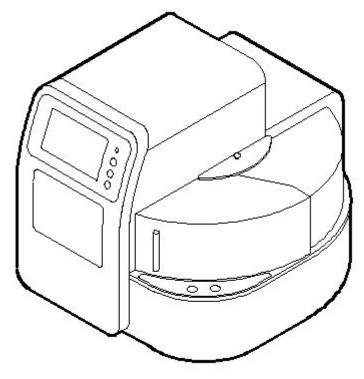
Operation Manual V1.0

Auto-Pure Series Nucleic Acid Purification

System

Auto-Pure 24/48/96





Hangzhou Allsheng Instruments Co., Ltd.

Foreword

Thank you for purchasing our Auto-Pure series Nucleic Acid Purification System. 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.

HANGZHOU ALLSHENG INSTRUMENTS CO., LTD.

Add: Building 1 & 2, Zheheng Science Park, Zhuantang Town, Xihu

District, Hangzhou, Zhejiang 310024, China

Tel.: 0086-0571-89948289

Fax: 0086-0571-87205673

Website: <u>www.allsheng.com</u>

E-mail: info@allsheng.com

File No.: AS161SM

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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 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 ${\rm I}$ 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 Allsheng 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.



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



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 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.

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

• 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

Ambient temperature: 10°C ~ 35°C Relative humidity: ≤70% Atmosphere pressure range: 500 ~ 1060hpa Locate it in a well-ventilated room, away from corrosive gas.

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Chapter 1 Introduction

Auto-Pure 24/48/96 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 sleeve to separate magnetic beads and samples. The operation is automatic, fast and simple. Users can extract 1~24, 1~48 or 1~96 samples simultaneously with special kits. Auto pure series 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

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).

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.

Chapter 2 Specifications

1. Working Conditions

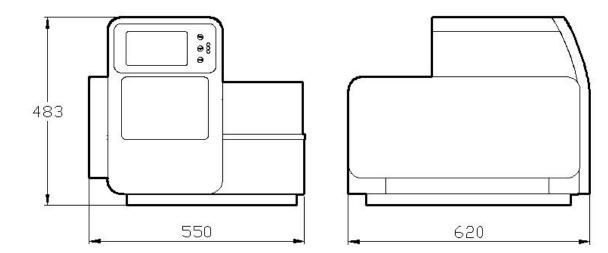
Environmental Temperature: 10°C~35°C Relative Humidity: ≤70% Input Voltage: AC 100~240V, 50Hz/60Hz

2. Basic Parameters

Model Parameters	Auto-Pure 24	Auto-Pure 48	Auto-Pure 96		
Principle	Magnetic	Particle Method, M	agnet type		
Sample Volume	200µL-10000µL	50µL-3000µL	50µL—1000µL		
Throughput	24	48	96		
Stability		CV≤5%			
Extraction time		10 ~ 60min/time			
Temperature control module	Room tempera	ture to 120 $^\circ\!\!\!\!\!^\circ$ for ly	ysis and elution		
Temp. Accuracy	±1℃				
Vibrateand mix	10 di	fferent speeds for o	ption		
Operation	7 inch color tou	ch screen, mouse ca	an be connected		
Programs		ams can be preset, groups of programs			
Program management	Including create, edit, delete and protocol mode				
Extension interface	With USB port and Ethernet port				
Network	Extended Ethernet remote control, WiFi function.				
Power Supply	AC100)-240V, 50Hz/60Hz,	250VA		

3. Overall Dimensions

Unit: mm





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 this instrument.

