UVStudio

For UV/Visible Spectrophotometers

Instruction Manual

Version：1.1.0

Contents

Preface

Introduction

Controlling the spectrophotometers from a computer running UVStudio software offers additional data display, manipulation and storage capabilities beyond those available in the firmware and build-in software.

UVStudio software includes fixed wavelength (single or multiple wavelengths), quantitative analysis, spectral scanning, time scanning, and biological methods (DNA/RNA/protein). The software also features a comprehensive validation application that enables you to verify the continued performance of the instrument.

Installation

PC requirements

Hardware

- Processor	Intel or AMD at 1.0GHz or above
- RAM	4GB or above
- Hard disk	100GB free space
- Display	1280×800 or higher, color
- USB ports	USB 2.0 or USB 3.0×2
- Input/Output Devices	Keyboard/Mouse or Touch Screen
- Operating System	Microsoft Windows 8/10/11 Pro (32-bit or 64-Bit)

Operating System

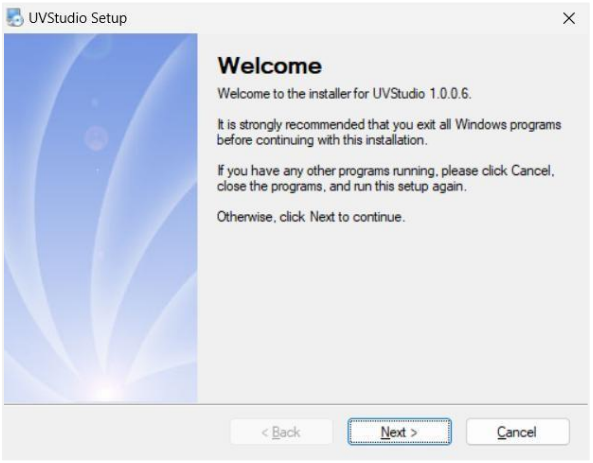
- Operating System	Microsoft Windows 8/10/11 Pro
- Automatic standby/sleep	Disable
- Hard disk automatic shutdown	Disable
- Local computer time change	Disable

PC security

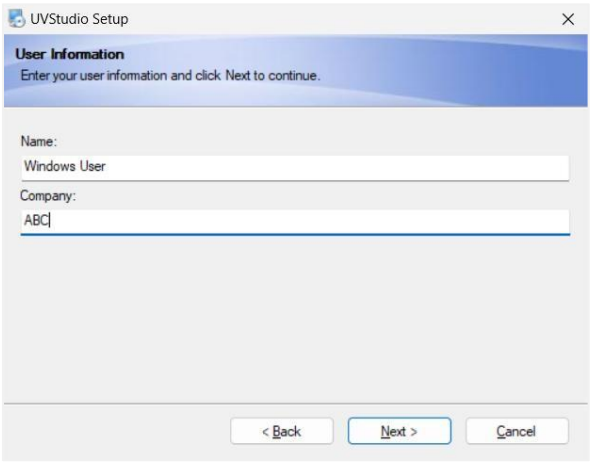
- Automatic Updates	Disable
- Firewall	On
- Antivirus software	Installation is not allowed

Installation of UVStudio software

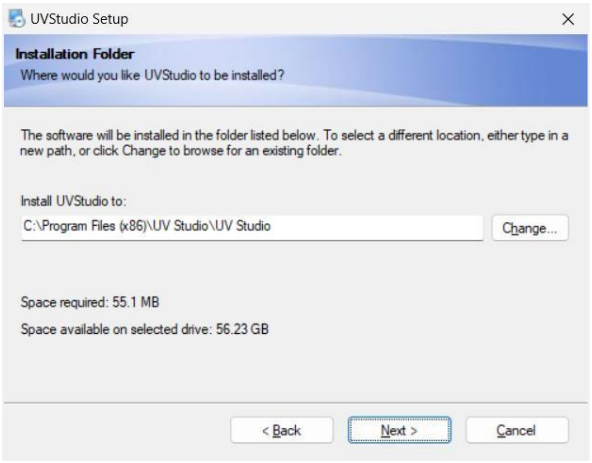
1. Insert the UVStudio software installation USB disk into the USB port of your computer. Open the USB disk and double-click "Setup.exe" to start the installation. Click "Next";



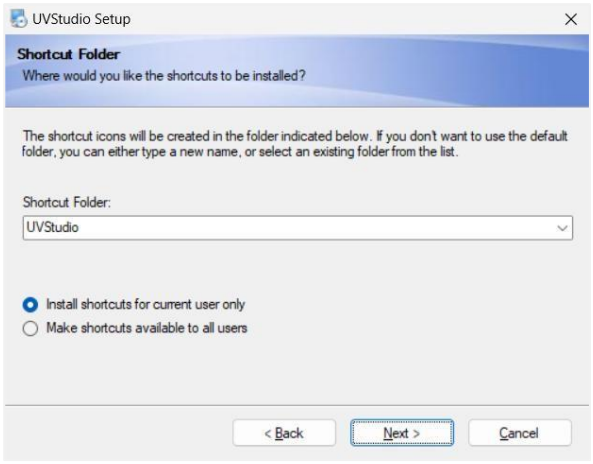
2. Enter the "User Name" and "Company Information" and click "Next";



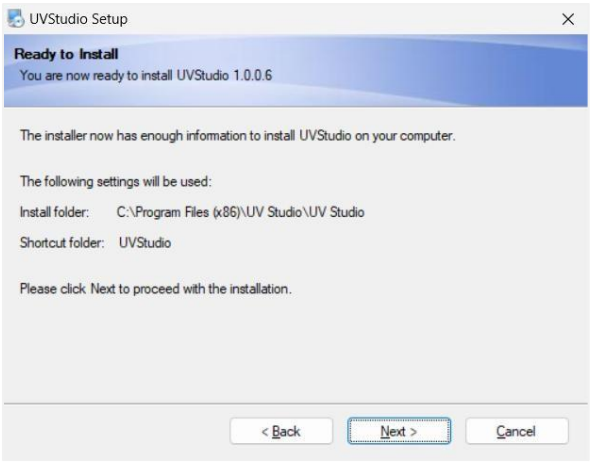
3. Click "Change..." Select the installation directory and click "Next";



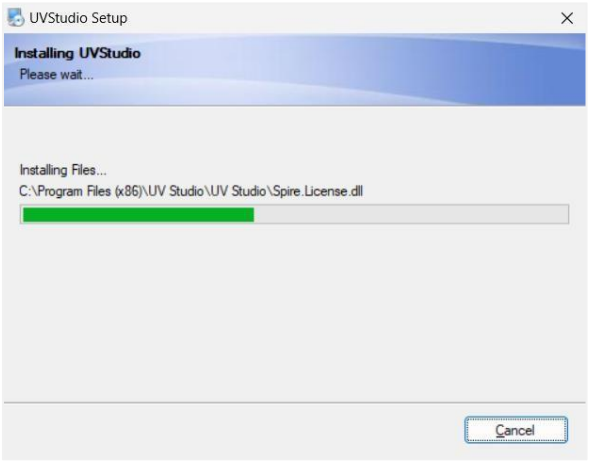
4. Select the shortcut folder and the range of users to which the shortcut applies, and click "Next";

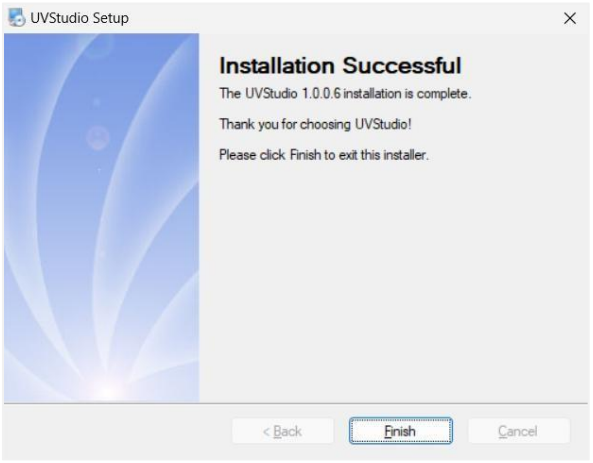


5. Display the installation information that has been set or selected and click "Next";



6. The installation program copies the required files and database to the installation directory, and makes the corresponding settings, and displays the "Installation Success" interface after completion. Click "Finish" to end the installation of UVStudio software.



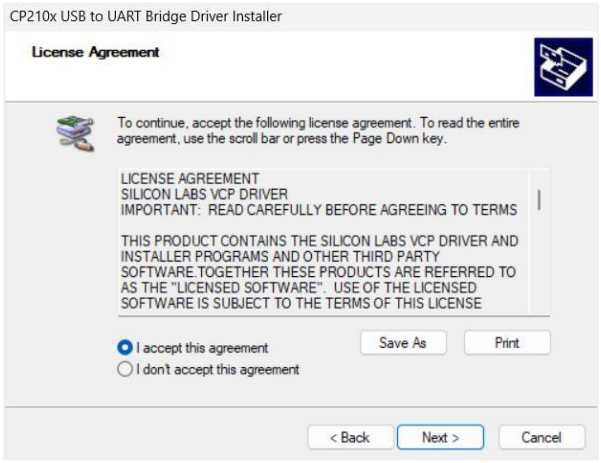


Installation of USB driver

1. Open the "CP210x_VCP_Win7_8_10" in the USB flash drive, select the appropriate installation file according to the different operating systems, and double-click to start the installation. Click "Next";

   - CP210xVCPInstaller_x64.exe : Windows 8/10/11 64-bit
   - CP210xVCPInstaller_x86.exe : Windows 8/10/11 32-bit

2. The software license agreement is displayed, select "I accept this agreement" and click "Next";

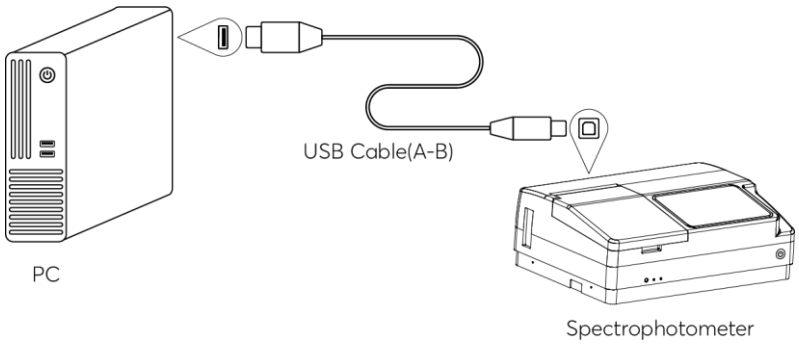


3. The installation program copies the required files to the installation directory, and displays the "Installation Success" interface after completion. Click "Finish" to end the installation of USB Driver.

