument from the user to the maintenance department shall be paid by the user. Our company shall bear the freight of returning the instrument to the user.

For repairs beyond the warranty, our company will charge appropriate maintenance costs.

5.2. Warranty scope

The above warranty is not applicable to the damage caused by users' improper maintenance, use under non-conforming conditions, repair or modify without authorization.

5.3. After-sales service unit

After-sales service: Dominique DUTSCHER SAS

Add: 2C, rue de Bruxelles, 67170 BERNOLSHEIM - FRANCE

Tel.: +33 3 88 59 33 90

Website: https://www.dutscher.com/services/sav

E-mail: sav@dutscher.com

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Chapter 1 Introduction

MagnetaPure 16 nucleic acid purification instrument is a newly launched automatic extraction and purification system for DNA/RNA, proteins and cells. It can absorb, transfer and release magnetic beads by magnetic rod and magnetic rod's tip to separate magnetic beads and samples. The operation is automatic, fast and simple. Users can extract 1~16 samples simultaneously with 96-Deepwell plate. It can extract samples of animal/plant tissue, blood and body fluids, etc with different kinds of magnetic bead nucleic acid extraction reagents. It is mainly used for the extraction and purification of nucleic acid from human body samples.

1. Application

Intended applications: This instrument is suitable for the extraction and purification of nucleic acids in animal and plant tissues, blood and body fluids and other samples(mainly used in human body samples).

Application occasion: Laboratories of scientific research institutes and medical colleges, etc.

2. Contraindication

No contraindication.

3. Service Life

Service life of the instrument is five years. For production date, please see the label on back of the instrument.

Note: According to the conventional five-year experimental model, the instrument meets the requirements of five-year service life.

During use, the user shall maintain and repair the product in accordance with the requirements of the product manual. After maintenance or repair, products that are confirmed to remain basically safe and effective, can be used normally.

4. Special function

None.

5. Features

- Humanized operation---English and Chinese interface operation, touch screen and 3 shortcut keys for operation, and can be connected to an external mouse, easy to use.
- Open software system---protocols are with editable function.
- Heating function---Realize pyrolysis heating and elution heating.

- Self sterilization - with UV sterilizing function which can reduce the possibility of contamination in experimental area.
- Stability - very low noise during working and with no vibration.
- Safe and reliable - full automatic reagent with disposable consumables which protect users from hazardous reagents.
- Fast extraction - generally 10 ~ 60min/time for different reagents.
- High quality consumables-qualified materials and processes which guarantee high yield and low loss of magnetic beads.
- APP software - for pad or mobile phone with Android system.
- Extended features ---- Internet of Things.

Chapter 2 Specifications

1. Working Conditions

Environmental Temperature: 10°C～40°C

Relative Humidity: ≤80%

Input Voltage: AC 100～240V, 50Hz/60Hz

2. Basic Parameters

Table 1 Parameters

Model / Parameters	MagnetaPure 16
Principle	Magnetic Particle Method, Magnet type
Sample Volume	50μL—1000μL
Throughput	1—16
Stability	CV≤5%
Extraction time	With different nucleic acid extraction reagents, 10 ~ 60min/time
Temperature control module	Ambient temperature ~ 120℃ for lysis and elution
Heating time	Ambient temperature ~120℃≤5 minutes
Temp. Accuracy	≤ ±1℃
Operation	4,3 inch touch screen
APP Software	Equipped with Android APP software to realize protocol editing and data transmission with the instrument
Internal protocols	Store up to 50 groups of protocols
Extension interface	With USB port, ethernet port and RS232 port
Data transfer	Support Bluetooth, USB, RS232 data transmission, can expand the transmission of PC port
Bar code scan	External code scanning gun, software can expand the sample information input

Consumables	Special magnetic rod tip, 96-Deepwell plate, special single sample kit
Purification disinfection	Fan exhaust, UV disinfection
Power Supply	100-240V±10％, 50-60Hz±5％; support battery power
Power	Standby 10W, MAX 150W
Operating temperature	10℃~ 40℃
Operating humidity	Less than 80%

3. Outline Dimension

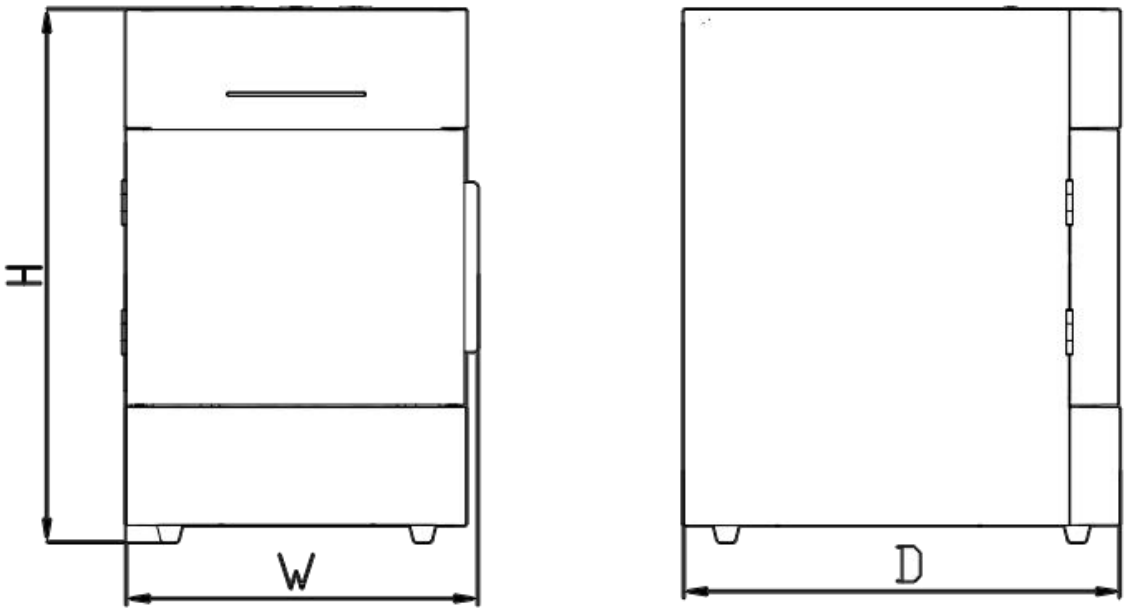


Fig 1 Outline Dimension

Dimensions (W×D×H): 208mm×258mm×315mm

Chapter 3 Basic Operating Instructions

This chapter mainly introduces structures, basic operation keys, displays, as well as preparations before starting up. Please read this chapter carefully before using.

