

ESPECTROFOTÓMETRO UV/VIS 4330/9
4330/9 UV/VIS SPECTROPHOTOMETER
SPECTROPHOTOMÈTRE UV/VIS 4330/9



Este manual es parte inseparable del aparato por lo que debe estar disponible a todos los usuarios del equipo. Le recomendamos leer atentamente el presente manual y seguir rigurosamente los procedimientos de uso para obtener las máximas prestaciones y una mayor duración del mismo.

This manual should be available for all users of these equipments. To get the best results and a higher duration of this equipment it is advisable to read carefully this manual and follow the processes of use.

Ce manuel est une partie indissociable de l'appareil et doit être mis à la disposition de tous les utilisateurs de l'équipement. Nous vous recommandons de lire attentivement ce manuel et de suivre scrupuleusement les procédures d'utilisation afin d'obtenir des performances maximales et une plus longue durée de vie de l'appareil.

LANGUAGE INDEX

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SAFETY INFORMATION

Please follow the guidelines below and read this manual in its entirety to ensure safe operation of the unit.



- Do not open the device.
- Disconnect the device from the mains supply before carrying out maintenance work or changing the fuse.
- The inside of the device is a high-voltage area Danger!
- Do not use the device if it is damaged, especially if the main power cable way is in any damaged or defective.
- Repairs may only be carried out by the service technicians from us and authorized contractual partners.
- The device must be connected to a power outlet that has a protective ground connection.



- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Do not allow any liquid to enter into the device.
- Do not operate the device in a hazardous location or potentially explosive environment.

PACKAGE CONTENTS

Description	Quantity
Spectrophotometer	1 pc
Power cord	1 pc
Glass cuvette	4 pcs
Quartz cuvette	2 pcs
Dust cover	1 pc
Instruction Manual	1 pc

UNPACKING

Open the package and carefully check the packing list items; if you find missing or damaged items please contact your distributor.

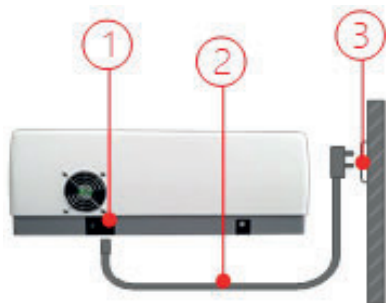
INSTALLATION

■ Placement

Place the instrument on the stable table carefully.

■ Connect the power cord

Check to confirm instrument power switch is turned off. Plug the female of the power cord into the power inlet of the instrument and plug the male into the power outlet.

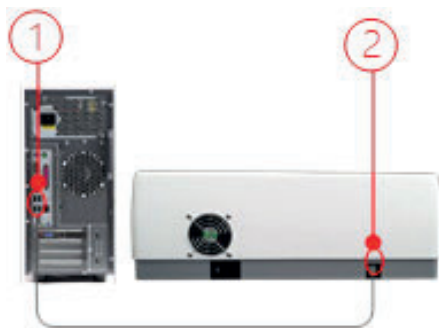


- 1 – Power inlet
- 2 – Power cord
- 3 – Power outlet

■ Connect to a computer

Plug one end of the USB cable into the instrument's USB port (Type B, square) and the other end into the computer's USB port (Type A, flat).

Note: The USB cable is an accessory for the PC application and is not supplied with the instrument.



- 1 – USB port of tablet (Type A, flat)
- 2 – USB port of instrument (Type B, square)

■ Connect other peripherals



- 1 – HDMI (connect HD external display)
- 2 – VGA (connect external display)
- 3 – Ethernet (connect to the network)

- 4 – USB (connect USB flash drive, keyboard, mouse, WIFI, printer, etc.)
- 5 – Temperature controller port

SYMBOLS AND CONVENTIONS

The following chart is an illustrated glossary of the symbols that are used in this manual.



CAUTION This symbol indicates a potential risk and alerts you to proceed with caution.



CAUTION This symbol indicates the presence of high voltage and warns the user to proceed with caution.



CAUTION This symbol indicates risks associated with hot surfaces.

OVERVIEW

4330/9 spectrophotometer is used in Chemistry, Pharmaceuticals, Biochemical, Metallurgy, Light Industry, Textile, Material, Environment, Medical, Education and some other fields for Quality Control laboratories.

SPECIFICATIONS

Model	4330/9
Reference	HJD013
Optical system	Double beam, 1200 l/mm grating
Light source	Tungsten lamp, Deuterium lamp
Detector	Dual silicon photodiode
Spectral bandwidth	0.5/1/2/4/5 nm
Wavelength range	190-1100 nm
Wavelength accuracy	±0.3 nm, 0.1 nm @ 656.1 nm
Wavelength repeatability	≤0.1 nm
Wavelength resolution	0.1 nm
Wavelength swing speed	10000 nm/min
Wavelength scanning speed	20-4200 nm/min
Photometric range	-0.3~3 A, 0~200 %T, 0~9999.9 C
Photometric accuracy	±0.002 A @ 0.0 ~ 0.5 A, ±0.004 A @ 0.5 ~ 1 A, ±0.3 %T @ 0 ~ 100 %T
Photometric repeatability	≤0.001 A @ 0.0 ~ 0.5 A, ≤0.002 A @ 0.5 ~ 1 A, ≤0.15 %T @ 0 ~ 100 %T
Stray light	≤0.03%T @ 220 nm & 340 nm
Noise	≤0.0002 A @ 0.0 A, 500 nm, ≤0.0004 A @ 1 A, 500 nm, ≤0.0008 A @ 2 A, 500 nm
Baseline flatness	±0.0005 A
Sample compartment	Reference holder (for 1 cuvette of 10 mm), sample holder (for 1 cuvette of 10 mm)
Display	10.1-inch IPS color capacitive touch screen, resolution 1280 x 800
Storage	64GB (built-in)
Interface	USB-A x 3, USB-B x 1, HDMI, VGA, Ethernet
Modes	Photometry, Multi Wavelength, Kinetics, Time Scan, Quantitation, Spectrum Scan, DNA/Protein
Power supply	100~240VAC, 50/60Hz
Dimensions	580×420×230 mm
Weight	15 kg

GETTING STARTED


The following chart describes the basic operation of the instrument.

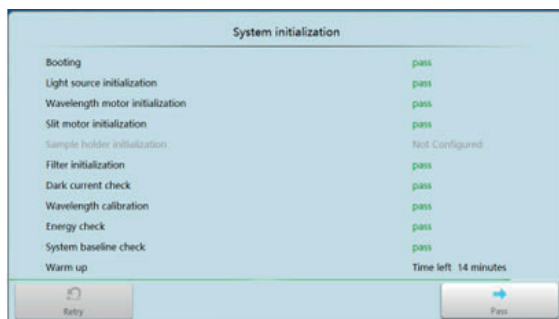
Turn the instrument power on / off

Switch on the power on the back of the instrument. Press the blue start/stop button on the front of the instrument to start.

Note: Do not turn the instrument on and off continuously and quickly. Wait at least 30 seconds before turning the instrument back on, otherwise the electrical and mechanical systems may be damaged.

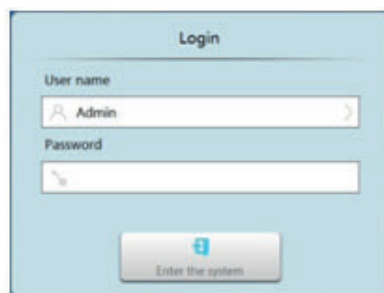
Self-check and calibration

Check the instrument sample chamber and remove anything from the light path. Launch the application **UV Studio** after double-clicking the icon  on the windows desktop. The instrument starts self-test. Self-check includes the following steps: Turn on lamp and positioning light source switching mechanism - Positioning filter disc - Positioning slit switching mechanism (if Installed) - Positioning automatic sample holder (if Installed) - Get dark current - Positioning wavelength - Checking energy - Checking system baseline.



User login

If the user has selected the “User Management and Audit Trail” module, after the self-test is completed, enter the “User Login” interface, select the user name and enter the password and press “Login” to enter the system.



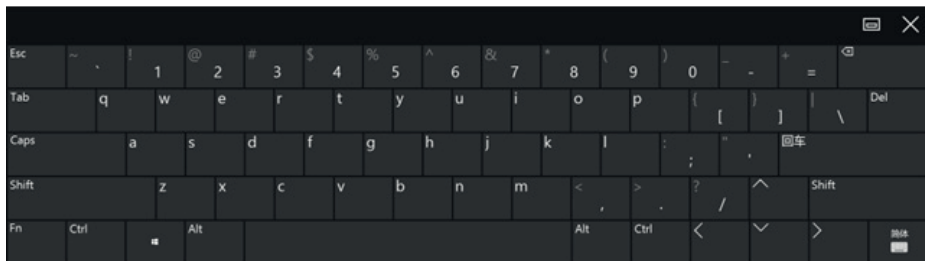
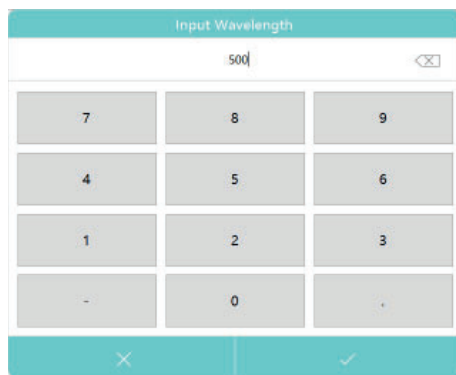
GENERAL OPERATING INSTRUCTIONS

■ Touch screen using tips

The entire screen can be started with a touch. To make a choice, use your nails, fingertips, pencil, or stylus to press the screen. Don't press the screen with sharp objects (such as ball point).

■ Using the keyboard

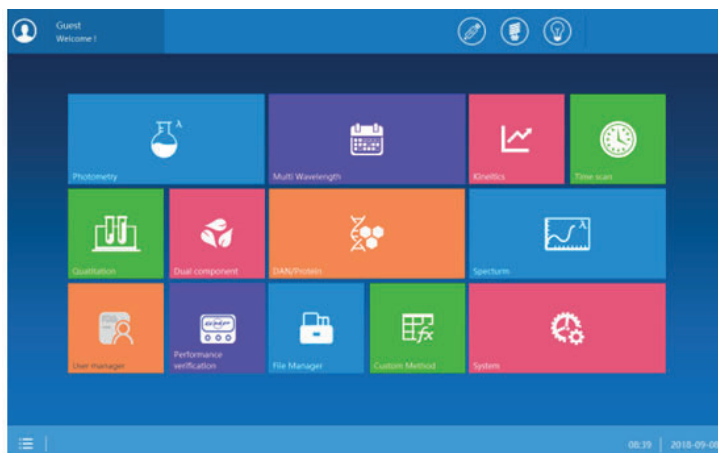
The instrument provides two kinds of keyboards for different situations. The numeric keypad is used to input parameters, and the full keyboard is used to input user information and file names.
















■ Basic Operation

- Enter an application module

Main interface, press an application icon.



	Photometry Measure the photometric value of a sample at a single wavelength.
	Multi wavelength Measure the photometric value of a sample at multiple wavelengths.
	Kinetics Measure the change in absorbance or absorbance change rate over time at a specified wavelength.
	Time scanning Measure the change of photometric value with time at a single wavelength.
	Quantitation Establish a standard curve and measure the concentration of the sample using a standard curve.
	Dual component quantitation Establish a standard curve and simultaneously measure the concentration of mixed samples containing 2 components using a standard curve.
	Biological measurement Measure DNA, RNA and protein concentrations using built-in methods or new methods.
	Spectrum scanning Measure the photometric curve of a sample over a range of spectrum.
	User management Assign user rights, operate log management.
	Performance verification Verify the technical performance of the instrument.
	File management Efficient management of user files, browsing, copying, renaming, and deleting operations.
	Custom method Users can add calculation methods for special applications or exploratory studies according to their needs.
	System Set system parameters and system calibration.


- Back to main interface

Measurement interface, press  back to main interface.

- Return to previous interface

Method/Settings/Data list/Curve list interface, press  back to previous interface.








- Measure the sample

Measurement interface, put the reference in the reference cuvette holder and the sample in the sample cuvette holder; read the value shown in the screen or press the button  to perform the measurement.