1. Structures

1.1. Front

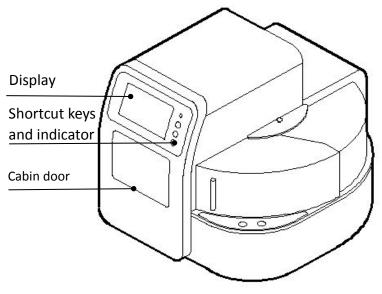
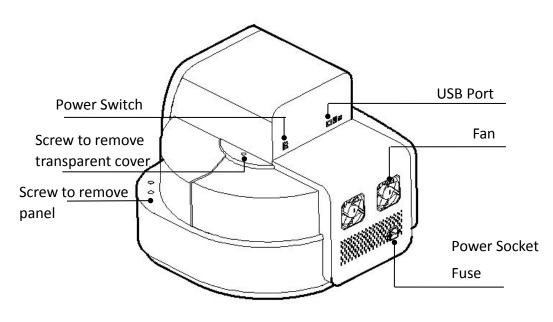


Fig 2





1.3. Cabin Door

The cabin door of Auto-Pure 24/48/96 can be opened which is convenient for cleaning and maintenance.

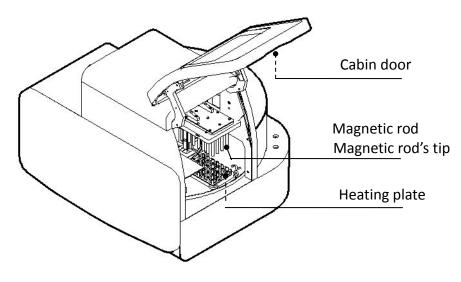


Fig 4

1.4. Transparent Cover

The transparent cover is on the right side of the instrument which is for placing or taking out kits.

The cover can be removed which makes it convenient matching with automatic liquid transfer wrokstation.

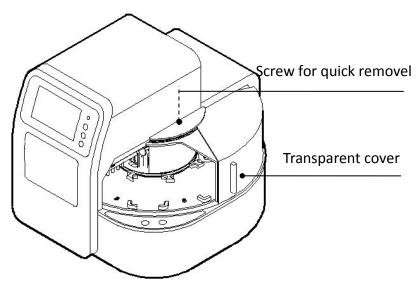
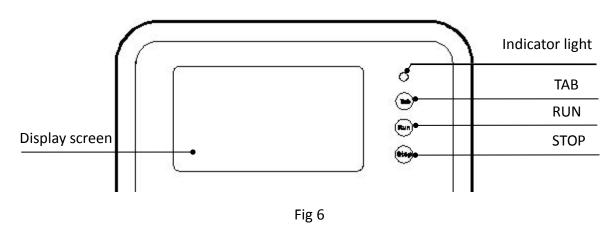


Fig 5

2. Touch Screen



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

TAB: Select shortcut program.

RUN: Start the shortcut program and run the instrument.

STOP: Stop the operation.

Chapter 4 Operations

1. Power Connection

AC 100 ~ 240V

2. Kits Installation

Open the cabin door, put kits on the plate position of the rotary table, press position button to turn the rotary table and place all the kits in turn. Auto- pure24/48/96 are suitable for 24-well kit, 48-well kit and 96-well kit separately.

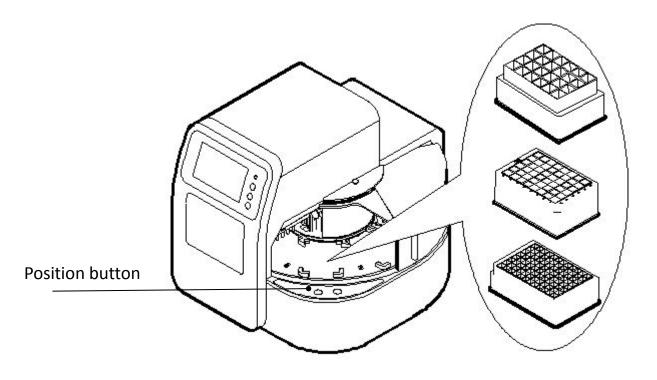


Fig 7

3. Detailed Operations

3.1. Start-up Interface

Turn on the instrument and make sure the door is closed before start, start-up interface will comes up.

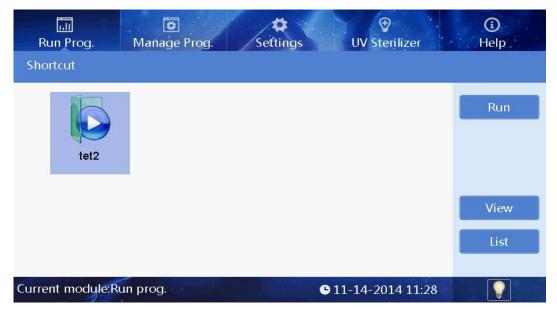




Then, it will enter into "Run Prog." interface.