1. Structure

1.1. Front

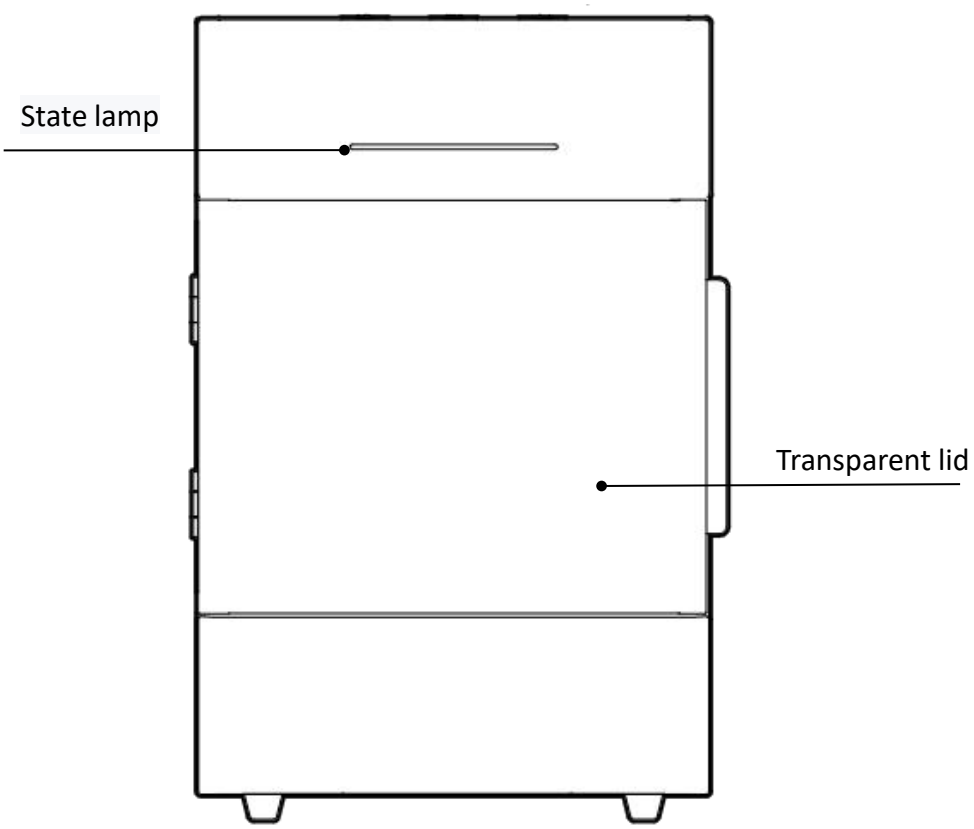


Fig 2 Front

1.2. Back

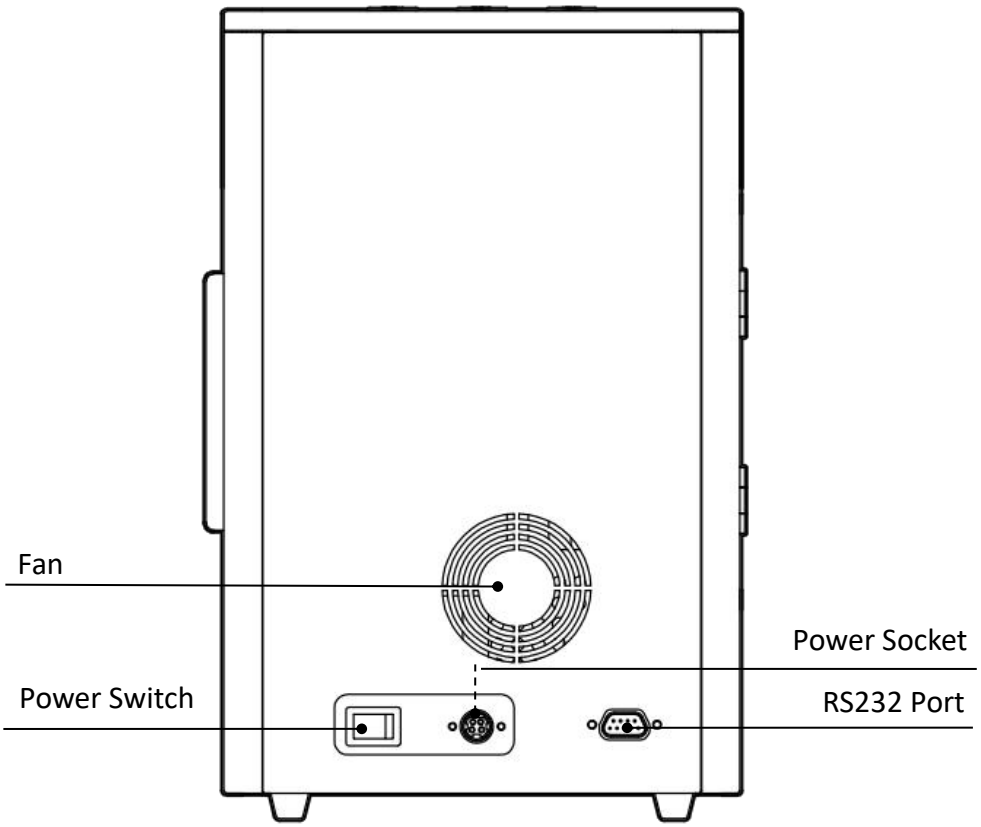


Fig 3 Back

1.3. Side

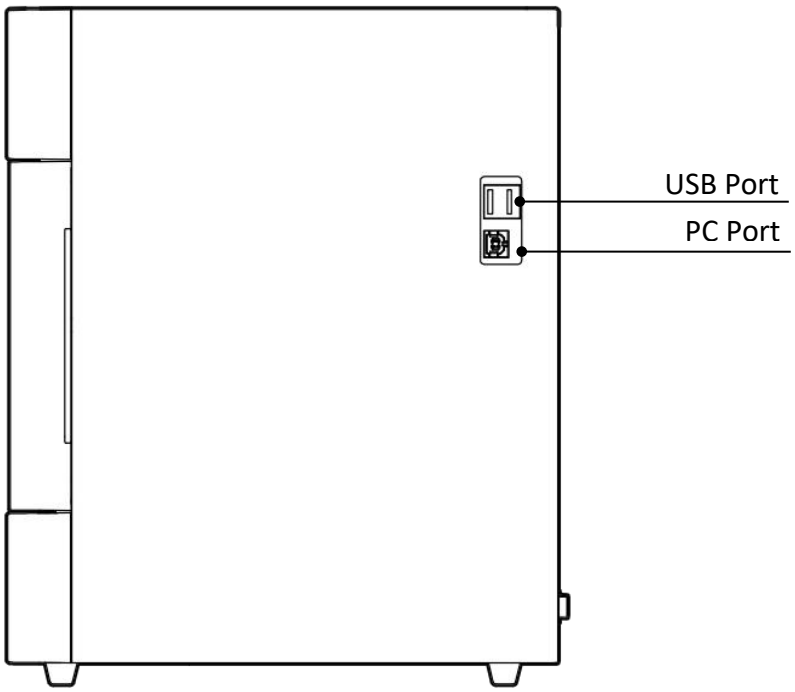


Fig 4 Side

1.4. Test area

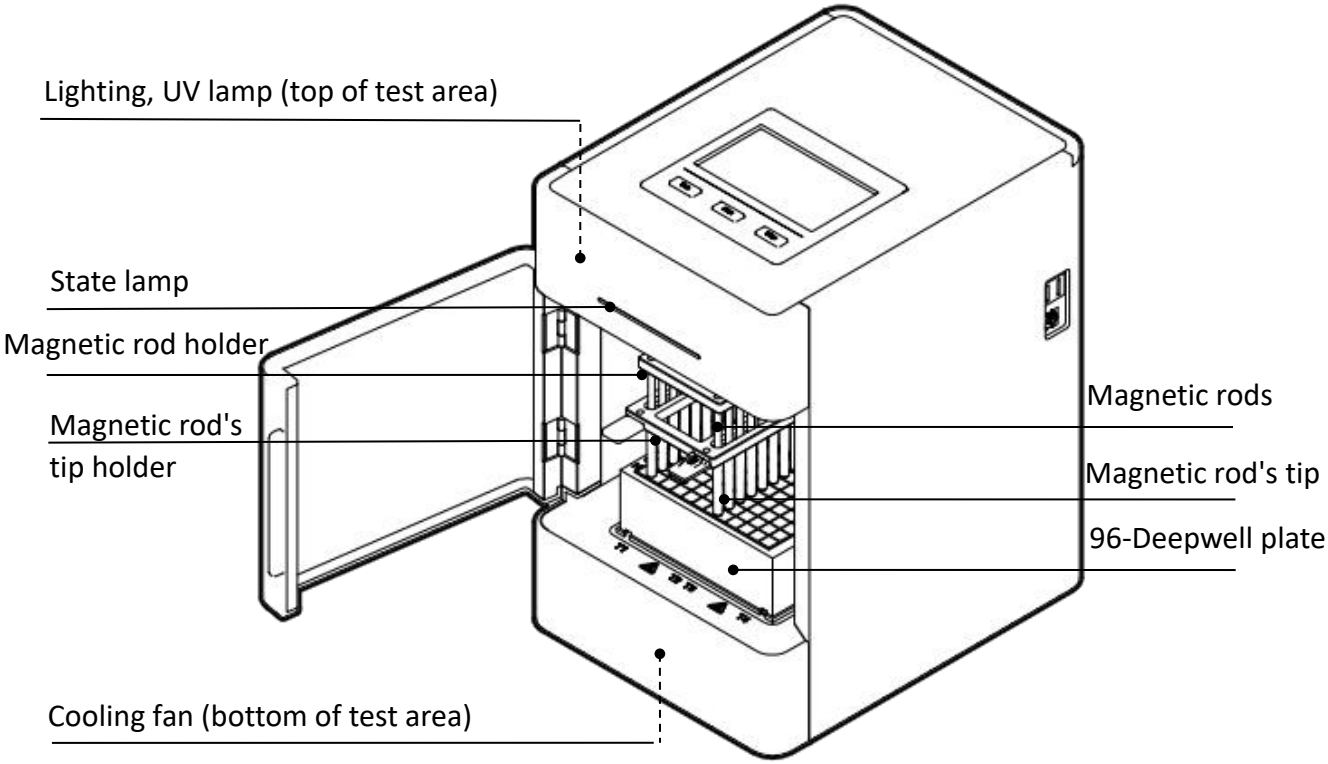


Fig 5 Test area

2. Operation Panel

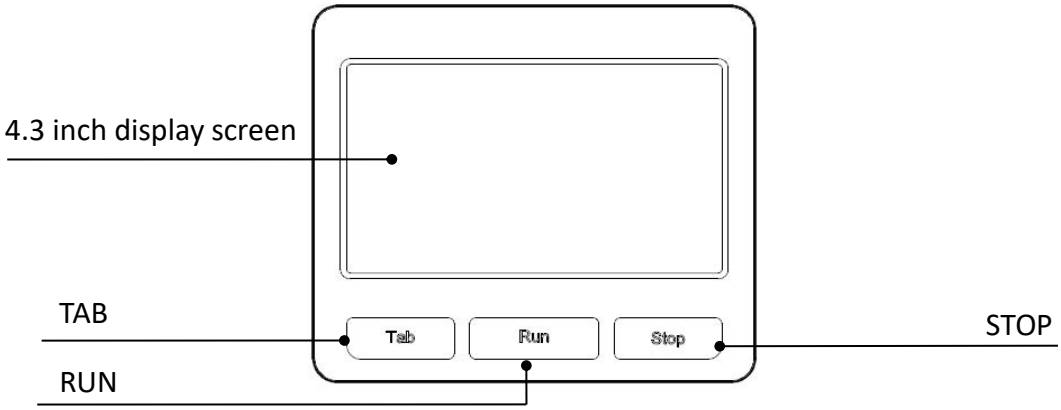


Fig 6 Touch screen

Display screen: Touch screen, mouse also can be connected for operation.

TAB: Switching between protocols.

RUN: Start the protocol and run the instrument.

STOP: Stop the operation.

Chapter 4 Operations

1. Preparation before use

Details read Quick Start Guide.

2. Power Connection

AC 100 ~ 240V.

3. View software version

All the software versions are consistent with the version recorded in the product performance table.

3.1 Software version of instrument

On Settings->Settings->Version interface.



Fig 7

3.2 Software version of APP

After the App installation(view method 7.1.1), open APP, The software version will appear automatically.

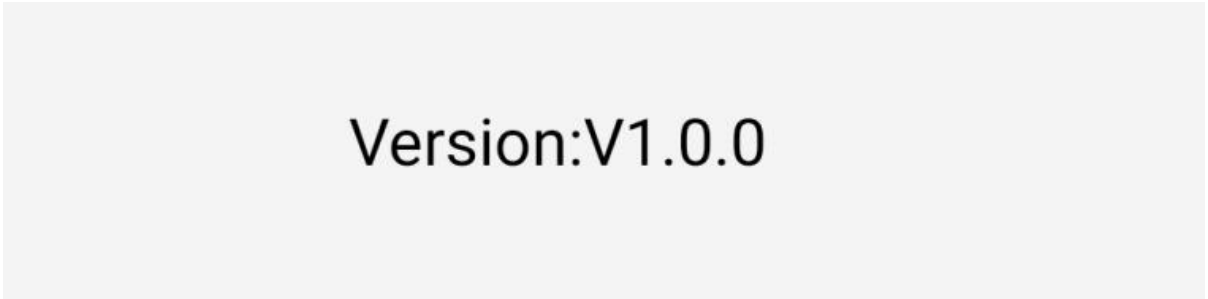


Fig 8

4. Kits Installation

4.1 96-Deepwell plate installation

Open the cabin door. First, place the plate with the sample in the position slot according to the arrow ①. Then press the plate into the heating strip according to the arrow ②, and place it smoothly. Note the orientation of the plate (kit corner A1 corresponds to the marker A1 on the instrument) to avoid the wrong sequence of reagents. After the plate is in place, close the door.

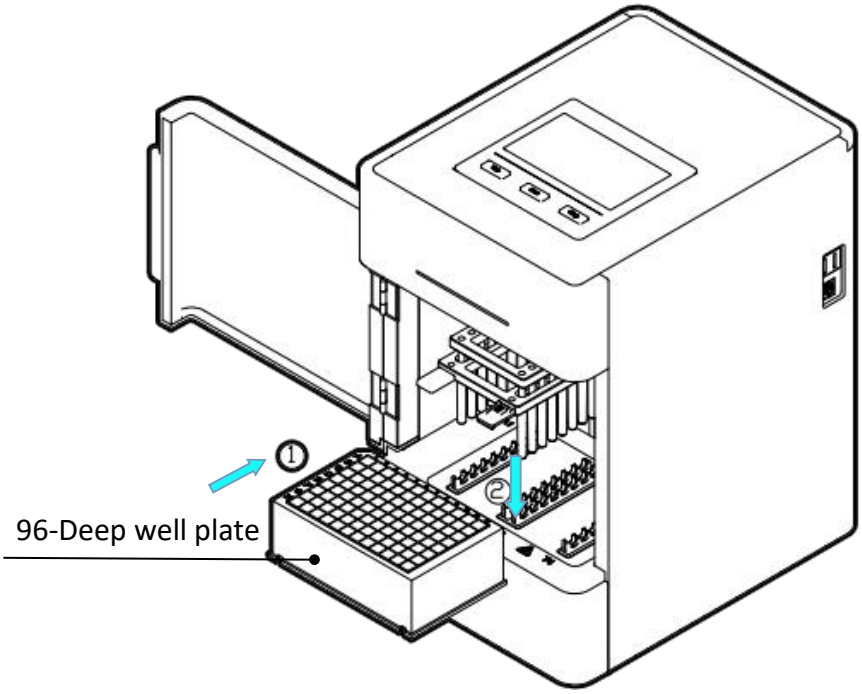


Fig 9 96-Deepwell plate installation

4.2 Single sample kit installation

Single sample kit trays are placed in the same way as 96-Deepwell plates. The difference is that the single-sample kit tray can hold 1~8 single-sample kits, and the number of single-sample kits can be determined according to the number of samples.

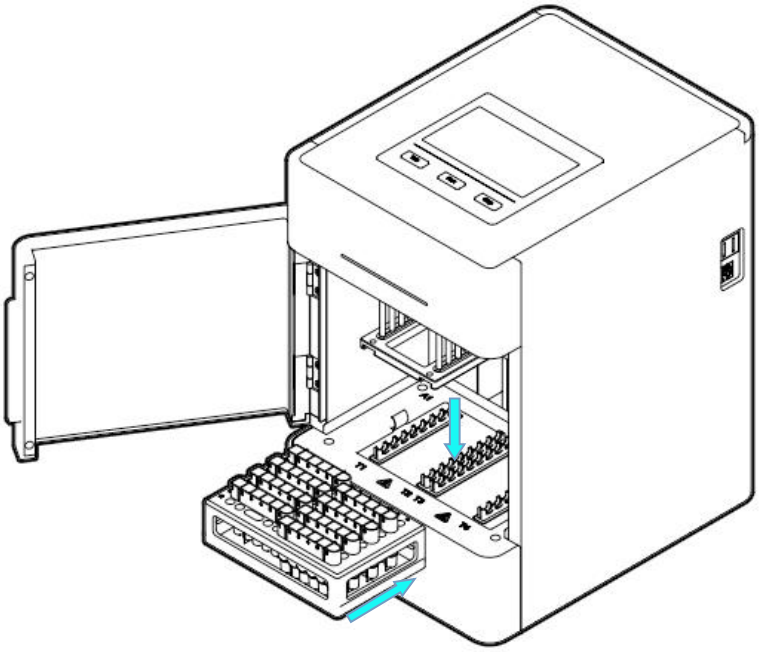


Fig 10 Single sample kit installation

5. Magnetic rod's tip installation

5.1 Magnetic rod's tip installation

Insert the magnetic rod's tip into the fixed groove of the magnetic rod's tip holder in the direction of the arrow to the end. The number of magnetic rod's tip can be determined according to the number of samples.