Connecting the spectrophotometer to the computer

1. Connect the USB cable to the USB-A port on the computer and USB-B port on the back of the instrument. Connect the

USB key to the USB-A port on the computer;

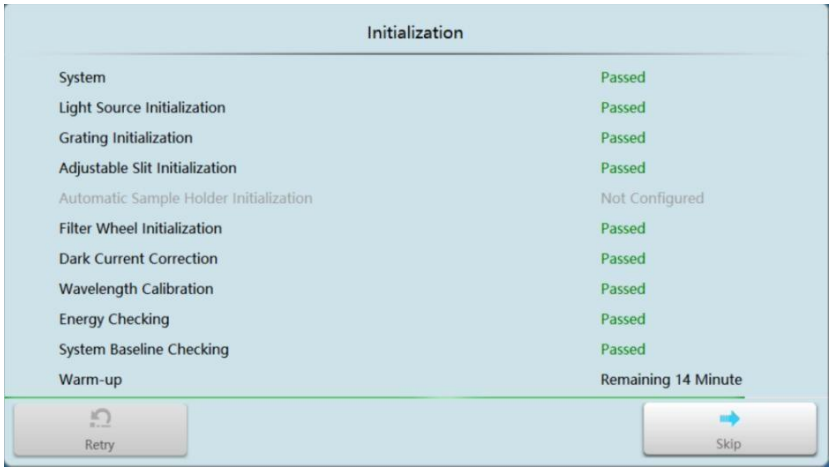


2. Press the start button of the instrument, wait for the instrument startup to complete, and enter the "Device Manager" → "Ports (COM and LPT)" to check the port number on the PC;

Run UVStudio software

Start running

1. Power on the spectrophotometer.
2. Open the sample room lid, check and remove anything in the light path that might block the light, and close the sample room lid.
3. Double-click the "UVStudio" icon on the desktop to run the software, initialize and system calibration in turn, and then enter the main interface after completion.



Note ***If the pop-up window "Do you want run offline versions?" , it may be***

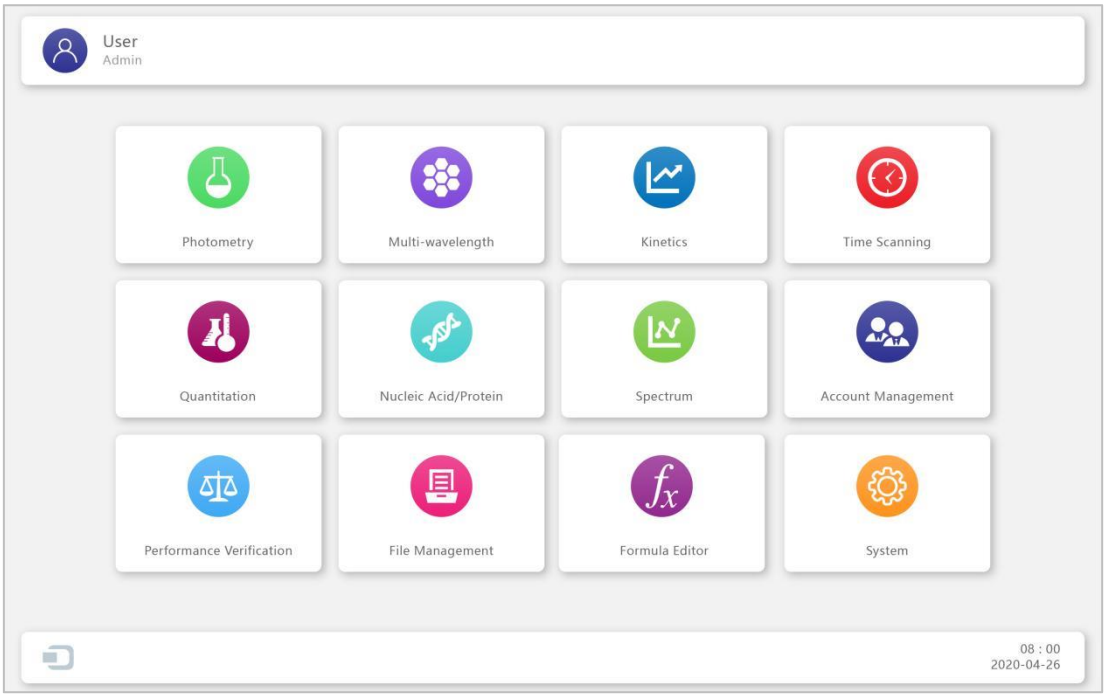
1. ***The instrument has not been started or the USB communication cable is not connected.***
2. ***The default port number is not the currently connected device.***

   After checking and confirming, click the "x" button to select the port number of the connected device and click "OK" to connect.

Basic Operation

Enter an application module

Main interface, press an application icon to enter the module interface.



	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.
	Nucleic Acid/Protein Measure DNA, RNA and protein concentrations using built-in methods or new methods.
	Spectrum Measure the photometric curve of a sample over a range of spectra.
	Account Management (only for UVStudio Audit Trail edition) 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.
	Formula Editor Users can add calculation formula 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.

Do blank/Scan baseline

Measurement interface,

- Split beam models: Put the "Reference" in the measurement channel.
- Double beam models: Put the "Reference" in the reference channel and in the measurement channel.

Press  to do blank/scan baseline.

Measuring the sample

Measurement interface,

- Split beam models: Put the "Sample" in the measurement channel.
- Double beam models: Put the "Reference" in the reference channel and "Sample" in the measurement channel.

Press  to measure the sample.

Enter data/curve list

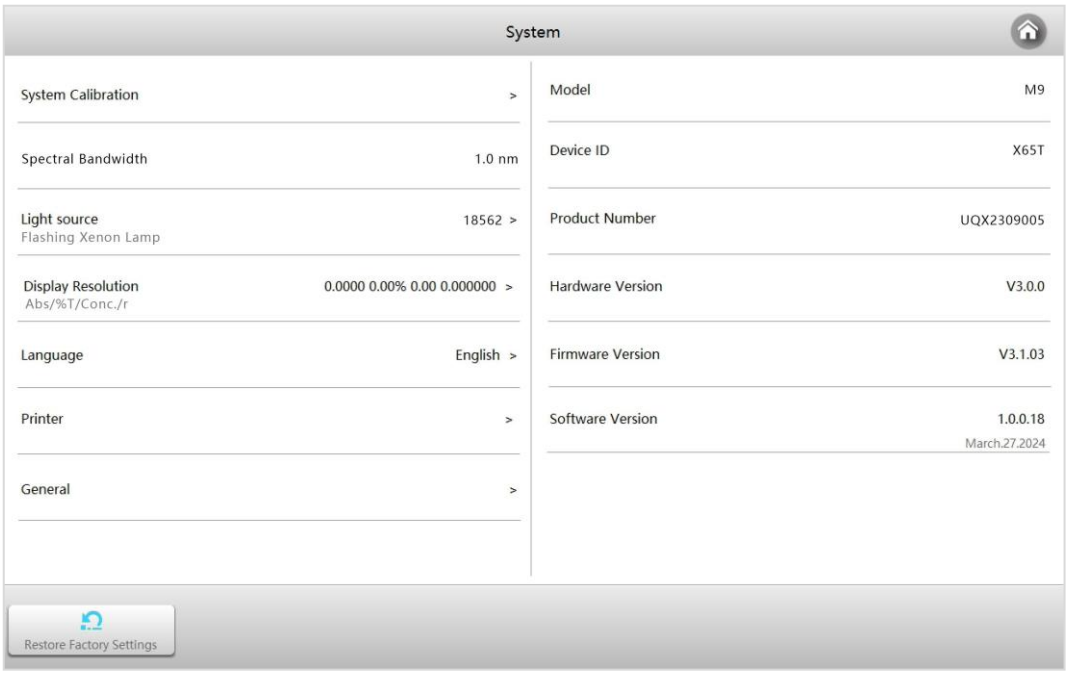
Measurement interface, press  to enter data/curve list.

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 file format** Export file to MS Excel format.
	**Export to PDF file format** Export file to PDF format.
	**Delete** Delete the selected results.

Calibration and System Settings

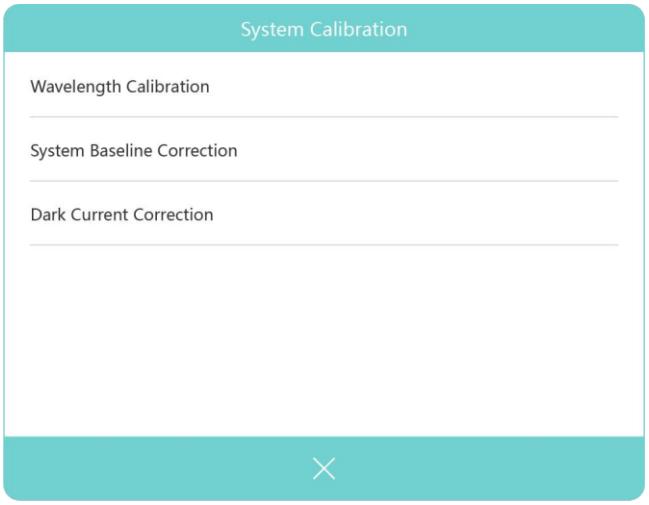
Select the icon  in the main interface. Display options to calibrate the system and configure the basic instrument settings.



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.

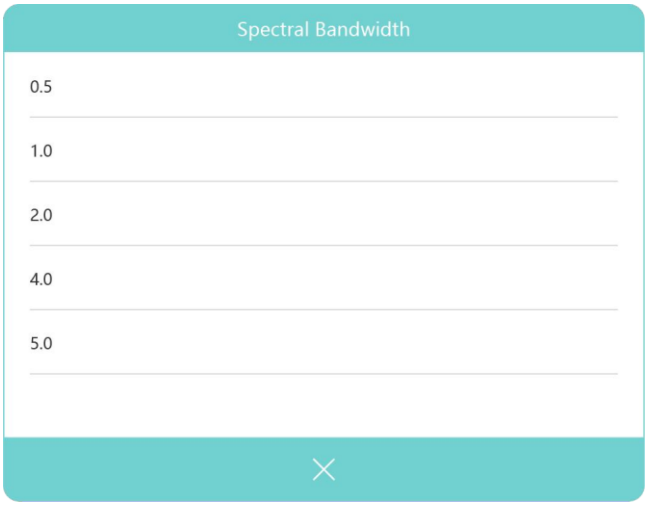
Important ***Before performing the calibration, you must remove something from the measurement channel, close the sample chamber cover, and maintain this state throughout the calibration process.***



Bandwidth selection

Select the tab **Bandwidth** in the System interface. Select the bandwidth which you want.

> ***Important*** ***After changed the bandwidth, you must do a calibration (wavelength calibration, system baseline calibration and dark current calibration).***

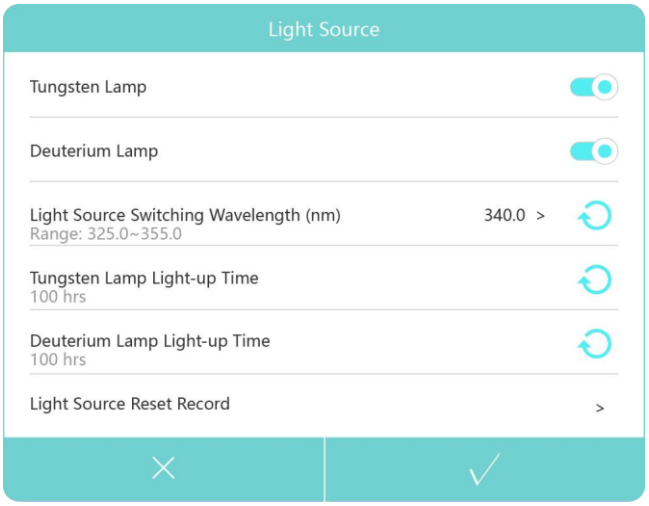


Display resolution setting

Press the tab **Display resolution**. 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**

Click  to turn on/off Tungsten lamp/Deuterium lamp.

> ***Note*** ***When using a single light source for a long time, you can turn off another unused light source to save light source life and energy.***

- **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.

