

Operation Manual

V1.0

Feyond-A300 Microplate Reader NB-12-0036







Foreword

Thank you for purchasing our Microplate Reader. This user manual describes how the instrument works and the operation guide, please read carefully before operation and keep for future reference.

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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Safety Warnings and Guidelines

1. Important information for safe use

Users should have a clear main idea on how to use this instrument before operate, 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.



This instrument intended to use in Scientific Research only!

2. Safety

The operation, maintenance and repair of the Instrument should comply with the basic guidelines and the remarked warning below. If you don't comply with them, it will have effect on the scheduled using life of the Instrument and the protection provided.



The instrument conform to class $\,I\,$ of GB 4793.1 standard. Indoor use only.



Warning: Biological contamination!! All samples for test, quality control, calibration are regarded as infectious, and any part contact with samples will also need to be treated as infectious. Please wear gloves when operate this device.



Before using the device, read the Manual carefully. These units are designed for use in laboratory environments. The device must be used by skilled personnel with the appropriate training.



Warning: Avoid injury. Keep your body or any part of body away 15cm (or more) from the instrument when running.

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Except for the part which can be opened by the user according to the manual, the user is forbidden to disassemble the instrument. Doing so will disqualify your warranty and may result in an electric shock. In case of repair, the company is responsible for maintenance.

Before power on, guarantee the voltage used should be accordant to the voltage needed, and the rated load of electrical outlet should not lower than the demand.



If the electric line is damaged, you should replace it with the same type. You should assure there's nothing on the electric line and you should not put the electric line in the ambulatory place.

Hold the socket when you pull out the plug, and don't pull the electric line only.



The Instrument should be put in the place of dry, less dust, no water and no sun or strong lamp. What's more, the place shouldbe good ventilation, no corrosively gas or strong disturbing magnetic field, far away from central heating, camp stove and other hot resource.



Power off when you finish your work. Pull off the connector plug when there's long time no use of the Instrument and cover it with a cloth or plastic paper to prevent from dust.

Pull the connector plug from the socket at once in the following cases, and contact the vendor:



- There is some liquid flowing into the Instrument;
- Drenched or fire burned.
- Abnormal operation: such as abnormal sound or smell.
- Instrument dropping or outer shell damaged.
- Malfunction



Maintenance Instruction

a) 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.

b) 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.



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Chapter 1 Introduction

Feyond-A300 is a powerful and multifunctional microplate reader. It is a widely used biological, medical equipment, using Enzyme-linked Immunosorbent Assay which analyze the presence, absence and color depth of chromogenic substances qualitatively or quantitatively according to the principle of enzyme labeling. It can be used for monoclonal antibody screening, blood coagulation, antibiotic sensitivity test, and other analytical requiring colorimetry work. The instrument is suitable for clinical testing, microbiology, epidemiology, immunology, endocrinology, drug screening, environmental monitoring and agriculture and forestry science and other fields. It is widely used in hospitals, blood stations, epidemic preventionstations, biological products and other departments.

In addition to microplate reader, the product also has fluorescence and luminescence detection functions. The product consists of optical module, detection module, motion control module, reagent injector module, incubator module, display module, power adapter and operation software. Colorimetry, fluorescence and luminescence readings can be realized, including colorimetry (P), fluorescence intensity (FL), Glow, Flash, etc.

In addition to the above main functions, it also has the following functions:

- 1) Can be used for 96-, 384- well plate detection, absorption of light can also be used for micro plate detection;
- 2) The absorption light adopts grating splitting design, and the wavelength range can be selected by 1nm step from 200nm to 1000nm;
- High-energy xenon lamp is used for absorption light and fluorescence detection, with a life of 10⁹ times;
- 4) Fluorescence detection using high-precision filter. And filter replacement is convenient, can be adjusted according to user experiment;
- 5) With high performance PMT detector, can detect very weak light, has high sensitivity;
- 6) Z-axis movement function;
- 7) Optional automatic sampling device which can realize the automatic sampling function in the process of experiment;
- 8) The instrument mainly consists of three test modes: end-point method,

kinetic and spectral scanning;

- 9) With temperature control system which can be used to incubate the microplate, suitable for temperature sensitive experiments;
- 10) The microplate can carry out linear, circular, double circular shaking, and the speed can be adjusted to ensure that the sample is fully mixed;
- 11) 10 inch capacitive LCD display, easy to view data and simple analysis;
- 12) Android system, man-machine interactive operation is more convenient, PC software ReaderIt-II compatible with Windows7 to 10 64-bit version;
- 13) The instrument has a scanning code module, which can be used to log in the instrument and import and export the protocol (under development);
- 14) The device comes with an expandable 4G module that connects to the Internet and cloud services.

Chapter 2 Features

Working conditions:

Ambient temperature: 10°C~40°C

The relative humidity: 10%~80%(not be condensed)

Power: AC100-240V 50-60Hz 2A

The basic parameters and characteristics

Name	Microplate reader
Model	Feyond-A300
Function	Absorbance(ABS), fluorescence(FL), luminescence(Glow, Flash)
Absorbance	ABS
Plate Formats	96-, 384-wells, Microplate
Light source	Xenon flash lamp/ flash times >10 ⁹
Wavelength range	200 \sim 1000nm, 1nm step
Wavelength accuracy	2nm
Wavelength repeatability(SD)	0.2nm
Half width (FWHM)	<2.5nm
Measuring range	0-4.0 OD
Resolution	0.0001 OD
Accuracy@450nm	96-precision mode: ±(1.0%+0.003) @ (0.0-2.0] ±2.0% @ (2.0-3.0]
Repeatability@450nm	CV < 1.0% or SD<0.003 Fast(0.0 - 3.0] CV < 0.5% or SD<0.003 Accurate(0.0 - 3.0]
Stability@450nm	< 0.005 Abs , (0.0 - 2.0 Abs] < 2% , (2.0 - 3.0 Abs]
linear@450nm	R ² ≥ 0.999 , [0.0 - 3.0Abs]
Stray light	0.1%@220nm
Reading time	96 well: fast <15s, accurate<28s
Fluorescence	FL
Plate Formats	96-, 384-well
Reading mode	Top reading
Excitation light source	High energy xenon lamp
Detector	PMT
Wavelength range	EX: 200-1000nm; EM: 270-850nm;

Filter EX / EM	3 groups, single module insert and remove

Detection limit	≤1pM
Linear dynamic range	6 logs
Luminescence	LUM
Plate Formats	96-, 384-well
Detector	PMT
Detection limit	100amol/well
Linear dynamic range	6 logs
Crosstalk	≤ 0.005%
Shaking & Incubation	
Shaking mode	Linear, circular, double circular
Shaking frequency	Slow, mid, fast
Incubation temperature	RT+4℃ to 45℃
Temperature uniformity	±0.5℃ @ 37℃
Software	
Software interface	Chinese / English
Screen size	10-inch LCD display (Resolution: 1920×1200)
Operation method	Touch capacitive screen; use mouse
Data capacity	10GB
Compatibility	Support PC software, win7 to win10 64 bit
Compatibility Data transmission	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP
Compatibility Data transmission Automatic Injector Module	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional)
Compatibility Data transmission Automatic Injector Module Plate Formats	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well
Compatibility Data transmission Automatic Injector Module Plate Formats Quantity	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well 2
Compatibility Data transmission Automatic Injector Module Plate Formats Quantity Dispensing volume	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well 2 5-1000µL, 1µL increment
Compatibility Data transmission Automatic Injector Module Plate Formats Quantity Dispensing volume Liquid injection speed	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well 2 5-1000µL, 1µL increment 125-500 µL/s
Compatibility Data transmission Automatic Injector Module Plate Formats Quantity Dispensing volume Liquid injection speed Accuracy	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well 2 5-1000µL, 1µL increment 125-500 µL/s ±1µL @ 5-50µL ±2% @ 51-1000µL
Compatibility Data transmission Automatic Injector Module Plate Formats Quantity Dispensing volume Liquid injection speed Accuracy Waste liquid collection	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well 2 5-1000µL, 1µL increment 125-500 µL/s ±1µL @ 5-50µL ±2% @ 51-1000µL 50mL
Compatibility Data transmission Automatic Injector Module Plate Formats Quantity Dispensing volume Liquid injection speed Accuracy Waste liquid collection Others	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well 2 5-1000µL, 1µL increment 125-500 µL/s ±1µL @ 5-50µL ±2% @ 51-1000µL 50mL
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Compatibility Data transmission Automatic Injector Module Plate Formats Quantity Dispensing volume Liquid injection speed Accuracy Waste liquid collection Others Instrument port	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well 2 5-1000µL, 1µL increment 125-500 µL/s ±1µL @ 5-50µL ±2% @ 51-1000µL 50mL 2 USB A type ports 1 USB B type port 1 Ethernet port Rs232 bus interface (injector connection) 420×550×386mm
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Compatibility Data transmission Automatic Injector Module Plate Formats Quantity Dispensing volume Liquid injection speed Accuracy Waste liquid collection Others Others Size(W×D×H)mm Power supply Power	Support PC software, win7 to win10 64 bit Test data report can be uploaded to PC server via FTP (Optional) 96-, 384-well 2 5-1000µL, 1µL increment 125-500 µL/s ±1µL @ 5-50µL ±2% @ 51-1000µL 50mL 2 USB A type ports 1 USB B type port 1 Ethernet port Rs232 bus interface (injector connection) 420×550×386mm AC 100 to 240V, 50 to 60Hz 100-240V 2A

Chapter 3 Instrument structure

This chapter mainly introduces the structure of the instrument. Before first use of this instrument, please read this chapter carefully to make a better preparation.

Structure







Chapter 4 Installation

1. Opening check

Each Feyond-A300 is thoroughly tested before shipping, but please check again when you receive the instrument. Note if the following damage exist:

1 The outer package is up side down or damaged

2 The outer package has any obvious moisture stains

3 The outer package has marks of impact

(4) The outer package has signs of being opened

Once the above damage is found, please immediately contact your local distributor or manufacturer.