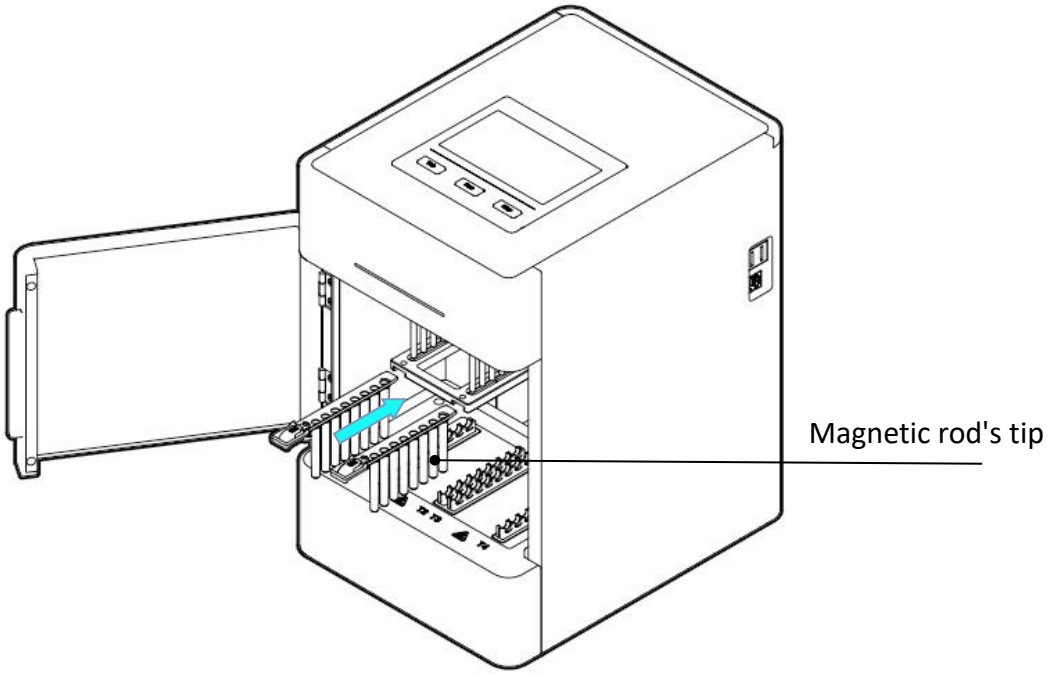


Fig 11 Magnetic rod's tip installation

Note: Up to 2 pcs magnetic rod's tip for MagnetaPure 16.

6. Remove magnetic rod's tip

Press the button on the magnetic rod's tip by the arrow ①, and pull out it along the direction of the arrow ②.

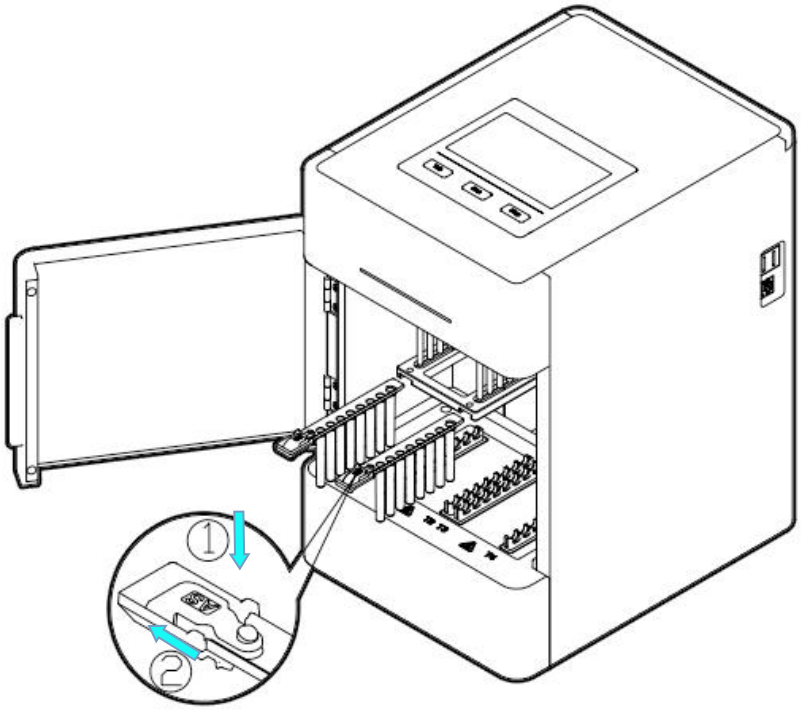


Fig 12 Remove magnetic rod's tip

7. Detailed Operations

The instrument software is divided into APP software and embedded software in the instrument:

APP software is only supported by Android devices, used to complete the edit of experimental protocols, generation of QR code and other operations;

The instrument software is oriented to the experimenter and is used for the operation of the protocol and the setting of relevant parameters.

7.1 App software

7.1.1 APP installation

Copy the APK file on the USB flash drive to the root directory of the memory of the mobile phone, then find the APK file in the file management - internal storage of the mobile phone, and click the APK file to install, as shown in the following figure.

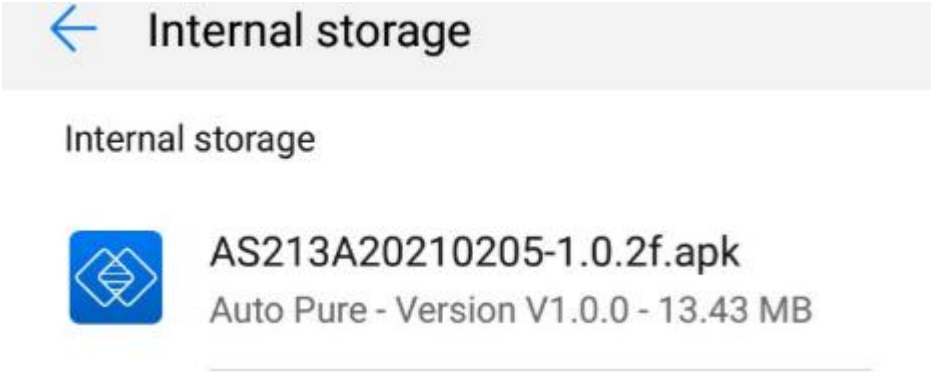


Fig 13 Installation path

7.1.2 Main interface

After the software installed, click ""software icon on the interface, After the startup is completed, it will enter the startup interface, where the software version information will be displayed. Then into the main interface, whose upper part display the name and information of the instrument, and the lower part displays five main function blocks: Protocol, New, Download, Instrument and Internet of Things.



Fig 14 APP main interface

Table 2 Title bar menu

Icon	Name	Function
	Protocol	Click into protocol interface
	New	Click to quickly create new protocol
	Download	Click into download protocol interface
	Instrument	Click into instrument management and setting interface
	Internet of Things	Click into Internet function interface

7.1.3 Protocol interface

Click protocol on main interface to enter the protocol interface. protocol interface is mainly divided into two parts: local creation and instrument acquisition.

Local creation: Create the protocol in the APP, and modify the parameters;

Instrument acquisition: The protocol in the instrument can be obtained after Bluetooth connection, and the downloaded protocol can be edited and transmitted.

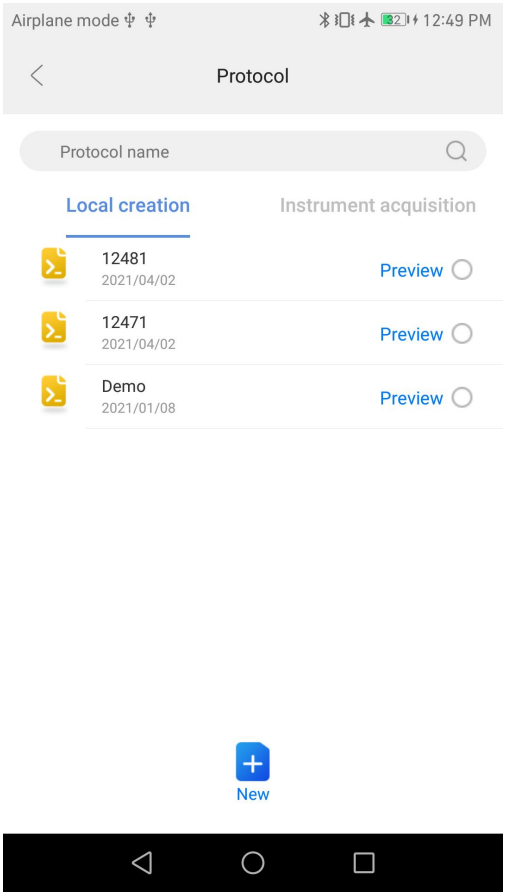


Fig 15 Protocol list interface

The protocol interface mainly displays the protocol list, with new, preview, selection, protocol search and other function.

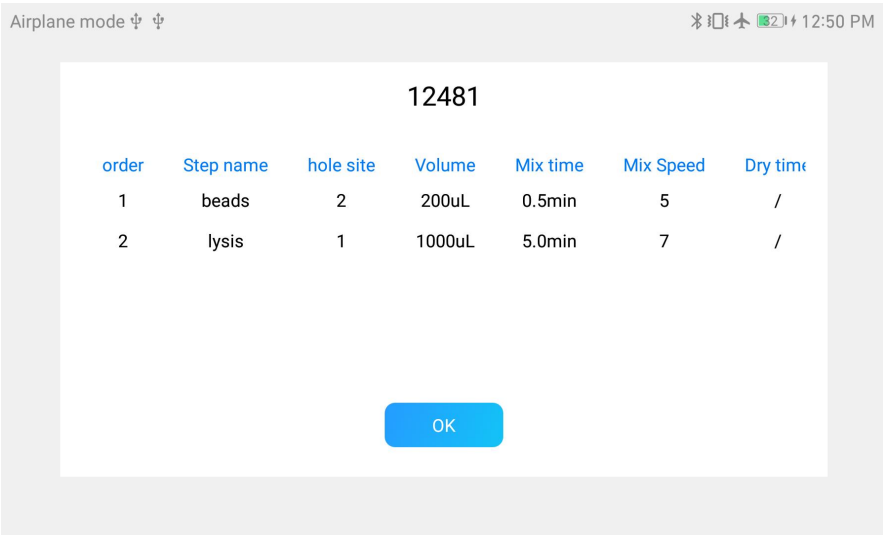


Fig 16 Preview protocol

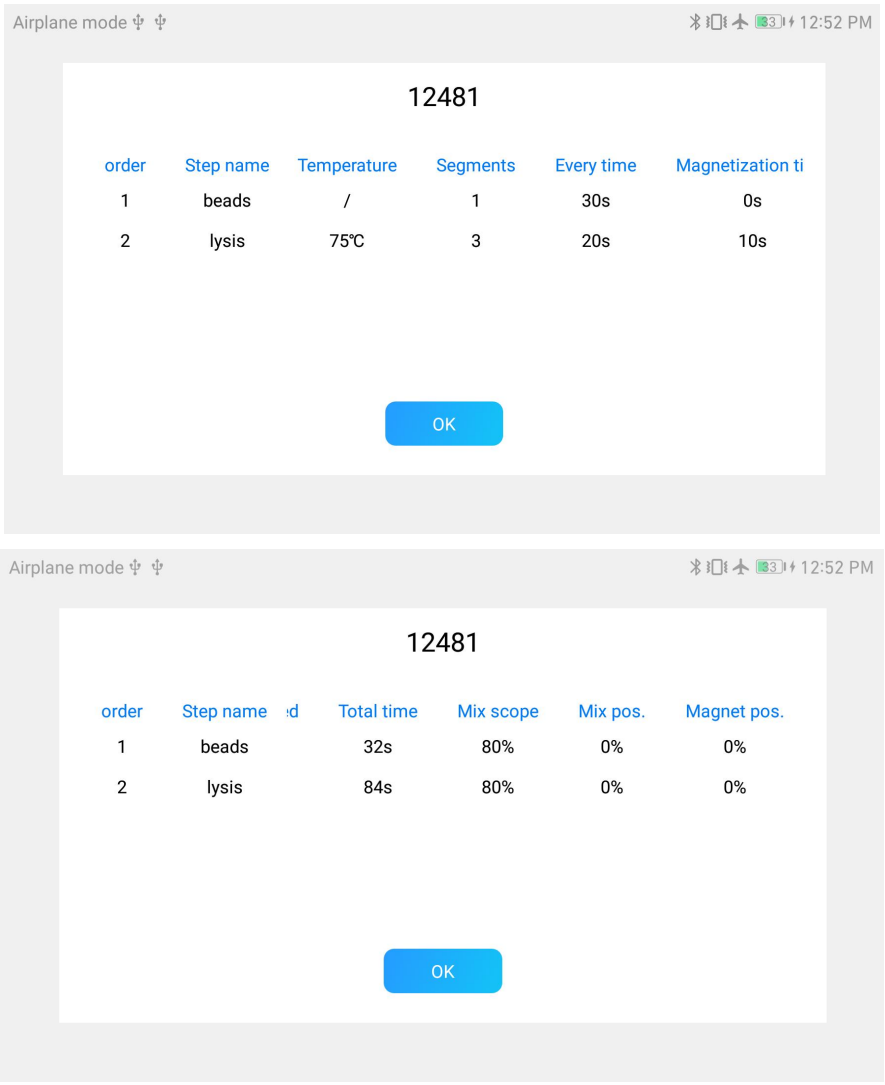


Fig 17 Preview protocol

When selecting a single protocol, four buttons appear at the bottom of the interface, Transmission, Delete, Protocol code and Save as, which can carry out Bluetooth transmission, protocol Delete, generate the QR code of the protocol and save the protocol;

Note: Generate code and save protocol can only select 1 protocol, can not select multiple protocol.