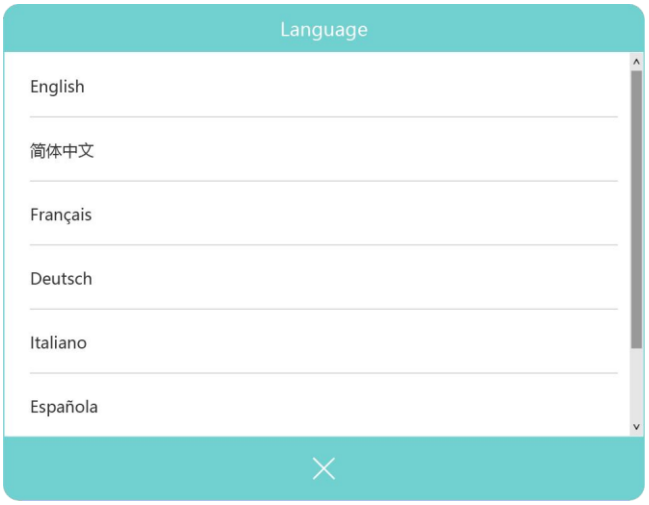
> ***Note*** ***After modifying the light source switching wavelength, you need to calibrate system baseline.***

Click  to reset the Tungsten lamp/Deuterium lamp timing.

> ***Note*** ***To ensure the accuracy of the light source timing, perform the corresponding light source clear after replacing the light source. Do not operate at other times.***

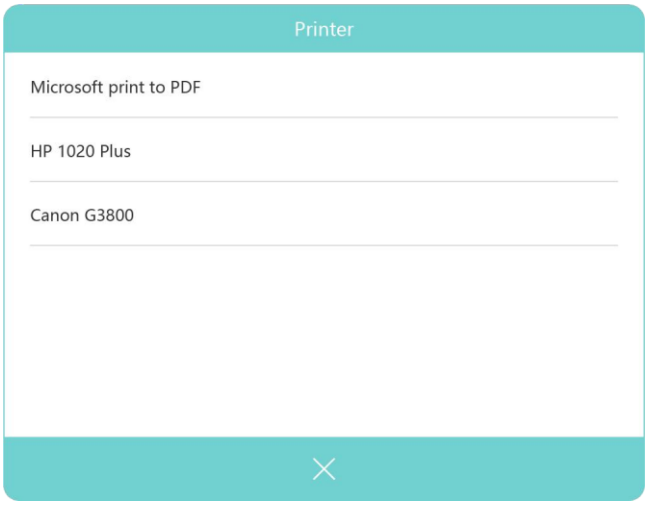
Language selection

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



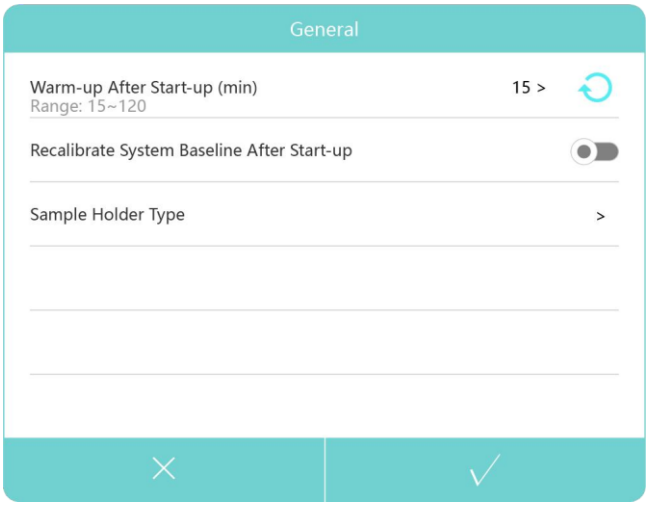
Printer setting

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



General settings

Click the tab **General** to enter.



·Warm up

Click "Warm up After Start-up (min)", pop up numeric keyboard, input value 15~120 minutes.

·Calibrate system baseline when startup

Click the icon  to turn on/off the "Calibrate System Baseline After Start-up" option.

·Set sample holder type

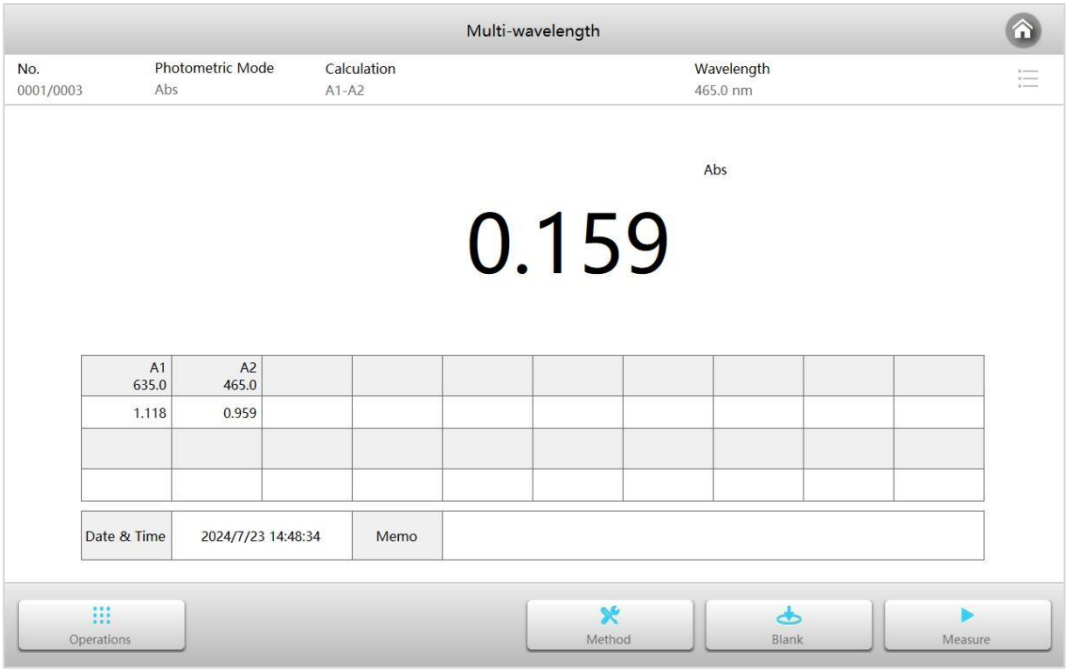
If you change to an auto sample holder or micro volume test base, you will need to set the sample holder to the matching type.

Measurement

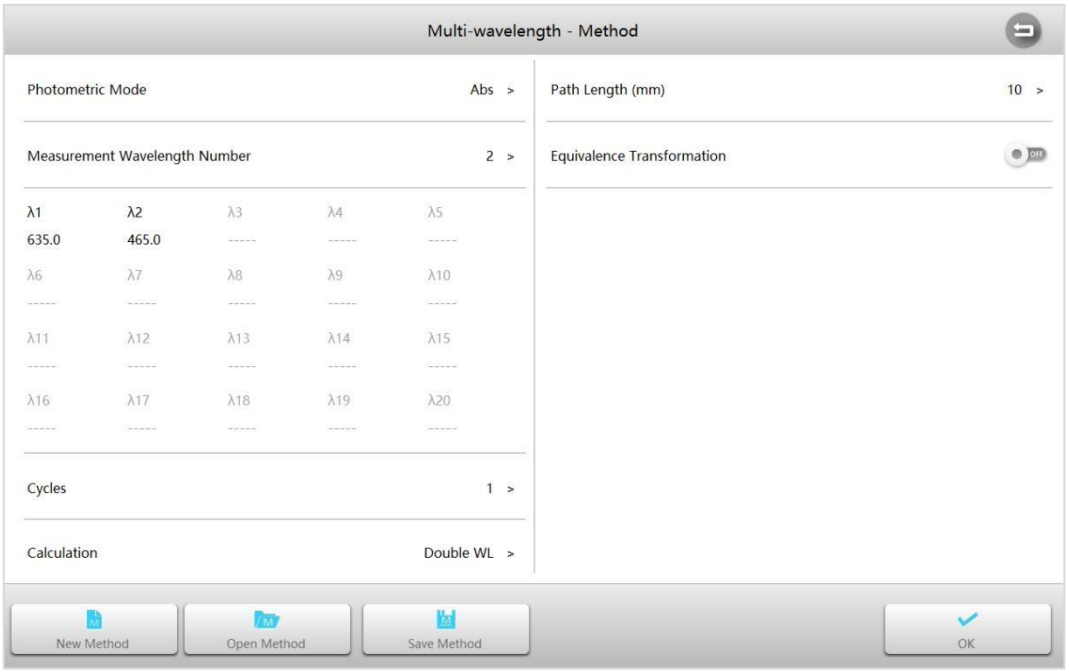
Multi-wavelength

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

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



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



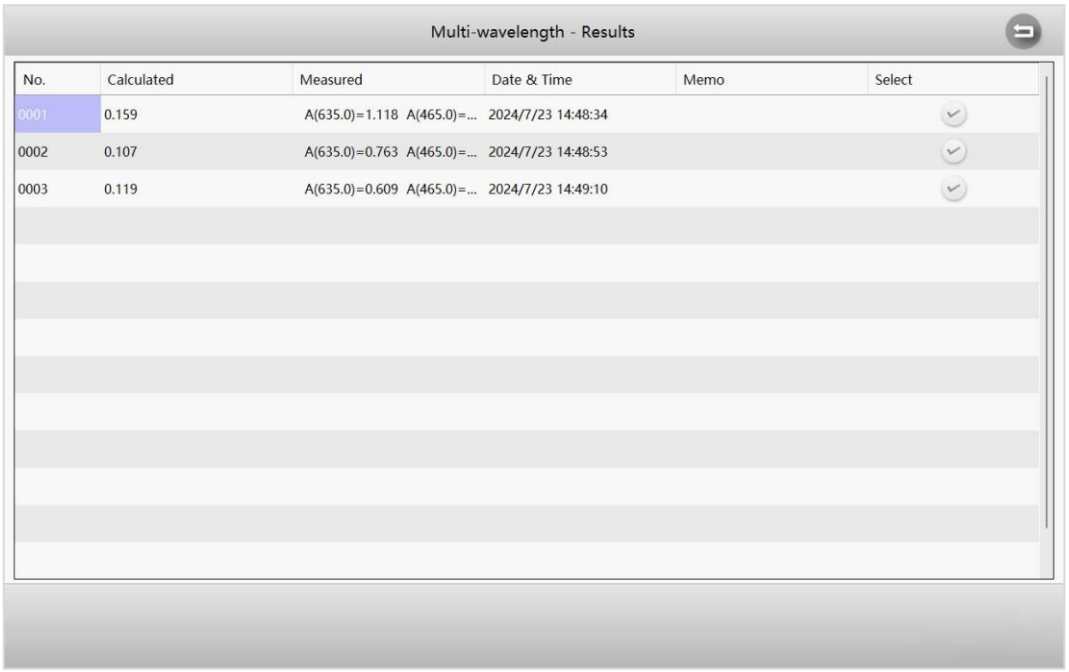
Photometric mode	2 photometric modes: absorbance and transmittance.
Measurement Wavelength Number	1~20 wavelengths are available, wavelength range: 190~1100nm.
Cycles	1, 2, 3, 5, 10, 20, 30, 50 times can be selected, the instrument will calculate the average as the final output.
Calculation	The instrument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

2 Put the reference in the measurement channel and also in the reference channel in double beam models, close the sample chamber cover, and clickthe button to do blank.

3 Put the sample in the measurement channel, close the sample chamber cover, and click the button to measure and calculation results.