If the outer packing is intact, please open the packing case and check it in the presence of the distributor and staff:

① According to packing list, confirm that all ordered accessories have been included;

2 Check the instrument's appearance for any damage.

2. Installation requirement

1 Working condition: locate instrument on a flat dry and clean work table. When placed on the table, keep 15cm space for back, left and right side to enable put or connect wires; keep the front side with enough space for plate holder in and out.

2 Working environment:

a. Clean air free from corrosion steam or smoke.

b. Temperature should be within the range of $+10^{\circ}C \sim +40^{\circ}C$.

c. Relative humidity should be within the range of 10% \sim 80% to avoid condensation.

Note: KEEP INSTRUMENT AWAY FROM DESTRUCTIVE GAS OR LIQUID!

3. Installation steps

1 Place the instrument and package lightly on the operation site, unpack the carton, take out the upper package, and then take out the instrument and place it on the work table.

Note: Please DO NOT loose any screw or parts without permission, or it will cause instrument damage and make it out of warranty.

2 Open the side door and press the button on the head of the locking pin with your finger to release the locking. Keep the pressing state, and upward to pull out the locking pin. Then plug the dustproof plug from the accessories to the installation hole of the locking pin, to play the role of dustproof and light avoidance.

Note: The locking pin plays a limiting role to ensure that the microplate bracket is in a fixed state during the instrument transportation. Please pull out the locking pin before the instrument is used.



3 Switch "I/O" button to "O" at the back of instrument. Take out the power cable, insert the plug into the power socket at the back of the instrument, and then connect the other end of the power cable to the power supply with the voltage of AC100 ~ 240V.

Warning: Don't connect instrument to power socket without ground wire.

Chapter 5 Operation Guide

1. Start the instrument

After installing the instrument according to chapter 4, turn on the powerswitch to start the instrument and enter the self-test interface as Fig 5-1. Atthis time, the instrument will automatically complete the self-test and calibration. If there is a fault alarm, please refer to Chapter 7 Trouble shooting.



Fig 5-1

User login interface will appear after self-checking, see Fig 5-2.

Admin	
Password login Scan code login	
Admin	
✓ Remember Password	

Fig 5-2

Table 5-1 lists the permissions of the three types of users.

	Table 5-1		
Name	Permissions content	Rema	ark
Admin	User administrator permissions, all permissions related to user operations. Users cannot log in after forgetting the password;	Unique fixed nam password	account, e, initial 0000
Advanced user	For an administrator defined by Admin, the functions of the administrator are the same as that of Admin, or the permissions and functions of the administrator are less than or equal to that of Admin. The permissions and functions of the administrator are defined by Admin. The permissions are fixed before delivery, and the password is reset by Admin when forgotten;	Manage group	account
User	Can only operate, can not do anything else, the lowest level of permission, the current permission factory is fixed:	User group	Account

Table F 1

Note: Contact the manufacturer or your distributor when forgotten the password of Admin. Please keep the Manager password well to avoid unnecessary losses.

Click Account to enter the Account-Admin interface, see Fig 5- 3. By default, the change password interface is displayed, see Fig 5- 4.





5	Account - Admin	
Password	Change Deservord	
Manage		
	Change Password	
	Please input again	
	Cancel	

Fig 5-4 Change password interface

After you select a user and enter the password, the system main interface is displayed, as Fig 5- 5.

8 8 8 A	dmin		09	/01/2009 00:08	Help
		Protocols	My Favorite	s Rec	ent
		20090901_0	000347 09	9/01/2009 00:05	>
Quick Start	All Results	20090901_0	000150 09	9/01/2009 00:02	>
					
Standard Curve	Share				
\$					
Settings	u-Nano				More 🗠

Fig 5- 5 Main interface

In this case, you can log out by pressing the button in the upper right corner, return to the user interface, and log in again.

The files in this software are divided into three categories: protocol file (P), result file (R) and standard curve file (SC). Table 5- 2 lists the file functions on the main interface;

Name	Туре	Function
All results	Кеу	There is only the result file (R), which contains the running data
Standard curve	Кеу	There is only the standard curve file (SC), which is saved from the results
Share	Кеу	It includes protocol (P), result (R), standard curve (SC), Tab switch
Protocol	Кеу	There is only the protocol file (P), it includes layout, setting, algorithm parameters, without running data; <u>Click "More" to view all protocol files;</u>
My favorites	Key	There are only protocol files (P) in it. <u>Click "More" to view all protocol files</u>
Recent	Кеу	There may be either protocol (P) or results (R), which refers to the most recent operation of the 6 protocol/result files, in chronological order, the most recent time at the top, no "More" button

Table 5- 2 File functions

2. System settings

Click "Quick Start" on the main interface to pop up a new protocol selection box. Users can select protocol parameters according to experimental requirements, as Fig 5- 6.



Fig 5- 6 Quick start interface

After selecting protocol parameters, click the "OK" to enter the protocol interface, as Fig 5-7. It mainly consists of title bar, main display area, menu bar and option bar.

Ś	Pro	tocol :		Title	bar		200909	901_000	827 🖊				
ANSI	/SBS,C	lear,96-wel	I ABS/En	idpoint							K Z	List	Step Analysis
All A B C D E F G H	1	2	3	4 Mair	5 displa	6 Ny area	7	8	9	10	11	12	 Wavelength(nm) λ1: 405 λ2: λ3: λ4: Detection Method: Precise Shake Disable Wait Time at start Disable Area Selection Disable Option bar
) 31.3	3℃	Z Inject		30]{		Info:Pl	ease set p	arameter	Menu	u bar	- 0%	Step Para. Layout



There are four read modes: ABS, FL, LUM. The ABS mode have three read types: EndPoint, Kinetic, Spectrum, the other two read modes have only have EndPoint and Kinetic. The basic difference between the Endpoint and Kinetic is that the Endpoint only takes once read, whereas the Kinetic is a cycle read, with a minimum of two reads and a maximum of 99. Where the specific number of reads is determined by the setting of time reading in Kinetic, the spectrum is read in the wavelength range of 200-1000 according to specified rules. Table 5- 3 shows the relationship between read modes and read types.

	EndPoint	Kinetic	Spectrum
ABS	1.General	1.General	1.General
	2.Shake	2.Detection	2.Shake
	3.Advanced	3.Shake	3.Advanced
	4.Area Selection	4.Advanced	4.Area Selection
FL		5.Area Selection	×
LUM	1.Injector	1.Injector	x
	2.General	2.General	
	3.Shake	3.Detection	

Table 5- 3 Relationship between Read Modes and read types

4.Advanced	4.Shake	
5.Area Selection	5.Advanced	
	6.Area Selection	

2.1 Title bar

The title bar is used to return to the previous page, protocol operations, name and modify files, as Fig 5- 8.

Protocol :					200909	01_0008	327 /					
New	ABS/Er	ndpoint							K Z	List	Step	Analysis
Save Save as	3	4	5	6	7	8	9	10	11	12	 Wavelength(nm)
Export to U disk	-										λ1: 405 λ3:	λ2: λ4:
QR code	_										 Detection 	
Report											Method: Pre	ecise
											Disable	
	Protocol : New Save Save as Export to U disk QR code Report	Protocol : New ABS/Er Save as 3 Export to U disk QR code Report	Protocol : New ABS/Endpoint Save as 3 4 Export to U disk QR code Report	Protocol : New ABS/Endpoint Save as 3 4 5 Export to U disk QR code Report	Protocol : New ABS/Endpoint Save as 3 4 5 6 Export to U disk QR code Report	Protocol : 200909 New ABS/Endpoint Save as 3 4 5 6 7 Export to U disk Image: Constraint of the second of	Protocol : 20090901_0008 New ABS/Endpoint 3 4 5 6 7 8 Save as 3 4 5 6 7 8 Export to U disk 4 5 6 7 8 QR code 4 5 6 7 8	Protocol : 20090901_000827 / New ABS/Endpoint Save as 3 4 5 6 7 8 9 Export to U disk QR code Image: Colspan="5">Image: Colspan="5" Image: Colspan="5">Image: Colspan="5" Image: Colspan="5" Image: Colspan="5" Image: Colspan="5">Image: Colspan="5" Image: Colspa="5" Image: Colspan="5" Image: Colspan="5" Image: Colspa=	Protocol :: 20090901_000827 / New ABS/Endpoint Save as 3 4 5 6 7 8 9 10 Export to U disk QR code Image: Colspan="5">Image: Colspan="5">Image: Colspan="5">Image: Colspan="5">Image: Colspan="5">Image: Colspan="5">Image: Colspan="5" /> Report Image: Colspan="5">Image: Colspan="5">Image: Colspan="5">Image: Colspan="5">Image: Colspan="5" />	Protocol : 20090901_000827 / New ABS/Endpoint Save as 3 4 5 6 7 8 9 10 11 Export to U disk QR code Image: Code Ima	Protocol : 20090901_000827 / New ABS/Endpoint Save as 3 4 5 6 7 8 9 10 11 12 Export to U disk QR code Image: Colspan="4">Image: Colspan="4" Image: Colspa="4" Image: Colspan="4" Image: Colspan="4" I	Protocol : 20090901_000827 / New ABS/Endpoint Step Save as 3 4 5 6 7 8 9 10 11 12 · Wavelength(\(\lambda1:405) \(\lambda3:600) · Wavelength(\\lambda1:405) \(\la



Table 5-4 describes the functions of the title bar.