3.2. Run Program Interface

This interface including two modes: "shortcut" mode and "list mode", as shown in below Fig 9 and Fig 10.



Run Prog.	🗘 Manage		# ettings		₽ erilizer		() Help
List mode							
SN 1	Name yy	Modify 2014-11-11		Shortcut	Lock		Run
							View Shortcut
Current modu	le:Run prog.	AN		911-11-20	014 12:2	24	ALLSHENG

Fig 10

In the "List mode" interface, if one program selected/activated in "Shortcut" column, the icon of the program can be displayed on shortcut interface. 8pcs of programs can be activated in maximum at the same time.

"SN", "Name", "Modify time" and "Lock" are non-editable options.

3.2.1. Run Interface

In "List mode" or "Shortcut" mode, select required program and click "Run" to enter into run interface.

When running the program, the instrument will first detect the presence of the kit on the rotary table. If no kit is found on the board of the setup program, the program will prompt to confirm whether the following steps can be continued, as shown in the figure below.

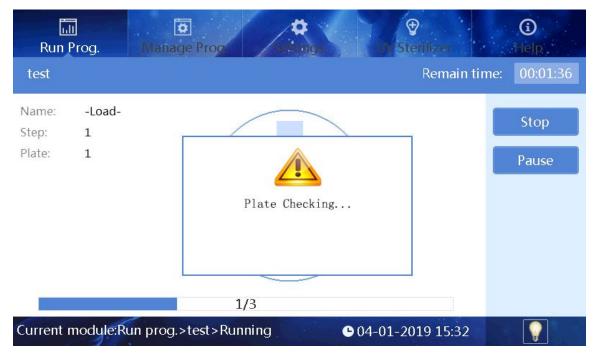


Fig 11

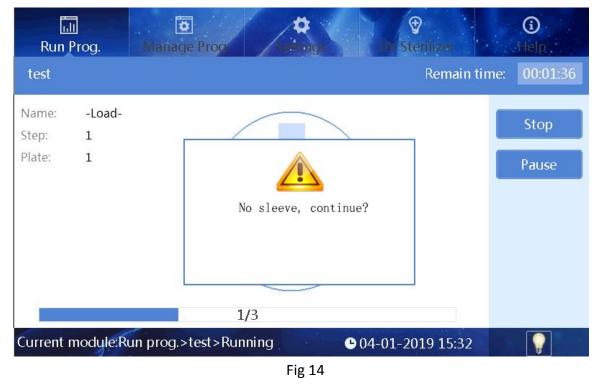


Fig 12

The instrument will install magnetic rod sleeve automatically. If rod sleeves are already installed on the current magnetic rod sleeve rack, "Sleeve loaded, continue?" will pop up. If no magnetic rod sleeve is detected after installing the magnetic rod sleeve, "No sleeve, continue?" will appear.



Fig 13



After the magnetic rod sleeve is successfully installed, the instrument automatically performs the following steps, please see Fig 15.

Run Pr	og.	Manage Proc.	i) Help
test		Rema	ain time: 00:01:33
Name:	STEP		Stop
Step:	2	s	Stop
Plate:	1	9 ×	Pause
Mix time:	0min		
Magnet:	19sec		
Wait time:	0.0min		
Volume:	200µl	8 2	
Mix speed:	5	1	
Temp.:	OFF		
		2/3	
Current m	odule:R	un prog.>test>Running	32
		5. 45	

Fig 15

In the running interface, users can stop, pause, continue or run the program again. The plate with dark blue color, number 1, is the working plate, the red corner marks on it means the plate is running or already finished running, while blue corner mark means the plate which is ready to run, one corner mark means one running and two means two runs. A corner mark represents the plate position used once in the whole program.

After the completion of the operation, the No. 8 plate position will be automatically pushed to the transparent cover on the right side.