4 Repeat step 3 to measure more samples.

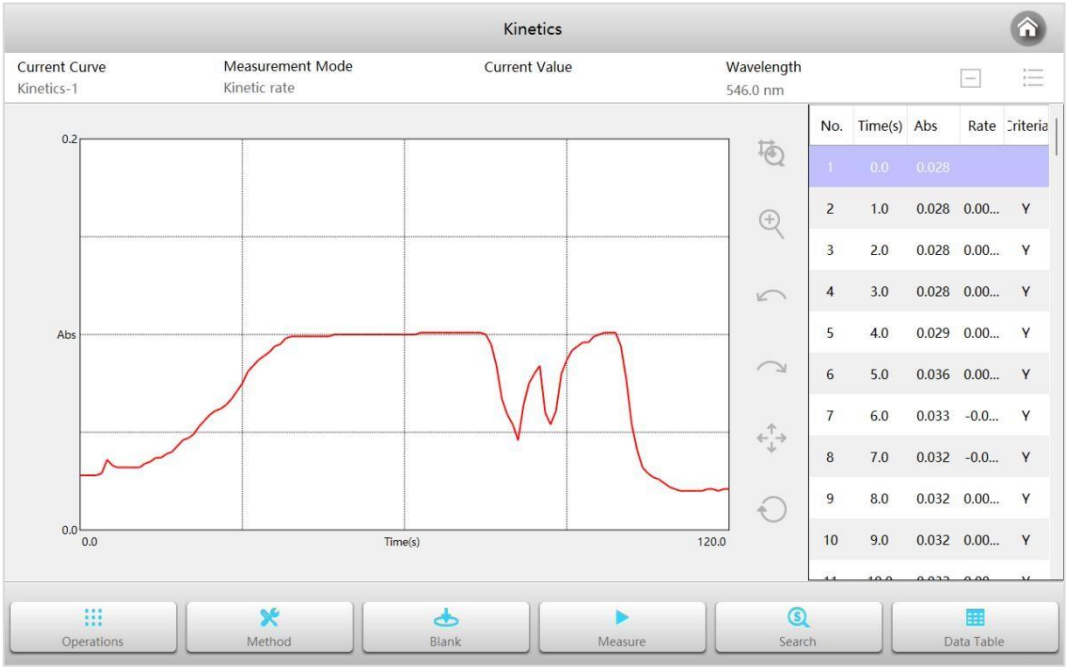
5 Click to switch to list mode to browse the list of measurement results.



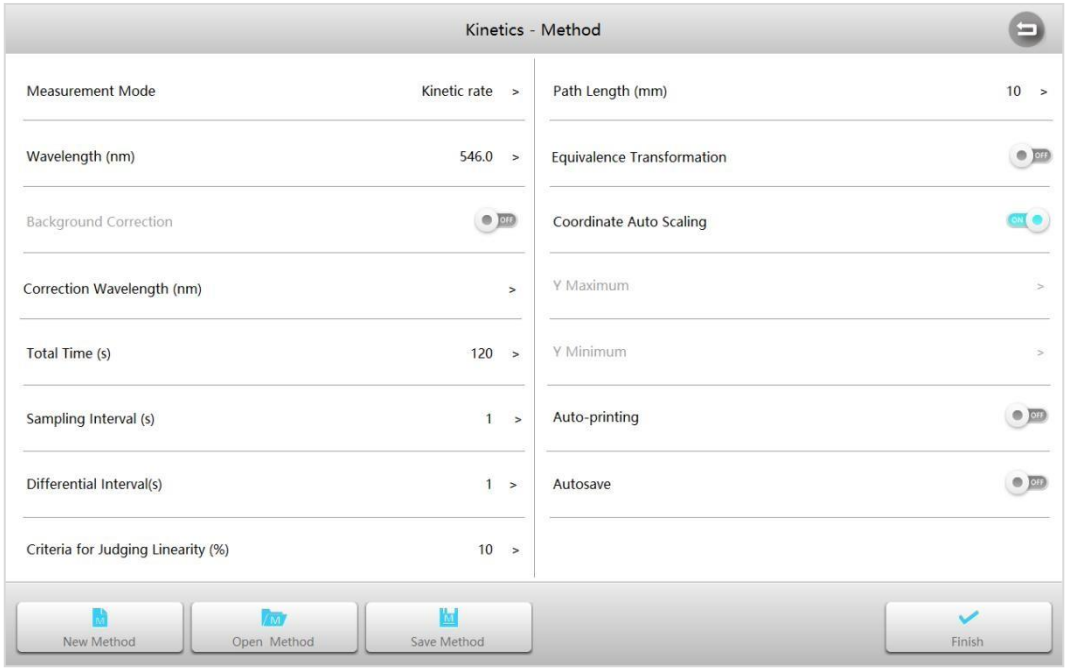
Kinetics

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

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



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



Measurement mode	2 measurement modes: kinetics and kinetic rate.
Wavelength	Measured wavelength, range: 190~1100nm.
Background correction	Background correction switch, can be set according to actual needs.
Correction wavelength	Background corrected wavelength, range: 190~1100nm.
Total Time	Measure the total sampling time required.
Sampling Interval	Sampling interval.
Delay/Derivative	Waiting time before starting sampling/time of participating activity calculation.
Coefficient	Coefficient of activity calculation equation.
Path Length	The width of the cuvette used for the measurement.
Equivalence Transformation	Activation automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Coordinate Auto Scaling	Whether to automatically adjust the coordinates based on the data.
Y Maximum	The maximum value of the ordinate (valid only when the coordinates are fixed).
Y minimum	Minimum value of the ordinate (valid only when the coordinates are fixed).
Auto-printing	Automatically print curves and results after measurement is complete.
Autosave	Automatically save curves and results after measurement is complete.

2 Put the reference in the measurement channel and also in the reference channel in double beam models, close the sample chamber cover, and clickthe button  to do blank.

3 Put the sample in the measurement channel, close the sample chamber cover, and click the button  to measure and get sampled data and draw the curve.

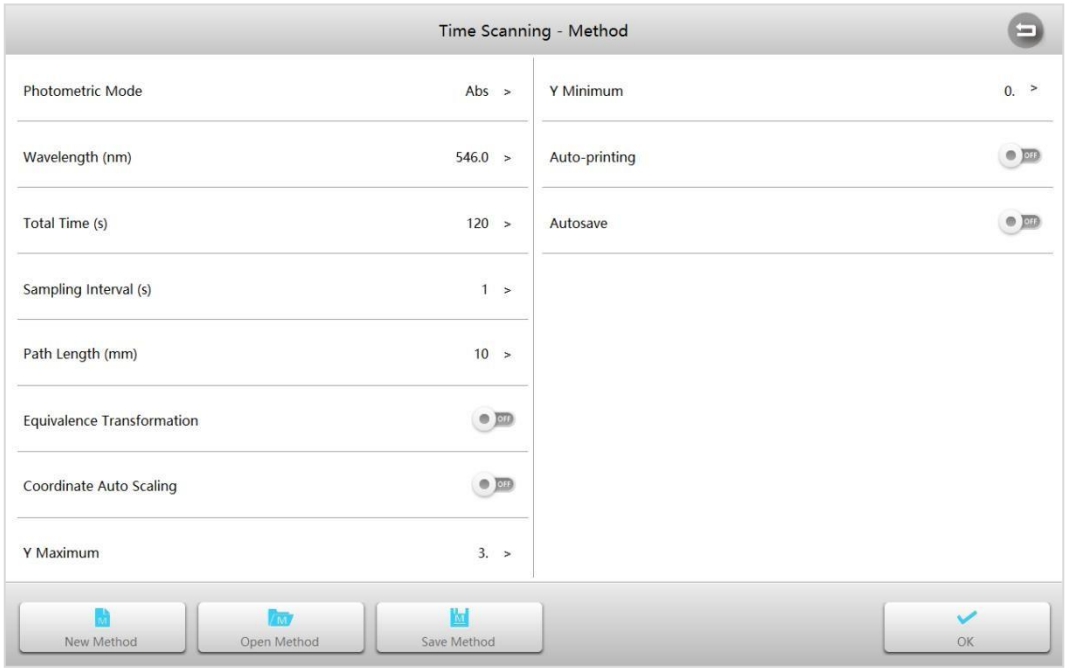
4 Repeat step 3 to measure more samples.

Time scanning

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

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

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



Photometric mode	2 photometric modes: absorbance and transmittance.
Wavelength	Measurement wavelength, range: 190~1100nm.
Total	Measure the total sampling time required.
Interval	Sampling interval.
Path Length	The width of the cuvette used for the measurement.
Equivalence Transformation	Activation automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Coordinate Auto Scaling	Whether to automatically adjust the coordinates based on the data.
Y Maximum	The maximum value of the ordinate (valid only when the coordinates are fixed).
Y minimum	Minimum value of the ordinate (valid only when the coordinates are fixed).
Auto-printing	Automatically print curves and results after measurement is complete.
Autosave	Automatically save curves and results after measurement is complete.

2 Put the reference in the measurement channel and also in the reference channel in double beam models, close the sample chamber cover, and clickthe button  to do blank.

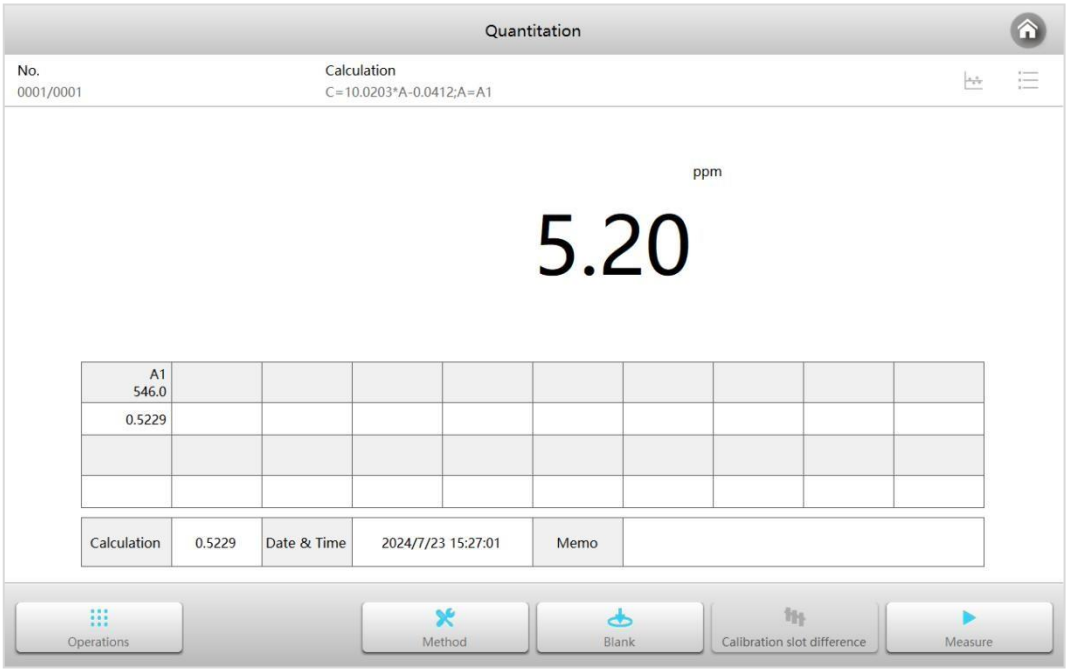
3 Put the sample in the measurement channel, close the sample chamber cover, and click the button  to measure and get sampled data and draw the curve.

