

TGuide S16 Nucleic Acid Extractor

User's Manual



Catalog number

Product Name

OSE-S16-AM

TGuide S16 Nucleic Acid Extractor

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Safety Warnings and Guidelines

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 injury or electric shock. Please read the manual carefully and operate safely according to the guidelines.

Security

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



The instrument is a 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 of any injury or out-of-warranty. If service is required please contact TIANGEN or your local distributor for repair.

Before powering on, please make sure the voltage of the power supply is consistent with the required voltage. Additionally, 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 instrument when using. Insert and pull on the power line gently to make sure that the plug is completely inserted into the jack.



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

The instrument should be kept in an area with minimal dust, away from wet areas and direct sunlight. In addition, the installation location should have sufficient ventilation, and be placed away from electromagnetic interference and heat sources. The vents on this instrument are designed for ventilation. Do not cover them to prevent overheating. If multiple instruments are being used at the same time, the distance between each instrument should be more than 100cm.

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.



If one of the following cases occur, disconnect the power cord from the jack at once and contact your local distributor or TIANGEN:

- Liquid enters the instrument.
- Instrument was rained on or watered.

-
- Abnormal operation: such as abnormal sound or smell.
 - The instrument is dropped or the outer shell is damaged.
 - The function has obviously changed.



Indicates disposal instruction.

DO NOT throw this unit into a municipal trash bin when this unit has reached the end of its lifetime. To ensure utmost protection of the global environment and minimize pollution, please recycle this unit.

Maintenance

The instrument should be cleaned regularly using a soft cloth dampened with a small amount of alcohol. If there is any stain on the surface of the instrument, wipe it with soft cloth damp with cleansing cream.

After-sales service

a) Warranty content

Warranty is provided for faults due to material and manufacturing defects for twelve months from the date of delivery. During the warranty period, our company will selectively repair or replace instruments that are proven 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 will bear the freight of returning the instrument to the user.

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

b) Warranty scope

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



After the instrument is unpacked, please check the contents according to the packing list. If you find that the items are damaged or missing, please contact TIANGEN immediately.

Please keep the packing material properly for maintenance. TIANGEN will not be responsible for any damage due to improper packing on the way to the maintenance department.

Chapter 1 Introduction

The TGuide S16 nucleic acid extractor can bind, transfer and release magnetic beads by a magnetic rod's tip to separate magnetic beads and samples. Users can extract 1-8 samples or 16 samples simultaneously with single sample reagent kits or a 96 Deepwell plate. It can extract nucleic acid from samples of animal, plant tissue, bacteria, fungi and cells, etc with different kinds of magnetic beads nucleic acid extraction reagents.

1、Working conditions

Environmental temperature: 10°C-40°C

Relative humidity: ≤80%

Input voltage: AC 100-240V, 50Hz/60Hz

2、Transportation and storage requirements

Environmental temperature: 10°C-40°C

Relative humidity: ≤80%

Atmosphere pressure range: 500-1060 hpa

3、Basic parameters

Product name	TGuide S16 nucleic acid extractor
Sample volume	20 µl-1000 µl
Throughput	1-8 or 16
Temperature control module	Ambient temperature-120°C for lysis and elution
Outline dimension(W×D×H)	208 mm×258 mm×315 mm

Table 1 Basic parameters

4、Application

This instrument is suitable for the extraction and purification of nucleic acids in animals, plants, bacteria, cultured cells, blood, plasmids, viruses, etc.

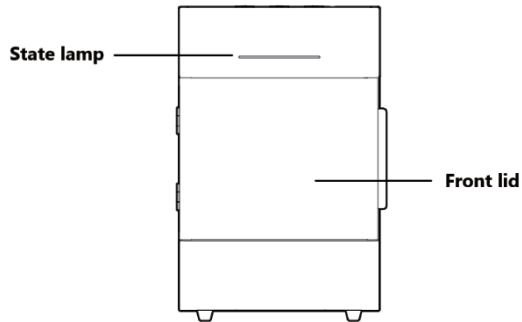
5、Instrument life

The lifetime of this instrument is five years.