- Enter data/curve list

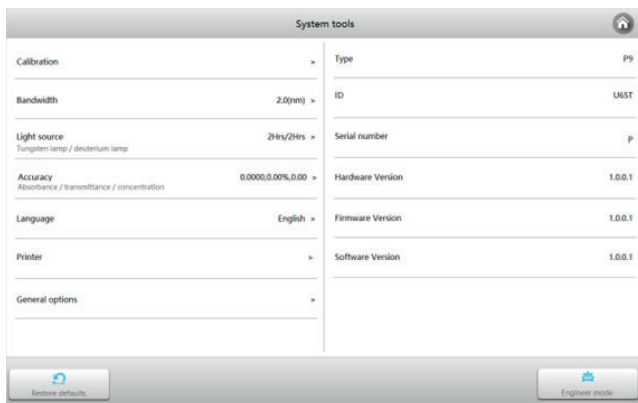
Measurement interface, press  to enter data/curve list.

■ Measurement Results Operation

	Open Open a stored file, load data or parameters.
	Save Save data, parameters to storage.
	Print Print test report.
	Export to MS Word Export file to MS Word format.
	Export to MS Excel Export file to MS Excel format.
	Export to PDF Export file to PDF format.
	Delete Delete the selected results.

CALIBRATION AND SYSTEM SETTINGS

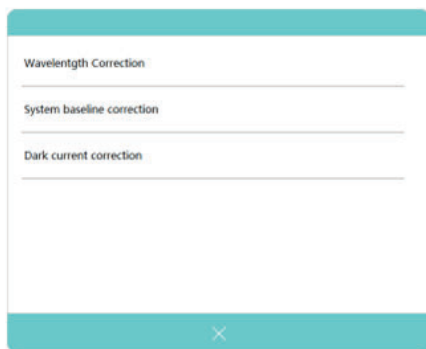
Select the icon  in the main interface. Display options to calibrate the system and configure the basic instrument settings.



■ Calibration:

Select the tab **Calibration** in the System interface. Remove something from the measurement channel, close the sample chamber cover, and select the item **Wavelength calibration, System baseline calibration or Dark current calibration** to do calibration.

Important! Before performing the calibration, you must remove something from the measurement channel, close the sample chamber cover, and maintain this state throughout the calibration process.



■ Bandwidth setting:

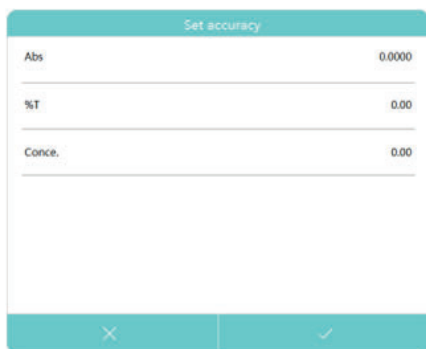
Select the tab **Bandwidth** in the System interface. Select the required bandwidth, and the instrument automatically switches to that bandwidth.

Important! After switching the spectral bandwidth, the instrument needs to be recalibrated, so remove the sample in the measurement channel before setting the spectral bandwidth and close the sample chamber. The entire process of switching bandwidth and recalibration takes about 3~4 minutes.



■ Result resolution setting:

Press the tab **Accuracy**. Select the resolution of the required display digits according to different measurement modes.



■ Light source management:

Press the tab **Light source**, which displays the usage timing of the light source and the switching wavelength of the light source.




- Turn on / off lamp:


Press the icon  to turn on/off Tungsten lamp/Deuterium lamp.

Note: When using a single light source for a long time, you can turn off the other unused light source to save energy and extend its lifetime.

- Set the light source switching wavelength:

Press the current switching wavelength, pop up the numeric keyboard, input the switching wavelength, and press the button  to complete the setting.

Note: After modifying the light source switching wavelength, you need to calibrate system baseline.

Press the icon  to reset the Tungsten lamp/Deuterium lamp timing.

Note: To ensure the accuracy of the light source timing, perform the corresponding light source reset after replacing the lamp. Do not operate at other times.

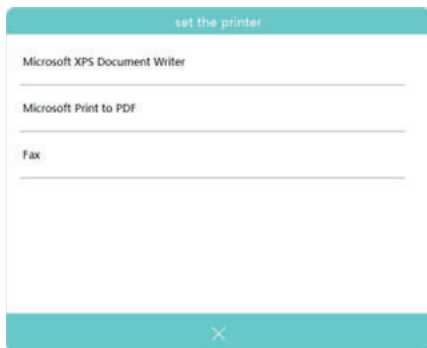
■ Language selection:

Press the tab **Language** and select the desired language.



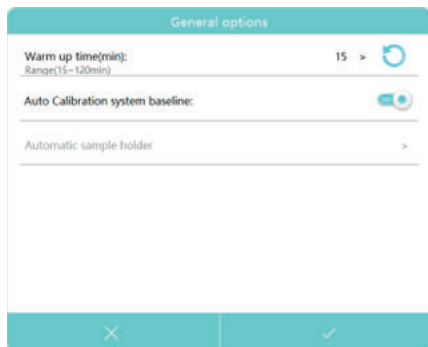
■ Printer setting:

Press the tab **Printer** and select the installed printer.



■ General settings:

Press the tab “General options” to enter.



- Warm up:

Press “Warm up”, pop up numeric keyboard, input value 15~120 minutes and press the button  to complete the setting.

- Auto Calibration of system baseline:

Press the icon  to turn on/off the “Calibration of system baseline when boot” option.

MEASUREMENT

■ Important Guidelines

- Reagents and dilution buffers can cause cauterization and other damage to health.
- Samples (nucleic acids, proteins, bacteria cultures) can be infectious and cause serious damage to health.
- During sample preparation, measuring procedures and maintenance and cleaning work, observe all local laboratory safety precautions (e.g. wear protective clothing and gloves, use of disinfectant) regarding the handling of sample material.
- Dispose of measuring solutions and cleaning and disinfectant materials in accordance with the relevant local laboratory regulations.

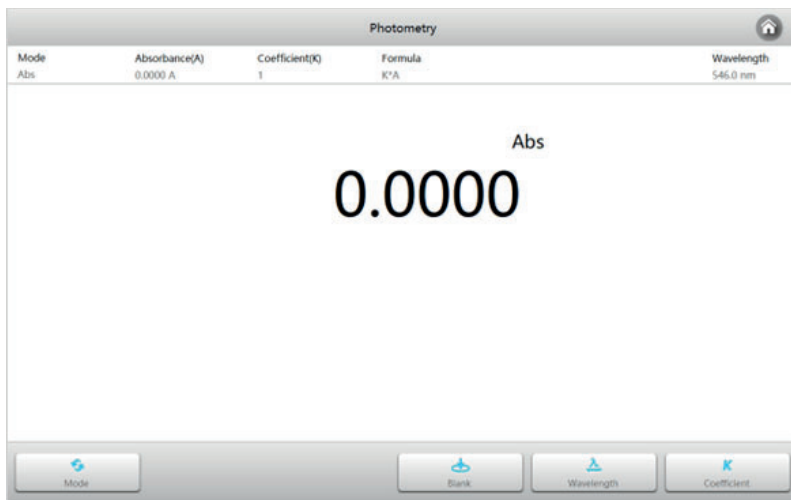
■ Check the cuvettes

The cuvettes must be clear and there's no remains of the samples on the surface of it. **Only Quartz cuvettes are permitted to be used in the range of UV region.**

■ Photometry


Photometry mode is used to measure the absorbance or transmissivity of the sample at a single wavelength.

- **Main** interface, press the icon  to start a **Photometry** application.



1. Press the icon  to switch to the measurement mode.

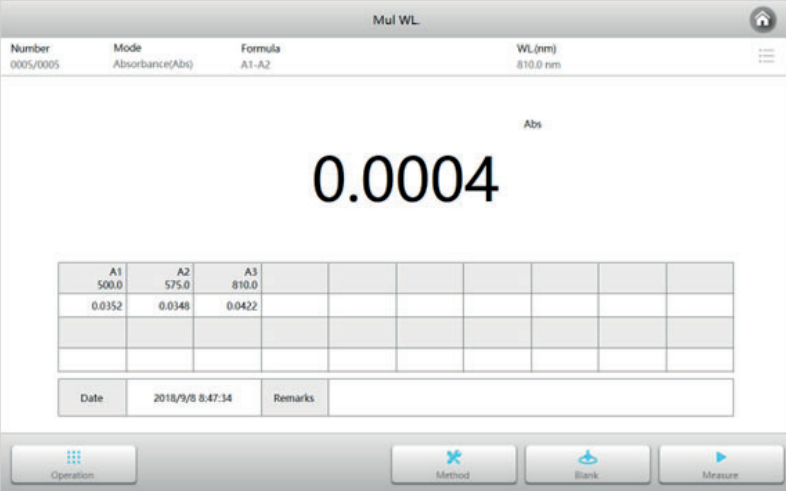
Abs	Measure absorbance value of the sample(s).
%T	Measure transmittance value of the sample(s).

2. Press the button  to set wavelength, key in the measurement wavelength.
3. If the mode is Abs, you can calculate K*A by pressing the button **K** to set the coefficient K.
4. Put the reference in the reference cuvette holder and the sample in the sample cuvette holder, close the sample chamber lid and read the value shown in the screen.

■ Multi wavelength

Multi wavelength mode is used to measure the absorbance or transmissivity of the sample at multiple wavelengths.

- **Main** interface, press the icon  to start a **Multi wavelength** application.



Mul WL

Number	Mode	Formula	WL (nm)
0005/0005	Absorbance(Abs)	A1-A2	810.0 nm



Abs

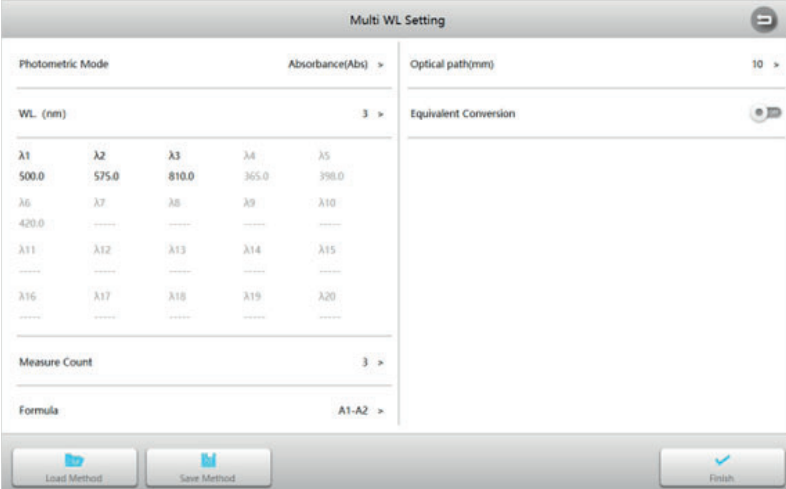
0.0004

A1	A2	A3						
500.0	575.0	810.0						
0.0352	0.0348	0.0422						

Date	2018/9/8 8:47:34	Remarks	
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Operation Method Blank Measure

1. **Multi wavelength** interface, press the button  to set the measurement parameters. The method can be saved or directly called from the memory. Press  to accept the new parameters and return to the measurement interface.