4 Repeat step 3 to measure more samples.

Quantitation

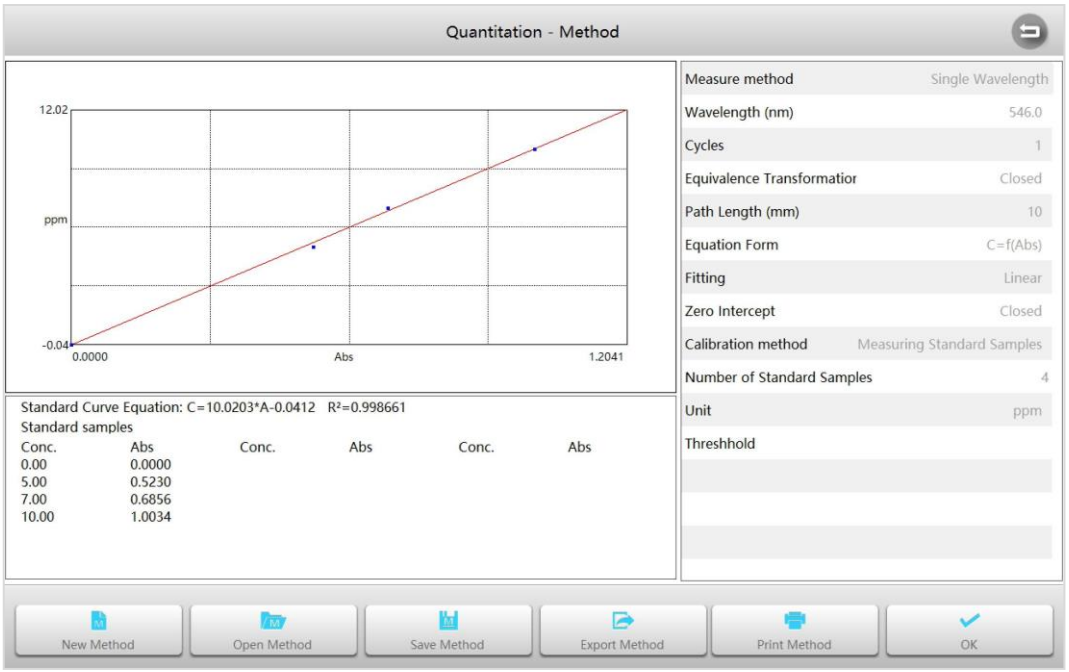
Quantitation mode is used to measure sample concentration by establishing and using a standard curve.

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

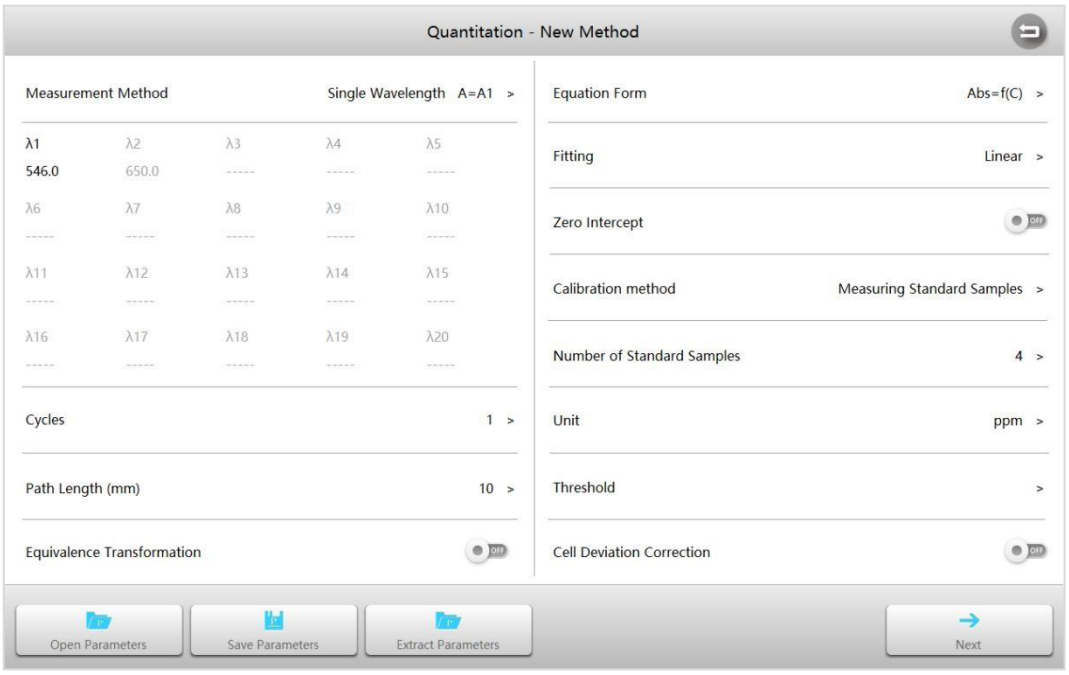


Establish quantitative methods

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



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



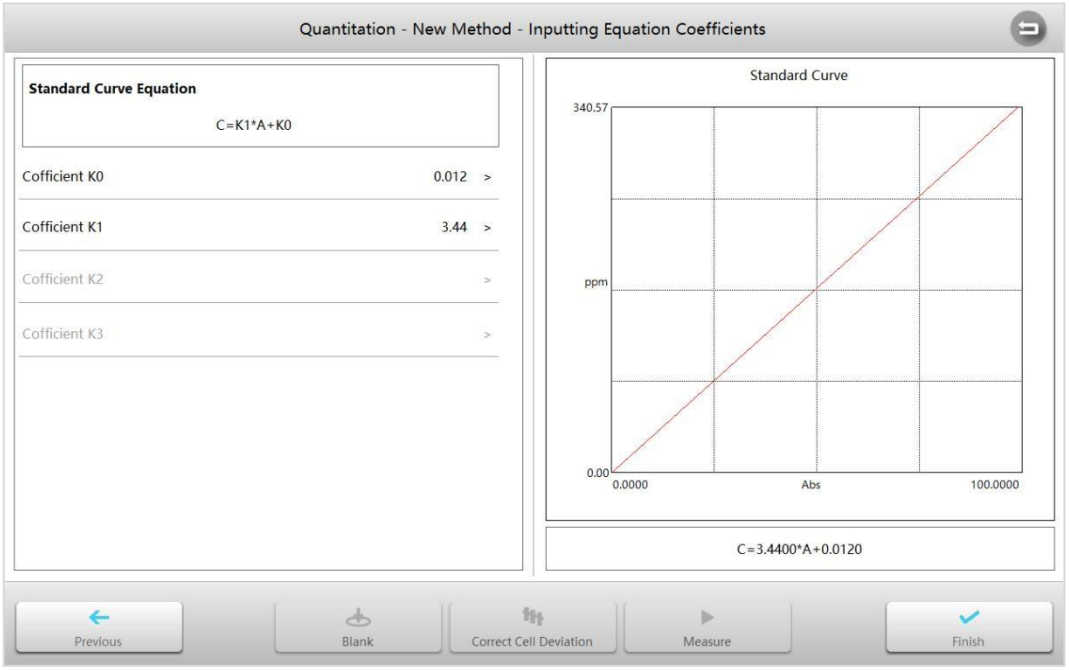
Measurement Method	Built-in single wavelength, dual wavelength difference, dual wavelength ratio, three wavelengths, area 5 ways, and support custom formula.
Wavelength	Measuring wavelength, range: 190~1100nm.
Cycles	1, 2, 3, 5, 10, 20, 30, 50 times can be selected, the instrument will calculate the average as the final output.
Path Length	The width of the cuvette used for the measurement.
Equivalence Transformation	Activation automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Equation Form	Equation form: C=F(Abs) and Abs=F(C).
Fitting	Three ways of fitting are provided: Linear, Quadratic, Cubic.
Zero Intercept	Turning on the representative fitting curve will directly cross the zero point, and closing will represent the fitting curve but the zero point.
Calibration Method	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, 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.
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 standard curve

3.1 Establish standard curve by inputting the equation coefficient

1) Set **Calibration** to **Input Equation Coefficient**, set other measurement parameters according to measurement requirements, and click the button to start.

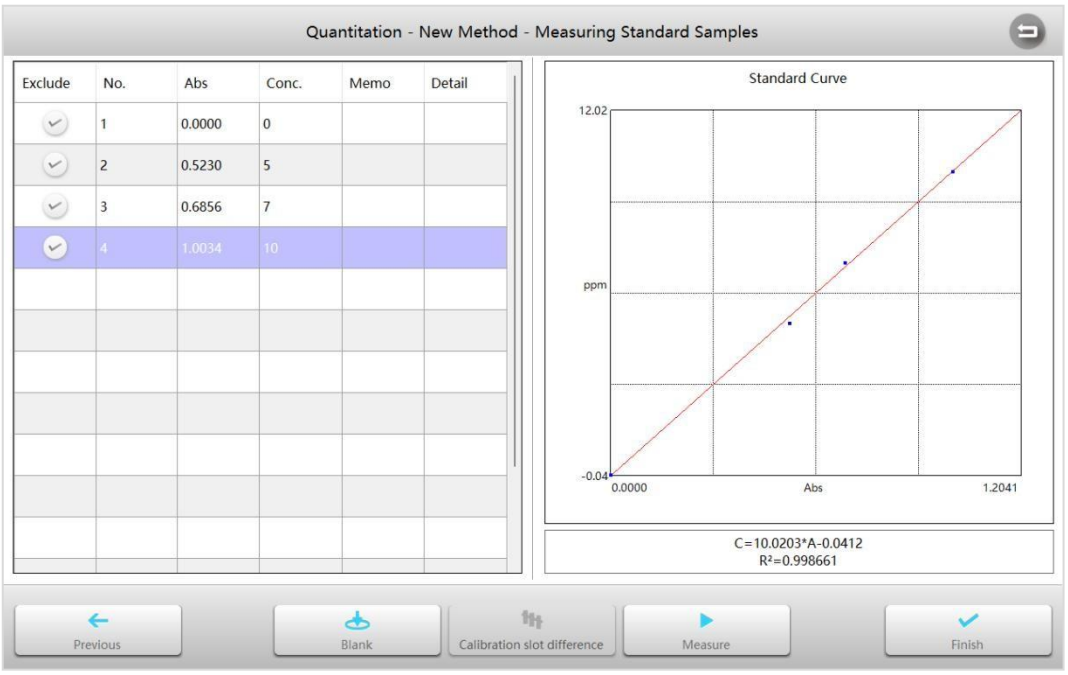
2) **Input Equation Coefficient** interface, click the coefficient K0~Kn to pop up the keyboard and enter the coefficient.