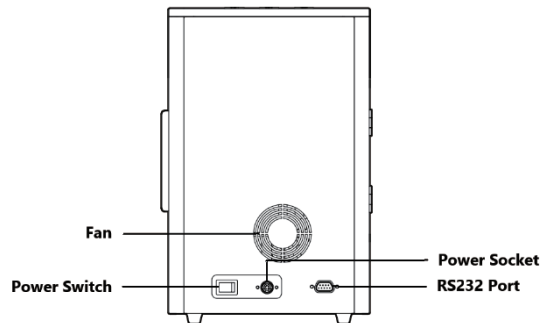
Chapter 2 Basic Operating Instructions

1. Structure

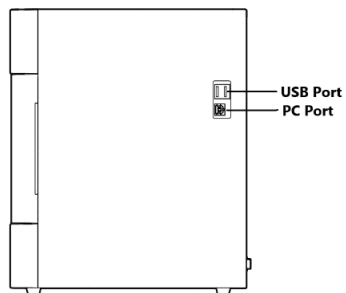
1.1 Front



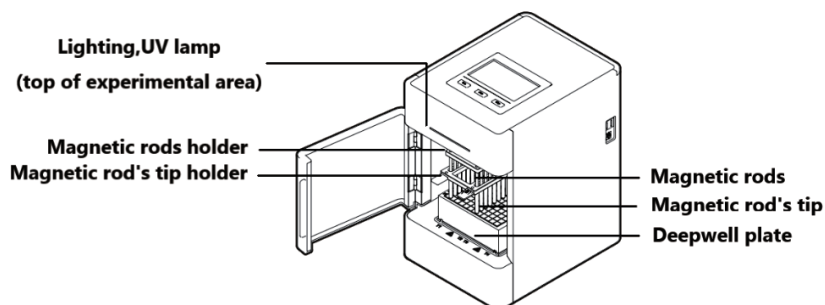
1.2 Back



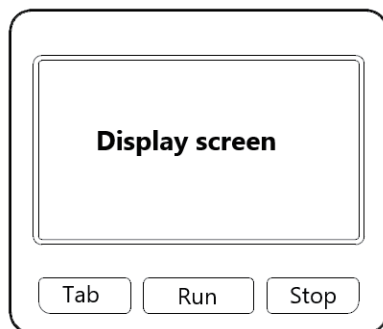
1.3 Side



1.4 Experimental area



1.5 Operation panel



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

Tab: Switching between protocols.

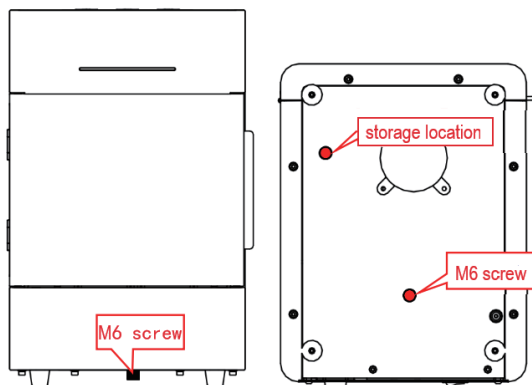
Run: Start the protocol and run the instrument.

Stop: Stop the operation.

2. Installation

2.1 Remove the instrument from the packing case and remove the tape holding the front lid.

2.2 Then unscrew the M6 screw fixing the lifting part at the bottom of the instrument to release the lifting part.



Note: Please pay attention to magnetic rods during the operation to prevent any damage!

3. Check-up before power-on

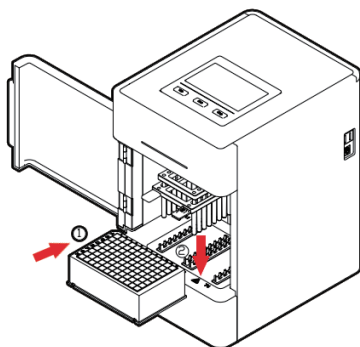
Remove the power adapter from the box, connect one end to the power socket on the back of the instrument and the other end to an AC power outlet (AC100-240V). Before switching the power on, please check and ensure that:

- 1) Supply voltage falls within the specified limits;
- 2) The plug has been inserted into the power socket reliably;
- 3) The grounding of the power line is reliable;
- 4) The fastening belt and hexagonal screw are removed;
- 5) The 96 Deepwell plate and Magnetic tips are put in the right place.