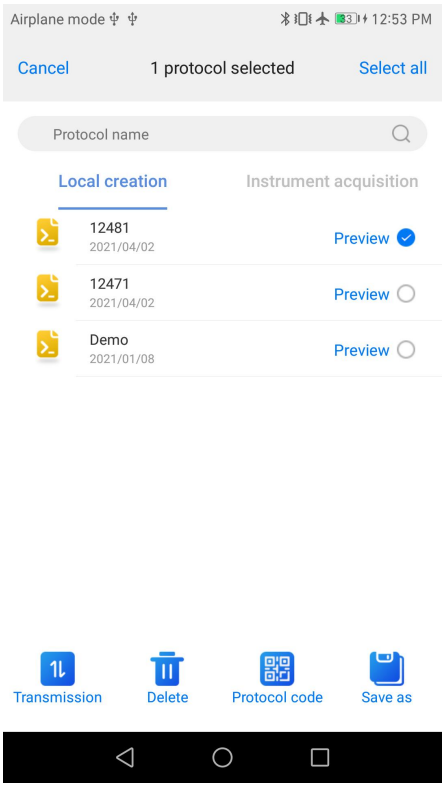


Fig 18 1 protocol selected

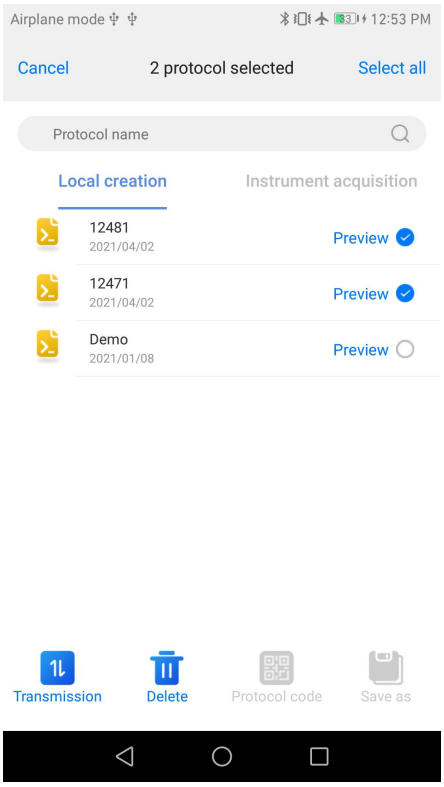


Fig 19 Multiple protocol selected

When multiple protocols are selected, only Bluetooth transmission and protocol deletion can be performed.

Transmission: Transfer the selected protocol on the APP to the instrument;

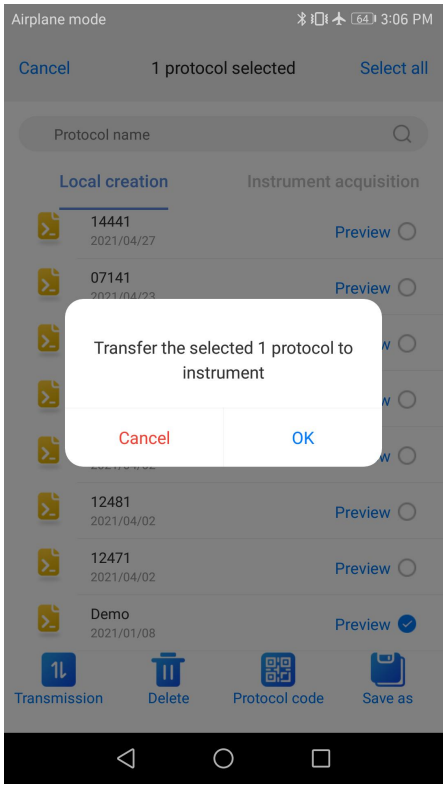


Fig 20 Protocol transmission

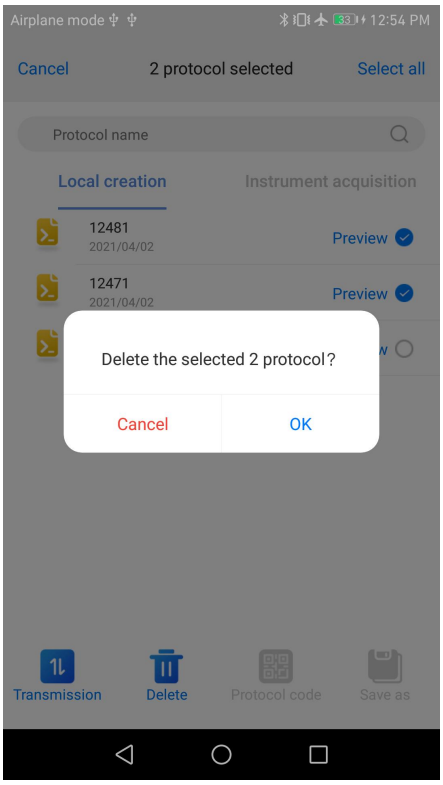


Fig 21 Protocol deletion

Delete: Removal unnecessary protocol;
Save as: The selected single protocol can be saved as a new protocol (default save protocol name is current time + serial number, up to 8 characters, letters, numbers, and decimal point).

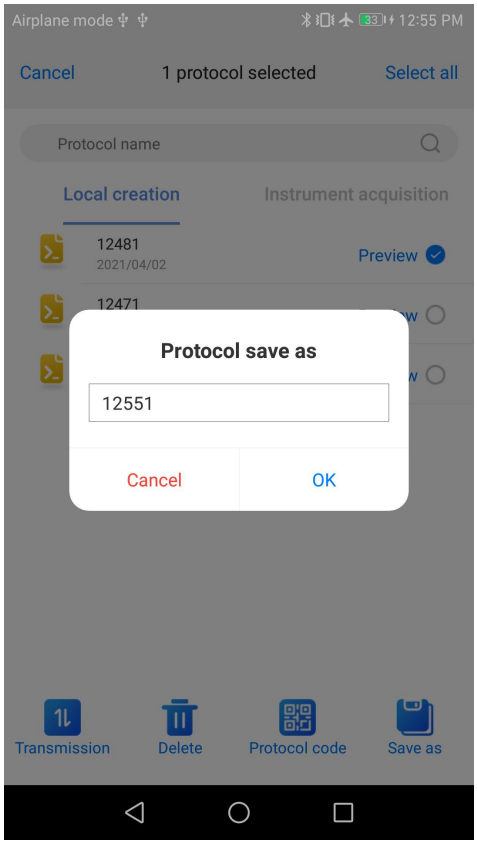


Fig 22 Protocol save as

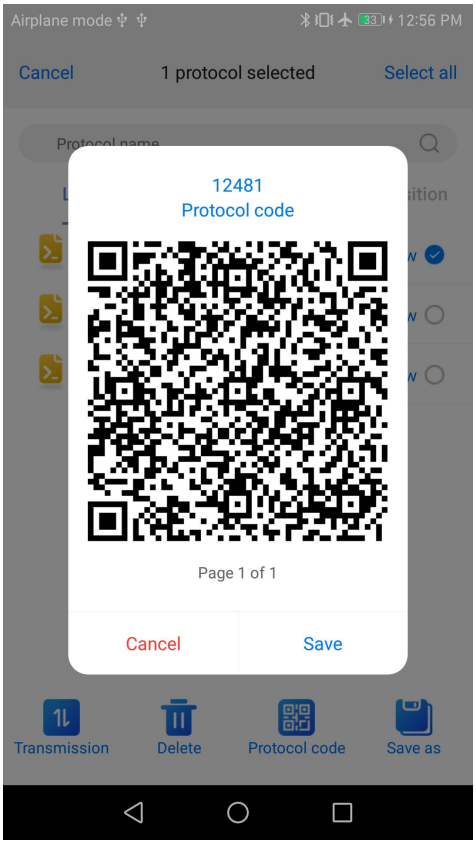


Fig 23 QR code generation

Protocol QR code: Click “QR code”, Pop-up code generation interface, every 15 steps to generate a QR code (operation under a single protocol);
The code is stored in an album as shown in figure below. Save the format as "protocol Name - protocol Code - Current Page Number/Total Page Number",



Fig 24 Protocol code save format

7.1.4 New protocol

Click the "New" icon on the protocol interface to customize the protocol name. The default protocol name is the time. For example, The current time is 7:14, so the first protocol is 07141, the second protocol is 07142, and so on.As shown in the figure below;