Name	Functions
5	Click and a prompt box will pop up asking the user whether to exit the current interface; click "OK" and another prompt box will pop up "Do you want to save the current protocol?"; click "OK" to save and exit; click "No" to exit without saving;
/	Click to display the input box to modify the current name. <u>The input box</u> <u>contains a maximum of 15 characters /15 Chinese characters, including</u> <u>upper/lower case letters, digits, Chinese characters, and symbols "-" and " ".</u>
Protocol	Click to display operation optiions, including New, Save, Save as, Export to U disk, QR code;
New	Click and the selection box as Fig 5-6 will pop up;
Save	Click to save the current protocol/results;
Save as	Click to pop up the save protocol name input box <u>, if the current protocol has</u> been executed, then the pop-up box with another "without data" option;
Export to U disk	Click to determine whether to insert U disk first, if no, it will prompt, if yes, the selected protocol will be exported to U disk;
QR code	Click to generate a QR code for the data on the left of the standard curve;

Table 5- 4 Functions of title bar

Click the "modify name", and the input box for modifying the protocol name will pop up, as Fig 5-9. The red text indicates that the protocol has the repeated name; otherwise, it will not be displayed.

Proto	col Name
20090901_0001	50
Protocol name repeat	ed!
Cancel	ок

Fig 5-9 Input box for protocol name

2.2 Main display area

The main display area consists of two parts: operation bar and display area. The default display area is 96-well plate, consisting of 8 rows (A-H) *12 columns (1-12). Click A-H to select all the wells in the row, click 1-12 to selectall the wells in this column, and click the blank block above A to select all the wells of the plate. Template include 96-well plates and 384-well plates. Table 5-5 lists the relationships between microplates and their names. The microplates cannot be scaled if the microplates are smaller than 96 well.

In the operation bar, you can view Kinetic or Spectrum data, run logs and data list.

Well plate	Name
	ANSI/SBS,clear,96-well
96 well plate	ANSI/SBS,black,96-well
	ANSI/SBS,white,96-well
	ANSI/SBS,clear,384-well
384 well plate	ANSI/SBS,black,384-well
	ANSI/SBS,white,384-well

Table 5-5 Relationships between microplate and name

According to the type of the current interface, the content of the main display area is different. Fig 5- 10 shows the finished interface when the protocol is running Endpoint.

All	1	2	3	4	5	6	7	8	9	10	11	12
A	Blk 0.0003	Std 001 0.0002	Ctrl 001 0.0002	Un 001 0.0002	Pos 0.0001	Neg 0.0001						
В	Blk 0.0001	Std 002 0.0001	Ctrl 002 0.0002	Un 002 -0.0000	Pos 0.0002	Neg 0.0001						
С	Blk 0.0001	Std 003 -0.0001	Ctrl 003 0.0001	Un 003 0.0000	Pos -0.0000	Neg 0.0001						
D	Blk -0.0002	Std 004 0.0001	Ctrl 004 0.0001	Un 004 0.0000	Pos -0.0000	Neg 0.0001						
E	Blk 0.0000	Std 005 0.0001	Ctrl 005 0.0000	Un 005 -0.0000	Pos -0.0000	Neg 0.0000						
F	Blk -0.0000	Std 006 0.0001	Ctrl 006 0.0000	Un 006 0.0001	Pos 0.0000	Neg 0.0000						
G	Blk -0.0000	Std 007 -0.0000	Ctrl 007 -0.0000	Un 007 -0.0001	Pos -0.0000	Neg 0.0000						
н	Blk -0.0000	Std 008 -0.0002	Ctrl 008 -0.0001	Un 008 -0.0001	Pos -0.0001	Neg -0.0001						

Fig 5-10 Protocol finished interface(Endpoint)

After the protocol is finished, the heat diagram is shown in Fig 5- 11. Only the Endpoint has heat diagram.



Fig 5-11 Heat diagram interface after protocol is finished





Fig 5-12 Protocol finished interface(Kinetic)

2.3 Option bar

In the options bar, switch between step and analysis at the top, and display, set, and layout buttons at the bottom, as Fig 5- 13.

	Step	Analysis		
•	Wavelength	- n(nm)		
	λ1: 405	λ2:		
	λ3:	λ4:		
	Detection			
	Method: P	recise		
	Reading Tir	mes		
	Detection : No. of readings			
	Number: 5			
	Interval: 0	0:00:05		
•	Shake			
	Disable			
	Wait Time a	at start		
	Disable			
•	Area Select	ion		
	Otom Dava			

Fig 5-13 Option bar

It is mainly used to set the parameter information of protocol running. There are four read modes: ABS, FL and LUM. There are three ABS read types: EndPoint, Kinetic and Spectrum, while the other two read modes only have EndPoint and kinetics.

2.4 Menu bar

The lower part is the menu bar, as Fig 5- 14. Including incubator, inject, filter, vibration, plate in/out, running information, Read button.



Fig 5-14 Menu bar

Table 5- 6 lists the menu bar functions.

Name	Function
∫ 31.6℃	Click to pop up the incubator setting box;
Inject	Click to pop up the inject setting box;

	Click to pop up the filter setting box;
\$ ### \$	Click to execute a vibration, lasting 1 second;
E	When the plate of current instrument is out, click the plate
-	into, otherwise the click plate out;
Dead	Click to start reading, and the protocol becomes the stop
Reau	button;

When you click the incubator button, the incubator temperature input box and keyboard will pop up. Enter the incubator temperature, as Fig 5-15.

	Incubator
Incubator	
Temperature	20.0 ℃ +
Cancel	ок

Fig 5-15 Enter incubator temperature

The incubator function is a global variable. Table 5-7 lists the specific functions of the incubator setting interface.

Name	Function
Incubator	On or off incubation, off by default;
Temperature	Input the incubation target temperature, ranging from RT+4 $^{\circ}\!$
ОК	Click to save the current Settings;
Cancel	Return button;

Table 5- 7 Incubator interface function

If the instrument does not have an automatic sample inject module, the button is gray and unavailable. When the injector button is available, click to pop up the injector interface, as Fig 5-16 and Figure 5-17.

	Injector	
 Wash 	✓ Injector 1 ✓ Injector 2	Start Wash
 Mode 	Prime Manual	
Injector 1	Start Prime Reverse	l
Injector 2	Start Prime Reverse	
		Cancel OK

Fig 5-16 Injector interface 1

		Injector			
 Wash 	V Injector 1	\checkmark	Injector 2	Start Wash	
 Mode 	Prime	Manual			
Injector 1	300		Start	Reverse	
Injector 2	300		Start	Reverse	
				Cancel OK	

Fig 5-17 Injector interface 2

Table 5-8 lists the functions of injection interface.

Table 5-8 Functions of injection interface

Name	Function
Wash	Select at least one injector to be washed;
Mode	Select the injector mode, Prime or Manual is optional, default Prime. In Prime, the volume of wash and reverse is fixed;
Start Wash	Click to start wash;
Start	Click to start injection;
Reverse	Click to reverse part of the liquid;

When you click the filter button, the filter setting interface pops up, as Fig 5-18, showing the information about the current filter and the filter that can be replaced.

		r	
Excitation:	485	Destaur	
Emission:	535	Керіасе	
Cancel		ок	

Fig 5-18 Filter interface

Table 5-9 describes the functions of the filter pop-up box.

Name	Function
Excitation	Display the wavelength of excitation light;
Emission	Display the wavelength of emission light;
Replace	Click the instrument scanning module to scan the code. The user can scan the QR code of the new filter, and the interface will display the parameters of the new filter. Users can manually replace the filter;

Table 5-9 Functions of filter interface

The Microplate Reader has four physical buttons, namely "Start", "Stop", "Plate in/ Out", and "LCD" to flip the display. The physical buttons are only available on the plate interface.

3. Step parameter setting

3.1 ABS general setting

The general setting interface of Endpoint and Kinetic for ABS are the same, as Fig 5-19. On the left is the check box to confirm whether to enable the wavelength. If it is enabled, the corresponding graph box will be displayed. The graph box will change according to the input color. Enter range is 200-1000, λ 1 defaults to 405, λ 2 to 450, λ 3 to 492, and λ 4 to 630. Detection is divided into fast and precise, the default precise mode.

ANSI/SBS,Clear,96-well	ABS/Endpoint					
 Wavelength 	\checkmark	λ1	405			
	\checkmark	λ2	450	1	2	3
		12	402	4	5	6
		лэ	492	7	8	9
		λ4	630	0		-
Detection	Prec	ise	Fast	С	C	Ж

Fig 5-19 General setting interface of Endpoint and Kinetic for ABS

Table 5-3 lists the functions of general setting interface of Endpoint and Kinetic for ABS.

The general setting interface of spectrum for ABS is shown in Fig 5-20. Enter the start wavelength and end wavelength. The color of the graph box on the right changes according to the wavelength. The default value is 200nm for the start and 300nm for the end. The value ranges from 200nm to 1000nm. The default step is 10, it can change as required.

ANSI/SBS,Clear,96-well	ABS/Endpoint					
Wavelength	\checkmark	λ1	405			
	\checkmark	λ2	450	1	2	3
		λ3	492	4	5	6
		10		7	8	9
		λ4	630	0	•	-
Detection	Precis	se	Fast	С	C	Ж



3.2 FL general setting

The general setting interface of Endpoint and Kinetic for FL are the same, as Fig

5-21. Table 5-10 lists the functions;

ANSI/SBS,Clear,96-well	FL/Endpoint		
 Wavelength 	Ex: 485		
	Em: 535		
Detection	Precise Normal	Fast	
Number	20		
PMT Gain	Automatic 🗸		
Settle Time	150 ms		
Integration Time	40 µs		

Fig 5-21 The general setting interface of Endpoint and Kinetic for FL

Table 5- 10 Function of the general setting interface of Endpoint and Kinetic for FL

Name	Function
Wavelength	Display the excitation wavelength EX and emission wavelength EM
_	of the instrument, which cannot be changed;
	Can select Pricise, Normal or Fast, the default is Pricise. When
Detection	selecting Pricise, you need to enter the number of times, the default
	is 20, and the range is 1-150;
PMT Gain	Optional Automatic/Low/Medium Low/Medium High/High, default
	automatic;
Settle Time	Settle time can be entered, default 150ms, range 5-999ms;
Integration Time	Integration time can be entered, default 40us, range 5-1000us;

3.3 LUM general setting

The general setting interface of Endpoint and Kinetic for LUM are the same, as Fig 5-22, Fig 5-23. Figure 5-22 shows the interface for selecting no reagent/reagent 1/ reagent 2 for injector, and Figure 5-23 shows the interface for selecting both reagents for injector.