4. Kits installation

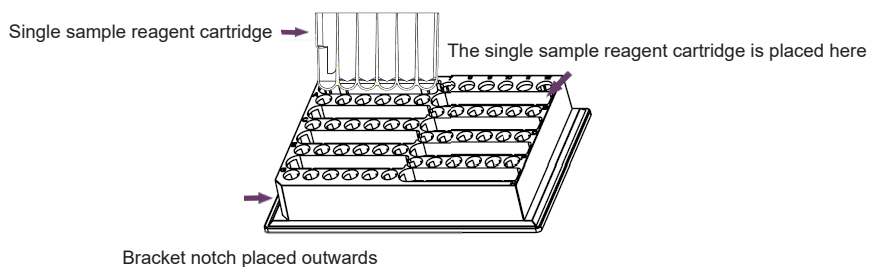
4.1 96-Deepwell plate installation

Open the cabin door. First, place the plate with the sample in the position slot according to arrow ①. Then press the plate into the heating strip according to 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.



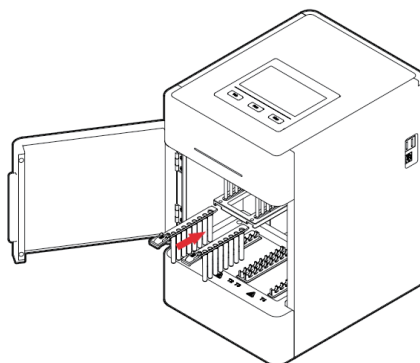
4.2 Single sample kit installation

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



4.3 Magnetic rod tips installation

Insert the magnetic rod tips into the slots to the end, in the direction of the arrow. The number of magnetic rod tips can be determined according to the number of samples.



Chapter 3 Experimental Protocol Settings and Operation

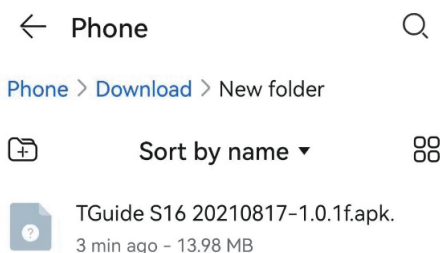
The instrument software is divided into APP software and embedded software in the instrument:

APP software is only supported by Android devices. It is used to complete the edit of experimental protocols, generate QR codes, log transfer and other operations.


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

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.



2. Main interface

After the software is installed, click the software icon  on the interface. When the startup is completed, you will enter the startup interface, where the software version information will be displayed. Then into the main interface where the name and information of the instrument is displayed in the upper part and the four main function blocks, Protocol, New, Transmission and Instrument, are displayed in the lower part.







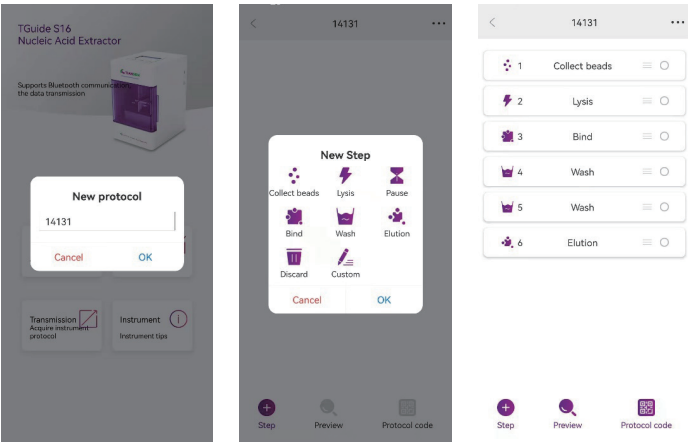
Icon	Name	Function
	Protocol	Click into protocol interface, protocol edit and management
	New	Click to quickly create new protocol
	Transmission	Click into download protocol interface
	Instrument	Click into instrument management and setting interface

Table 2 Main interface

3. New protocol

Click the "New" icon on the protocol interface to customize the protocol name. The default protocol name is the time.