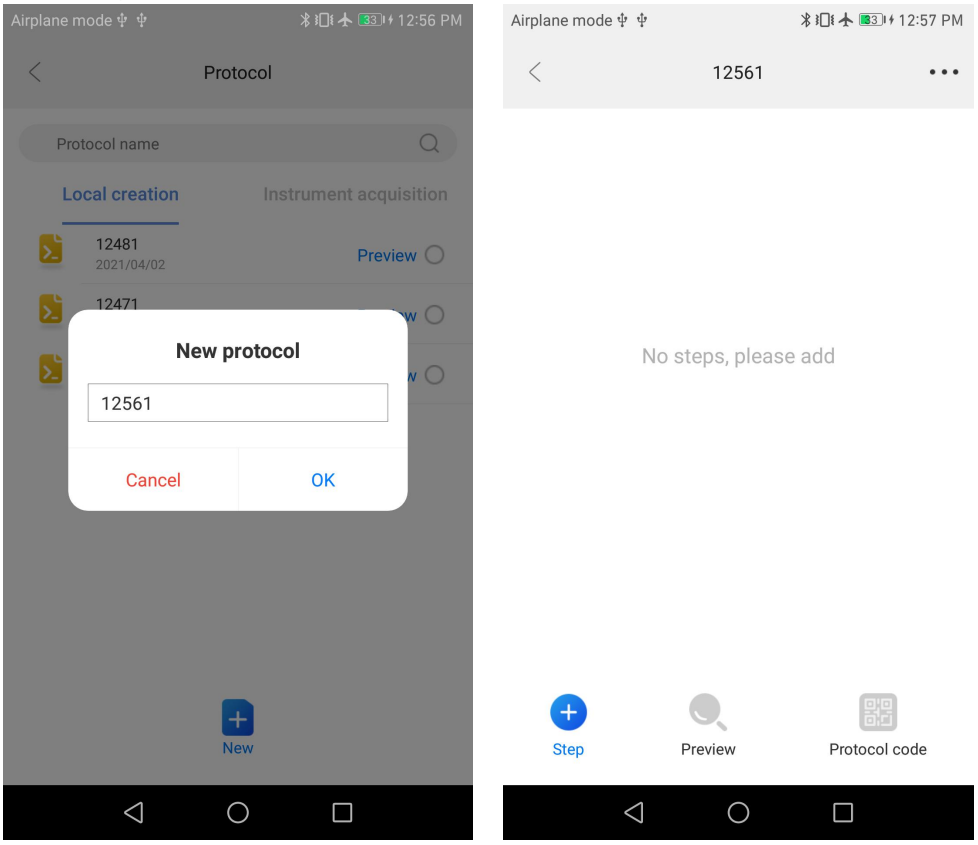


Fig 25 New protocol

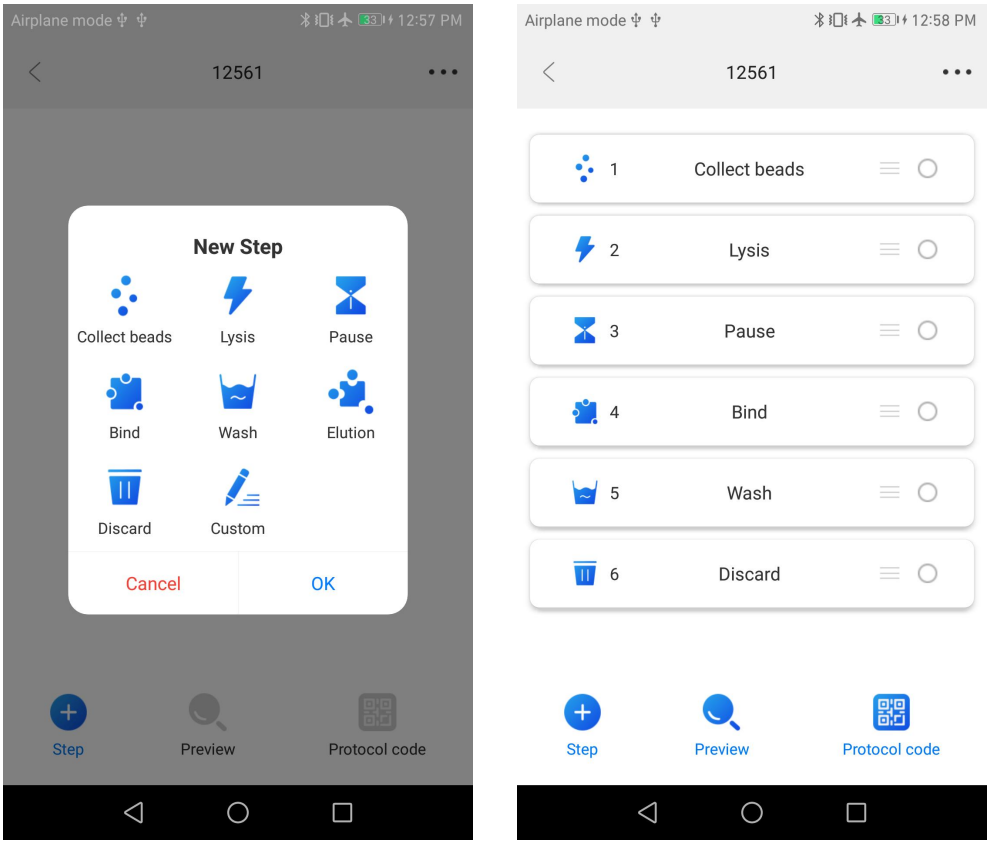


Fig 26 New step

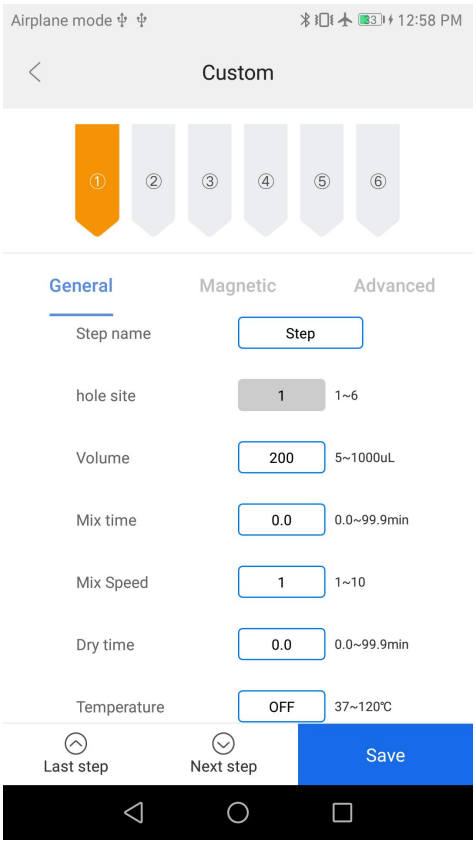


Fig 27 Custom steps added

Table 3 Project interface function

Icon	Name	Function
	Move	Long press this key to drag step sequence
	Select circle	Select step
	Step	New steps
	Protocol code	Generates the code for the selected protocol
	Preview	Preview current protocol

After the new protocol is completed, it will automatically enter the new interface of the protocol steps, and it can add, delete and copy the steps, preview, move and edit the parameters of the steps and generate the QR code of the protocol.

Add step: New procedure steps, you can use the App's own step name, or customize the edit according to personal habits;

Preview: Like protocol preview, the main thing is to generate a preview after the protocol steps are edited;

Move: Used to adjust the sequence of steps;

Delete and copy: The circle on the right side of the protocol interface is the selection box. You can select a single or multiple steps to delete and copy. When delete step, a prompt box will be displayed to confirm again;

Protocol code: After the protocol is created, it is used to generate the QR code of the protocol.

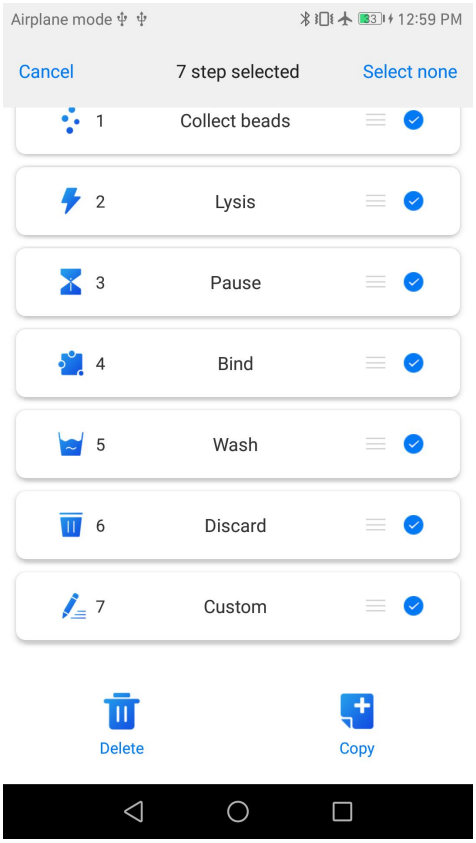


Fig 28 Step delete and copy

7.1.4.1 Step parameters settings

Click a single step to enter the parameter setting interface, as shown in Table 4, Only 1 and 6 hole have heating function, the top display is the current set hole position, the bottom can switch the previous and the next step.

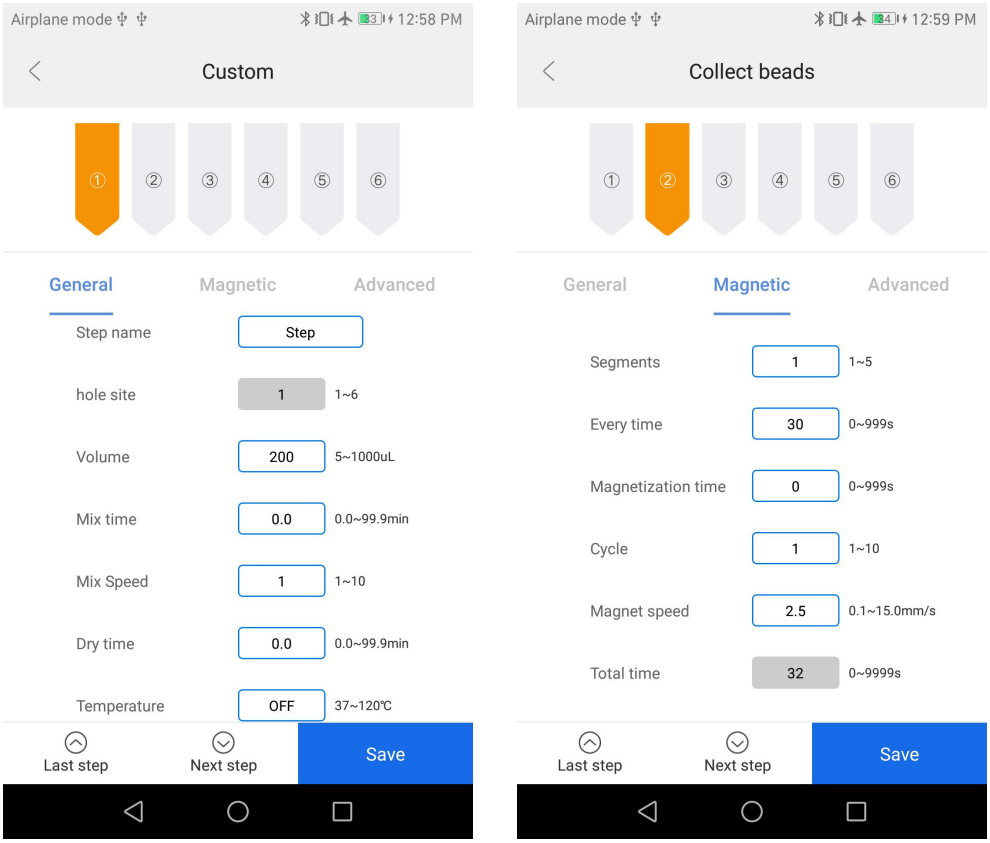


Fig 29 General parameter settings

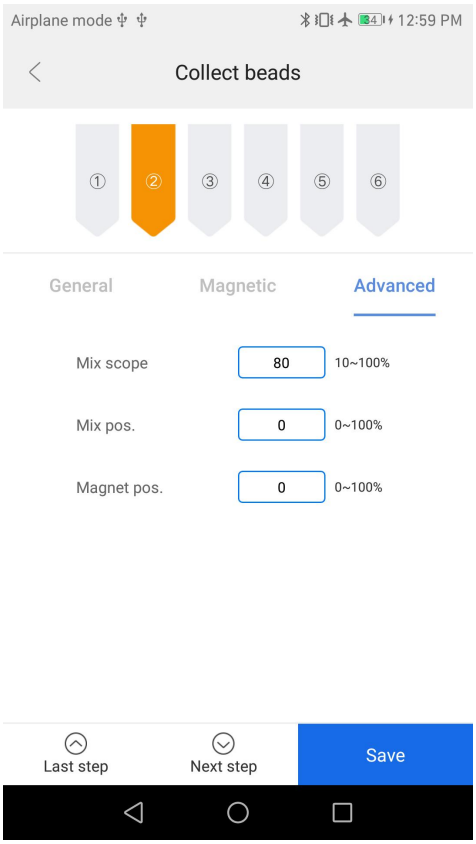


Fig 30 Advanced parameter

The parameters of each step are shown in the following table:

Table 4 Step information description

Name	Meaning
Save	Click to save settings
Name	Name of step. A step is not allowed to be renamed. Only a custom step can be renamed. Custom step parameters are shown in Fig 29.
Hole site	The hole site is 1-6, the default is 1 for lysis, 2 for collect beads, 1 for bind, 3 for wash, 6 for elution, and 3 for discard
Volume	Set the volume of the corresponding hole site (5-1000ul)
Mix time	Set the mix time between 0.0 and 99.9min. It can enter a decimal digit.
Mix speed	Set the mix speed to a range of 1-10.
Dry time	Set dry time, rang 0.0-99.9min.
Temperature	Set the temperature of the hole in the range of 37-120℃, 1 and 6 hole have heating function. Default OFF
Segment	The segments of magnet can be set in the range of 1-5.
Every time	Can be set for each period of time, range 0-999s.
Magnetization time	Set magnetization times. Range 0-999s.
Cycle	The number of cycle can be set.The range is 1-10.
Magnet speed	Set magnet speed, range 0.1-15.0mm/s.
Total time	Settings are not supported, calculated
Mix scope	Set mix scope. Range 10-100%, the default is 80%
Mix pos.	Set mix position. Range 0-100%, the default is 0%
Magnet pos.	Set magnet position. Range 0-100%, the default is 0%

Click Parameter Save to save the current step setting parameters.

7.1.4.2 Option settings

Click  at the top right corner of step interface to enter into optional interface for senior parameters settings. Then click “save” after finishing settings, as shown in the figure below;

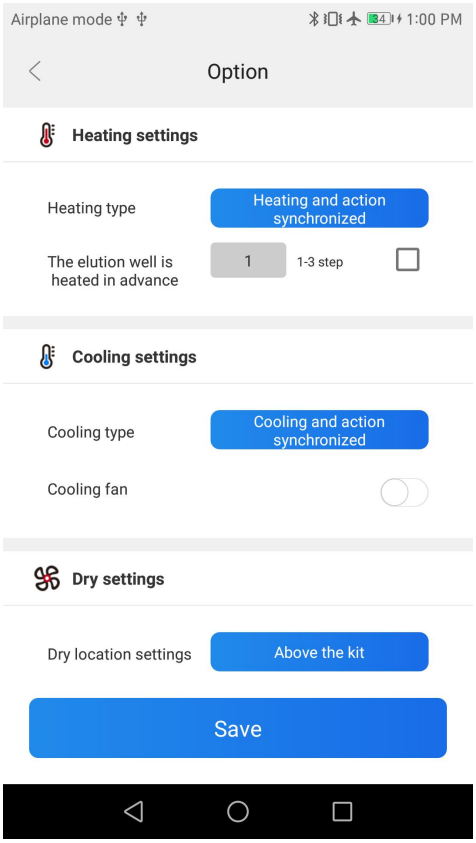


Fig 31 Option settings

The setting meanings of each option are shown in the following table;

Table 5 Option settings

Step	Option	Meaning
Heating settings	Heating in advance	When running to the heating hole position, the magnetic rod's tip or magnetic rod will start to action after the temperature of the heating hole reaches the preset temperature
	Heating and action synchronized	When running to the heating hole position, heating is carried out synchronously with the magnetic rod's tip or magnetic rod action
	Protocol ahead __step, elution hole start heating	Set advanced steps to heat, up to 3 steps
Cooling settings	Cooling in advance	When running to this step, if the actual temperature is higher than the set temperature, the temperature will be cooled first, and then the magnetic rod's tip or magnetic rod action will be started
	Cooling and action synchronized	When running to this step, if the actual temperature is higher than the set temperature, cooling is carried out synchronously with the magnetic rod's tip or magnetic rod action
	Cooling fan	Optional on or off, off by default