ANSI/SBS,Clear,96-well	LUM/Endpoint	 Step
		Injector
- Detection		General
PMT Gain	Automatic 🗸	Shake
Settle Time	150 ms	Advanced
Delay	20 ms	Area Selection
Integration Time	400 ms	



ANSI/SBS,Clear,96-well	LUM/Endpoint	Step
		Injector
Detection		General
PMT Gain	Automatic 🗸	Shake
Settle Time	150 ms	Advanced
Delay 1	20 ms	Area Selection
Integration Time 1	400 ms	
Delay 2	20 ms	
Integration Time 2	400 ms	

Fig 5-23 The general setting interface 2 of Endpoint and Kinetic for LUM

The injector is specific to the LUM, as Fig 5-24 to 5-25. Input injector volume, default is 100μ L. When both injectors are selected, the injector integrals are devided into injector volume 1 and injector volume 2, ranging from 5 to 500. Input injector speed, default 200uL/s. When both the injectors are selected, the injector speed is divided into injector speed 1 and injector speed 2, ranging from 5 to 500.

ANSI/SBS,Clear,96-well	LUM/Endpoint	Step
		Injector
 Injector 	No reagent Reagent 1 Reagent 2 Both	General
Volume	100 μL	Shake
		Advanced
Speed	200 µL/s	Area Selection



ANSI/SBS,Clear,96-well	LUM/Endpoint	Step
		Injector
 Injector 	No reagent Reagent 1 Reagent 2 Both	General
Volume 1	100 µL	Shake
		Advanced
Speed 1	200 µL/s	Area Selection
Volume 2	100 μL	
Speed 2	200 µL/s	

Fig 5-25 Both injector reagents

3.4 Read setting

Click "Read" to enter the Kinetic parameter setting interface. The Kinetic Settings are divided into total time and number of readings, as shown in Figure 5-26 and Figure 5-27 respectively. When the total time is selected, the number of readings is calculated by rounding the value of time/ interval and adding 1. Table 5-11 lists the parameters to be set;

	and an approximate	
Detection	Total Time	No. of readings
Total Time (hh:mm:ss)	00 : 00 :	25
Interval (hh:mm:ss)	00 : 00 :	05
Read		
Reading 1	Reading 2	Reading 3

Fig 5-26 Kinetic-Total Time setting

 Detection 	Total Time	No. of readings	
Number	5		
Interval (hh:mm:ss)	00 : 00 :	05	
Read Reading 1	Reading 2	Reading 3	
Interval To	→ otal Time : Numbers×Interval		

Fig 5- 27 Kinetic- No. Of readings setting

Table 5-11 Function of Kinetic option columns

Name	Function
Total Time/No. of readings	Enable the total time to control the Kinetic cycle or according to the total number;
Total time	The maximum time is 99:59:59;
Number	The maximum number is 99;
Interval	The interval time between Kinetic, the maximum time is 99 hours 59 minutes 59 seconds;

3.5 Shake

Click Shake to enter the shake interface, as shown in Figure 5-28.

ANSI/SBS,Clear,96-well	ABS/Kinetic		
Shake			
Speed	Low Med	ium High	
Туре	Linear	Orbital	Double Orbital
Mode	First	Each	
Duration (hh:mm:ss)	00 : 00	25	

Fig 5-28 Shake interface

Table 5-12 lists the default shake settings.

Name	Default settings
Shake	The default value is off;
Speed	The default value is no display. When shake is on, the default value is low. It can select low/medium/high;
Туре	The default value is linear. Linear/Orbital/Double Orbital is optional.
Mode	The default value is first time. It can select first time/each time. Only Kinetics has this function, Endpoint and spectrum do not have this function;
Duration	When shake is on, the default value is 00:00:25. The value ranges from 00:00:01 to 23:59:59;
Way	The default is plate, plate/well can be selected; Only LUM has this function, ABS, FL, TRF does not have this function.

Table 5-	12	Default shake settings
Table 3		Derdant Shake Settings

3.6 Advanced

Click the advanced button to enter the advanced setting interface. At this time, the sub-option is closed. The advanced screen is displayed, as shown in Figure 5-29. Wait Time at start is on by default when LUM, and the rest are off by default. For LUM, the default time is 00:01:00, ranging from 1min to 30min. For others, the default time is 00:00:25, ranging from 0 to 01:59:59.

 Wait Time at start 	
Time (hh:mm:ss)	00 : 00 : 25



4. Layout

Click the "Layout" button in the sidebar to switch to the layout interface, as shown in Figure 5-30.

5	Pro	otocol :					200909	901_0024	401 🖊				
ANS	I/SBS,C	lear,96-we	ell ABS/K	linetic								к л 2 У	Layout - Negative
All	1	2	3	4	5	6	7	8	9	10	11	12	 Negative
A	Blk	Std 001	Ctrl 001	Un 001 1:1.000	Pos	Neg							
в	Blk	Std 002	Ctrl 002	Un 002 1:1.000	Pos	Neg	Disn	lav aro					
с	Blk	Std 003	Ctrl 003	Un 003 1:1.000	Pos	Neg	USP	nay are					
D	Blk	Std 004	Ctrl 004	Un 004 1:1.000	Pos	Neg							Option bar
E	Blk	Std 005	Ctrl 005	Un 005 1:1.000	Pos	Neg							
F	Blk	Std 006	Ctrl 006	Un 006 1:1.000	Pos	Neg							
G	Blk	Std 007	Ctrl 007	Un 007 1:1.000	Pos	Neg							
н	Blk	Std 008	Ctrl 008	Un 008 1:1.000	Pos	Neg							
				Samp	le typ	e						F	
	Blank		Standard	Co	ontrol	Unknov	wn	Positive	Neg	gative	Cle	ar	
													Save



Different colors correspond to different options, and different options include different operational functions. Sample types mainly include blank, standard, quality control, unknown, negative, positive and clear. These seven types are in single mode and displayed with stroke display after selection, as Table 5-13. Table 5- 13 Sample types function

Name	Function	lcon		

Blank	Blank is replicas (replicates). By default, the name corresponds to the group name and number. The "Blank Subtraction" in the calculation is the average of all blank samples subtraction from the selected group.	Blank
-------	---	-------

Standard	Standard is mainly used to place standard samples, standard curve can be made by standard products (standard curve). The concentration of the standard must be set in advance. It can be set as single well or replicates.	Standard
Control	Control is used to place quality control samples. For user further operation analysis use, the default is replicates.	Control
Unknown	Used for placing solution samples of unknown concentration. Can be single well or replicates. Unknown product has dilution parameter option for setting dilution ratio.	Unknown
Negative	Negative samples are used for classification of special samples, default are replicates	Negative
Positive	Positive samples are used for classification of special samples, default are replicates	Positive
Clear	This parameter is used to clear the well status and set the well status to None. When a new protocol file is created, the default state of all wells is "None".	Clear

5. Analysis interface

When the user clicks the "Analysis" button in the sidebar, the option bar will switch to the analysis interface, as Fig 5-31. The main display area includes the operation bar and the display area. The switch box is the data analysis area, and the option bar is the algorithm parameters and calculation type.

ANS	SI/SBS,C	lear,96-we	ell ABS/E	ndpoint					L	<u>_</u> ~	Log	List =	Step A	lidiysis
All	1	2	3	4	5	6	7	8	9	10	11	12	Raw Data	1
A	Blk 0.2035	Std 001 0.2191	Ctrl 001 0.2216	Un 001 0.2148	Pos 0.2103	Neg 0.2136								
в	Blk 0.2186	Std 002 0.2217	Ctrl 002 0.2227	Un 002 0.2249	Pos 0.2202	Neg 0.2277								
С	Blk 0.2148	Std 003 0.2190	Ctrl 003 0.2967	Un 003 0.2215	Pos 0.2145	Neg 0.2201								
D	Blk 0.2113	Std 004 0.2279	Ctrl 004 0.2175	Un 004 0.2171	Pos 0.2149	Neg 0.2190								
E	Blk 0.2237	Std 005 0.2176	Ctrl 005 0.2077	Un 005 0.2102	Pos 0.2145	Neg 0.2314								
F	Blk 0.2260	Std 006 0.2235	Ctrl 006 0.2181	Un 006 0.2151	Pos 0.2051	Neg 0.2230								
G	Blk 0.2247	Std 007 0.2160	Ctrl 007 0.2173	Un 007 0.2154	Pos 0.2158	Neg 0.2130								
н	Blk 0.1925	Std 008 0.2097	Ctrl 008 0.2282	Un 008 0.1751	Pos 0.2164	Neg 0.1962								
λ1:	405 λ2	: 450							0.1751	0.29	67	01	Data Source Raw Data	

Fig 5- 31 Main interface of result

Table 5-14 describes the functions of the data analysis area.

		······································
Name	Туре	Function
Raw Data	drop-down menu	Click to display the algorithm that can be selected;
Data Source	Кеу	Click to select the data source, the data source includes the raw data and blank subtraction data;

Table 5- 14 Function of Data analysis

"Raw Data" is an item that cannot be deleted. The three operation modes of Endpoint, Kinetic and Spectrum have their own corresponding algorithm processes, and the algorithm cannot be deleted.

When click the existing calculation method in the data analysis area, the display area and the option bar on the right of the interface will jump to the corresponding content. For example, if select the standard curve calculation method in the data analysis area, the standard curve interface is displayed, and parameter settings of the standard curve are displayed in the option bar on the right.