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








Icon	Function
	Long press this key to drag step sequence
	Select step, select single or multiple steps to copy or delete
	New steps
	Generates the QR code for the selected protocol
	Preview current protocol

Table 3 Protocol interface

4. Step parameters settings

Click a single step to enter the parameter setting interface, as shown in Table 4. Click "Save" to save the current step setting parameters.

<

Collect beads

①

②

③

④

⑤

⑥

General

Magnetic

Advanced

Step name

beads

hole site

2

1-6

Volume

200

5-1000μl

Mix time

0.5

0.0-99.9min

Mix Speed

5

1-10

⏮

⏪

Save

<

Collect beads

①

②

③

④

⑤

⑥

General

Magnetic

Advanced

Segments

1

1-5

Every time

30

0-999s

Magnetization time

0

0-999s

Cycle

1

1-10

Magnet speed

2.5

0.1-15.0mm/s

Total time

32

0-9999s

⏮

⏪

Save

<

Collect beads

①

②

③

④

⑤

⑥

General

Magnetic

Advanced

Mix scope

80

10-100%

Mix pos.

0

0-100%

Magnet pos.

0

0-100%

⏮


⏪

Save

Name	Meaning
Name	Name of step. A step is not allowed to be renamed. Only a custom step can be renamed.
Hole site	The hole site is 1-6, the default is 1 for lysis, 2 for collected beads, 1 for bind, 3 for wash, 5 for elution, and 3 for discard.
Volume	Set the volume of the corresponding hole site (5-1000 μl).
Mix time	Set the mix time between 0.0 and 99.9 min. You can enter a decimal digit.
Mix speed	Set the mix speed to a range of 1-10.
Dry time	Set dry time, range 0.0-99.9 min.
Temperature	Set the temperature of the hole in the range of 37-120°C, 1 and 5 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. Range 0-999 sec.
Magnetization time	Set magnetization times. Range 0-999 sec.
Cycle	The number of cycles can be set. The range is 1-10.
Magnet speed	Set magnet speed, range 0.1-15.0 mm/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%.

Table 4 Step parameters description

5. Option settings

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

Step	Option	Meaning	
Heating settings	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	
	Action after heating	When running to the heating hole position, the magnetic rod's tip or magnetic rod start action after reaching the set temperature	
	Elution well heated in advance	Set advanced steps to heat, up to 3 steps	
Cooling settings	Action after Cooling	When running to this step, if the actual temperature is higher than the set temperature, the temperature will be cooled first. Then the magnetic rod's tip or magnetic rod action will start	
	Cooling and action synchronized	When running to this step, 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 reagent	The default drying position is on the top of the reagent; The default is 5 mm above the liquid;
	Specify location	When the wait step is performed, the bottom of the magnetic rod's tip is located at the set height above the liquid.	
Motion parameters	Horizontal velocity (1-100 mm/s)	Set the left/right movement speed, default 50 mm/s	
	Lifting speed of magnetic rod (1-100 mm/s)	Set up and down speed of magnetic rod, default 50 mm/s	
	Lifting speed of magnetic rod's tip (1-100 mm/s)	Set up and down speed of magnetic rod's tip, default 50 mm/s	

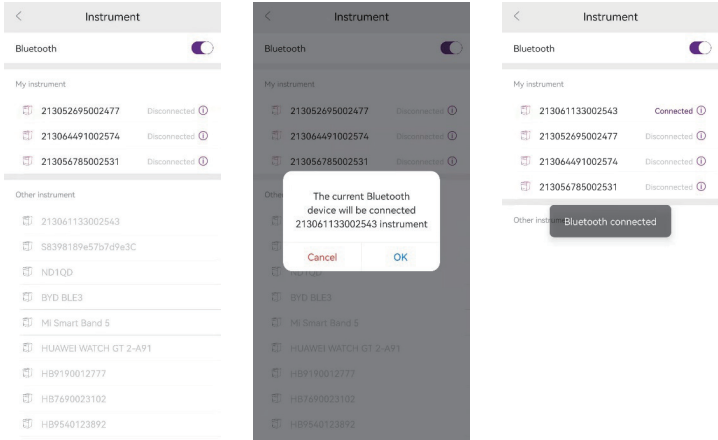
Table 5 Option parameters description

6. Instrument connection

Click the “Instrument” icon to enter the instrument interface. Bluetooth can be turned on or off. Bluetooth needs to be opened when APP is connected to the instrument.