Multi WL Setting

Photometric Mode Absorbance(Abs) >

Optical path(mm) 10 >

WL (nm) 3 >

λ1	λ2	λ3	λ4	λ5
500.0	575.0	810.0	365.0	398.0
λ6	λ7	λ8	λ9	λ10
420.0	-----	-----	-----	-----
λ11	λ12	λ13	λ14	λ15
-----	-----	-----	-----	-----
λ16	λ17	λ18	λ19	λ20
-----	-----	-----	-----	-----



Equivalent Conversion

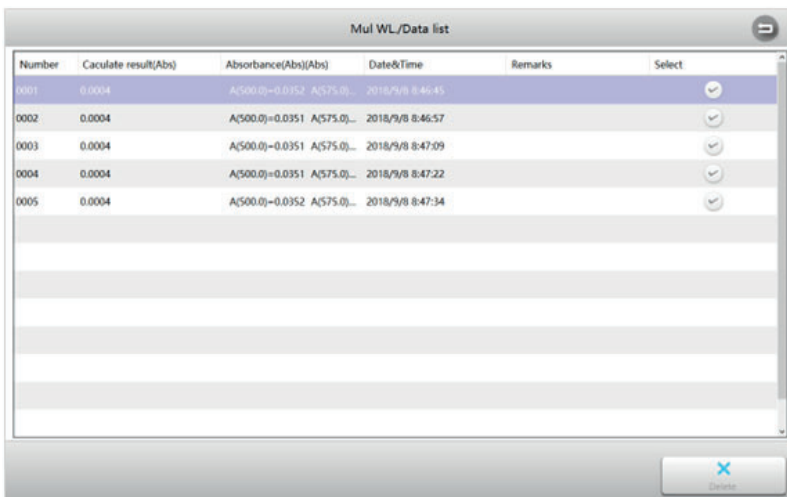
Measure Count 3 >

Formula A1-A2 >

Load Method Save Method Finish

Photometric mode	2 photometric modes: absorbance, transmittance.
Wavelength	1~20 wavelengths are available, wavelength range: 190~1100nm.
Cycles	1, 2, 3, 5, 10, 20, 30, 50 times can be selected, the instrument will calculate the average as the final output.
Calculation formula	The instrument can choose to embed the calculation formula to directly calculate the result. The formula can support user customization (in the custom method module).
Light path length	The width of the cuvette used for the measurement.
Equivalent conversion	When activated, the instrument automatically converts measurements from different path cuvettes to values in the 10mm light path length.

- Put the reference in the reference cuvette holder and the sample in the sample cuvette holder, close the sample chamber lid and press the button  to measure and get calculation results.
- Repeat step 2 to measure more samples.
- Press  to switch to list mode to browse the list of measurement results.

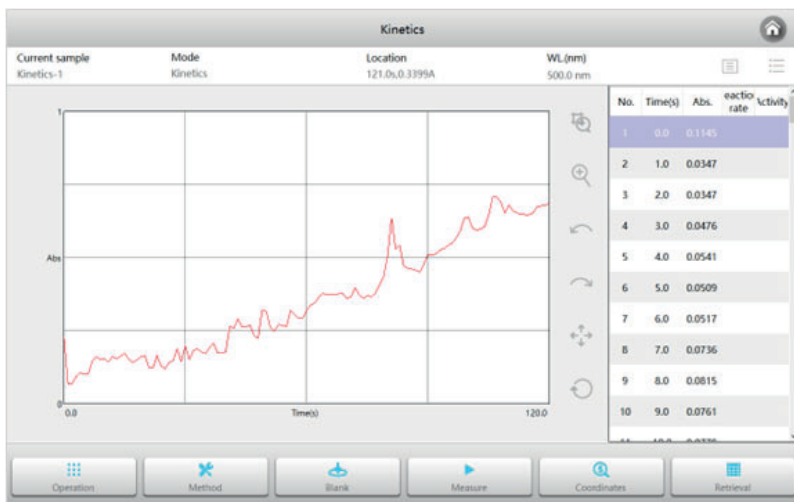




Number	Calculate result(Abs)	Absorbance(Abs)(Abs)	Date&Time	Remarks	Select
0001	0.0004	A(500.0)=0.0352 A(575.0)...	2018/9/8 8:46:45		<input checked="" type="checkbox"/>
0002	0.0004	A(500.0)=0.0351 A(575.0)...	2018/9/8 8:46:57		<input checked="" type="checkbox"/>
0003	0.0004	A(500.0)=0.0351 A(575.0)...	2018/9/8 8:47:09		<input checked="" type="checkbox"/>
0004	0.0004	A(500.0)=0.0351 A(575.0)...	2018/9/8 8:47:22		<input checked="" type="checkbox"/>
0005	0.0004	A(500.0)=0.0352 A(575.0)...	2018/9/8 8:47:34		<input checked="" type="checkbox"/>

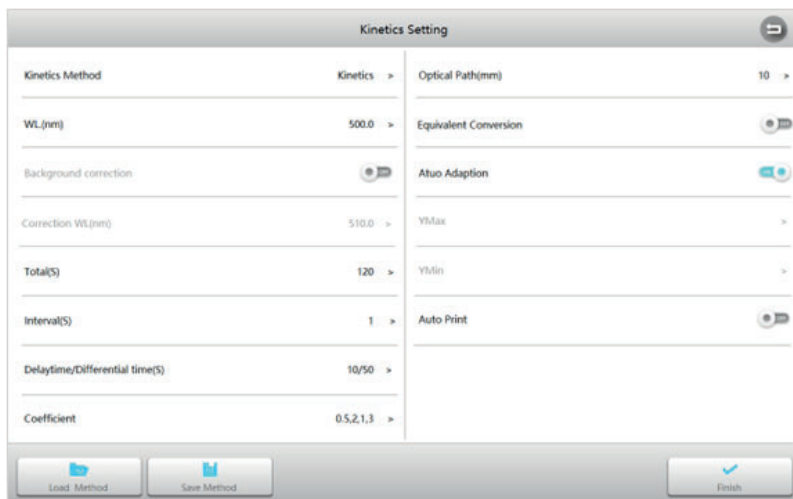
■ Kinetics

Kinetics mode is used to measure the rate of change of the sample.

- **Main** interface, press the icon  to start a **Kinetics** application.



1. **Kinetics** interface, press the button  to set the measurement parameters. The method can be saved or directly called from the memory. Press the button  to accept the new parameters and return to the measurement interface.




The screenshot shows the 'Kinetics Setting' interface. It contains several adjustable parameters:

- Kinetics Method:** Kinetics >
- WL(nm):** 500.0 >
- Background correction:**
- Correction WL(nm):** 510.0 >
- Total(S):** 120 >
- Interval(S):** 1 >
- Delaytime/Differential time(S):** 10/50 >
- Coefficient:** 0.5,2,1,3 >
- Optical Path(mm):** 10 >
- Equivalent Conversion:**
- Atuo Adaption:**
- YMax:** >
- YMin:** >
- Auto Print:**

At the bottom, there are three buttons: 'Load Method', 'Save Method', and 'Finish'.

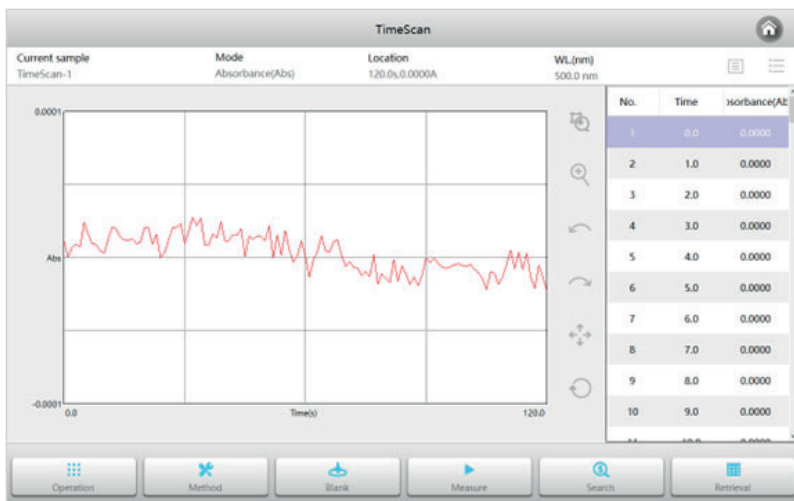
Measurement mode	2 measurement modes: kinetics, kinetic rate.
Wavelength	Measurement wavelength, range: 190~1100nm.
Background correction	Background correction switch, can be set according to actual needs.
Corrected wavelength	Background corrected wavelength, range: 190~1100nm.
Total	Total sampling time required.
Interval	Sampling interval.
Delay / Derivative	Waiting time before starting sampling/time of participating activity calculation.
Coefficient	Coefficient of activity calculation equation.
Light path length	The width of the cuvette used for the measurement.
Equivalent conversion	When activated, the instrument automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Auto scale	Whether to automatically adjust the coordinates based on the data.
Y max	Maximum value of the ordinate (valid only when the coordinates are fixed).
Y min	Minimum value of the ordinate (valid only when the coordinates are fixed).
Automatic printing	Automatically print curves and results after measurement is complete.
Automatic save	Automatically save curves and results after measurement is complete.



2. Put the reference in the reference cuvette holder and the sample in the sample cuvette holder, close the sample chamber lid and press the button  to measure and get sampled data and draw the curve.
3. Repeat step 2 to measure more samples.

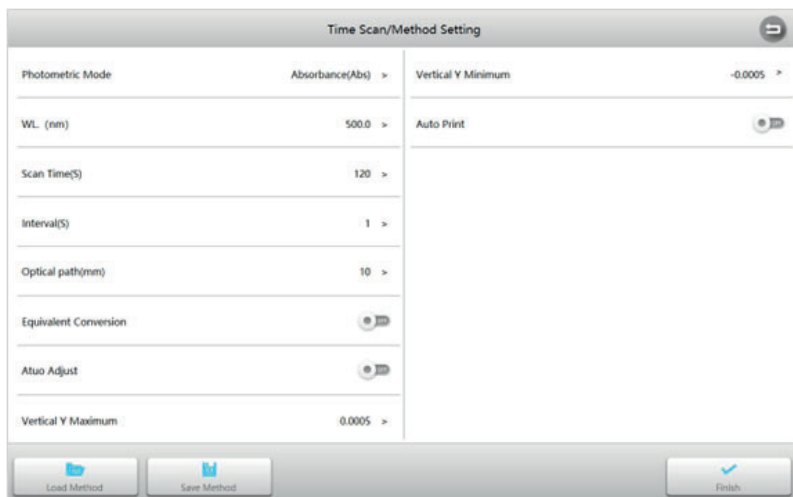
■ Time scanning

Time scanning mode is used to measure photometric value changes of the sample.

- **Main** interface, press the icon  to start a **Time scanning** application.




1. **Time scanning** interface, press the button  to set the measurement parameters. The method can be saved or directly called from the memory. Press  to accept the new parameters and return to the measurement interface.



The screenshot shows the 'Time Scan/Method Setting' interface. It has a title bar with a home button. The settings are organized into two columns. The left column includes: 'Photometric Mode' (Absorbance(Abs) >), 'WL. (nm)' (500.0 >), 'Scan Time(S)' (120 >), 'Interval(S)' (1 >), 'Optical path(mm)' (10 >), 'Equivalent Conversion' (toggle off), and 'Auto Adjust' (toggle off). The right column includes: 'Vertical Y Minimum' (-0.0005 >) and 'Auto Print' (toggle on). At the bottom, there are three buttons: 'Load Method', 'Save Method', and 'Finish'.

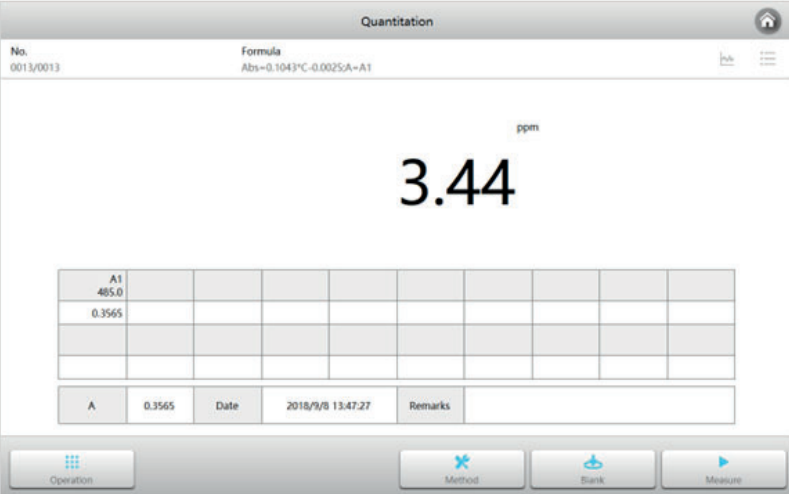
Photometric mode	2 photometric modes: absorbance, transmittance.
Wavelength	Measurement wavelength, range: 190~1100nm.
Scan time	Total sampling time required.
Interval	Sampling interval.
Light path length	The width of the cuvette used for the measurement.
Equivalent conversion	When activated, the instrument automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Auto scale	Whether to automatically adjust the coordinates based on the data.
Y max	Maximum value of the ordinate (valid only when the coordinates are fixed).
Y min	Minimum value of the ordinate (valid only when the coordinates are fixed).
Automatic printing	Automatically print curves and results after measurement is complete.
Automatic save	Automatically save curves and results after measurement is complete.