6. Algorithm

Users can choose the algorithm to calculate and analyze the raw data.

6.1 Endpoint

In the calculation analysis of the results, it should be made clear that all calculation methods operate on the data within the group, and a group is a whole. The Endpoint calculation method includes blank subtraction, basic calculation, standard curve, quality control, classification.

Table 5-15 shows the restriction relation of the endpoint method.

Name	Restriction condition
Blank Subtraction	Blank samples must be set
Standard Curve	The standard sample must be set, and the concentration of the standard sample is not always 0.
Quality Control	Quality control one must be set up
Classification	Negative and positive samples must be set

Table 5-15 Restriction relation of the endpoint method

Table 5-16 shows the specific algorithm of the Endpoint method.

Table 5-16 Specific algorithm of the Endpoint method

Name	Algorithm
Blank	1)Blank subtraction(Android has normal blank only);
Subtraction	2)The read values of all blank wells in the sample group are averaged;
	3)Subtract this average value from all samples within the group;
	Data to data calculations
Basic	1)Select data as A;
Calculation	2)Select one of the operators +, -, *, / between A and B;
Calculation	3)Select data as B;
	4)Get the calculation result.
	1.Linear
	1)The read values of the standard samples were linearly fitted by the
Standard	least square method.
Curve	2.Linear(through origin)
	1)The read values of the standard samples were linearly fitted by the
	least square method. And must through origin.
	3.Logistic(4PL)

	1)Use 4PL fitting to calculate.
	4.Quadratic, Cubic, Quartic Polynomial
	1)Polynomial fitting calculation method, the core is the least square
	method.
	5.Point to Point
	1)The data points are wired from point to point directly.
	6.Cubic Spline
	1)Multiple linear system of equations.
	7.Logitlog
	1)The core is the least square method.
	1)Select data source (concentration or absorbance);
	2)Input values K1, K2, K3;
	3)The critical value is calculated according to the formula
	K1*NC+K2*PC+K3 (where NC is the average value of negative sample
Classification	reading, PC is the average value of positive sample reading);
	4)Input values K4;
	5)According to the weakly positive formula: ±K4%* critical value, the
	range of weakly positive was calculated;
	6)According to the positive formula: > critical value, the positive range is
	calculated.
	1)Select data source (concentration or absorbance);
Quality	2)Set target value and deviation value;
Control	3)Calculate the values of the upper and lower limits according to the
	target value and deviation, and then check whether the read data is
	within the range of the upper and lower limits. If so, it will be displayed.

6.2 Kinetic

Kinetic algorithm include blank subtraction, basic calculation, and kinetic analysis.

Table 5-17 shows the restriction condition of the kinetic algorithm.

	······································
Name	Restriction condition
Blank Subtraction	Blank samples must be set
Kinetic Analysis	Kinetic readings must be performed

Table 5-17 Kinetic algorithms restrict relation

The specific algorithm of the kinetic is shown in Table 5-18.

|--|

Name	Algorithm
Blank	1)Blank subtraction(Android version has just normal blank)
Subtraction	2)The read value of all blank well in the sample group are averaged;
Subtraction	3)Subtract this average value from all samples within the group.
	Data to data calculations
Basic	1)Select data as A;
Calculation	2)Select one of the operators +, -, *, / between A and B;
calculation	3)Select data as B;
	4)Get the calculation result.
	1. Average, SD and CV
	1)Select reading range and take the kinetic read data of each wavelength;
	2)Get average, SD and CV.
	2.Integral to get the area of the curve
	1)Set reading range and take the kinetic read data of each wavelength;
	2)Calculate the area of line segments according to the calculation method of
	trapezoidal area (if it is multiple line segments, disassemble to calculate).
	3.Baseline subtraction. Select a baseline and subtract the values
	corresponding to that baseline from all readings
	1)Select reading range and take the kinetic read data of each wavelength;
	2)Set baseline points (from the beginning to a baseline point or from a
	baseline point to the end) to get a baseline;
Kinetic	3)Take the average of the baseline;
Analysis	4) All the absorbances minus the average.
,	4.Maximum Rate
	1)Select readings range and take the kinetic read data of each wavelength;
	2)Set the window value;
	3)Set the units;
	4) Calculate the reading difference between points (the reading at the last
	point minus the reading at the previous point) and divide by time. All results
	can be maximized according to the window partition.
	5.Select Single Reading
	1)Set the readings, select a single reading;
	6.Select Reading Range
	1)Set reading range and take the kinetic read data of each wavelength;
	7.Maximum(Peak)
	1)The maximum value of each curve

6.3 Spectrum

Table 5-19 shows the constraints of the spectrum algorithm.

None Stable 5- 15 Spectrum algorithms restrict relation				
Name	Restriction condition			
Basic Calculation	Readings must have			
Blank Subtraction	Blank samples must be set			
Spectral Analysis	Must be in spectrum running mode			

The specific algorithm of spectral is shown in Table 5-20.

Table 5- 20 The specific algorithm of spectrum

Name	Algorithm
Blank	1)Blank subtraction(Android version has just normal blank)
Subtraction	2)The readings of all blank well in the sample group are averaged;
Subtraction	3)Subtract this average value from all samples within the group.
	Data to data calculations
Basic	1)Select data as A;
Calculation	2)Select one of the operators +, -, *, / between A and B;
calculation	3)Select data as B;
	4)Get the calculation result.
	1.Spectral Maximum (select spectrum range)
	1)Select spectrum range;
	2)Select threshold;
	3)Find out the absorption peak with the maximum wavelength, which is
	greater than threshold.
	2.Spectral Normalization(select spectrum range)
	1)Set the spectral range, take the maximum absorption peak as the
Caralis	number 1, and the remaining values are converted into percentages
Spectral	based on this baseline.
Analysis	3.Ratio within Spectrum
	1)Set two wavelength values, WL1 and WL2, which can be selected in
	the spectral range. Take the value of WL1/WL2.
	4.Select Wavelength Range
	1)Set the start and end wavelengths and read the measurements in the
	wavelength range.
	5.Select Single Wavelength
	1)Set the wavelength value and read the measured value at that
	wavelength.

7. Algorithm parameter

The algorithm parameters are the specific setting parameters of the algorithm, which will change according to the change of the selected algorithm. The following are the algorithm parameters. Blank Subtracting does not need to set algorithm parameters, so it will not be introduced.

7.1 Standard curve

Figure 5-32 shows the algorithm parameter setting interface when standard curve is selected.

Standa	rd Curve 🛛 🗸
 Select SC 	
 Fit type 	
Linear	Regression
Through Ori	gin
Show Unknow	owns
 Conc. Trans 	
Linear	Logarithmic
Abs. Trans.	
Linear	Logarithmic
Data Source	
	ALC: N

Fig 5- 32 Standard curve algorithm parameter interface

Table 5-21 describes the parameters of the standard curve algorithm.

Table 5- 21 Algorithm parame	eter function of standard curve
------------------------------	---------------------------------

Name	Function
Fit type	Click to display the type selection interface of standard curve, as shown in Figure 5-32;
Show Unknowns	Click to display the reading point of the unknown sample in the figure, and click again to disappear;

Through origin	The standard curve must be through origin when click it;
Conc. Trans.	Transfer the concentration of the readings to a linear or logarithmic display;
Abs. Trans.	Transfer the absorbance of readings to a linear or logarithmic display;

Figure 5-33 shows the interface for selecting a standard curve type. On this page, you can select a standard curve type, including linear regression, 4PL, quadratic polynomial, cubic polynomial, quartic polynomial, point to point, cubic spline, and Logit/log.

Select Data							
Linear Regression							
4PL	4PL						
Quadratic Polynomial	Quadratic Polynomial						
Cubic Polynomial							
Quartic Polynomial							
Point to Point							
CubicSpline							
Logit/Log							
Cancel	ок						

Fig 5-33 Selecting interface of standard curve type

ANSI/SBS,Black,96-well ABS/Endpoint		\ominus		Step Analysis
			Save to SC	Standard Curve 🗸 🗸
			QR code	Select SC
				 Fit type
				Linear Regression
				Through Origin
gnal	No chart data available.			Show Unknowns
^{CO}				Conc. Trans. Linear Logarithmic
				 Abs. Trans.
				Linear Logarithmic
	0			Data Source
<u>λ1: 405</u> λ2: 450 λ3: 492 λ4: 630	Conc.			Raw Data
	Completed		100%	Read

Table 5-22 describes the functions of display area on the standard curve interface.

Name	Function
	Click on the pop-up operation items, saved to SC
	and QR code
Saved to SC	Click saved the standard curve to SC
QR code	Click to generate the standard curve to QR code
7 100% 2	Click to zoom to restore the initial value
Log	Click to switch to the run log interface
List	Click to switch to list interface
λ1: 610 λ2: 665 λ3: 430 λ4: 280	Click to select wavelength to perform the standard
	curve analysis

Table 5- 22 functions of display area on the standard curve interface

7.2 Kinetic

When choose kinetic, calculation parameter settings vary according to different types of selection. the selection interface of kinetic calculation typeas shown in figure 5-34, including average, integral, baseline subtraction,

select single reading, select reading range, maximum rate, maximum (peak) seven types of calculation, is single selection mode.

5	Pro	otocol :				20090901_000401 🖊		
ANS	SI/SBS,C	lear,96-we	ell ABS/K	linetic			Step /	Analysis
All	1	2	3	4	5	Calent Date	Kinetic	\sim
A	Blk 0.2032	Std 001 0.2112	Ctrl 001 0.2148	Un 001 0.2149	Pos 0.2139		 Cal. Type 	_
в	Blk 0.2182	Std 002 0.2182	Ctrl 002 0.2179	Un 002 0.2174	Pos 0.2165	Integral	Average / SD /	/CV%
С	Blk 0.2179	Std 003 0.2180	Ctrl 003 0.2221	Un 003 0.2220	Pos 0.2216	Baseline Subtraction	 Select readings 	
D						Select Single Reading	From	
F						Select Reading Range	10	
_						Maximum Rate		
F						Maximum(Peak)		
G						Average Rate		
н						Cancel OK		
λ1:	405						Data Source Raw Data	
] 31	I.9℃	Inject		38	⊞ŧ	Completed 100%	🕨 Rea	id

Fig 5-34 Kinetic calculation type

7.3 Spectral analysis

When spectral analysis is selected, calculation parameter settings vary according to the selection type. Figure 5-35 shows the selection interface of spectral analysis calculation type, which includes five calculation types, namely spectral maximum, spectral normalization, ratio within spectrum, select wavelength range, and select single wavelength.