3.2.2. View

In the list mode or shortcut mode, select the required program, and click "View" button to enter the view interface (See Fig 16). Users can view each parameter settings of the program.

Ru	n Prog.	Me	🔯 mage Pr	00	-		UV Ste) tilizer		() Help
tet2										\bigcirc
Step	Name	Plate	Mix Time (min)	Mix Map (%)	Wait Time (min)	Volume (µl)	Mix Speed (1-10)	Temp. (℃)		Run
1	-Load-	1								
2	STEP	3	1.5	80	1.0	200	5	OFF		Steps Run
3	STEP	5	0	80	1.0	200	5	OFF		
4	-Unload-	2								
										Option
										Back
									-	
Currer	nt module:R	tun pr	og.>tet2	2		C 1	1-14-20	14 11	:28	

Fig 16

Users can click button in the upper right corner to switch to the graphic display. Highlight displays the plate position which corresponding to the selected step, please see Fig 17 as below.

Ru	n Prog.	Me	🔯 mage Pr	00	¢ Seitings IN Sterilizer		() Help
test							Ũ
Step	Name	Plate	Mix Time (min)	Mix Map (%)	Graphics		Run
1	-Load-	1					
2	STEP	1	0	80	g S z		Steps Run
3	-Unload-	2					
							Option
					8 2		Option
							Back
Currer	nt module:P	lun pr	og.>test		• 04-01-2019 15	:34	

Fig 17

U

Then click button **1** to magnetic parameter absorption interface which displays magnetic parameters of selected step as shown in Fig 18. "Steps Run": run the program starts from currently selected step. "Option": view settings of the program, please see Fig 19.

ull Prog	Ma	😰 Inage Pr	og.	Settings UV Sterritze		(i) Help
Name	Plate	Mix Time (min)	Mix Map (%)	Mag.Parameters		Insert
-Load-	1			Segments: 3 Lip-lvl: 0s		
STEP	1	0	80	Cycle times: 1 Anti-splash: 0s Mag.speed: 1		Delete
-Unload-	2			1st. Segment time: 1s		Option
				2nd. Segment time: 3s 3rd. Segment time: 2s		Save
						Back
				Estimated time:22s	-	DACK
	Name -Load- STEP	PrimeMaNamePlate-Load-1STEP1	PrimeManage PrNamePlateMix Time (min)-Load-11STEP10	Prime IManage Prog.NamePlateMix Time (%)-Load-1-STEP10	NamePlateMix Time (min)Mix Map (%)Mag.Parameters-Load-1	Name Plate Mix Time (min) Mix Map (%) Mag.Parameters -Load- 1

Fig 18

Run Prog. Manage Prog. ettings Uv Sterilizer Option	() Help
Heating Setup Heating synchronization Cooling Setup Cool Fan Disabled, Cooling synchronization	
Current module:Run prog.>tet2>Option	Back

Fig 19

3.3. Manage Program

Users can manage all programs in "Manage Prog." interface.

1000	للله Prog.	😺 Manage Pre	og. Se	‡ ettings	and the second second	₽ erilizer		i Help
-	ge Prog.							
SN 1 t	Na et2	ime	Modify 2014-11-14	No Received III.	Shortcut	Lock		New
	est		2014-11-14			<u>.</u>		Edit
								Save As
								Delete
							-	
Current	: module:Ma	anage prog.			11-14-20	014 11:	29	
			Fig	g 20				

3.3.1. Management Interface

Management interface is similar to list interface in program operation, except that locking column is non-operable option in program run interface while it's an operable option in management interface. Click the lock icon to switch lock and unlock. Programs cannot be edited, saved or deleted if in lock state, please make the change in unlock state.

3.3.2. New/Edit interface

When the users click the "New" or "Edit" button, interface of Fig 23 will appear, the main difference between "New" interface and "Edit" interface is whether the program name exists or not, other operations are similar. This interface mainly includes five buttons: "Insert", "Delete", "Option", "Save" and "Back".

Insert: click "Insert" to add a new program with default parameters next to the current selected program, the new program should be with a valid name.