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

3.2 Establish standard curve by measuring standard samples

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



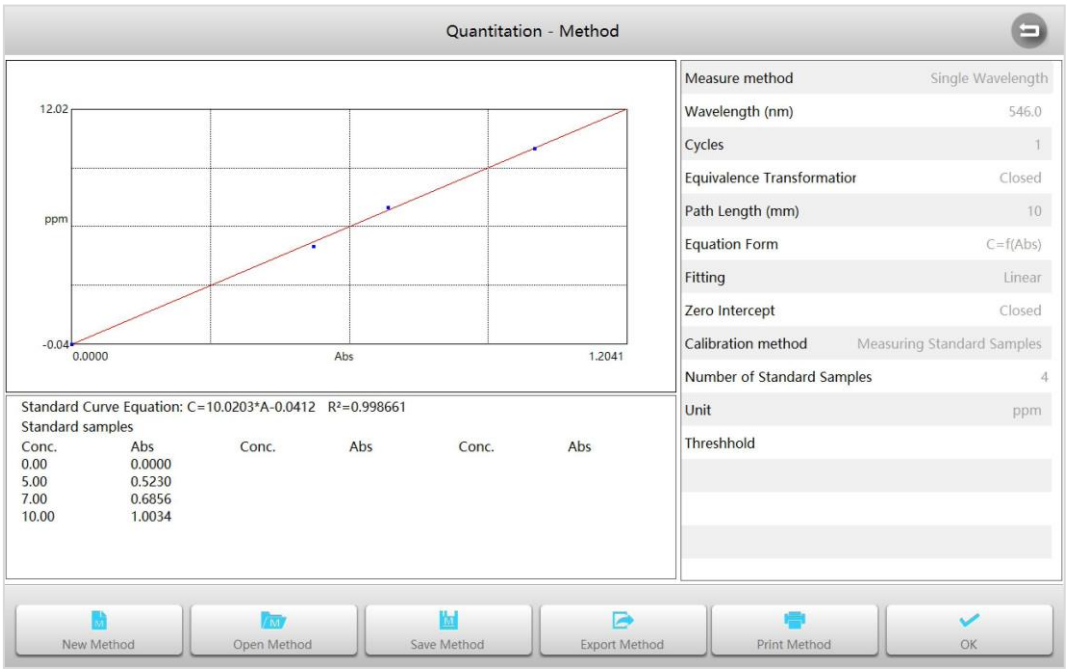
2) **Measure standard sample** interface, put the reference in the measurement channel and also in the reference channel in double beam models, close the sample chamber cover, and click the button to do blank.

3) Put the standard sample in the measurement channel, close the sample chamber cover, and click the button to measure.

4) Repeat step 3 to measure all standard samples.

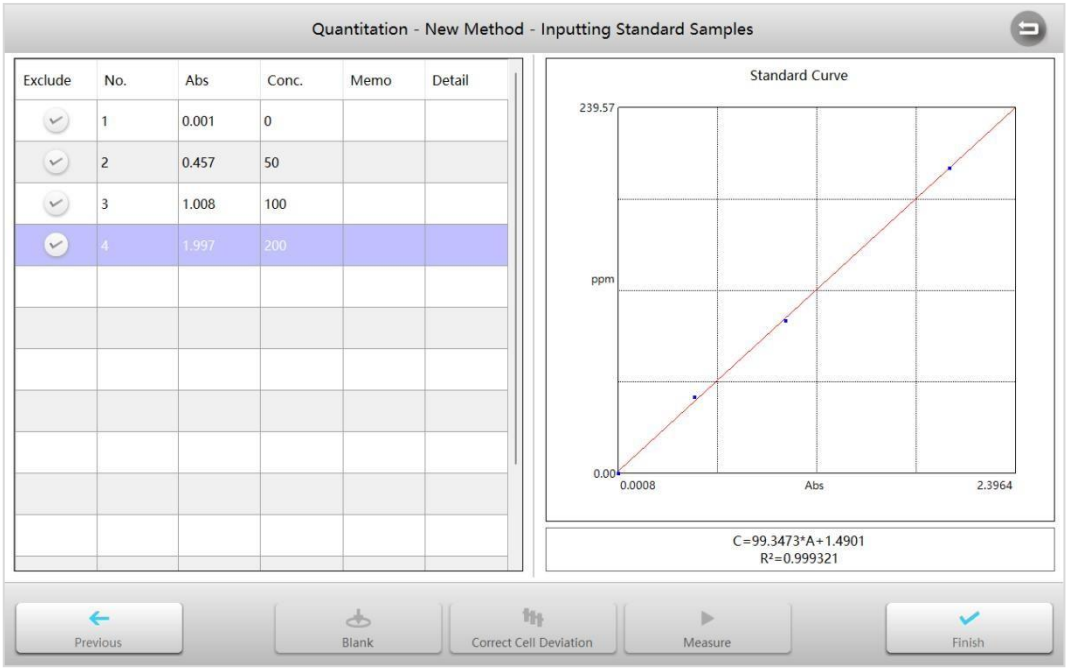
5) Click the concentration cell to enter the corresponding concentration value.

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



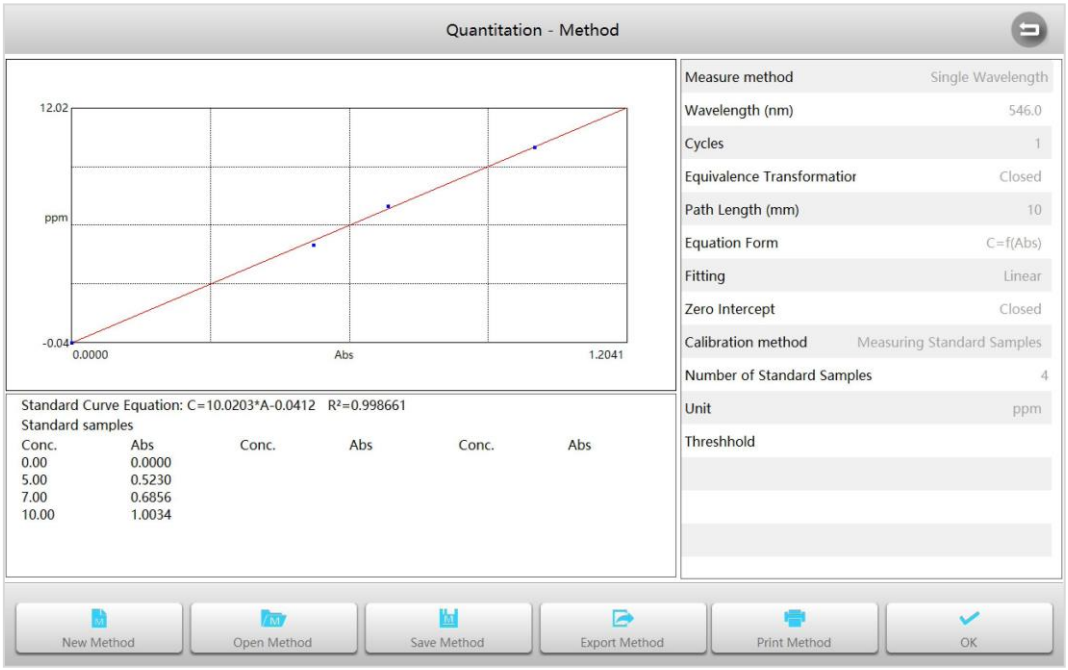
3.3 Establish standard curve by inputting standard samples

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



2) Click the **Abs** cell to input Abs value and click **Concentration** cell to input the corresponding concentration value.

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



Measure sample

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

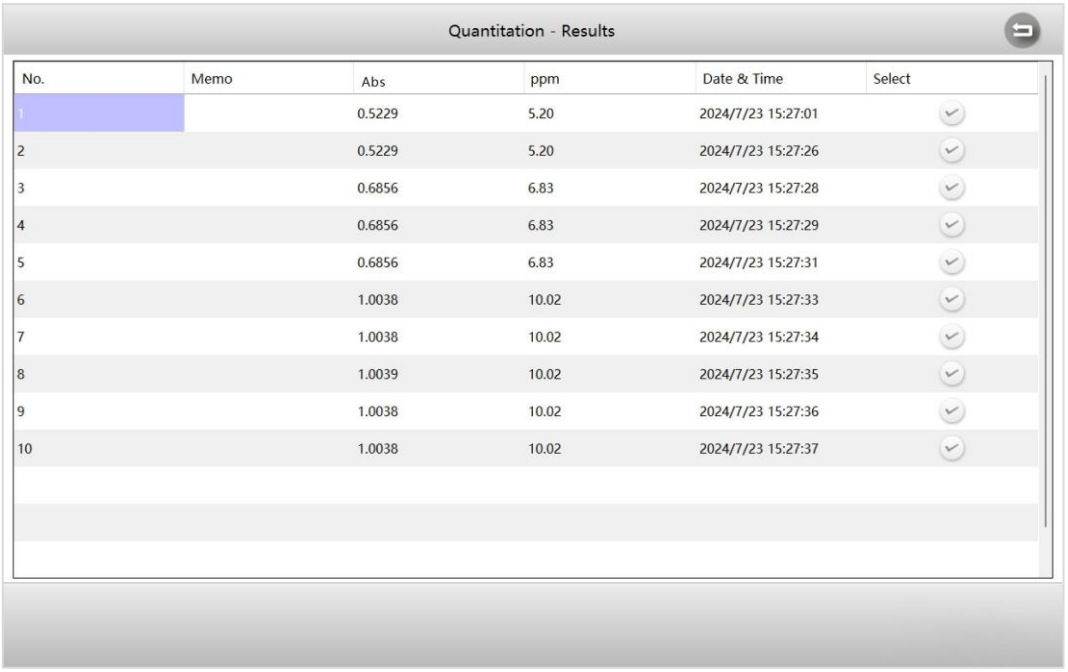
2 **Method** interface, load or new a method, click the button to accept and return to measurement interface.

3 Put the reference in the measurement channel and also in the reference channel in double beam models, close the sample chamber cover, and clickthe button to do blank.

4 Put the sample in the measurement channel, close the sample chamber cover, and click the button to measure and calculation results.

5 Repeat step 4 to measure more samples.

6 Click to switch to list mode to browse the list of measurement results.

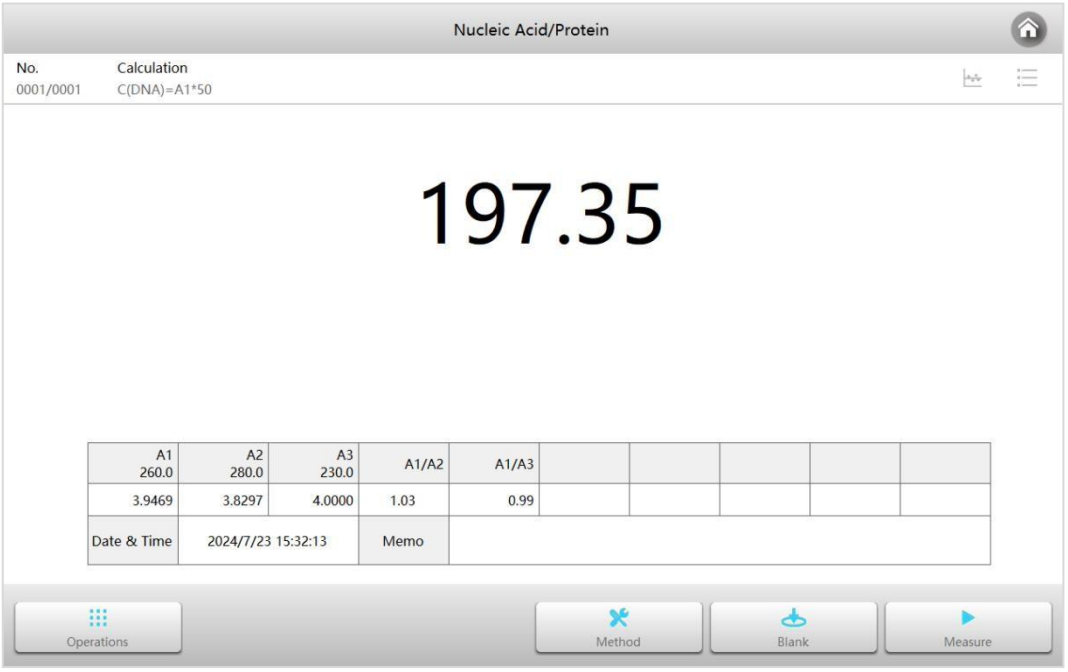


No.	Memo	Abs	ppm	Date & Time	Select
1		0.5229	5.20	2024/7/23 15:27:01	
2		0.5229	5.20	2024/7/23 15:27:26	
3		0.6856	6.83	2024/7/23 15:27:28	
4		0.6856	6.83	2024/7/23 15:27:29	
5		0.6856	6.83	2024/7/23 15:27:31	
6		1.0038	10.02	2024/7/23 15:27:33	
7		1.0038	10.02	2024/7/23 15:27:34	
8		1.0039	10.02	2024/7/23 15:27:35	
9		1.0038	10.02	2024/7/23 15:27:36	
10		1.0038	10.02	2024/7/23 15:27:37	