- Put the reference in the reference cuvette holder and the sample in the sample cuvette holder, close the sample chamber lid and press the button  to measure and get sampled data and draw the curve.
- Repeat step 2 to measure more samples.

■ Quantitation

Quantitation mode is used to measure the sample concentration by establishing and using a standard curve.

- **Main** interface, press the icon  to start a **Quantitation** application.



Quantitation

No. 0013/0013 Formula Abs=0.1043*C-0.0025*A=A1

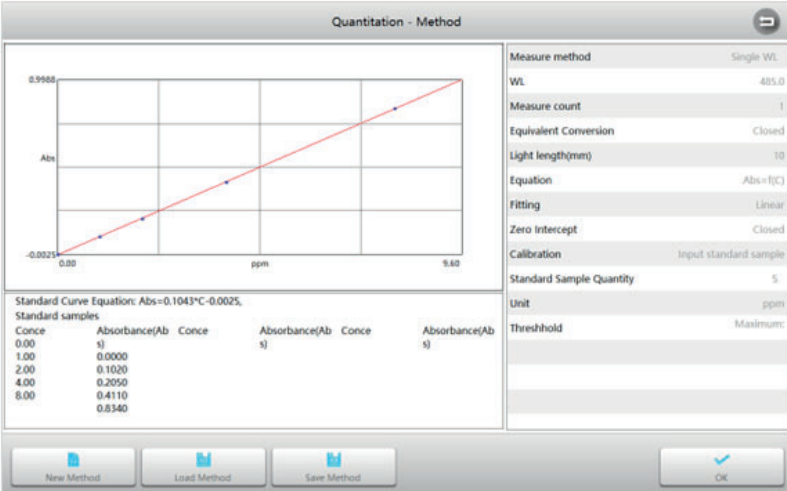
3.44 ppm

A1							
485.0							
0.3565							
A	0.3565	Date	2018/9/8 13:47:27	Remarks			

Operation Method Blank Measure

Establish quantitative methods

1. **Quantitation** interface, press the button  to enter into **Method** interface.



Quantitation - Method

Standard Curve Equation: Abs=0.1043*C-0.0025

Conce	Absorbance(Ab s)	Conce	Absorbance(Ab s)	Conce	Absorbance(Ab s)
0.00	0.0000				
1.00	0.1020				
2.00	0.2050				
4.00	0.4110				
8.00	0.8340				

Measure method Single WL

WL 485.0

Measure count 1

Equivalent Conversion Closed

Light length(mm) 10

Equation Abs=f(C)

Fitting Linear

Zero intercept Closed


Calibration Input standard sample

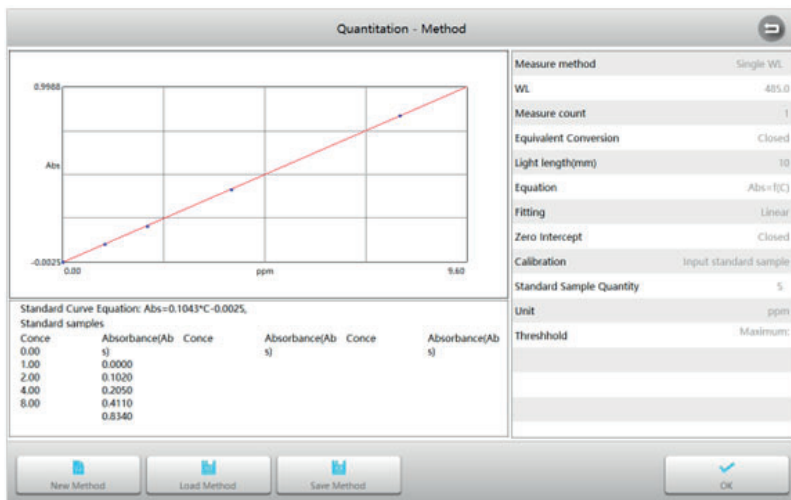
Standard Sample Quantity 5

Unit ppm

Threshold Maximum

New Method Load Method Save Method OK


2. **Method** interface, press the button  to start a new measurement method and enter the parameter setting interface.

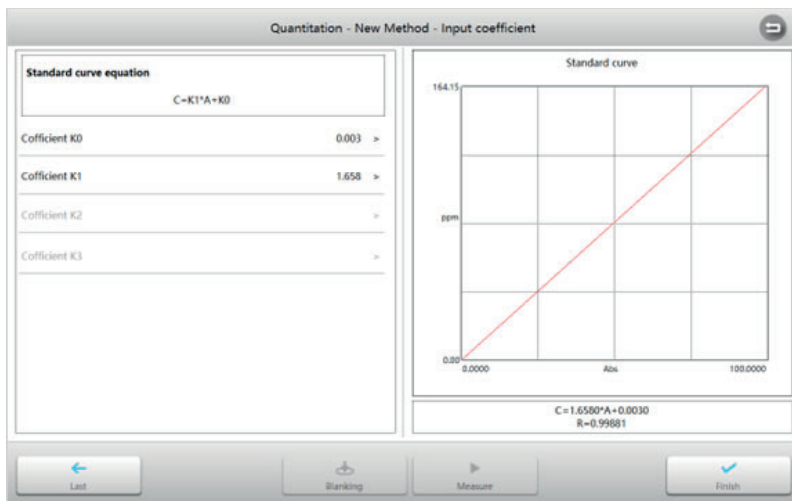



Measurement method	Built-in single wavelength, dual wavelength difference, dual wavelength ratio, three wavelengths, area 5 ways, and support custom formula.
Wavelength	Measurement wavelength, range: 190~1100nm.
Cycles	1, 2, 3, 5, 10, 20, 30, 50 times can be selected, the instrument will calculate the average as the final output.
Light path length	The width of the cuvette used for the measurement.
Equivalent conversion	When activated, the instrument automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Equation	Equation form: $C = F(Abs)$ and $Abs = F(C)$.
Fitting	Three ways of fitting are provided: first order, second order, third order.
Zero intercept	When turned on the representative fitting curve will directly cross the zero point, and when closed will represent the fitting curve without zero point.
Calibration	Three ways to generate a standard curve: inputting equation coefficient, measuring standard samples and inputting standard sample values.
Unit	Built-in 19 commonly used concentration units: -, %, ppm, ppb, g/l, mg/l, $\mu\text{g/l}$, ng/l, g/dl, mg/dl, $\mu\text{g/dl}$, mg/ml, $\mu\text{g/ml}$, ng/ml, $\mu\text{g}/\mu\text{l}$, ng/ μl , mol/l, mmol/l, IU, and support input custom units.
Number of standard samples	The number of standard samples can be selected (only valid for standard sample calibration and standard sample input), quantity: 2~20.
Threshold	Upper and lower limits of measurement results.

3. Establish the standard curve


3.1 Establish the standard curve by inputting the equation coefficient

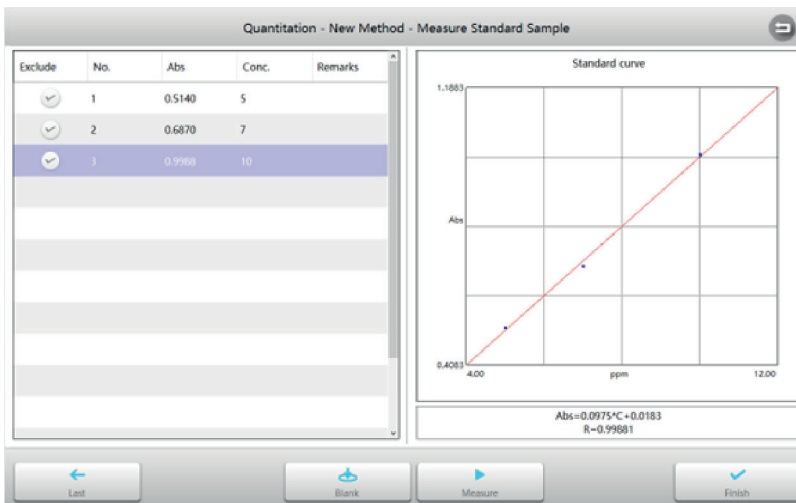
- 1) Set **Calibration** to **Input Equation Coefficient**, set other measurement parameters according to measurement requirements, and press the button  to start.
- 2) **Input Equation Coefficient** interface, press the coefficient K0~Kn to pop up the keyboard and enter the coefficient.



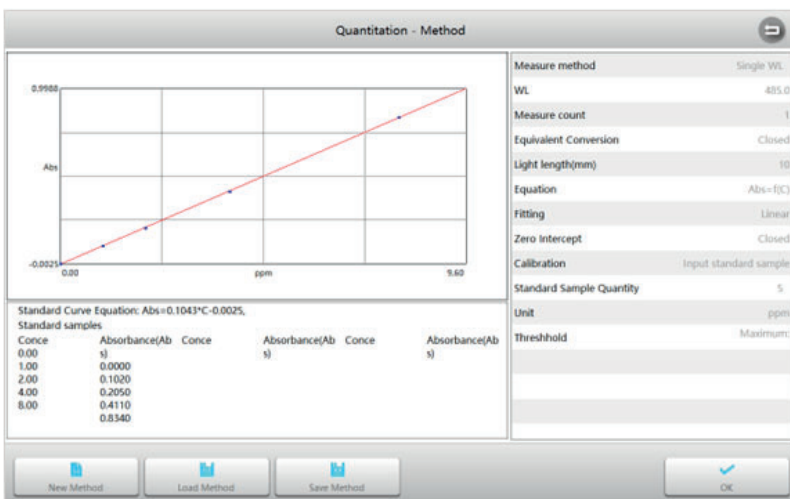
- 3) After the method is completed, the standard curve and related information are displayed. Press the button  to complete and return to **Method** interface.

3.2 Establish the standard curve by measuring standard samples


- 1) Set **Calibration** to **Measure standard samples**, set other measurement parameters according to measurement requirements, and press the button  to start.

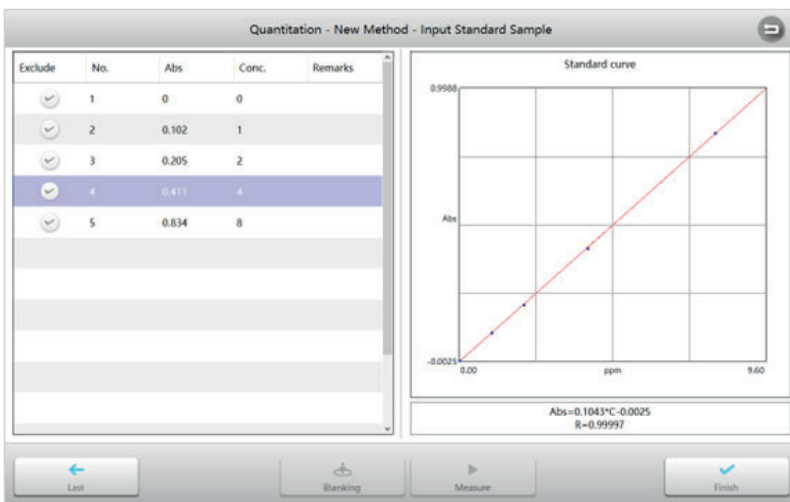


- 2) **Measure standard sample** interface, put the reference in the reference cuvette holder.
- 3) Put the standard sample in the sample cuvette holder, close the sample chamber lid and press the button ▶ to measure.
- 4) Repeat step 3 to measure all standard samples.
- 5) Press the concentration cell to enter the corresponding concentration value.
- 6) After the method is completed, the standard curve and related information are displayed. Press the button ✓ to complete and return to **Method** interface.



3.3 Establish the standard curve by inputting standard samples


- 1) Set **Calibration** to **Input standard samples**, set other measurement parameters according to measurement requirements, and press the button  to start.