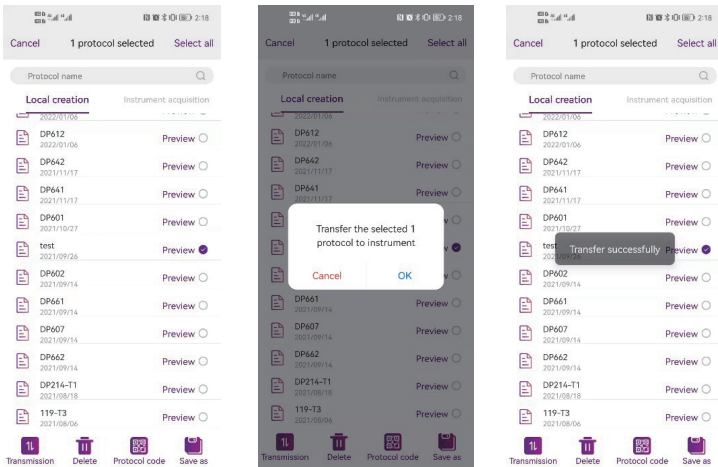
"My instrument" refers to all the instruments that have been connected by the APP up to the present time. The right side will show which instrument is currently connected. Other instruments are instruments that are currently connected by the APP but have never been connected to the instrument.

Click the instrument serial number to connect the instrument.



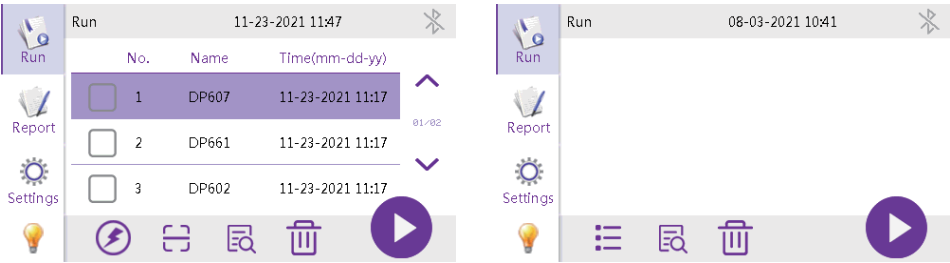
7. Protocol transmission

Click the “Protocol” icon to enter the list of protocols. After selecting the protocol, the transmission icon will appear at the bottom of the page. Click on the transmission button to import the protocol to the instrument. Before using this function, it is necessary to establish the connection between the instrument and the app.



8. Protocol running

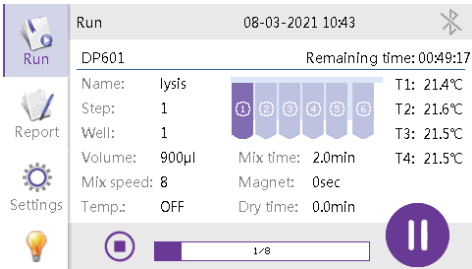
After turning on the instrument, the start up interface will come up. This means the device is under self-testing, which will last for about 5-10 seconds. Please wait patiently. After self-testing, enter the protocol run interface, the interface is divided into two types: quick display mode and list display mode. Several function buttons to run interface are shown in the table below.



Icon	Function
	Use to delete the selected protocol
	Shortcut for switching between quick display and list display
	Scan, click and activate the scanning module(optional), which can scan the QR code and identify the QR code of the protocol and the bar code of the instrument
	Preview the protocol step information
	Click and run the selected protocol
	Light on/off button

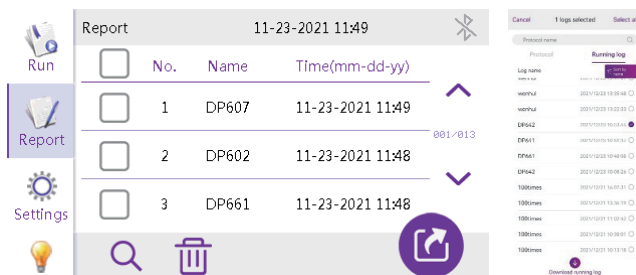
Table 3 Protocol interface

Select the protocol that is needed to run, then click the “Run” button and enter the run interface to start running the protocol..