Delete: delete the selected program.

Option: Option is the high-level parameter setting which applies to

the entire program scope.

Save: save the program file, please note a valid program name is necessary.

Ru	in Prog	Mé	onage Pr	og.	€ Settings UV Sterilize	1	i Help
test							
Step	Name	Plate	Mix Time (min)	Mix Map (%)	Mag.Parameters		Insert
1	-Load-	1			Segments: 3 Lip-IvI: 0s		
2	STEP	1	0	80	Cycle times: 1 Anti-splash: 0s Mag.speed: 1		Delete
3	-Unload-	2			1st. Segment time: 1s 2nd. Segment time: 3s	=	Option
					3rd. Segment time: 2s		Save
					Estimated time:22s	-	Back
Currer	nt module:N	lanag	je prog.>	∙test	€ 04-01-2019 1	5:31	

Fig 21

"Insert" interface as Fig 22.

Run Pro	n Mar	age Prog.	¢ Settings	€ UV Ster	ilizer	(i) Help
test1						\bigcirc
Step Na	me Plate ^I	Mix Time Mix Ma (min) (%)	ap Wait Time Volu (min) (µ		Temp. (°C)	Insert
1 -Lo	ad- 1					
Step Nan 2 STEP	ne Plate	(<u>min)</u> (1	1ix amp Wait tii L-100%) (min 30 [15.0		Mix speed (1-10) 5	Temp. (°C) OFF >>
q a 4 123	w e s (z (Esc	r d f x c	t y g v	u h j b n ,	i () (k) (m)) (.)	o p I K Enter

Fig 22

Plate: select a plate position for the coming operation

Name: set a name of the step

Mix time: the mixing time for selected plate.

Mix amp: mix amplitude, the range is from 1 to 100%.

Wait time: interval time between two steps.

Volume: The volume is automatically converted to the amplitude of mixing according to the formula.

Mix speed: 10 kinds of mix speeds from 1 to 10. The higher the value is, the faster the mixing speed will be.

Temp.: The temperature can be set according to actual requirements, only No.2 and 8 wells can be set.

Click "[>>]" to enter parameter settings of magnetic absorption, see below picture please.

Run Pro	n Ma	🖨 anage Prog.			C) Help
test1					\bigcirc
Step N	ame Plate	Mix Time Mix M (min) (%	ap Wait Time Volume) (min) (µl)	e Mix Speed Temp. (1-10) (℃)	Insert
1 -Lo	oad- 1				
		le times Mag.s 0-10) (1-1 1		(0-30)s	timated (s) 8 <<
1st. Seg	ment time	5 (s)	2nd. Segment	time <mark>6</mark> (s)	
3rd. Seg	gment time	5 (s)	4th. Segment t	ime 0 (s)	
5td. Seg	gment time) (s)		Esc	Enter
1	2 ;	3 4	5 6	7 8	90



Segments: setting range is $0 \sim 5$, it can stop to do magnetic absorption for each segment, magnetization function will be closed if set it to 0.

Cycle times: repeat magnetic absorption times.

Mag.speed: It's magnetic absorption speed when magnetic rod moves under the liquid level. 1 is the slowest while 10 the fastest.

Lip-lvl: the standing time when magnetic rods closing to liquid level after finishing magnetic absorption which is for magnetic beads gathering in case beads falling off due to liquid surface tension.

Anti-splash: the standing time when magnetic rods pulling away from liquid level after finishing magnetic absorption, in case cross contamination which caused by liquid splashing due to some special sample tissues falling off.

1-5 Segment time: independent magnetic absorption time of each segment, the maximum time can reach to 999 seconds.

Estimated: The estimated magnetic absorption time of the software. It can only be displayed on the next entry after exiting the interface.

3.3.3. Option

In program new or edit interface, click the "Option" to enter the option interface. The parameters in the option are applied to the whole program as shown in the figure below.

Run Proy Manage Prog.	i) Help
Option Heating Setup Cooling Setup Preheating Start when 5 °C below set temp(1-50°C)	Confirm Back
Current module:Manage prog.>test>Option	

Fig 24

Confirm: Save all settings and exit.