S Pro	tocol :					20090	901_000	0810 🖊					
ANSI/SBS,C	lear,96-well	ABS/Sp	ectrum					\exists	~ ~ ~	N Log E	List		Analysis
All 1	2	3	4	5	6	7	8	9	10	11	12	Spect	ral 🗸
A Blk 3.6197												 Cal. Type 	
в						S	elect Dat	ta	_			Spectral M	aximum
					Sp	ectral Max	imum					 Select wave 	length
					Sp	ectral Norr	nalization					Start	200
D					Ra	itio within S	Spectrum					End	300
E					Se	lect Wavel	ength Rang	ge				Threshold	01
F					Se	lect Single	Waveleng	th					
G						Cancel		ОК					
н													
												Data Source	_
												Raw D	lata
∫ 31.9℃	Inject		1]{		Comp	leted				1009	. Þ F	Read

Fig 5-35 Selection interface of spectral analysis calculation type

7.4 Basic calculation

When basic calculation is selected, Figure 5-36 shows the calculation parameter setting interface. Click to pop up the calculation type selection interface, including A+B, A-B, A*B, A/B.

5	Prot	ocol :					200909	901_000	810 🖊					
ANS	6I/SBS,Cle	ear,96-wel	I ABS/S	pectrum					B L	~ K	Log	List		Analysis
All	1	2	3	4	5	6	7	8	9	10	11	12	Basic (Calculation 🗸 🗸
A	Blk 7.2394												 Cal. Type 	_
В							C	Cal. Type					A+B	
C						A+	В						 Select Data 	a
						A-E	i			- 8			A	200
D						A*E	3						В	200
E						A/E	3							
F										. 1				
G						-	Cancel		ОК					
н														
													Data Source	
													Ra	w Data
8 31		Inject		3										

Fig 5- 36 Selection interface of basic calculation calculation type

Figure 5-37 shows the interface for selecting basic calculation data. The raw data and all calculated steps are displayed on the left, and all optional values in the data are displayed on the right. The selection type is single.

5	Prot	ocol :				20090901_000810 🖌	
ANS	SI/SBS,Cl	ear,96-wel	ABS/S	pectrum			Step Analysis
All	1	2	3	4	5	Select Data 11 12	Basic Calculation 🛛 🗸
A	Blk 7.2394					200	Cal. Type
в						210 🗸	A+B
с						220	Select Data
D						230	A 200
						240	B. 200
E						250	
F						260	
G						270	
н						Cancel OK	
							Data Source
							Raw Data
] 31		Inject		3		Completed 100	Read

Fig 5- 37 Data selection interface of basic calculation

7.5 Quality control

When quality control is selected, the calculation parameter setting interface is shown in Figure 5-38.

\supset	Pro	tocol		20090901_001333 🖊				
NSI/S	SBS,CI	lear,96-well A	BS/Endpoint			List	Step	Analysis
	No.	Sample	Input	Value	Result		Quality	Control
/	1	Ctrl 001	Target:1.000 SD:0.50	Coefficient:0.500 Upper:2.000 Lower:0.000	Passed	创	 Input 	
/	2	Ctrl 002	Target:1.000 SD:0.50	Coefficient:0.500 Upper:2.000 Lower:0.000	Passed	创	Target	1.000
/	3	Ctrl 003	Target:1.000 SD:0.50	Coefficient:0.500 Upper:2.000 Lower:0.000	Passed	创	SD	0.50
1	4	Ctrl 004	Target:1.000 SD:0.50	Coefficient:0.500 Upper:2.000 Lower:0.000	Passed	一		C Add Rule
1: 405	5						Data Source Raw	Data

Fig 5- 38 Parameter setting interface of quality control

Table 5-23 describes the parameters of the quality control calculation.

Name	Function
Target	Click to enter the target value, default 1.000, range 0-999999, up
C	to three decimal places;
SD	Click to enter the SD value, default 0.500, range 0-999999, up to
	three decimal places;
	Click to add rules, and all values in the display area will judge
Add Rule	whether each sample conforms to the set rules according to the
	set rules;

7.6 Classification

When classification is selected, the calculation parameter setting interface is shown in Figure 5-39.

D	Pro	tocol					200909	01_001	333 /		-		
ANS	SI/SBS,C	lear,96-wel	I ABS/Er	ndpoint							Log	List	Step Analysis
All	1	2	3	4	5	6	7	8	9	10	11	12	Classification
A	Blk 0.2041	- Std 001 • 0.2201	Ctrl 001 ⁺⁺ 0.2220	Un 001 - 0.2145	Pos 0.2102	Neg = 0.2158							Data Type Abs. Conc.
в	Blk 0.2188	* Std 002 ** 0.2217	Ctrl 002 44 0.2232	Un 002 📫 0.2247	Pos 0.2218	Neg 👪 0.2286							Critical Value
с	Blk 0.2152	- Std 003 ++ 0.2212	Ctrl 003 ** 0.3501	Un 003 💾 0.2217	Pos 0.2140	- Neg + 0.2204							K1*NC+K2*PC+K3
D	Blk 0.2111	- Std 004 ** 0.2272	Ctrl 004 - 0.2185	Un 004 📮 0.2170	Pos 0.2143	Neg + 0.2192			2				K1 1 K2 0 K3 0
E F G													Weakly Positive ±K4%*Critical Value K4 1
н													Positive Critical
λ1:	405									• F	Pos 🖪 WF	🗖 Neg	Data Source Raw Data
31	.9°C	Z Inject		3	₽ŧ		Compl	leted				100%	Read

Fig 5-39 Parameter setting interface of classification

Table 5-24 describes the calculation parameter setting interface for classification.

Name	Function
Data Type	The value can be absorbance or concentration
K1	Click to enter K1 values, default 1, range 0-999999, Up to three decimal places;
K ₂	Click to enter K2 values, default 0, range 0-999999, Up to three decimal places;
K ₃	Click to enter K3 values, default 0, range 0-999999, Up to three decimal places;
K4	Click to enter K4 values, default 1, range 0-999999, Up to three decimal places;
Positive	Select the positive judgment sign;

In classification, the type will be displayed in the upper right corner of each data

well in the display area. The positive icon is "🚥", the weakly positive iconis"

", and the negative icon is "=", as shown in 5-39.

8. FlexDrop Plate(optional)

This microplate is an optional part. If the user has purchased the U-Nano flexdrop plate of our company, this function can be used for flexdrop plate related tests. Click the "u-Nano" button on the main interface to pop up the reading type selection box, which can select Nucleic acid, Protein, or UV-VIS, as shown in Figure 5-40.



Fig 5- 40 Selection interface of u-Nano reading type

8.1 Nucleic acid

Select nucleic acid on the u-Nano interface and click OK to enter the nucleic acid reading interface and create a protocol. The main display area of nucleic acid interface is shown in Figure 5-41 and 5-42. On the left is the well location layout of flexdrop plate: row (A-H) * column (3-4).

5	Pr	rotocol :				20090901_	000259 🖊				1 Uploa	be
S	Nucle	eic	Туре	dsDNA 5	0.0	λ(nm):	230,260,280		C	Keyword	s (2
All	3	4	Well	230	260	280	260/280	260/230	Conc.	Protocols	(Status
A 40	8lk 0.148 0.130 0.121	Blk 0.148 0.130 0.121	A3	-0.148	-0.130	-0.121	1.078	0.881	-6.545	2009090	1_005714 9 00:57:16	
в	In 003 0.026	Un 004 0.528 0.546	A4	0.148	0.130	0.121	1.078	0.881	6.545	2009090	1_005822	
	.480 In 005	0.429 Un 006	B3	-0.026	0.042	0.480	0.087	-1.608	2.102	2009090	9 00:57:16 1 005940	
С	0.042 0.144 0.207	0.113 -0.060 0.121	B4	0.528	0.546	0.429	1.272	1.033	27.327	09/01/200	9 00:57:16	Ĩ
D	In 007 1.197 1.180 1.156	Un 008 0.113 0.378 0.225	C3	0.042	-0.144	0.207	-0.694	-3.404	-7.201	2009090	1_010059 9 00:57:16	
E	In 009 1.212 1.144	Un 010 0.667 0.075 0.671	C4	0.113	-0.060	0.121	-0.499	-0.531	-3.027	2009090	1_010209 9 00:57:16	
_	In 011 0.078	Un 012 0.109	D3	0.197	0.180	0.156	1.152	0.913	9.006	2009090	1_000259	
	0.060 0.190 In 013	0.493 0.727 Un 014	D4	0.113	0.378	0.225	1.683	3.351	18.949	2009090	1_004442	
G	0.249 0.180 0.015	-0.163 -0.077 -0.049	E3	0.212	0.144	0.056	2.566	0.678	7.212	09/01/200	9 00:51:00	ĒØ
н	In 015 1.268 1.111 1.259	Un 016 0.354 0.532 0.088	E4	0.667	0.075	0.671	0.112	0.113	3.781	Total : 16	1_004258 < 1/2	>
	Blank	Unk	nown	Clear			[340 Baseli	ne	E (
] 31	.7℃	300	Ê	Info:Plea	ase set paran	neters.		1 00%			Read	
			F	ig 5- 41 N	ucleic a	cid inter	rface(mul	ti-wavele	ength)			
6						20000001	000450 4					