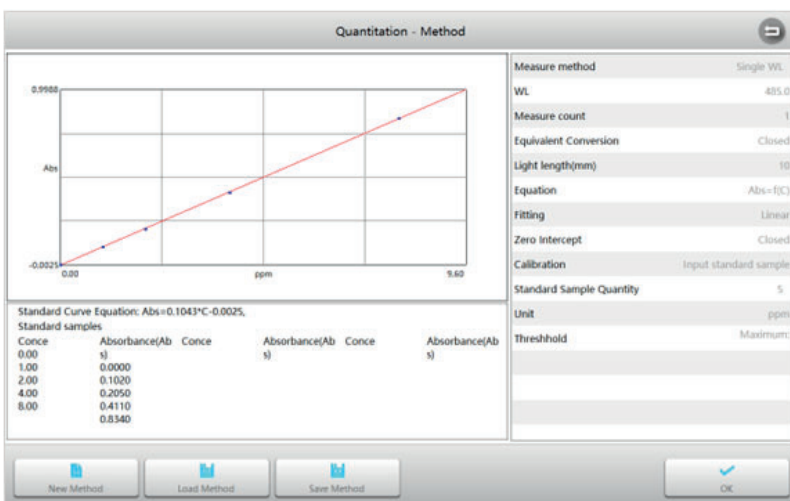


The screenshot shows the 'Quantitation - New Method - Input Standard Sample' interface. On the left, there is a table with columns: Exclude, No., Abs, Conc., and Remarks. The data points are as follows:

Exclude	No.	Abs	Conc.	Remarks
<input checked="" type="checkbox"/>	1	0	0	
<input checked="" type="checkbox"/>	2	0.102	1	
<input checked="" type="checkbox"/>	3	0.205	2	
<input checked="" type="checkbox"/>	4	0.411	4	
<input checked="" type="checkbox"/>	5	0.834	8	

On the right, there is a graph titled 'Standard curve' showing Absorbance (Abs) on the y-axis (ranging from -0.0025 to 0.9985) versus Concentration (ppm) on the x-axis (ranging from 0.00 to 9.60). A red line represents the standard curve, with five data points plotted. Below the graph, the equation is displayed as $Abs = 0.1043 \cdot C - 0.0025$ and the correlation coefficient is $R = 0.99997$. At the bottom, there are buttons for 'Last', 'Blanking', 'Measure', and 'Finish'.

- 2) Press the **Abs** cell to input absorbance value and press **Conc** cell to input the corresponding concentration value.
- 3) After the method is completed, the standard curve and related information are displayed. Press the button  complete and return to **Method** interface.



The screenshot shows the 'Quantitation - Method' interface. On the left, there is a graph titled 'Standard curve' showing Absorbance (Abs) on the y-axis (ranging from -0.0025 to 0.9985) versus Concentration (ppm) on the x-axis (ranging from 0.00 to 9.60). A red line represents the standard curve, with five data points plotted. Below the graph, the equation is displayed as $Standard\ Curve\ Equation: Abs = 0.1043 \cdot C - 0.0025$.

Below the graph, there is a table titled 'Standard samples' with columns: Conce, Absorbance(Ab), Conce, Absorbance(Ab), Conce, Absorbance(Ab). The data points are as follows:





Conce	Absorbance(Ab)	Conce	Absorbance(Ab)	Conce	Absorbance(Ab)
0.00	0.0000	0.00	0.1020	0.00	0.2050
1.00	0.0000	1.00	0.1020	1.00	0.2050
2.00	0.0000	2.00	0.1020	2.00	0.2050
4.00	0.0000	4.00	0.1020	4.00	0.2050
8.00	0.0000	8.00	0.1020	8.00	0.2050

On the right, there is a table of measurement parameters:

Measure method	Single WL
WL	495.0
Measure count	1
Equivalent Conversion	Closed
Light length(mm)	10
Equation	Abs=f(C)
Fitting	Linear
Zero intercept	Closed
Calibration	Input standard sample
Standard Sample Quantity	5
Unit	ppm
Threshold	Maximum:

At the bottom, there are buttons for 'New Method', 'Load Method', 'Save Method', and 'OK'.

Measure sample

1. **Quantitation** interface, press the button  to enter into **Method** interface.
2. **Method** interface, load a method or establish a new method, press the button  to accept and return to measurement interface.
3. Put the reference in the reference cuvette holder.
4. Put the sample in the sample cuvette holder, close the sample chamber lid and press the button  to measure and get calculation results.
5. Repeat step 4 to measure more samples.
6. Press  to switch to list mode to browse the list of measurement results.

■ Dual component quantitation

Dual component quantitation mode is used to measure the concentration of two components in the sample.

- **Main** interface, press the icon  to start a **Quantitation** application.

Dual component Analysis

No. 0008/0008 Standard curve $\Delta R1 = 99.6685^{\circ}\text{C} - 17.0720, \Delta R2 = 1.8441^{\circ}\text{C} + 0.3539$

0.53^{mg/L}

12.61^{mg/L}

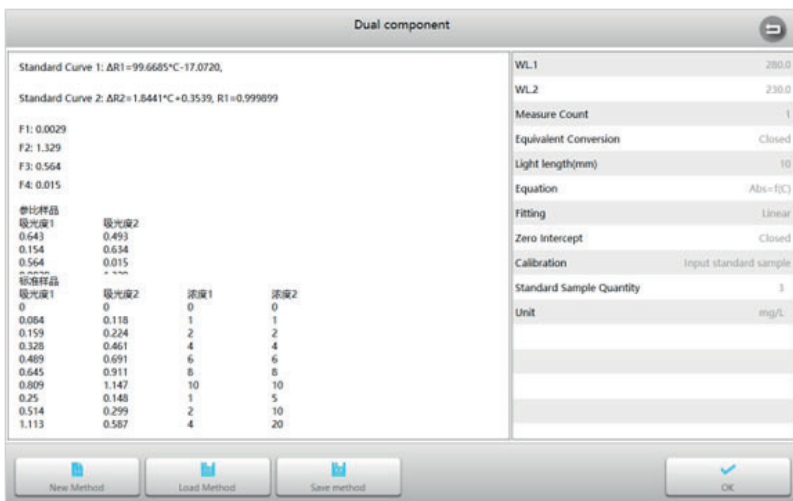
A1	A2		R11	R12	$\Delta R1$		R21	R22	$\Delta R2$
280.0	230.0		280.0	230.0			280.0	230.0	
0.1014	0.3567		34.9655	0.2684	34.6971		23.7800	0.1798	23.6002

Date	2018/9/8 10:49:35	Remarks	
------	-------------------	---------	--

Operation Method Blank Measure

Establish quantitative methods

1. **Dual component quantitation** interface, press the button  to enter into **Method** interface.



Dual component


Standard Curve 1: AR1=99.6685°C-17.0720,
Standard Curve 2: AR2=1.8441°C+0.3539, R1=0.999899

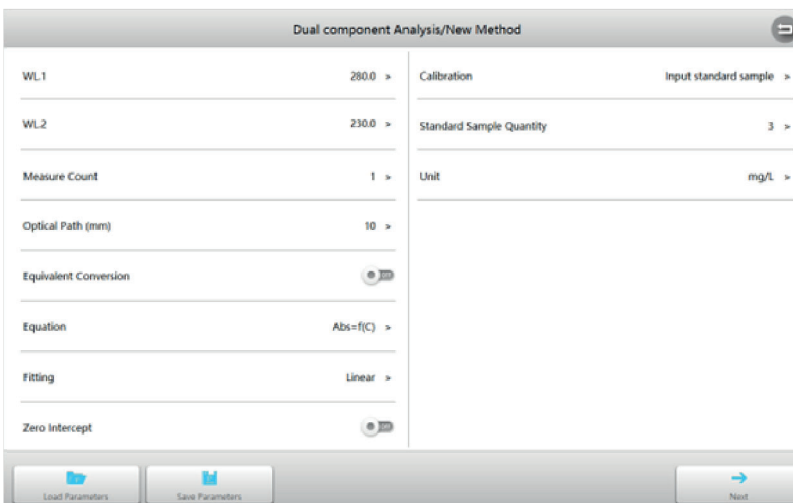
F1: 0.0029
F2: 1.329
F3: 0.564
F4: 0.015

参比样品	吸光度1	吸光度2	浓度1	浓度2
0	0	0	0	0
0.064	0.118	1	1	1
0.159	0.224	2	2	2
0.328	0.461	4	4	4
0.469	0.691	6	6	6
0.645	0.911	8	8	8
0.809	1.147	10	10	10
0.25	0.148	1	5	5
0.514	0.299	2	10	10
1.113	0.587	4	20	20



WL.1 280.0
WL.2 230.0
Measure Count 1
Equivalent Conversion Closed
Light length(mm) 10
Equation Abs=f(C)
Fitting Linear
Zero Intercept Closed
Calibration Input standard sample
Standard Sample Quantity 3
Unit mg/L

New Method Load Method Save method OK

2. **Method** interface, press the button  to start a new measurement method and enter the parameter setting interface.



Dual component Analysis/New Method

WL.1 280.0 >
WL.2 230.0 >
Measure Count 1 >
Optical Path (mm) 10 >
Equivalent Conversion 
Equation Abs=f(C) >
Fitting Linear >
Zero Intercept 


Calibration Input standard sample >
Standard Sample Quantity 3 >
Unit mg/L >

Load Parameters Save Parameters Next

Wavelength 1	Measurement wavelength of component 1, range: 190~1100nm.
Wavelength 2	Measurement wavelength of component 2, range: 190~1100nm.
Cycles	1, 2, 3, 5, 10, 20, 30, 50 times can be selected, the instrument will calculate the average as the final output.
Light path length	The width of the cuvette used for the measurement.
Equivalent conversion	When activated, the instrument automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Threshold	Upper and lower limits of measurement results.
Equation	Equation form: $C=F(\text{Abs})$ and $\text{Abs}=F(C)$.
Fitting	Three ways of fitting are provided: first order, second order, third order.
Zero intercept	When turned on the representative fitting curve will directly cross the zero point, and when closed will represent the fitting curve without zero point.
Calibration	Three ways to generate a standard curve: inputting equation coefficient, measuring standard samples and inputting standard sample values.
Number of standard samples	The number of standard samples can be selected (only valid for standard sample measurement and standard sample input), quantity: 2~20.
Unit	Built-in 19 commonly used concentration units: -, %, ppm, ppb, g/l, mg/l, $\mu\text{g/l}$, ng/l, g/dl, mg/dl, $\mu\text{g/dl}$, mg/ml, $\mu\text{g/ml}$, ng/ml, $\mu\text{g}/\mu\text{l}$, ng/ μl , mol/l, mmol/l, IU, and support input custom units.


3. Establish the standard curve

3.1 Establish the standard curve by inputting the equation coefficient


- 1) Set **Calibration** to **Input Equation Coefficient**, set other measurement parameters according to measurement requirements, and press the button  start.
- 2) **Input Equation Coefficient** interface, press the coefficient f1~f4, K10~K1n and K20~K2n to pop up the keyboard and enter the coefficient.

Dualcomponent Analysis - New Method - Input coefficient

f1	1 >	K20	3 >
f2	1 >	K21	7 >
f3	1 >	K22	>
f4	1 >	K23	>
K10	4 >	Component 1 standard curve: $C = K11 \cdot \Delta R1 + K10$ etc: $\Delta R1 = A1/f1 - A2/f2$ Component 2 standard curve: $C = K21 \cdot \Delta R2 + K20$ etc: $\Delta R2 = A2/f4 - A1/f3$	
K11	5 >		
K12	>		
K13	>		




3) After the method is completed, the standard curve and related information are displayed. Press the button  to complete and return to **Method** interface.

3.2 Establish the standard curve by measuring standard samples




1) Set **Calibration** to **Measure standard samples**, set other measurement parameters according to measurement requirements, and press the button  to start.





Dualcomponent Analysis - New Method - Measure Standard Sample



Component 1	Abs 1	Abs 2	Time
1	0.564	0.015	
2	0.0029	1.329	

- 2) **Measure pure standard sample** interface, put the reference in the reference cuvette holder.
- 3) Put the standard sample of component 1 in the measurement channel, close the sample chamber lid and press the button  to measure. Put the standard sample of component 2 in the measurement channel, close the sample chamber lid and press the button  to measure. Press the button  to measure mixed standard samples.

Dualcomponent Analysis - New Method - Measure Standard Sample

No.	Abs 1	Abs 2	Conce.1	Conce.2	Time	Exclude
1	0.25	0.148	1	5		
2	0.514	0.299	2	10		
3	1.113	0.587	4	20		

 Last
  Blank
  Measure
  Finish

- 4) **Measure mixed standard sample** interface, put the reference in the reference cuvette holder.
- 5) Put the mixed standard sample in the measurement channel, close the sample chamber lid and press the button  to measure.
- 6) Repeat step 5 to measure all standard samples.
- 7) Press the concentration cell to enter the corresponding concentration value.
- 8) After the method is completed, the standard curve and related information are displayed. Press the button  to complete and return to **Method** interface.