Back: Not save all settings and exit.

Heating Setup: It is used to set the heating type.

➤ Heating synchronization: It indicates that the heating and magnetic rod sleeve action are synchronous.

> Preheating: It indicates that the heating board will rise to the set

temperature first, and then the magnetic rod sleeve frame starts to work.

> Start when: It indicates that the magnetic rod sleeve frame starts to work when the temperature rised to the set temperature which is lower than the target temperature.

Cooling Setup: It is used to set the cooling type.

3.3.4. Save As/Delete

In the "Manage prog" interface, click the save as button to save the file, and click the delete button to delete the file.

3.4. System Settings

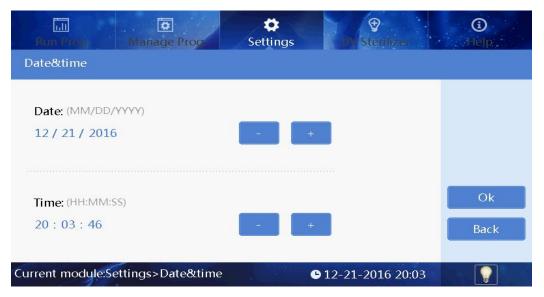
In system setting interface, "Instrument", "Date&time", "Language", "Air ejector fan", "Im.&export" and "Upgrade" can be modified.



Fig 25

3.4.1. System Time

Click "Date & time" button to enter modification interface, as shown in the figure below.





The date and time can be adjusted by "+" or "-" buttons.

3.4.2. Language Settings

Two options: Chinese and English.

Run Praxi Manage Pro	Settings	DV Sterjiizer	() Help
Language settings			
●中文 ● English			Ok Back
Current module:Settings>Langu	lage settings	• 12-21-2016 20:03	

Fig 27

Select the language , press "Ok " to save the modification.

3.4.3. Fan

Click "Air Ejector Fan" to choose "On" or "Off".

Run Proxi Manage Prog	Settings	€ UV Sterilizer	(i) Help
Air ejector fan			
On			
● Off			
			Back
Current module:Settings>Air ejector fan		● 12-21-2016 20:04	

Fig 28

3.4.4. Import and Export

Click the "Im.&export" to below interface.

Run Prog.	💽 Manage Prog	Contraction Contra	₩ Sterilizer	G Help
Import&export				
_				
	import	Ехро	rt	
				Back
Current module:Setti	ngs>Import&expo	ort 🕻	12-21-2016 20:0)4

Fig 29

Press the "Import " to enter U disk directory and then select the program needed, press the "Ok" to import.

Press the "export" button to enter the system directory, select programs and then "Ok" to export files to the U disk.

3.4.5. Software Upgrade

Click "Upgrade" to upgrade interface, see Fig 30 please.

Run Prog. Manage Prog. Settings UP Sterilizer	() Help
Softwre upgrade	
InterfaceUpdate	
0%	Back
Current module:Settings>Softwre upgrade	
Fig 30	

Insert the U disk with the latest software in, and then upgrade the interface software or control software of the instrument.

3.4.6. Operation Record

Each run of the program automatically generates a running record.

Ell Run Prog.	Contraction Contra	¢ Settings		(j) Help
Settings				
SN	Name	Time	Select	Search
1	tet2	2014-11-14 11:24:26		
2	tet2	2014-11-14 11:24:23		Export
3	tet2	2014-11-14 11:24:23		Pre. pace
4	tet2	2014-11-14 11:24:23	\checkmark	t we bride
5	tet2	2014-11-14 11:24:23		Next page
6	tet2	2014-11-14 11:24:22		Back
7	tet2	2014-11-14 11:24:22		DACK
			1/13	
urrent modu	le:Settings>Log	G 11-1	4-2014 11:30	

Fig 31

Users can trace records by "Search" button, see Fig 32 please.