Dry settings	Above the kit	When the wait step is performed, the bottom of the magnetic rod's tip is placed above the kit	The default drying position is on the top of the kit;The default is 5mm above the liquid level;
	Specified location	When the wait step is performed, the bottom of the magnetic rod's tip is located at the set height above the liquid level	
Action parameter	Horizontal velocity (1-50mm)	Set the left/right movement speed, default 50	
	Lifting speed of magnetic rod (1-100mm)	Set up and down speed of magnetic rod, default 50	
	Lifting speed of magnetic rod's tip (1-100mm)	Set up and down speed of magnetic rod's tip, default 50	

7.1.5 Quick new protocol

Click "New" button on the main interface to quickly create a new protocol (the method of creating a new protocol is the same as 7.1.4)

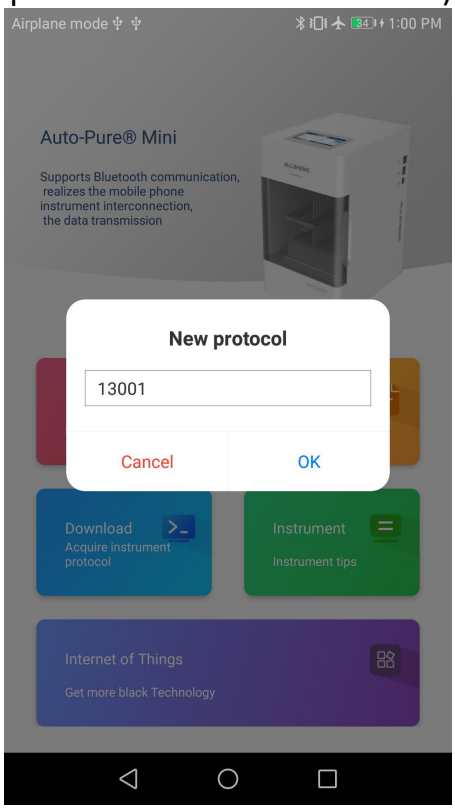


Fig 32 Quick new protocol

7.1.6 Download

Before using this function, it is necessary to connect the Bluetooth of the

mobile phone. After successfully connecting the Bluetooth, APP can acquire the protocol list and running log list of the instrument and download them. The downloaded protocol can be viewed and edited in the "Protocol - Instrument Acquisition"; After downloading the operation log, it can click the preview directly.

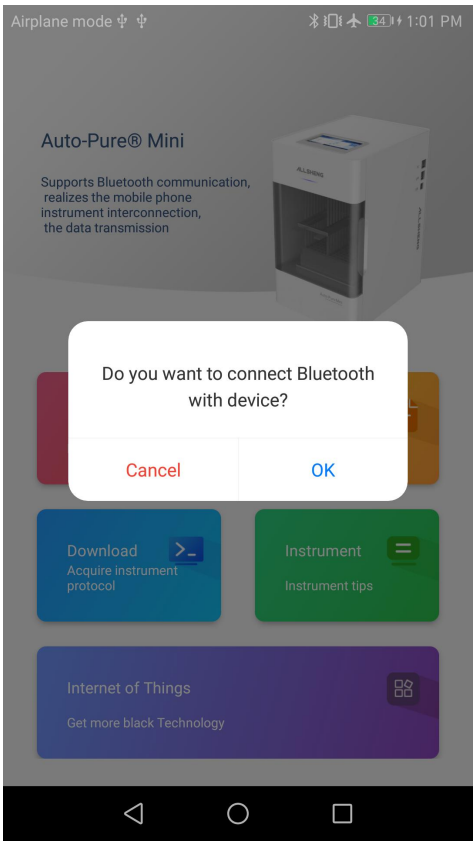


Fig 33 Bluetooth is not connected prompt box

7.1.6.1 Acquire instrument protocol

The page displays the current protocol in the instrument. It can select the protocol to download. A prompt will be given if the download is successful.

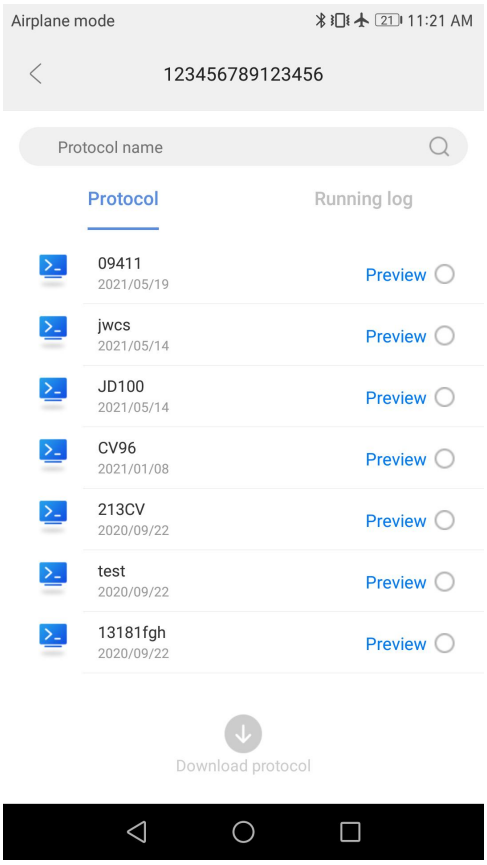


Fig 34 Acquire the protocol list

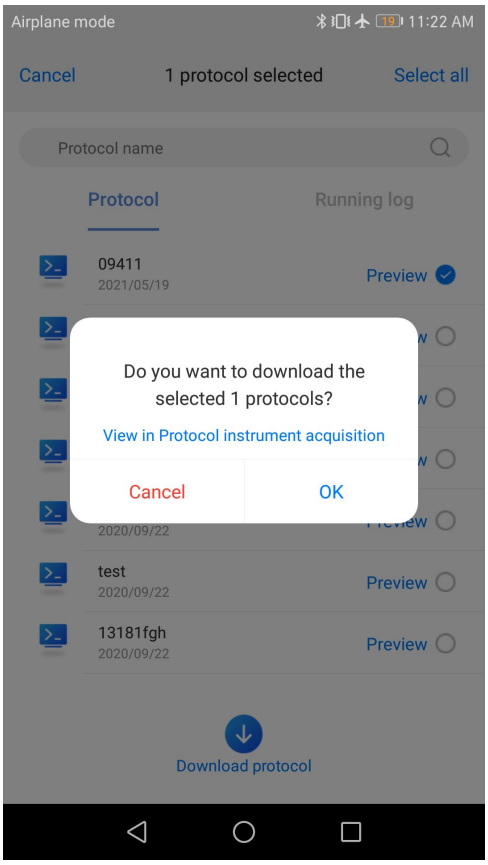


Fig 35 Protocol download

After the protocol is downloaded successfully, duplicate name detection is performed, as shown in figure below.

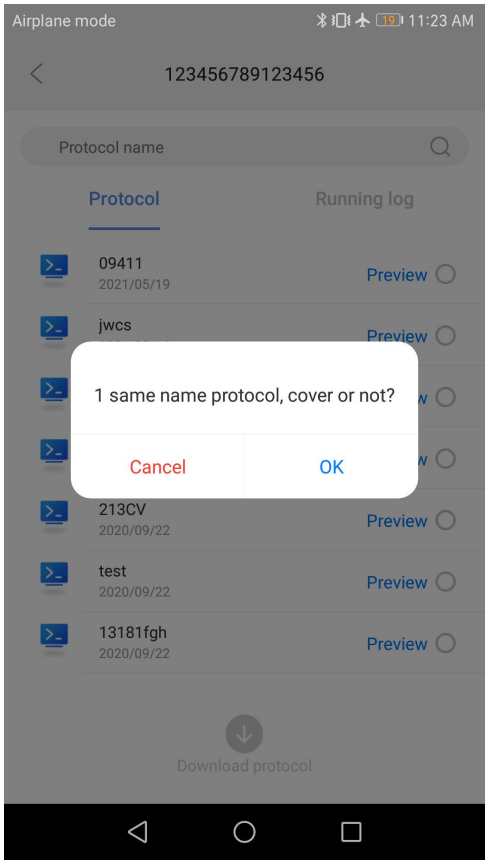


Fig 36 Duplicate name detection

Note: The detection of duplicate name conditions for downloading and receiving APP are: ① The protocol name is the same; ② The PN number of the instrument is the same; if both are met, the duplicate name is considered.

7.1.6.2 Running log

Select the running log that you want to download, and then click to download the log (in figure below). The blue font is the log that has been downloaded. Click to preview it.

Note: The running log transmitted from the instrument is in CSV format. APP will convert the data in CSV format into WORD form and preview it.

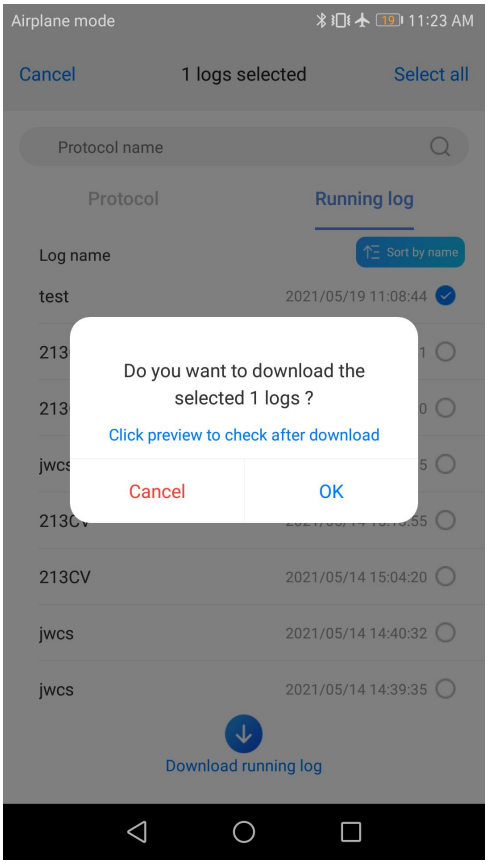


Fig 37 Running log download

7.1.7 Instrument

7.1.7.1 Instrument interface

Bluetooth can be turned on or off:

①When the bluetooth of the mobile device is not enabled, a prompt box will appear when Bluetooth is enabled in the APP, as shown in figure 39;

②When the bluetooth of the mobile device is enabled, the APP can directly open the Bluetooth.

My instrument refers to all the instruments that have been connected by the APP at present. The right side will show which instrument is currently connected. Other instruments refers to instruments that are currently connected by the APP but have never been connected.

Click one of the instruments to connect the instrument and the prompt box pops up, as shown in figure 40.

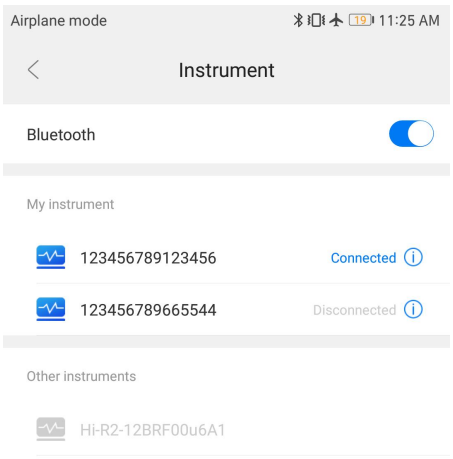


Fig 38 Instrument interface

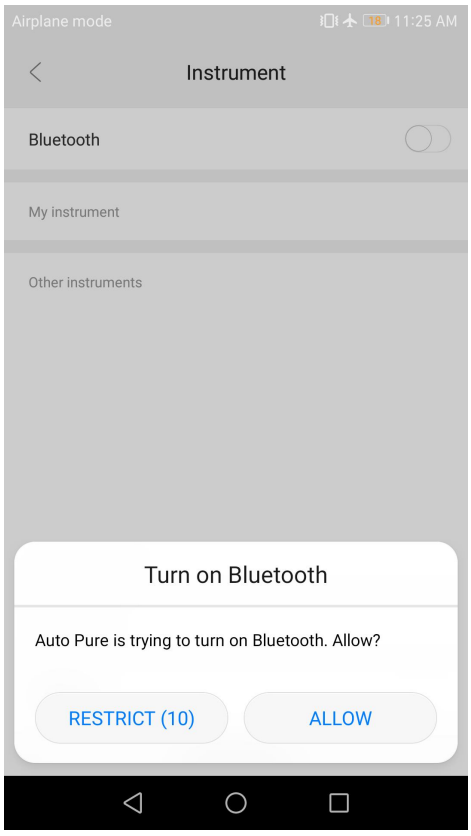


Fig 39 Bluetooth on prompt

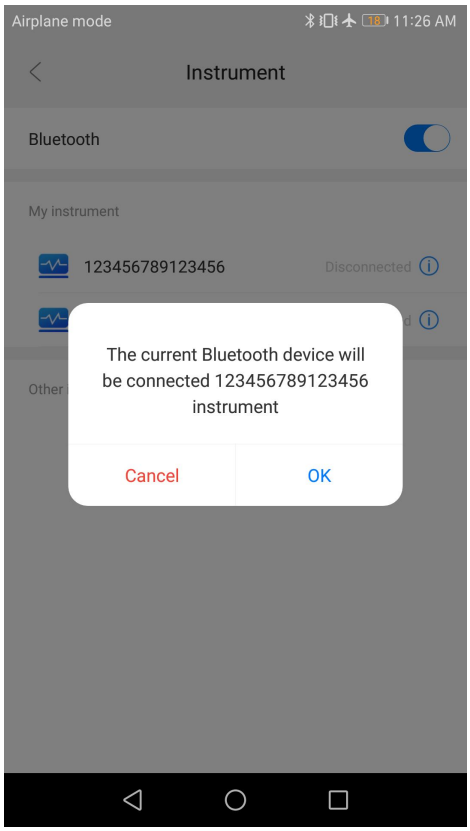


Fig 40 Instrument connection prompt

Note: The default Bluetooth name is corresponding to the PN number of the device to be connected.