Dual component

Standard Curve 1: AR1=99.6685°C-17.0720,
Standard Curve 2: AR2=1.8441°C+0.3539, R1=0.999099

F1: 0.0029
F2: 1.329
F3: 0.564
F4: 0.015


参比样品	吸光度1	吸光度2
0.643	0.493	
0.154	0.634	
0.564	0.015	

标准样品	吸光度1	吸光度2	浓度1	浓度2
0	0	0	0	0
0.084	0.118	1	1	1
0.159	0.224	2	2	2
0.328	0.461	4	4	4
0.489	0.691	6	6	6
0.645	0.911	8	8	8
0.809	1.147	10	10	10
0.25	0.148	1	5	
0.514	0.299	2	10	
1.113	0.587	4	20	

WL1	280.0
WL2	230.0
Measure Count	1
Equivalent Conversion	Closed
Light length(mm)	10
Equation	Abs=f(C)
Fitting	Linear
Zero Intercept	Closed
Calibration	Input standard sample
Standard Sample Quantity	3
Unit	mg/L

New Method Load Method Save method OK

3.3 Establish the standard curve by inputting standard samples

- 1) Set **Calibration** to **Input standard samples**, set other measurement parameters according to measurement requirements, and press the button  to start.
- 2) **Input standard sample** interface, press the **Abs** cell to input absorbance value of the pure standard sample.

Dualcomponent Analysis - New Method - Input Standard Sample

Component 1	Abs 1	Abs 2	Time
1	0.564	0.015	
2	0.0029	1.329	

← Last Blank Measure → Next

- 3) **Input standard sample** interface, press the **Abs** cell to input absorbance value and **Conce** cell to input the corresponding concentration value of the mixed standard sample.

Dualcomponent Analysis - New Method - Input Standard Sample

No.	Abs 1	Abs 2	Conce.1	Conce.2	Time	Exclude
1	0.25	0.148	1	5		<input type="checkbox"/>
2	0.514	0.299	2	10		<input type="checkbox"/>
3	1.113	0.587	4	20		<input type="checkbox"/>

- 4) After the method is completed, the standard curve and related information are displayed. Press the button to complete and return to **Method** interface.

Dual component

Standard Curve 1: $AR1=99.6685^{\circ}C-17.0720$





Standard Curve 2: $AR2=1.5441^{\circ}C+0.3539$, $R1=0.999899$

F1: 0.0029
F2: 1.329
F3: 0.564
F4: 0.015

对比样品	吸光度1	吸光度2	浓度1	浓度2
0.643	0.493			
0.154	0.634			
0.564	0.015			
~ ~ ~				
标准样品	吸光度1	吸光度2	浓度1	浓度2
0	0	0	0	0
0.064	0.118	1	1	1
0.159	0.224	2	2	2
0.328	0.461	4	4	4
0.489	0.691	6	6	6
0.645	0.911	8	8	8
0.809	1.147	10	10	10
0.25	0.148	1	5	
0.514	0.299	2	10	
1.113	0.587	4	20	


WL1	280.0
WL2	230.0
Measure Count	1
Equivalent Conversion	Closed
Light length(mm)	10
Equation	Abs=f(C)
Fitting	Linear
Zero Intercept	Closed
Calibration	Input standard sample
Standard Sample Quantity	3
Unit	mg/L


Measure sample

1. Dual component quantitation interface, press the button  enter into Method interface.
2. Method interface, load a method or establish a new method, press the button  to accept and return to measurement interface.
3. Put the reference in the reference cuvette holder.
4. Put the sample in the measurement channel, close the sample chamber lid and press the button  to measure and get calculation results.
5. Repeat step 4 to measure more samples.
6. Press  to switch to list mode to browse the list of measurement results.

■ Biological measurement

Biological measurement mode is used to measure DNA, RNA and protein concentrations using built-in methods or new methods.

- **Main** interface, press the icon  to start a **Biological measurement** application.

DNA/Protein Analysis 


No.	Formula	Unit	...
0006/0006	C[DNA]=62.9*(A1-Aref)-36.0*(A2-Aref); C[Protein]=1552*(A2-Aref)-757.3*(A2-Aref);		


1.01 ^{mg/L}


48.53 ^{mg/L}


A1	A2	Aref	Ratio					
260.0	280.0	320.0	0.87					
0.0940	0.1011	0.0000						


Date	Remarks
2018/9/8 10:56:27	


 Operation


 Method


 Blank



 Measure


1 **Biological measurement** interface, press the button  to enter into **Method** interface.


Protein Analysis - Measure


C(DNA)=(A1-Aref)*62.9-(A2-Aref)*36.0
 C(protein)=(A2-Aref)*1552.0-(A1-Aref)*757.3
 Ration=(A1-Aref)/(A2-Aref)


Biometric method	DNA Method 1
WL	260.0,280.0
Measure count	1
Equivalent Conversion	Closed
Light length(mm)	10
Equation	
Fitting	
Zero Intercept	
Calibration	
Standard Sample Quantity	
Unit	mg/L
Threshold	

 New Method

 Load Method

 Save Method

 OK

2 **Method** interface, press the button  to start a new measurement method and enter the parameter setting interface.

DNA/Protein Analysis/New Method

Method Name DNA Method 1 >

λ1	λ2	λ3	Background WL (nm)	<input checked="" type="checkbox"/>
260.0	280.0	320.0		

Coefficient 62.9,36.0,1552.0,757.3 >


Measure Count 1 >


Optical Path (mm) 10 >


Equivalent Conversion 30 >


Unit mg/L >

Threshold >




 Default

 Load Parameters

 Save Parameters

 Finish

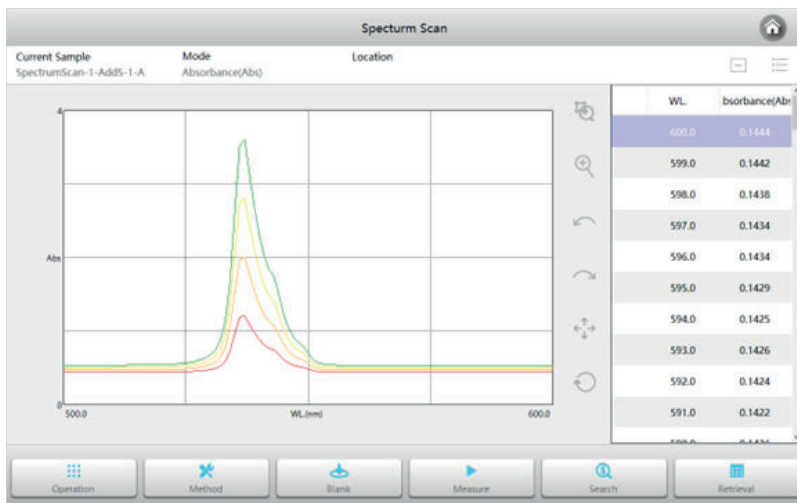
Measurement method	Built-in 7 methods: DNA-1(260/280)□DNA-2(260/230), UV method, Lowry method, BCA method, CBB method, Biuret method.
Wavelength	Measure wavelength, range: 190~1100nm.
Coefficient	Calculate the coefficient required for concentration (related to the specific measurement method)
Light path length	The width of the cuvette used for the measurement.
Equivalent conversion	When activated, the instrument automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Unit	Built-in 19 commonly used concentration units: -, %, ppm, ppb, g/l, mg/l, μg/l, ng/l, g/dl, mg/dl, μg/dl, mg/ml, μg/ml, ng/ml, μg/μl, ng/μl, mol/l, mmol/l, IU, and support input custom units.
Threshold	Upper and lower limits of measurement results.


- 3 Method interface, load a method or establish a new method, press the button  to accept and return to measurement interface.
- 4 Put the reference in the reference cuvette holder.
- 5 Put the sample in the measurement channel, close the sample chamber lid and press the button  to measure and get calculation results.
- 6 Repeat step 5 to measure more samples.
- 7 Press  to switch to list mode to browse the list of measurement results.

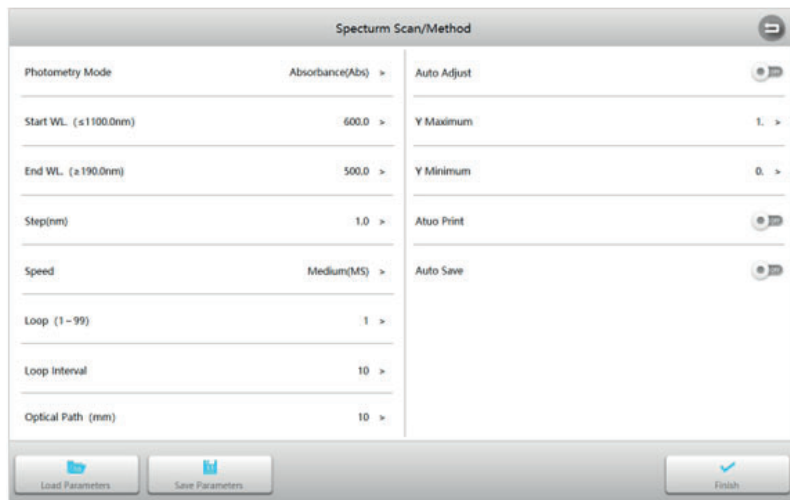
■ Spectrum scanning

Spectrum scanning mode is used to scan the absorbance or transmissivity of the sample in a wavelength range.

- **Main** interface, press the icon  to start a **Spectrum scanning** application.






1. **Spectrum scanning** interface, press the button  to enter into **Method** interface.



Spectrum Scan/Method	
Photometry Mode	Absorbance(Abs) >
Start WL. (≤1100.0nm)	600.0 >
End WL. (≥190.0nm)	500.0 >
Step(nm)	1.0 >
Speed	Medium(MS) >
Loop (1 - 99)	1 >
Loop Interval	10 >
Optical Path (mm)	10 >
Auto Adjust	<input checked="" type="checkbox"/>
Y Maximum	1. >
Y Minimum	0. >
Auto Print	<input type="checkbox"/>
Auto Save	<input type="checkbox"/>

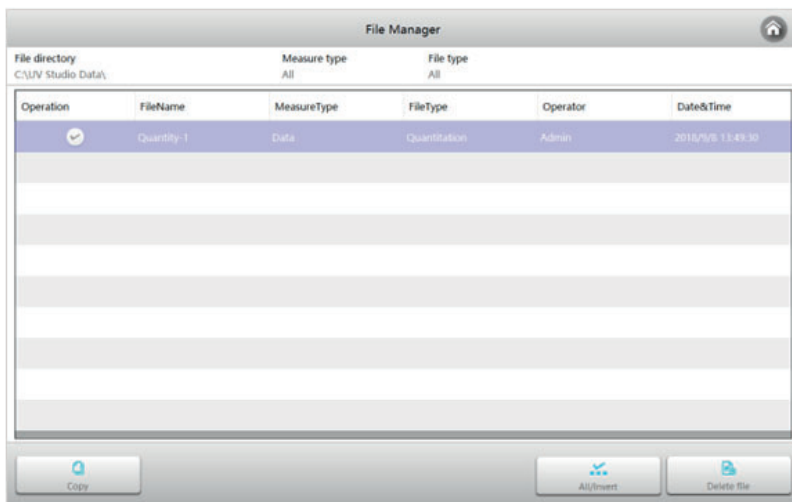
Photometry mode	2 modes: Absorbance (Abs), Transmittance (%T)
Start wavelength	Scan start wavelength, range: 190~1100nm
End wavelength	Scan end wavelength, range: 190~1100nm
Step	6 wavelength intervals selectable 0.1, 0.2, 0.5, 1.0, 2.0, 5.0 nm
Speed	3 scan speeds selectable □ Quick, Medium, Slow
Loop	Scan times
Loop interval	Interval between 2 scans
Light path length	The width of the cuvette used for the measurement
Auto scale	Whether to automatically adjust the coordinates based on the data
Y max	Maximum value of the ordinate (valid only when the coordinates are fixed)
Y min	Minimum value of the ordinate (valid only when the coordinates are fixed)
Automatic printing	Automatically print curves and results after measurement is complete
Automatic save	Automatically save curves and results after measurement is complete

2. Put the reference in the reference cuvette holder.
3. Put the sample in the measurement channel, close the sample chamber lid and press the button  to scan sample and draw the curve.
4. After the scan is complete, press the button  to zoom the graph as needed.
5. Press the button  to retrieve the value of each point (peak) of the curve and mark it for a specific point.