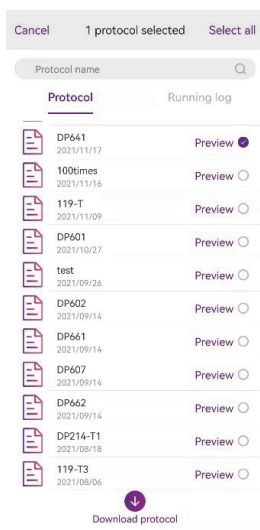
9. Running log

Each time a protocol is run, the instrument automatically generates and stores an running log. This log contains name, time, step information, alarm record, instrument information, etc., and can be exported. Maximum 1000 copies of running reports can be stored, and the earliest report can be automatically replaced when the report storage is full. Users can export logs from the instrument via USB flash drive, or export from the app transmission page.



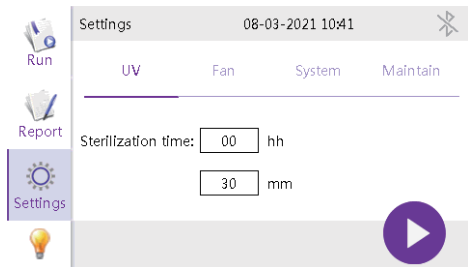
10. Download protocol

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, you can click the preview directly.



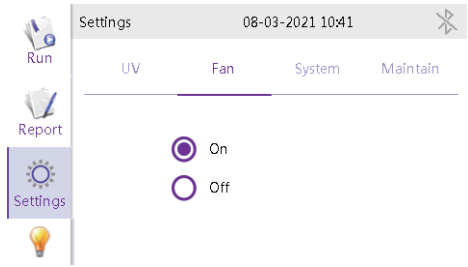
11. UV sterilization setting

Click the setting interface to set the time of sterilization. Click the start button to begin the countdown. The UV light will turn off automatically after finishing.



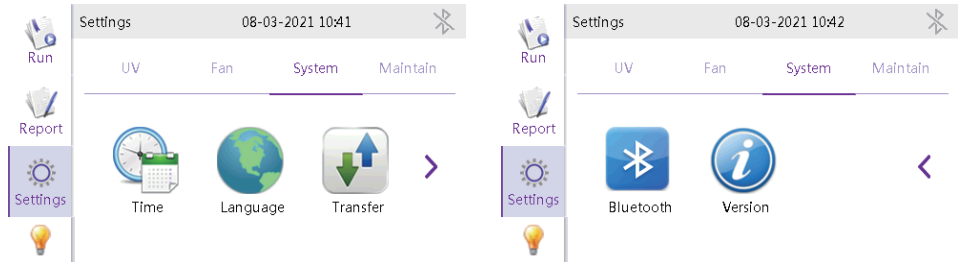
12. Fan setting

The TGuide S16 nucleic acid extractor has a built-in fan, and users can choose “on” or “off” according to their preferences.



13. Settings interface

The Settings interface is divided into “Time”, “Language”, “Transfer” and “Bluetooth” and “Version”.



Chapter 4 Troubleshooting

This chapter mainly introduces the possible failure symptoms, cause analysis and treatment methods of the TGuide S16 Nucleic Acid Extractor.

No.	Symptom	Causes Analysis	Method
1	No display after switching on	Power not connected	Check power
		Switch failure	Replace switch
		Fuse failure	Replace power adapter
		Others	Contact the distributor
2	No UV light	UV light failure	Replace light tube Contact the distributor
3	No light	Light failure	Replace light tube Contact the distributor
4	No heating for heating strip	Sensor failure	Contact the distributor
		Heater failure	
5	Instrument can't run	Controller failure	Contact the distributor
		Motor failure	
6	Abnormal sound while working	Guide rail installed incorrectly	Contact the distributor
		Motor failure	
		Synchronous belt abrasion	
7	Invalid press	Press button failure	Contact the 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	E016, E026, 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

Notice: During the warranty period, users are strictly prohibited from dismantling the machine to check. If the trouble mentioned above occurs, please contact TIANGEN immediately.