Run Prog	O Manage Pro	Settings	∲ Sterilizer	i) Help
Settings SN	Name	Time	Select	
3N 1	tet2	Time		Search
2	tot2			Export
3	tet2	Start date 2018 0/8 0/8		Den march
4	tet2	ind date: 2018 Ø8 Ø8	\checkmark	Pre. page
5	tet2	Confirm		Next page
6	tet2			Pask
7	tet2	2014-11-14 11:24:22		Back
rrent module	::Settings>Log	© 11-14	1/13 4-2014 11:30	Q

Fig 32

Log exports can be done through the export key.

3.4.7. Lighting

At the rith bottom of the screen, if icon " ?" appears, it means the lighting is on while lighting is off if the icon displays "?". Users can click the icon to switch between on and off.

3.5. UV Sterilization

The UV disinfection interface is mainly used for the opening and closing of the UV lamp. The time can be set by pressing "+" or " -" button. The program can automatically determine half of the set time to sterilize the half circle of the rotary table, with a minimum of 2min, as shown in the figure below.

Image Prog.Image Prog.Run Prog.Manage Prog.SettingsUV Sterilizer	③ Help
UV Sterilizer	
Sterilization time: (hh:mm) 00: 30 - +	Start
00:00:00	
Current module:UV sterilizer	

Fig 33

3.6. Help

Help interface displays help information and version as shown in the figure below.

للله Run Pro	g. Manage Prog. Settings UV Sterilizer Help
Help	
Run prog.	Program Running Shortcut mode: Icon shows the checked programs.
Manage prog.	List mode: List shows all programs within the instrument. Run: Run the currently selected program.
settings	View: View parameters and options of the program. Running interface Stop/Run again: Stop or run the program again.
UV Sterilizer	Pause/Continue: Pause or continue the program. Back: Return to the previous interface.
Versions	
Current mod	dule:Help 🕒 11-14-2014 11:30 📿

Fig 34

Chapter 5 Trouble Shooting

1. Troubleshootings

No.	Symptom	Causes Analysis	Method
		Power not connected	Check power
		Switch failure	Replace switch
1	No display after switch on	Fuse failure	Replace fuse (5X20 250V 8A)
		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	Sensor failure	Contact with distributor
0	strip	Heater failure	
7	Instrument con't run	Controller failure	Contact with distributor
	Instrument can't run	Motor failure	
	Abnormal sound during working	Guide rail installed incorrect	
8		Motor failure	Contact with distributor
		Synchronous belt abrasion	
9	Press button not working	Press button failure	Contact with distributor

2. Software Error Alarm List

Fault type	Fault name		
Temperature	T1 Overheat		
(code: 0)	T1 Open circuit	E015	
	T1 Short circuit	E016	
	Baffle motor sensor	E404	
	Rotary motor sensor damaged	E405	
Electric machinery	Lifting platform motor sensor damaged	E406	
stroke position (code:4)	Push rod motor sensor damaged	E407	
	Motor position sensor of magnetic rod sleeve damaged		
	Magnetic rod motor position sensor damaged	E415	
	The clock crystal fault	E702	
LCD, Crystal	Memory chip E2P damaged Setting parameters lost		
oscillator, Storage (code: 7)	New instrument, instrument type hasn't been set		
	Zero has not been calibrated, the instrument zero calibration is not in the 3 well will lead to the program does not working		
Communication	Moving parts online failure	E801	
(code: 8)	Rotary parts online failure	E802	

Chapter 6 Accessory

No.	Name	Specs.	Unit	Qty.	Remark
1	Power cord		Рс	1	
1	Mouse	Logitech	Рс	1	

Chapter 7 Abbreviations and Tags

1. Abbreviations

The following Abbreviations are for reference and will appear in this operation manual.

А	ampere
AC	alternating current
V	volt
Hz	Hertz
W	watt
USB	universal serial bus
SD	secure digital card
WiFi	wireless Fidelity
Kg	kilogram
mm	millimeter
μL	microliter
hpa	hectopascal
°C	degree centigrade
CV	stability
ТАВ	tab
RUN	run
STOP	stop

2. Tags

	Warning label
	Heating label
CE	CONFORMITE EUROPEENNE
	Be careful of hands

Following marks appear on the instrument

Notes