■ File management

File management is used to manage saved parameters, methods, and measurement files.


- **Main** interface, press the icon  to start **File management**.




Browse file list:

File management interface displays the data files stored in the storage, including data, methods and parameters. Press **Measurement type** and **File type** to set the filter conditions and display the corresponding file types.


Delete files:

Select the file you want to delete and then press the button  to delete it.

Copy files:

Select the file you want to copy, then press the button Copy, pop up the Path selection form, select target path and press the button .

Rename file name:

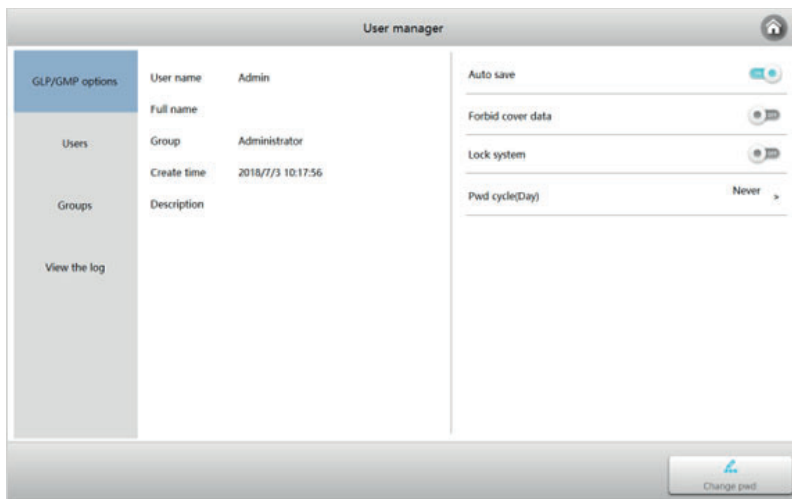
Press the file name you want to rename, pop up the keyboard, enter a new file name, and press the button  to complete the modification.

■ User management and audit trail

User management is used to manage user permissions, operation logs, etc.

- **Main interface**, press the icon  to start **User management**.

Note: Only authorized users can enter the module to perform the corresponding operations. Usually, an administrator or some advanced users.

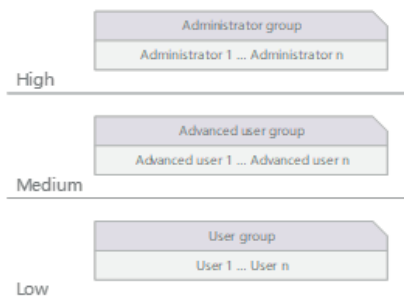


GLP/GMP option:

The tab **GLP/GMP options** contains four options: “Automatic Data Saving”, “Disable Overwriting Data”, “Allow Locking System” and “Password Replacement Period”, which can be enabled/disabled by the administrator as needed.

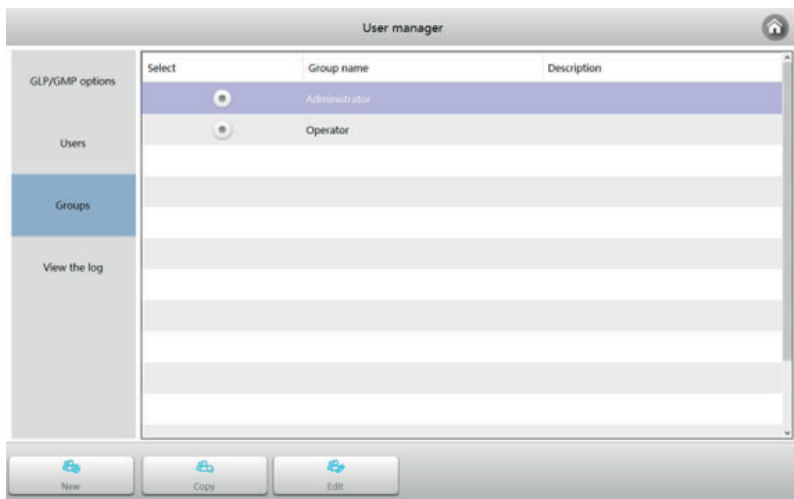
Users and user groups:

The module is divided into three layers of management structure. Each layer exists in the form of a group. All members belong to different groups. Group members in different levels can separately assign the permissions available for allocation within the level.





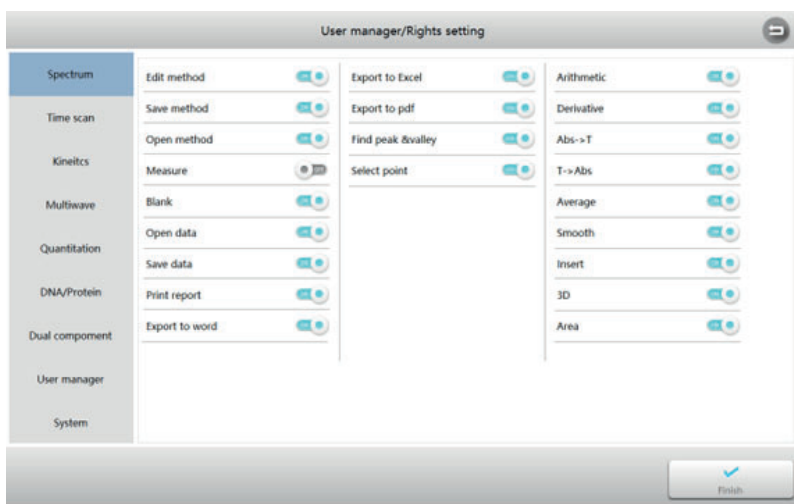
1) Operation of user groups:

User management interface, press the tab **Groups** to enter user group management.





- Create a new user group:



Press the button  to create a new user group, assign the permissions that the group has, and press the button  when done.



- Copy a user group:

Select the user group you want to copy, then press the button  to copy a user group with the same permissions and press the button  to complete.



- Edit a user group:

Select the user group you want to edit, then press the button  to edit a user group and press the button  to complete.



2) Operation of user:

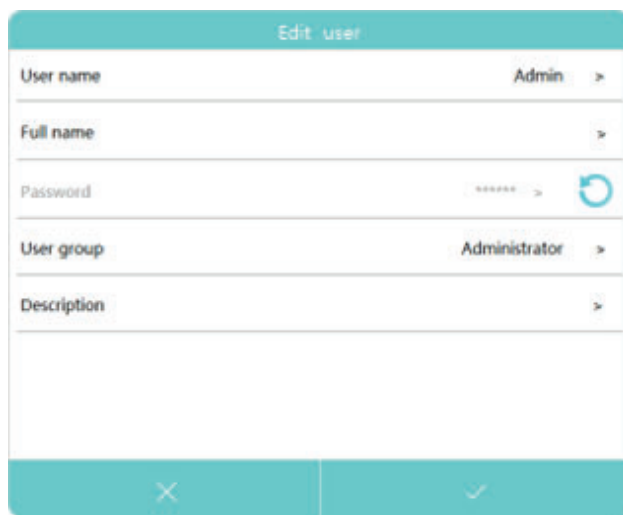
User management interface, press the tab **Users** to enter user management.



- Copy a user:

Select the user you want to copy, then press the button  to copy a user with the same permissions and press the button  to complete.

- Edit a user:

Select the user you want to edit, then press the button  to edit user name, description information, password, etc., and press the button  to complete.


- Lock / unlock user:

Select the user who needs to lock/unlock, and then press the button  to lock the original active user. It is temporarily unavailable. If you need to re-enable it, select the user to press the button  again.

Audit trail:

User management interface, press the tab **Log** to enter log management.


The screenshot shows the 'User manager' interface. On the left, there is a sidebar with 'View the log' selected. The main area displays a table with columns: Select, User name, User group, Operating time, Operating module, and Operating content. Below the table are buttons for 'All/inverse', 'Print', 'Export', 'Backup database', and 'Restore database'.

Select	User name	User group	Operating time	Operating module	Operating content
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:54:45	Dualcomponent analysis	Update method
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:52:52	Quantitation	Update method
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:49:30	Quantitation	Save data
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:47:26	Quantitation	Measure
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:47:25	Quantitation	Measure
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:47:24	Quantitation	Measure
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:47:22	Quantitation	Measure
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:47:21	Quantitation	Measure
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:47:20	Quantitation	Measure
<input checked="" type="checkbox"/>	Admin	Administrator	2018/9/8 13:47:18	Quantitation	Measure


1) Browse operation log:

Press **User name** to select the user who needs to browse the log. Press **Operation time** to select the time range to view the operation log of one (or all) users.


2) Print log:

Select the log content you want to print and press the button  to print the log contents.


3) Export log:

Select the log content you want to export, press the button , and select the export path to export the log content.

4) Database backup:

Press the button  to back up the database to other storage after selecting the backup path.

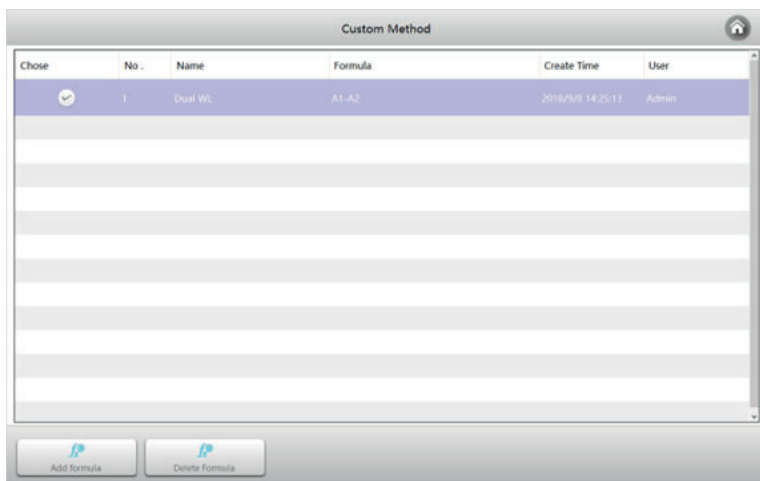
5) Database recovery:

Press the button  to select the backed-up database file to restore the database to the instrument default storage location.


■ Formula editor

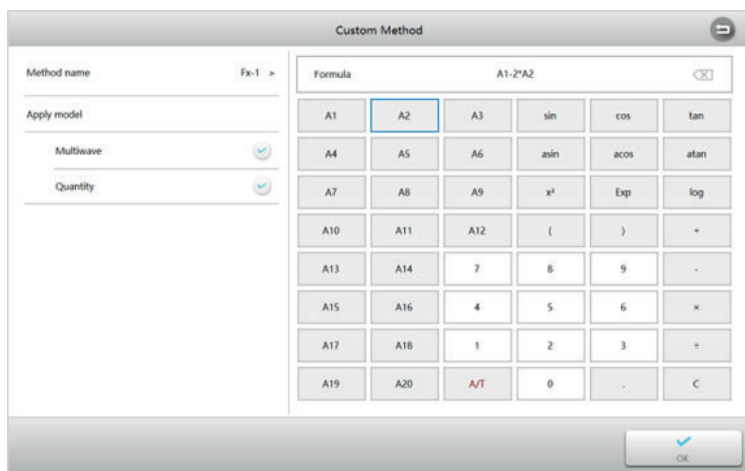
Method editor is used to write formulas for photometric calculations.

Main interface, press the icon  to start **Formula editor**.



Add calculation formula:

Formula list interface, press the button **Add formula** to enter to **Formula editor** interface. Enter the formula name as required by pressing the label **Name**, select the applied module, enter the calculation formula and press the button  to complete.



Delete calculation formula:

Formula list interface, select the method you want to delete and press the button **Delete formula** to delete the method.

■ Performance verification

Performance verification is used to verify that the instrument's performance indicators are good.

- **Main** interface, press the icon  to start **Performance verification**.