5) Pro	otocol :				20090901_0	000450 🖊				1 Uplo	ad
2	Nuclei	с	Туре	dsDNA	50.0	λ(nm):	220-350		M C	Keywo	rds (Q
All	3	4	Well	230	260	280	260/280	260/230	Conc.	Protoco	ols	Status
А	Ritherman	Bik	A3	0.037	0.202	-0.233	-0.867	5.472	10.135	20090	901_001640	J
	L'n 003	<u>Un 004/ ii l</u>	A4	-0.037	-0.202	0.233	-0.867	5.472	-10.135	20090	901_001100	
	11 of all of	nakinin nuk	B3	0.368	0.186	-0.101	-1.839	0.505	9.307	09/01/2	009 00:11:03	E
С	HWHITHWY	han the high m	B4	0.035	0.236	0.302	0.780	6.706	11.827	09/01/2	009 00:06:59	
D	KAR BAR	Un 008 MM/W/Why/W	C3	-0.012	-0.416	0.319	-1.300	33.653	-20.810	20090	901_000450 009 00:05:52	
Е		Un 010	C4	-0.370	-0.081	0.185	-0.442	0.220	-4.090	20090	901_000109	
-	UN 011	Lin 012	D3	0.122	0.088	0.141	0.624	0.719	4.422	20090	901_000254	
F	A L Mail of Louis	White White	D4	-0.097	-0.517	-0.046	11.168	5.312	-25.877	09/01/2	009 00:01:30	EV
G	11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		E3	0.613	0.414	0.066	6.245	0.676	20.729			
н	49,915m	WP STANN	E4	-0.062	0.135	-0.220	-0.613	-2.174	6.774	Total : 16	< 2/2	2 >
	Blank	Unk	nown	Clear			[340 Base	eline	F	\ominus	⑪
з	1.7℃	3000	â	Info:Ple	ease set paran	neters.		- 100%			Read	

Fig 5-42 Nucleic acid interface(spectrum)

Table 5-25 describes the function of nucleic acid interface.

Table 5- 25 Function of nucleic acid interface						
Name	Function					
	Click to prompt whether to exit, if click "Yes" to prompt whether to save					
5	the current file, then click "Yes" to save and exit to the main interface, if					
	click "No" to not save and exit to the main interface;					
	Click the button to pop up the operation of the current selected protocol,					
	including save, save as, export USB disk, QR code, report; When click save					
Protocol	as, if the protocol has been run, a prompt box will pop up with whether to					
	save the data option, otherwise, there is no option to save the data; The					
	export format of the report is XIs, and the export format of protein and					
	UV-VIS is the same;					
/	Click the pop-up modify input box, can modify the current protocol name;					
	Click to upload the current protocol to FTP. If the upload are not enabled in					
Upload	settings, the button will not be displayed. The function of protein and					
	UV-VIS is the same;					
	Click to select the type of nucleic acid reading, including dsDNA, ssDNA,					
Type	RNA, Others; Among them, the coefficient of dsDNA is 50.0, ssDNA is 33.0,					
, F =	RNA is 40.0, the default value of Others is 25.0, users can manually input,					
	the input range is 0.01-99.99;					
λ(nm)	The reading mode can be selected from <u>"multi-wavelength (230,260,280)"</u>					
,	<u>or "spectrum (220-350nm)";</u>					
M	Click to view the graph of the selected well, <u>only when the reading mode is</u>					
	spectrum, the button will be available;					
C	Click to refresh the current interface data;					

Table 5-26 lists the functions of the main display area of nucleic acid.

Table 5- 26 Functions of the main display area of nucleic acid

Name	Function
	When not running, the well shows the sample name;
	When running multi-wavelength, the well displays the
Left wells	name and data; When running the spectrum, the well
	shows the name and curve Minimap; The operation of
	row, column, single selection and area selection of well
	is consistent with that of 96 well;

Blank	Select this button, and then select the well of the flexdrop plate, then set the well to blank type;
Unknow	Select this button and then select the well of the flexdrop plate, then set the well to unknown type;
Clear	Select this button and then select the well of the flexdrop plate to clear the well setting, and there will be a prompt when clearing;
Baseline	Can set whether to open baseline, optional range of 220-350nm;
Well	Display well, display well list;

When reading the spectrum of nucleic acid, select the well and click the curve button to display the curve, as shown in Figure 5-43.



Fig 5-43 Curve interface

The functions of the control area are shown in Table 5-27. <u>The functions of the</u> <u>control area of protein and UV-VIS are consistent.</u>

Table 5- 27 Functions of the control area						
Name	Function					
€ 27.5℃	Cannot be set. The incubation temperature is displayed in real time					

3	Click and the instrument vibrates once
	When the plate is in the instrument, the plate out operation is performed; otherwise, the plate in operation is performed
Read	Click to run the protocol, and the key becomes stop key

On the right of the nucleic acid interface is a list of all nucleic acid files, including executed (with data) and unexecuted (without data). The executed icon is displayed next to the data, as shown in Figure 5-44. The file interface functions of protein and UV-VIS are consistent. Table 5-28 describes the functions of the file area.

[Keywords	Q
	Protocols	Status
	20090901_00571 09/01/2009 00:57:16	4 📸
	20090901_00582 09/01/2009 00:57:16	2
	20090901_00594 09/01/2009 00:57:16	0
<	20090901_01005 09/01/2009 00:57:16	9 🚯
~	20090901_01020 09/01/2009 00:57:16	9 🚯
~	20090901_00025 09/01/2009 00:56:56	9 🚯
	20090901_00444 09/01/2009 00:51:00	2 🚯
	20090901_00425	8
Tota	al : 16 < 1/	2 >
[€ ⊖	⑪

Fig 5-44 File interface

Table 5-28 Function of file interface

Name	5	Function	
Keywords	Q	Search based on input	

\checkmark	Select the protocol to operate
20090901_000450 09/01/2009 00:05:52	Displays the file name and the creation date
	Shows whether the protocol has been executed, the icon indicates that it has been executed, with running data
Total : 16	Display the total protocol number
< 1/2 >	Previous page, current/total page, next page
F	Click, the box pops up, and display U disk specified directory, Udisk: \Feyond\ username \Nucleic. The user can select the protocol and import, as shown in Figure 5-45. The folder name of Protein is Protein, and the folder name of UV-VIS is Uv;
Ð	Click to export the currently selected protocol to the USB disk, where the directory is Udisk: \ Feyond\ username\ Nucleic, as shown in Figure 5-46. If there is no USB disk, it will prompt. The folder name of Protein is Protein, the folder name of UV-VIS is Uv, and the folder name of Cuvette is Cuv;
创	Click the pop-up prompt box to ask the user whether to delete the selected protocol, click yes to delete, the selected protocol refers to the check box selected.





¢) Pr	otocol :				2009	0901_00	0259 /				1	Uploa	ad
2	Nucle	eic	Туре		50.0	λ(n	m): 2			C			(2
All	3	4	Well	230	2	:60	280	260/280	260/230	Conc.		Protocols	1	Status
А	Bik -0.148 -0.130 -0.121	Blk 0.148 0.130 0.121	A3	-0.148	-0	.130	-0.121	1.078	0.881	-6.545		20090901_	005714	8
P	Un 003 0.026	0n.004. 0.528	A4	0.149	0	190	0 121	1 079	0.991	6.545		20090901_	005822	
	0.480	0.545	B3	-0.0			Export			2.102		09/01/2009 0	0:57:16	EØ
С	0.042 10.344 0.207		B4	0.52						27.327		20090901_ 09/01/2009 0	005940	8
D	Un 007 0.197 0.180 0.156	Un 108 0.113 0.378 0.225	C3	0.04	Name	Data_09_0	01_2009			-7.201		20090901_ 09/01/2009 0	010059 0:57:16	8
E	UN 009 0 212 0 144	Uni 010 0.657 0.075	C4	0.1						-3.027		20090901_ 09/01/2009 0	010209 0:57:16	8
	Dn 011 0.078	Un 012. 0.109	D3	0.19	0	anaal			OK	9.006		20090901_	000259	
F	0.060 0.190	0.443 0.727	D4	0.1	C	ancei			OK	18.949		09/01/2009 0	0:56:56	
G	0.249 0.180 -0.015		E3	0.212	0.	144	0.056	2.566	0.678	7.212		09/01/2009 0	0:51:00	
н	Un 015 0.258 0.111 0.259	04 016 0.354 0.532 0.060	E4	0.667	0.	075	0.671	0.112	0.113	3.781	Total	20090901_ :16 <	004258 1/2	>
	Blank	Unk	nown	Clear)				340 Baseli	ne	•	e e	÷ 1	<u>ال</u>
[з		3	â											

Fig 5-46 Export protocol

8.2 Protein

Select the protein in the u-Nano interface and click OK to enter the protein reading interface, as shown in Fig 5-47 and Fig 5-48, where protein reading can be performed.