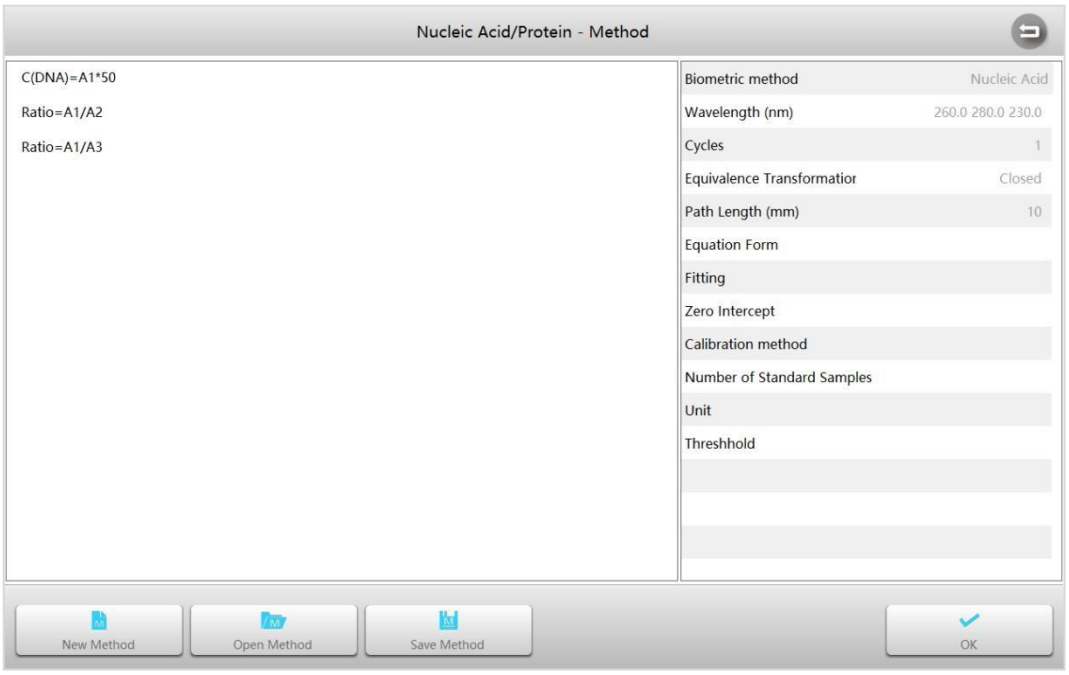
Nucleic Acid/Protein

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

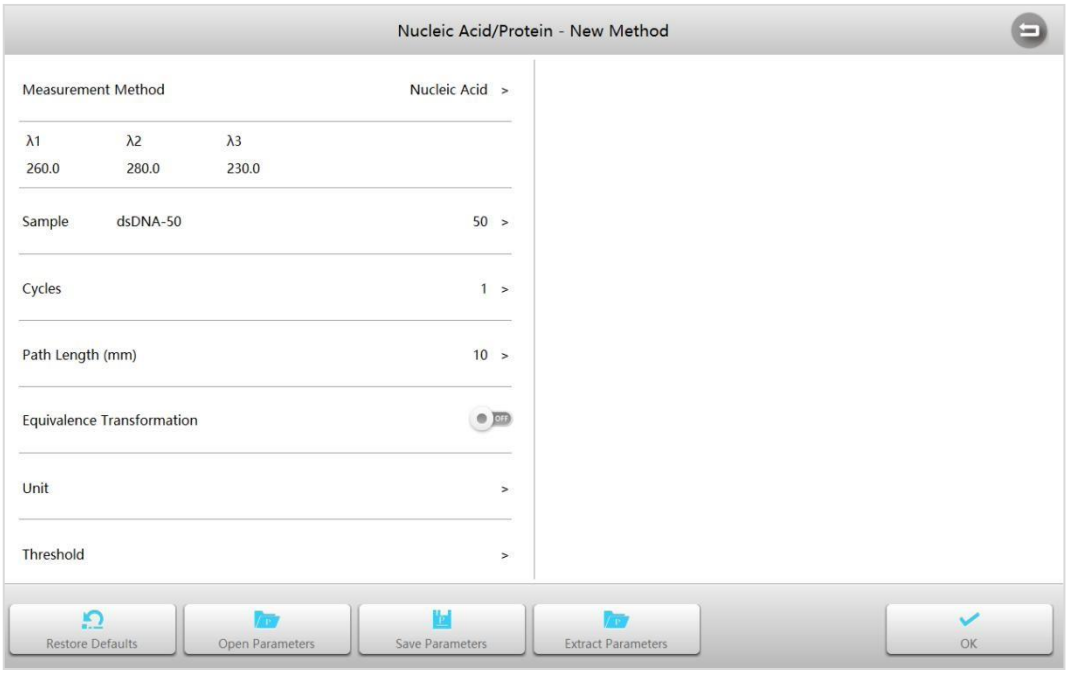
Main interface, click the icon  to start a **Nucleic Acid/Protein** measurement application.



1 **Nucleic Acid/Protein** measurement interface, click the button  to enter into **Method** interface.



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



Measurement Method	Built-in Nucleic Acid (dsDNA, ssDNA, RNA), Protein A-280 (1Abs=1mg/mL, BSA, IgG, Lysozyme), DNA Quantitation 1 (260/280), DNA Quantitation 2 (260/230), Protein-Lowry, Protein-BCA, Protein-CBB, Protein-Biuret measurement method.
Wavelength	Measure wavelength, range: 190~1100nm.
Samples	dsDNA, ssDNA, RNA, Protein, etc.
Cycles	1, 2, 3, 5, 10, 20, 30, 50 times can be selected, the instrument will calculate the average as the final output.
Path Length	The width of the cuvette used for the measurement.
Equivalence Transformation	Activation automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Equation Form	Equation form: C=F(Abs) and Abs=F(C).
Fitting	Three ways of fitting are provided: first order, second order, third order.
Zero Intercept	Turning on the representative fitting curve will directly cross the zero point, and closing will represent the fitting curve but the zero point.
Calibration Method	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, 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 inputcustom units.
Threshold	Upper and lower limits of measurement results.

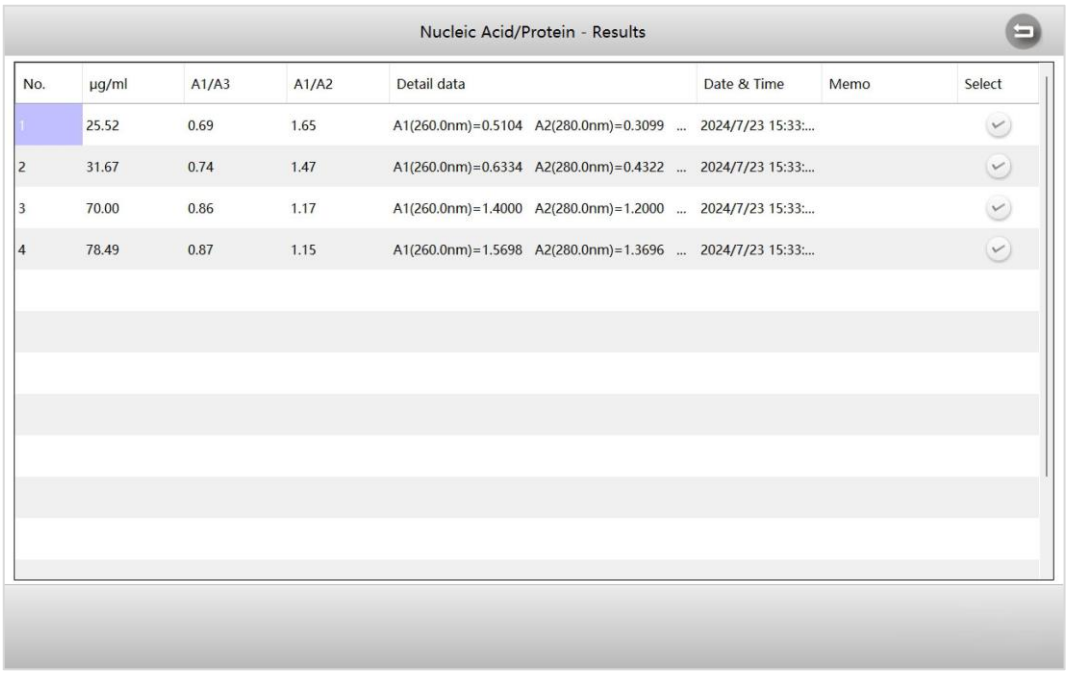
3 **Method** interface, load or new a method, click the button  to accept and return to measurement interface.

4 Put the reference in the measurement channel and also in the reference channel in double beam models, close the sample chamber cover, and clickthe button  to do blank.

5 Put the sample in the measurement channel, close the sample chamber cover, and click the button  to measure and calculation results.

6 Repeat step 5 to measure more samples.

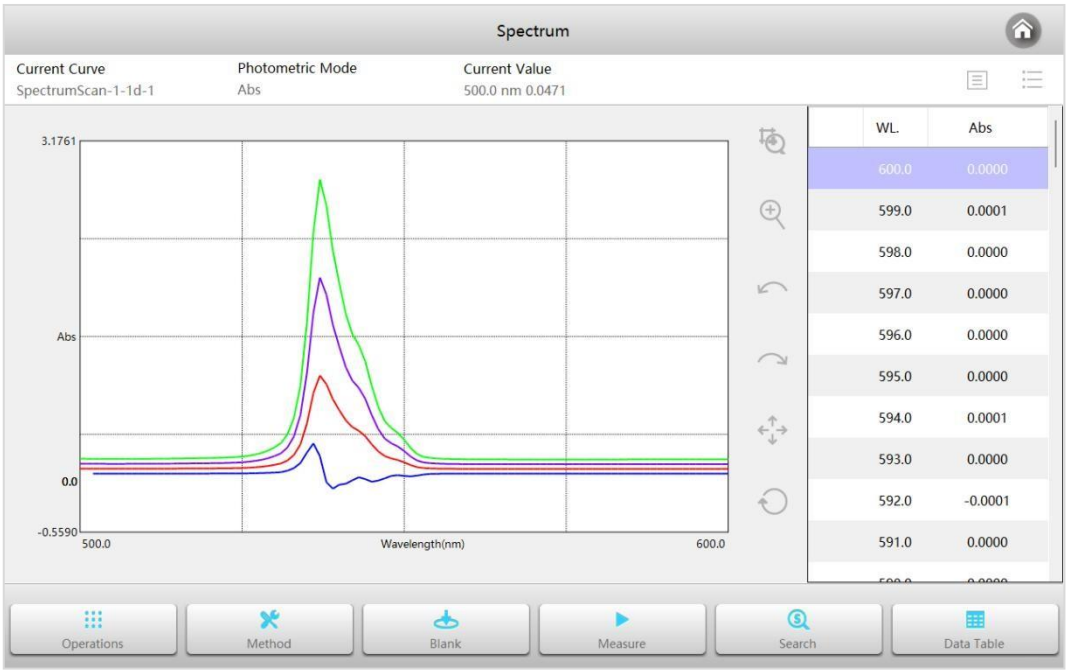
7 Click  to switch to list mode to browse the list of measurement results.