GMP				
Wavelength accuracy			±0.3nm >	
Reference material	Standard value(nm)	Measure value(nm)	deviation(nm)	
Filter-1	641.0			
	537.0			
	485.4			
Wavelength accuracy(nm)			Result:	
Straylight			≤0.0033%T >	
Reference material	Wavelength(nm)	Measure value(%T)		
Filter-1	228.0			
Stray light(%T)			Result:	
Photometric accuracy			±0.3%T >	
Reference material	Wavelength(nm)	Standard value(%T)	Measure value(%T)	deviation(%T)
T1	440.0	9.8		
	546.0	10.1		
	635.0	7.8		
Photometric accuracy(%T)			Result:	
Resolution			≥2nm >	
Reference material	Wavelength(nm)	Peak(nm)	Valley(nm)	Measure value(nm)
Std-1	260-250.0			
Resolution accuracy(nm)			Result:	


Operation
Load method
Save method
Measure

1) Preparing

- The instrument must be warmed up for more than 30 minutes before performing performance verification.
- The instrument must first calibrate the dark current and the system baseline before verification.
- The reference material used for verification must be within the validity period of the test.

Note: Standard filters used to verify the performance of the instrument can be purchased separately, they are not supplied with the instrument.

2) Wavelength accuracy and wavelength repeatability verification:

- Standard material: Holmium oxide solution or equivalent filter
- Verification:
 - 1: **Performance Verification** interface, press the tab **Wavelength accuracy** to enter the **Setting** interface, set parameters, and press the button  to accept and back.

GMP/Wavelength accuracy setting

Standard sample 1 Filter-1

Measurement point and standard value 3 >


S1-1	S1-2	S1-3	S1-4	S1-5
641.0	537.0	485.4
S1-6	S1-7	S1-8	S1-9	S1-10
.....
S1-11	S1-12	S1-13	S1-14	S1-15
.....

Standard sample 2 Blue/turn

Measurement point and standard value >

S2-1	S2-2	S2-3	S2-4	S2-5
.....

Deviation(nm) ±0.3 >

2: Remove anything in the measurement channel, close the sample chamber cover, press the button  and select the tab **Wavelength Accuracy** to start the measurement.


3: According to the instructions of the instrument, put the reference and the standard material into the measurement channels; after completion the test result is displayed.

3) Photometric accuracy and photometric repeatability verification

- Standard material:

NIST 930D or equivalent filter

- Verification:

1: **Performance Verification** interface, press the tab **Photometric Accuracy** to enter the **Setting** interface, set parameters, and press the button  to accept and back.

GMP/Photometric accuracy setting

Photometric mode Transmittance(%) >

Standard sample 1 T1

Measurement point and standard value 3 >

440.0	546.0	635.0
9.8	10.1	7.8

Standard sample 2 2

Measurement point and standard value >

.....	635.0
.....

Standard sample 3 3

Measurement point and standard value >


.....	S-12	S-13
.....

Standard sample 4 4

Measurement point and standard value >

.....	S-2
.....

Allowable deviation ±0.3 >

2: Remove anything in the measurement channel, close the sample chamber cover, press the button  and select the tab **Photometric Accuracy** to start the measurement.


3: According to the instructions of the instrument, put the reference and the standard material into the measurement channels; after completion the test result is displayed.

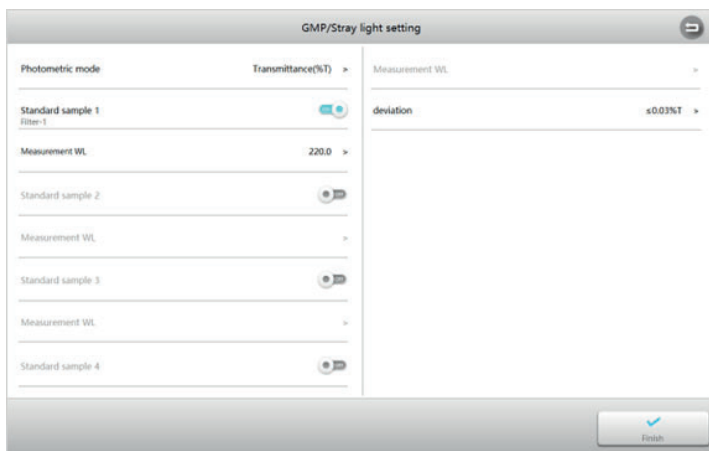
4) Stray light verification


- Standard material:

10g/L NaI solution or equivalent filter (220nm), 50g/L NaNO₂ solution or equivalent filter (340 or 360nm).

- Verification:

1: **Performance Verification** interface, press the tab **Stray Light** to enter the **Setting** interface, set parameters and press the button  to accept and back.




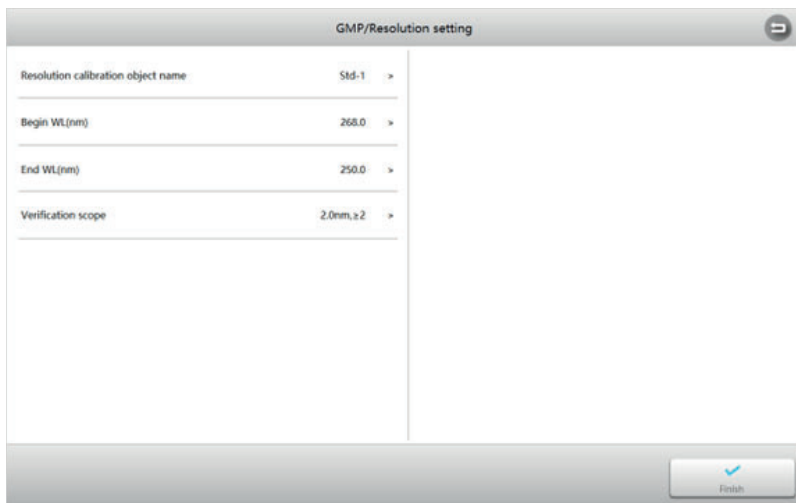
2: Remove anything in the measurement channel, close the sample chamber cover, press the button  and select the tab **Stray Light** to start the measurement.

3: According to the instructions of the instrument, put the reference and the standard material into the measurement channels; after completion the test result is displayed.

5) Resolution verification


- Standard material: Toluene-hexane
- Verification:

1: **Performance Verification** interface, press the tab **Resolution** to enter the **Setting** interface, set parameters, and press the button  to accept and back.



GMP/Resolution setting	
Resolution calibration object name	Std-1
Begin WL(nm)	268.0
End WL(nm)	250.0
Verification scope	2.0nm, z2

Finish

2: Remove anything in the measurement channel, close the sample chamber cover, press the button  and select the tab Resolution to start the measurement.

3: According to the instructions of the instrument, put the reference and the standard material into the measurement channels; after completion the test result is displayed.

REPAIR AND MAINTENANCE

In order to keep the instrument in optimal working condition, the daily maintenance of the instrument must be done. This chapter introduces some things you need to pay special attention to so that you can easily solve some minor problems.

■ Daily Maintain

1- Check the sample compartment:

After measurement, the cuvettes with sample solutions should be taken out of the compartment in time. Or the volatilization of the solution would make the mirror go moldy. Users must pay more attention to the corrosive sample and liquid easy to volatilize. Any solution remains in the compartment should be wipe off immediately.

2- Cleaning of the instrument surface:

If paint drops fall on the surface of the instrument, wipe them off immediately with a damp towel. Organic solution is forbidden to be used to clean the surface. Please wipe off the dirt on the surface timely.

3- Cleaning of the cuvettes:

After every test or after a solution change, the cuvettes should be cleaned carefully, or the remains on the surface would cause measuring error.

■ Troubleshooting

Review the information in the table below to troubleshoot operating problems.

Problem	Cause	Solution
Power on, no response	Power cord connection is not reliable	Improve connection
	Fuse burning	Replace fuse
Measurement uncertainty	Sample is not stable	Improve the sample
	Glass cuvettes used in UV region	Use quartz cuvettes
	The sample concentration is too high	Dilute the sample
	Power supply voltage low or not stable	Improve the power supply
	Lamp damage or lamp life maturity	Replace lamp
Dark current error when self-check	The lid of the compartment is open during self-check	Close the lid, restart
System calibration failed	Something blocks the light path	Remove it, calibrate again
Inaccurate measurements	Cuvettes were contaminated	Clean the cuvettes
	Samples were contaminated	Improve the samples
	Bad matching of the cuvettes	Improve the matching of the cuvettes
	Dark current error	Resample dark current

SPARE PARTS REPLACEMENT

■ Fuse replacement

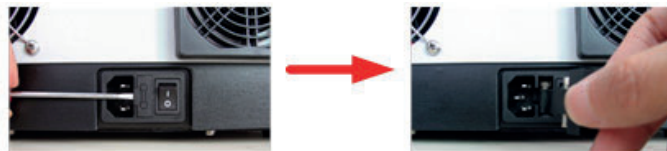


Danger! Be sure to switch off the power and unplug the socket before replacement!

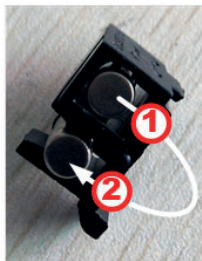
Tools preparation: Prepare a 3×75 flat blade screwdriver.

Switch off the power supply: Switch off the power supply and unplug the socket.

Take out the fuse seat: Use the screwdriver to pry and open the fuse holder.



Replace the fuse: Pick out the spare fuse (position 1) and place it in position 2. Install the fuse holder back to the instrument power outlet.



Power on: Plug the socket and switch on the power.

■ Lamps replacement



Hot! Wait 20 minutes before open the lamp chamber after power off to avoid scald!

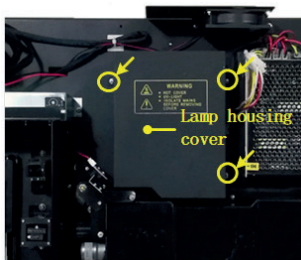
Tools preparation: Prepare a 6 × 150 mm flat blade screwdriver and a pair of gloves.

Power off: Switch off the power supply and unplug the socket. Wait 20 minutes for the light source to cool.

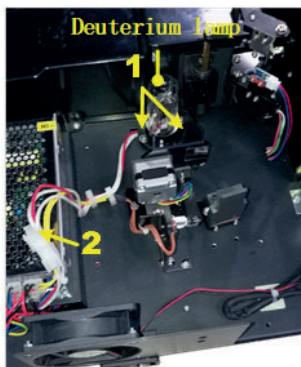
Open the instrument cover: Use the screwdriver to unscrew the four screws (two on each side) of the instrument cover, slowly open the cover with the back of the instrument as the center and unplug the 2 plugs on the interface board.



Open the lamp cover: As shown in the figure, use the screwdriver to remove the three screws that secure the lamp housing cover and remove the lamp housing cover.



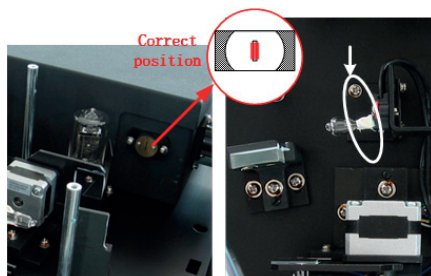
Deuterium lamp replacement: Unplug the connector (No. 2). Unscrew the 2 screws on the flange of the deuterium lamp (No.1) and remove the deuterium lamp. Draw on the cotton gloves and replace a new lamp. Fix the 2 screws and plug the connector again.



Tungsten lamp replacement: As shown in the figure, remove the old tungsten lamp, put on the cotton gloves, and insert the new tungsten lamp into the lamp holder.



Tungsten lamp replacement: As shown in the figure, remove the old tungsten lamp, put on the cotton gloves, and insert the new tungsten lamp into the lamp holder.



Completion: Install the lamp housing cover, fix it with the screws that have just been removed, insert the two plugs connected to the adapter plate on the cover of the control panel, place the instrument cover and fix it with screws to complete the replacement.

WARRANTY

AUXILAB S.L. warrant that this product will be free from defects in material and workmanship for a period of 2 years from date of delivery except the lamps. Lamps have a warranty of 1000 hours usage time or 6 months max. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Compliance with local laws and regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorizations necessary to use the product in its local environment. We will not be held liable for any related omission or for not obtaining the required approval or authorization, unless any refusal is due to a defect of the product.

EQUIPMENT DISPOSAL

This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

It's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment. For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you!