5) Pr	otocol :			20090901_00	0150 🖊		1 Upload
×	Prote	in	Type A280	10.0	λ(nm):	260,280	C	Keywords Q
All	3	4	Well	260	280	260/280	Conc.	Protocols Status
A	Blk -0.225 0.028	Blk 0.225 -0.028	A3	-0.225	0.028	-7.936	0.028	20090901_202816
P	Un 003 0.104	Un 004 0.385	A4	0.225	-0.028	-7.936	-0.028	20090901_000507
D	0.196 Un 005	1.080 Un 006	B3	0.104	0.196	0.531	0.196	09/01/2009 00:05:21
С	0.051 0.174	0.339 0.062	B4	0.385	1.080	0.356	1.080	09/01/2009 00:04:03
D	Un 007 0.481 0.418	Un 008 0.362 -0.081	C3	-0.051	0.174	-0.295	0.174	
Е	Un 009 0.136 -0.332	Un 010 0.054 0.036	C4	0.339	0.062	5.456	0.062	
	Un 011	Un 012 0.058	D3	0.481	0.418	1.151	0.418	
F	0.406	0.367	D4	0.362	-0.081	-4.441	-0.081	
G	0.025	-0.007 0.106	E3	0.136	-0.332	-0.410	-0.332	
н	Un 015 -0.104 -0.102	Un 016 0.268 0.353	E4	0.054	0.036	1.493	0.036	Total : 3 < 1/1 >
	Blank	Unk	nown Clear			340 E	Baseline	€ → 前
) 3	1.7℃	300	â	nfo:Please set par	ameters.	100%		► Read

Fig 5-47 Protein interface(multi-wavelength)

()) Pro	otocol :			20090901_00	0507 🖊		1 Upload
2	Protein	n	Type A280	10.0	λ(nm):	220-350	M C	Keywords Q
All	3	4	Well	260	280	260/280	Conc.	Protocols Status
A	Bik	Bik	A3	-0.132	0.142	-0.930	0.142	20090901_202816
B	Un CO3	Un 004 I MUltime line	A4	0.132	-0.142	-0.930	-0.142	20090901_000507
D		Uni006	B3	-0.449	-0.329	1.364	-0.329	09/01/2009 00:05:21
С	will your the	144444 Marine	B4	-0.143	-0.219	0.656	-0.219	09/01/2009 00:04:03
D			C3	-0.253	-0.296	0.857	-0.296	
Е	un 029 Manufaalaine	Un 010	C4	-0.186	-0.195	0.953	-0.195	
_	Un 011	Un 012	D3	-0.481	-0.286	1.683	-0.286	
F	In the second	Uninhimalin	D4	-0.099	-0.262	0.379	-0.262	
G	Mary Mill	AN AN AN AN	E3	-0.056	-0.033	1.678	-0.033	
н			E4	-0.131	0.041	-3.191	0.041	Total : 3 < 1/1 >
	Blank	Unk	nown Clear			340	Baseline	€ 🖯 🗇
ј з	1.7℃	} ⊞ !	â	nfo:Please set para	ameters.	100%		Read

Fig 5-48 Protein interface(spectrum)

Protein reading types, including A280, BSA, IgG, Lysozyme, others; The coefficient of A280 is 10.0, BCA is 6.7, IgG is 13.7, Lysozyme is 26.4, and the default value of Others is 25.0. It can manually enter the parameters from 0.01 to 99.99, as shown in Figure 5-49.

4) Pr	rotocol :			20090901_3	213202 🖊			1 Upload
2	P rote	in	Type A280	10.0	λ(nm):	260,280	C	Keywords	Q
All	3	4	Well	260	280	260/280	Conc.	Protocols	Status
А	Blk	Blk						20090901.	_202816 20:28:49
в	Un 003	Un 004			Тур	e		20090901	_000507
с	Un 005	Un 006			A280	~		20090901	_000150
D	Un 007	Un 008			IgG				
Е	Un 009	Un 010			Lysozyme				
F	Un 011	Un 012			Others				
G	Un 013	Un 014			Cancel	ок			
н	Un 015	Un 016						Total : 3	< 1/1 >
	Blank	Unk	nown Clear			340	Baseline	E E	→ 前
з		3							Read



8.3 Uv-Vis

Select UV-VIS on the u-Nano interface and click OK to enter the UV-VIS reading interface, as shown in Figure 5-50. λ (nm) Set the start wavelength, end wavelength, and step. The start wavelength must be smaller than the end. The default start value is 200, and the default end value is 350. The step value can be 1/5/10. The default value is 1. You can set whether to open baseline. The baseline wavelength can be set from the test wavelength range.

4) Pro	otocol :		20090901_195150 🖌							
1	UV-VI	S	λ(nm): Start 200 End 3	50 Step 1 5 10	M C	Keywords Q					
All	3	4	Well	λ	Abs.	Protocols Status					
A	BIR	Billing May	A3	200	0.040	20090901_202158					
в	Un 203	Un 004	A3	201	-0.133	20090901_195150					
_	nikalih	Lealt, M	A3	202	-0.126	09/01/2009 19:54:00					
С		-	A3	203	-0.147						
D	un 007 Mananak		A3	204	-0.082						
Е	Un 009	Un 010	A3	205	-0.075						
	Un 011	Un 012	A3	206	-0.126						
F			A3	207	-0.116						
G	Un 013	Un 014	A3	208	-0.082						
н	Un 015	Un 016	A3	209	-0.106	Total : 2 < 1/1 >					
	Blank	Unk	nown		340 Baseline						
) 3	1.7℃	300	Info:Please s	et parameters.	100%	Read					

Fig 5- 50 Uv-Vis interface

9. Report export

After the results are processed, the processed data and raw data can be exported by the Report interface. Click "protocol" in the upper left corner, and then click "Report" to enter the main interface of the report as shown in Fig 5-51. $\overrightarrow{}$ is for quick export.

5	Protocol : 20090901_001333 /								
AN	SI/SBS,C	lear,96-we	ell ABS/E	indpoint		Export		Log E List E	Step Analysis
All	1	2	3	4		Information		11 12	Raw Data 🛛 🗸
A	Blk 0.2041	Std 001 0.2201	Ctrl 001 0.2220	Un 001 0.2145	Pos 0.21	General information	\checkmark		
P	Blk	Std 002	Ctrl 002	Un 002	Pos	Instrument information	~		
	0.2188	0.2217	0.2232	0.2247	0.22	Protocol parameters	\checkmark		
С	0.2152	0.2212		0.2217		Layout	~		
D	Blk 0.2111	Std 004 0.2272	Ctrl 004 0.2185	Un 004 0.2170	Pos 0.21	Raw Data	\checkmark		
F						Result			
						Blank Subtraction	\checkmark		
F						Basic Calculation	\checkmark		
G						Standard Curve	\checkmark		
н						Type XLS CSV	PDF		
31.	405								Data Source
	405					Cancel	Export		Raw Data
] 3'	I.9℃	Inject		1	₽ŧ	Completed		100%	Read

Fig 5- 51 Report export

In the File Type column, it can select the file format to export. Currently, three text formats are available:

XIsCsv

Pdf

On the right of Export content, select the content to be exported by click. If v is displayed on the right, the option is selected. Click "Export" to export the data to the USB disk.

The export content is varies depending on the protocol setting and the result processing.

10. Power Off

When power off the device, note:

Remove the microplate kit from the instrument, and enter the microplate holder into the instrument;

Turn off the power switch at the back of the instrument to complete the power off.

Chapter 6 Maintenance, storage, transportation

1. Maintenance

- Keep storage environment dry and clean to prevent moisture, corrosion, away from strong electromagnetic interference sources.
- Instrument already calibrated before leave factory. User is not allowed to disassembly and make adjustment. Any defectiveness, please contact manufacturer.
- Continuous emergency turning on/off is not allowed.
- Make sure apply the device with correct input voltage scope.
- Maintenance list

Content	/Day	/Week	/Year	When needed
Make sure the instrument power off correctly				٧
Keep the instrument away from dust	٧			
Remove overflowing solution right away in case any damage, then clean it by deionized-distilled water.	٧			
If the surface been contaminated with a biohazard,	N			
sterilize it by mild disinfectant.	v			
Clean instrument enclosure regularly.		V		
Clean the plate holder when necessary.		V		
Verification by using light absorption verification plate.			V	
Sterilize the instrument when re-installing or			N	
maintaining.			v	
Maintenance				٧

2. Storage and transportation

- Storage at room temperature -10°C ~ 45°C, relative humidity less than 80%, without corrosive gas and with good ventilation.
- Keep away from heavy shock, vibration, and humidity during transportation.

Chapter 7 Trouble shooting

Failure and solution:

No.	Trouble description	Possible reason	Solution
1	The Microplate Reader can not be started	Power supply failure	a. Check the if the instrument energized.b. If the power plug loosec. Check the voltage
2	"Communication timeout" during self-checking	Instrument not working	Restart the instrument and try again; if still same problem, please contact distributor or manufacturer.
3	"E913, E923, E933, E943" during self-checking	Insufficient of light intensity	Contact distributor or manufacturer.
4	"E912, E922, E932, E942" when self-checking	Light intensity is too strong	Contact distributor or manufacturer.
5	"E911, E921, E931, E941" when self-checking	Excessive dark current	Contact distributor or manufacturer.
6	"E612, E622, E632, E642" when self-checking	Detection module failure	Contact distributor or manufacturer.
7	"E402, E403, E415, E425, E435, E445" when self-checking	Motor failure	Contact distributor or manufacturer.
8	"E011~E056" when self-checking	Incubation failure	Contact distributor or manufacturer.
9	Test results are greatly deviated or all are zero	Xenon lamp damaged	Restart the instrument and try again; if still same problem, please contact distributor or manufacturer.
10	Microplate holder can not in or out	Blocked by something	Check whether obstacles around the plate holder or whether the plate cover is raised.
11	Crash noise occurred during running	The microplate is not in place or plate cover fell off	 a. Check microplate b. If noise still there when running without plate, restart the instrument c. If noise still there, please contact distributor or manufacturer.
12	Test results unstable	Light path failure	Check if the plate is placed well, if liquid spilled out and whether the front door works well, then re-start the instrument. If problem still there, contact distributor or manufacturer.
13	Stop running during detection	Communication breakpoint	Press "stop", restart the detection

No	Item	Туре	Unit	Qty	Remarks
1	Power cord		PCS	1	
2	Mouse	Logitech	PCS	1	
3	Certification		PCS	1	
4	Operation Manual		PCS	1	
5	Performance test statement		PCS	1	
6	Packing List		PCS	1	
7	U-Disk		PCS	1	
8	Dustproof plug		PCS	1	
9	Filter assembly		PCS	1	
10	Quick Operation Guide		PCS	1	

Chapter 8 Accessories

Memo