7.1.7.2 Modify instrument information

Click  on instrument interface to enter modify instrument information interface, as shown in figure below.

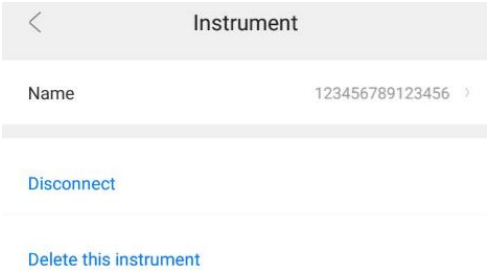


Fig 41 Modify instrument information

Click "Name" to modify the note name of the current instrument;
Click "Disconnect" to disconnect the currently connected instrument;
Click "Delete this instrument" to remove the currently connected instrument, the connection record of this instrument disappear.

7.2 Instrument software

7.2.1 Start-up Interface

Turn on the instrument, start-up interface will comes up.



Fig 42 Start-up Interface

7.2.2 Protocol running

After self-check, enter the protocol run interface, the interface is divided into two types: quick display mode and list display mode;

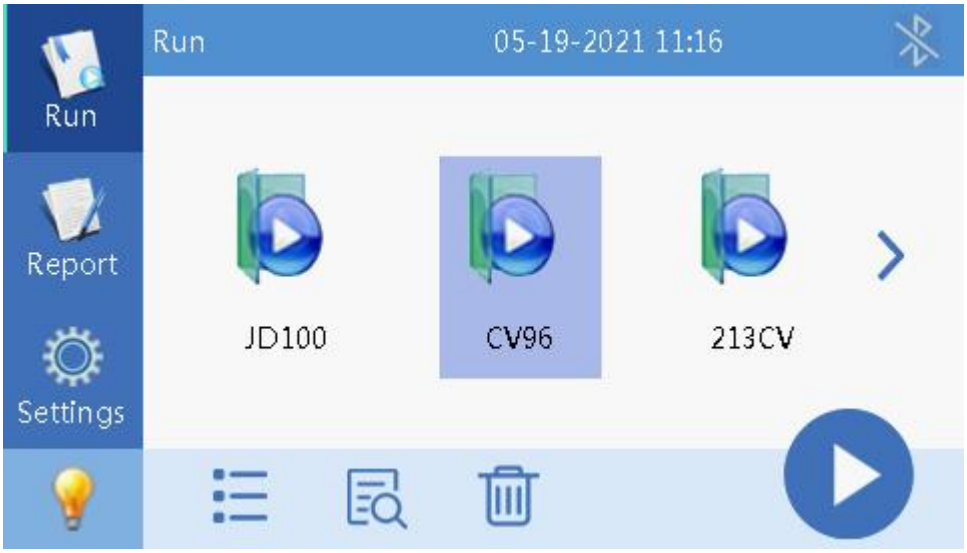


Fig 43 Protocol running-- Quick mode

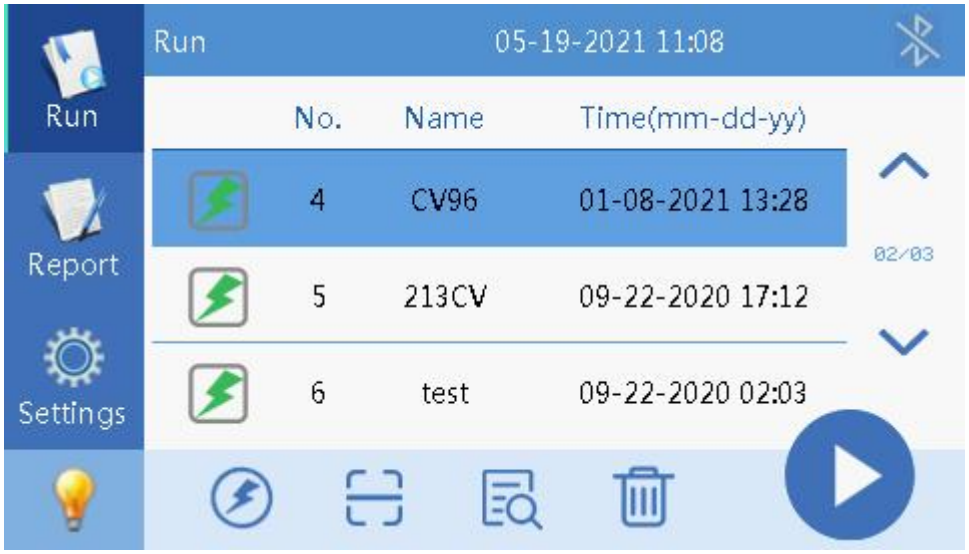


Fig 44 Protocol running-- List mode

Click "", the preview button can preview the selected protocol, as shown in the figure below;



Fig 45 Preview protocol

Several function buttons of run interface are shown in the table below.

Table 6 Run interface function buttons

Icon	Function
	Delete, used to delete protocol
	Shortcut for switching between quick display and list display
	Scan, click and activate the scanning module, which can scan the QR code and identify the QR code of the protocol and the bar code of the instrument
	Preview, can preview the protocol step information
	Run, click and run the selected protocol

7.2.3 Run

Click the "Run" button to enter the run interface directly;



Fig 46 Run interface

7.2.4 Running pause or stop

Click “  ” to stop running current protocol, click “  ” to pause running current protocol.



Fig 47

7.2.5 Report interface

Each time to run the protocol, the instrument automatically generates and stores an running report, which contains name, time, step information, alarm record and instrument information, etc., and can be exported. The running report can be stored 1000 pieces, and the earliest report can be automatically covered when the report is full, as shown in the figure below;

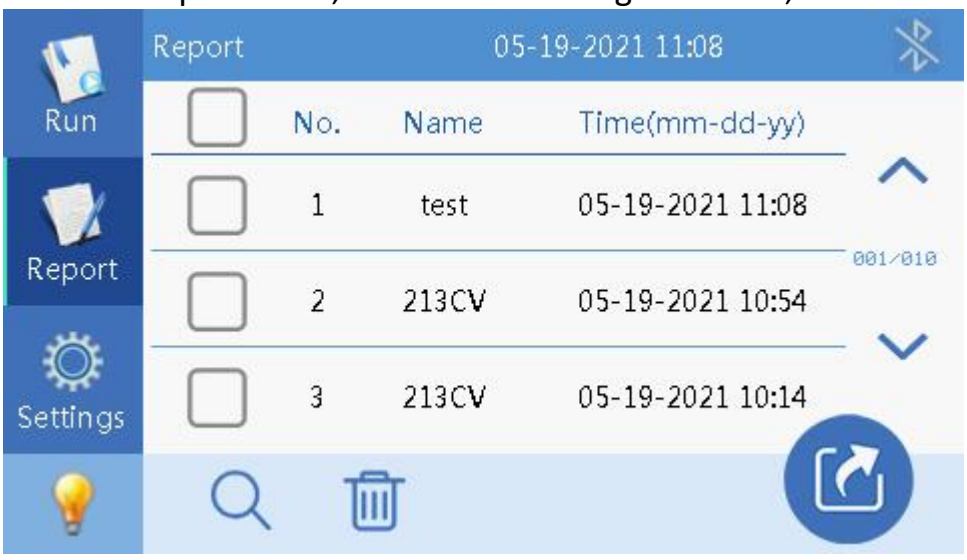


Fig 48 Running report

If it need delete report, select report, click “ ” to delete;

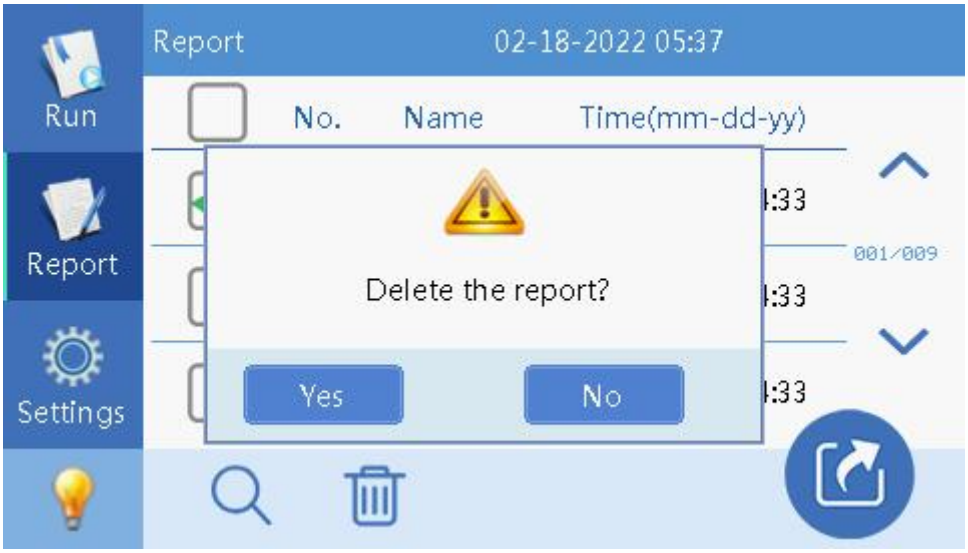


Fig 49

Report interface button function description, as shown in the table below;

Table 7 Button function description

Icon	Function
	Delete, used to delete the selected report
	Search, used to search for the specified report
	Export, can be exported to U disk

7.2.6 Settings interface

The Settings interface mainly has four functions: “UV”, “Fan”, “settings” and “Instrument”;

UV: The time of sterilization can be set. Click the Start button “” to enter the countdown. the UV light will be off automatically after finished;

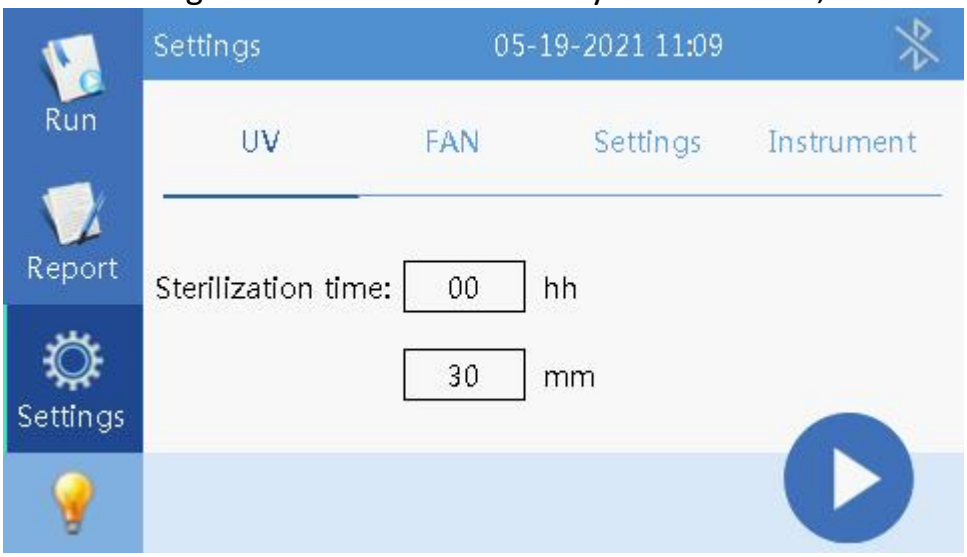


Fig 50 UV sterilization

Fan: users can choose “On” or “Off”;

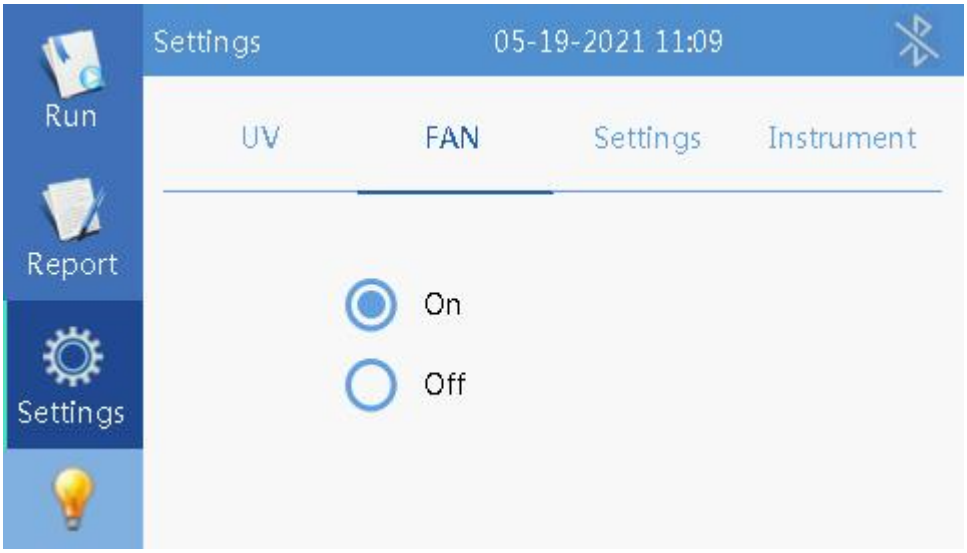


Fig 51 Fan

Settings interface is divided into “Time”, “Language”, “Transfer”, “Bluetooth” and “Version”, as shown in the figure below;



Fig 52 Settings



Fig 53 Settings

Time Settings, as shown in the figure below;

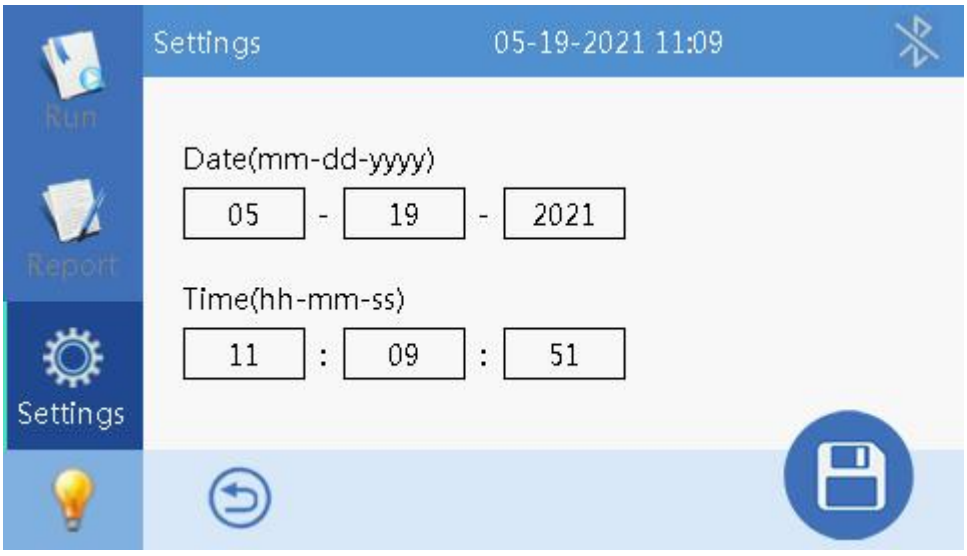


Fig 54 System time

Language Setting, support in Chinese and English;



Fig 55 Language Settings

After inserting the U disk, import or export the program by click “Transfer”;



Fig 56 Transfer

Bluetooth Setting, open or close Bluetooth, and the name of Bluetooth is the serial number of the corresponding instrument;



Fig 57 Bluetooth

Click Version to check the software version of instrument;



Fig 58 Version information

System maintenance Settings, this function is only open to after-sales maintenance personnel, the instrument has been adjusted before leaving the factory, the user does not need to set.

7.2.7 Lamp

In the lower left corner of all interfaces, there is a lamp switch button "", It can control the on and off of the light at any time.

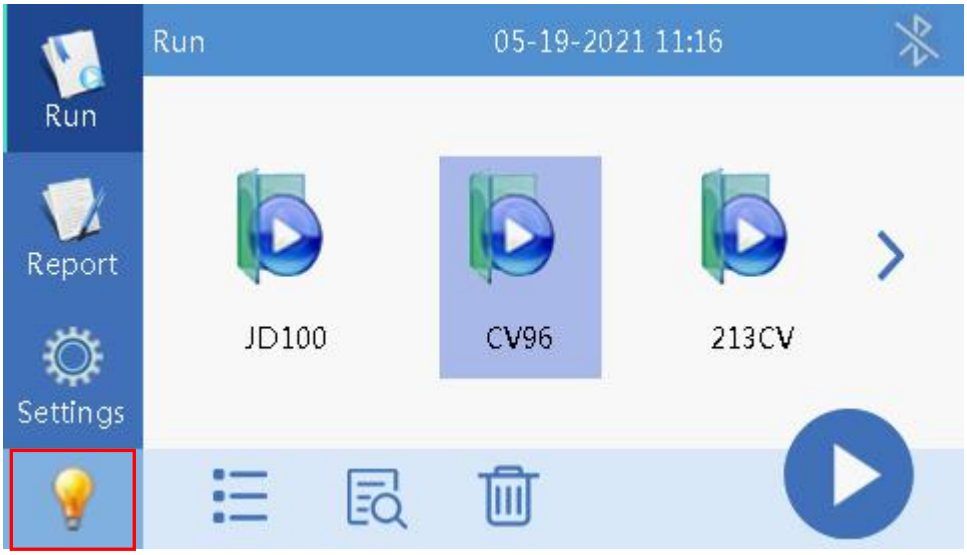


Fig 59 Lamp switch

7.2.8 Close program

Turn off the power switch at the rear of the instrument to close the instrument software, and the instrument is turned off.

Chapter 5 Trouble Shooting

Trouble shootings

No.	Symptom	Causes Analysis	Method
1	No display after switch on	Power not connected	Check power
		Switch failure	Replace switch
		Fuse failure	Replace fuse (250V F6.3A 5X20)
		Others	Contact with Distributor
2	No UV light	UV light failure	Replace light tube Contact with distributor
3	No light	Light failure	Replace light tube Contact with distributor
4	Can not stop automatically after opening the door.	Sensor failure	Contact with distributor
5	Big variance between actual and display temperature	Sensor failure	Contact with distributor
6	No heating for heating strip	Sensor failure	Contact with distributor
		Heater failure	
7	Instrument can’t run	Controller failure	Contact with distributor
		Motor failure	
8	Abnormal sound during working	Guide rail installed incorrect	Contact with distributor
		Motor failure	
		Synchronous belt abrasion	
9	Press button not working	Press button failure	Contact with distributor

Software Error Alarm List

No.	Trouble	Error
1	T1, T2, T3, T4 temperature overheat	E011, E021, E031, E041
2	T1, T2, T3, T4 open circuit	E015, E025, E035, E045
3	T1, T2, T3, T4 short circuit	E015, E025, E036, E046
4	Horizontal zero sensor damaged	E403
5	Magnetic rod's tip motor zero sensor damaged	E425
6	Magnetic rod motor zero sensor damaged	E415
7	Clock crystal vibration damaged	E702
8	Memory chip E2P damaged, setting parameters lost	E703
9	Zero calibration parameter error	E711
10	NAND FLASH damaged	E704
11	Online failure	E801

Chapter 6 Acronyms and Marks

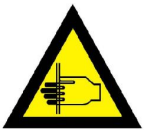
1. Acronyms

For reference only, may appear in the above user manual.

A	Ampere
AC	Alternating Current
V	Volt
Hz	Hertz
W	Watt
USB	Universal Serial Bus
SD	Safety Digital Code
WiFi	Wireless LAN
kg	Kilogram
mm	Micrometer
µL	Microliter
hPa	hectopascal
℃	Degree centigrade
CV	Concentration difference between wells
TAB	Tabulator key
RUN	Run
STOP	Stop

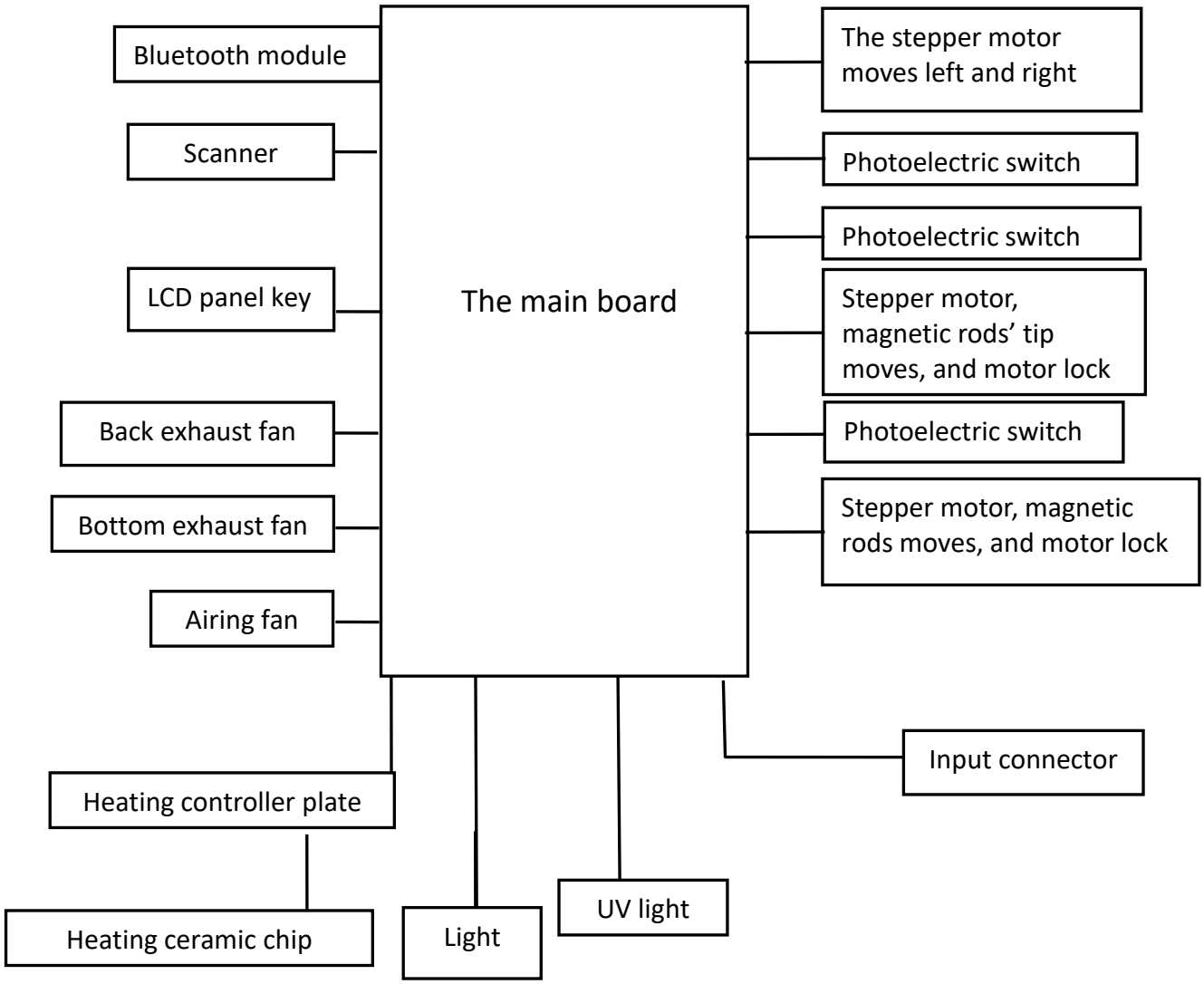
2. Marks

The following marks appear on the device.

	Warning
	Heating
	European standard
	Beware of clamping hand
	Biological pollution

Appendix: Wiring Diagram

(For reference only, without notification if updated.)



Memo