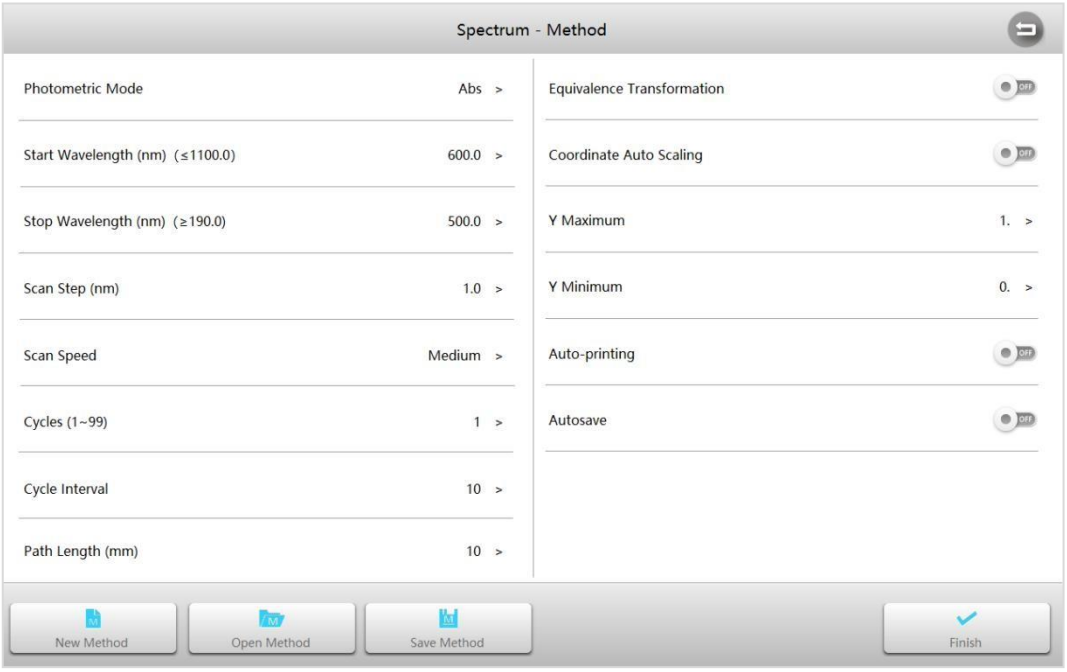
Spectrum

Spectrum mode is used to obtain the photometric curve of a sample over a range of wavelengths.

Main interface, click the icon  to start a **Spectrum** application.



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



Photometric mode	2 photometric mode: Abs and %T.
Start wavelength	Scan start wavelength, range: 190~1100nm.
Stop wavelength	Scan stop wavelength, range: 190~1100nm.
Scan Step	7 wavelength intervals selectable 0.1, 0.2, 0.5, 1.0, 2.0, 5.0, 10.0nm.
Scan Speed	3 scan speed selectable: Quick, Medium, Slow.
Cycles	Scan times.
Cycle Interval	Interval between 2 scans.
Path Length	The width of the cuvette used for the measurement.
Equivalence Transformation	Activation automatically converts measurements from different path cuvettes to values in the 10mm light path length.
Coordinate Auto Scaling	Whether to automatically adjust the coordinates based on the data.
Y Maximum	The maximum value of the ordinate (valid only when the coordinates are fixed).
Y minimum	Minimum value of the ordinate (valid only when the coordinates are fixed).
Auto-printing	Automatically print curves and results after measurement is complete.
Autosave	Automatically save curves and results after measurement is complete.

2 Put the reference in the measurement channel and also in the reference channel in double beam models, close the sample chamber cover, and clickthe button  to scan baseline.

3 Put the sample in the measurement channel, close the sample chamber cover, and click the button  to scan

sample and draw the curve.

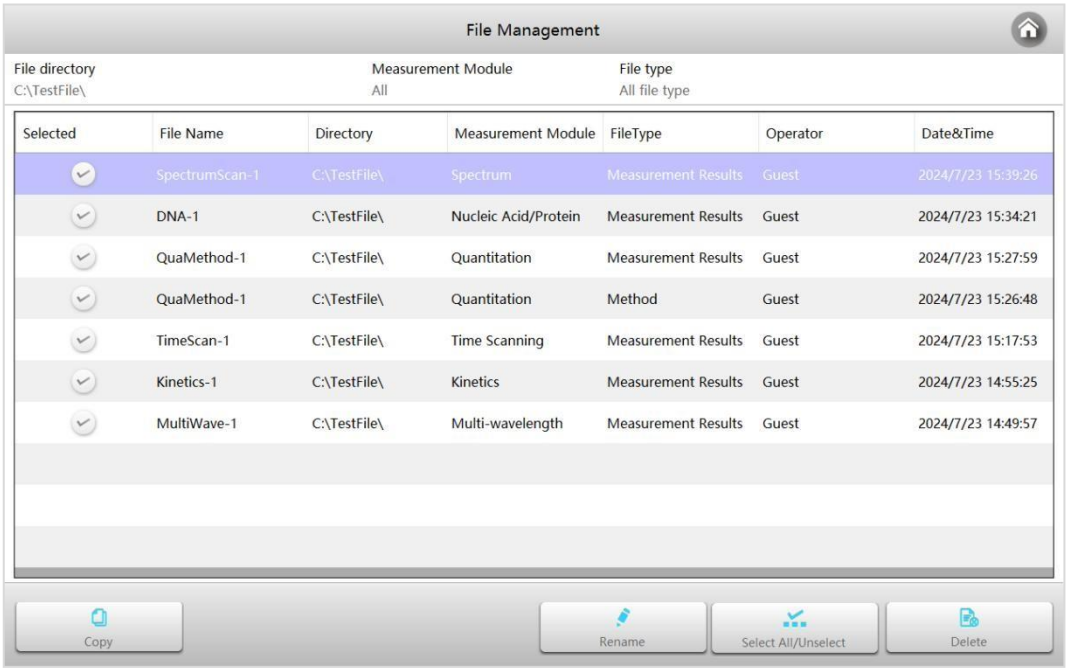
4 After the scan is complete, click the button to zoom the graph as needed.

5 Click 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, click the icon to start File management.



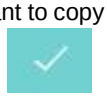
Browse file list

File management interface displays the data files stored in the storage, including data, methods and parameters. Click **Measurement Module** and **File Type** to set the filter conditions and displaythe corresponding file types.

Delete files

Select the file you want to delete to make it selected, then click the button **Delete** to delete it.

Copy files

Select the file you want to copy to make it selected, then click the button **Copy**, pop up the **Path selection** form, select target path and click the button 

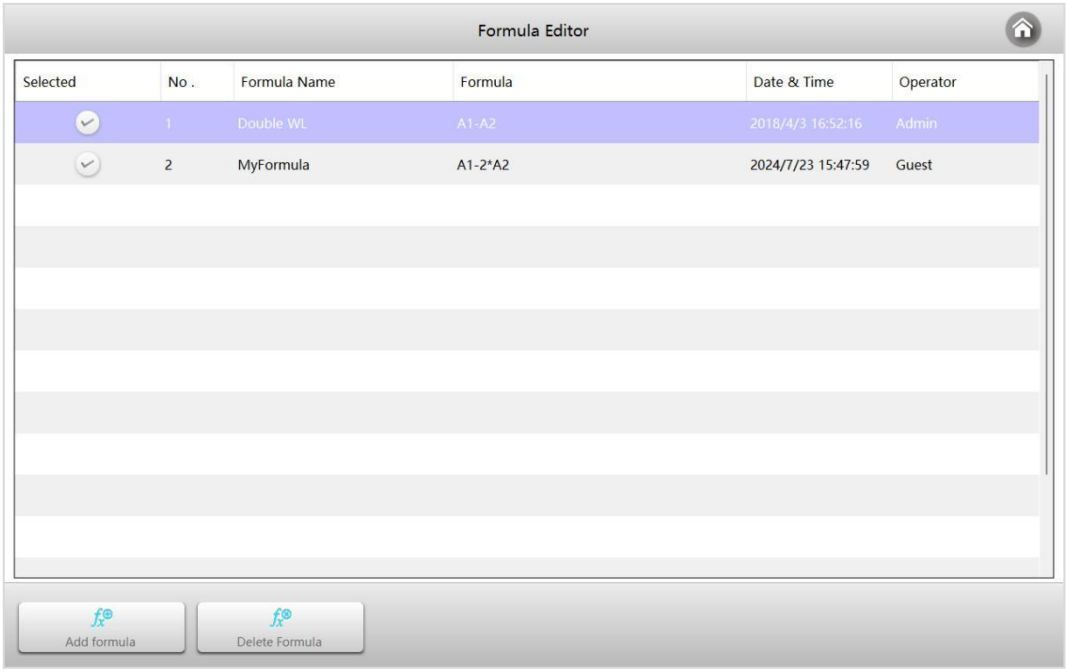
Rename a file

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

Formula editor

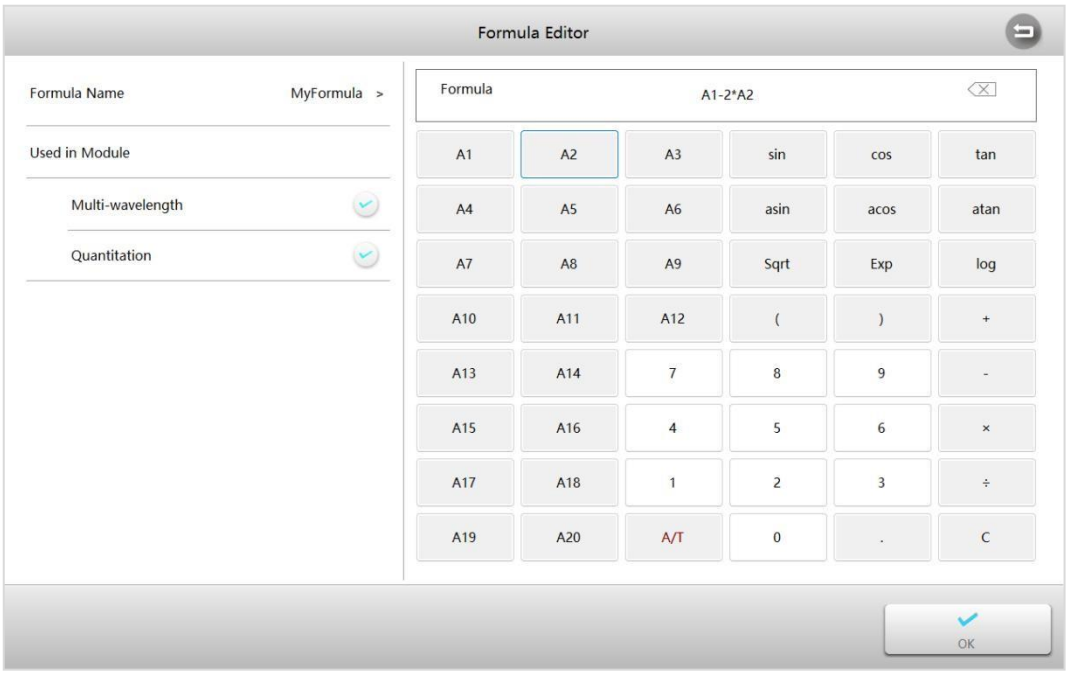
Formula Editor is used to write formulas for photometric calculations.

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



Add calculation formula

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



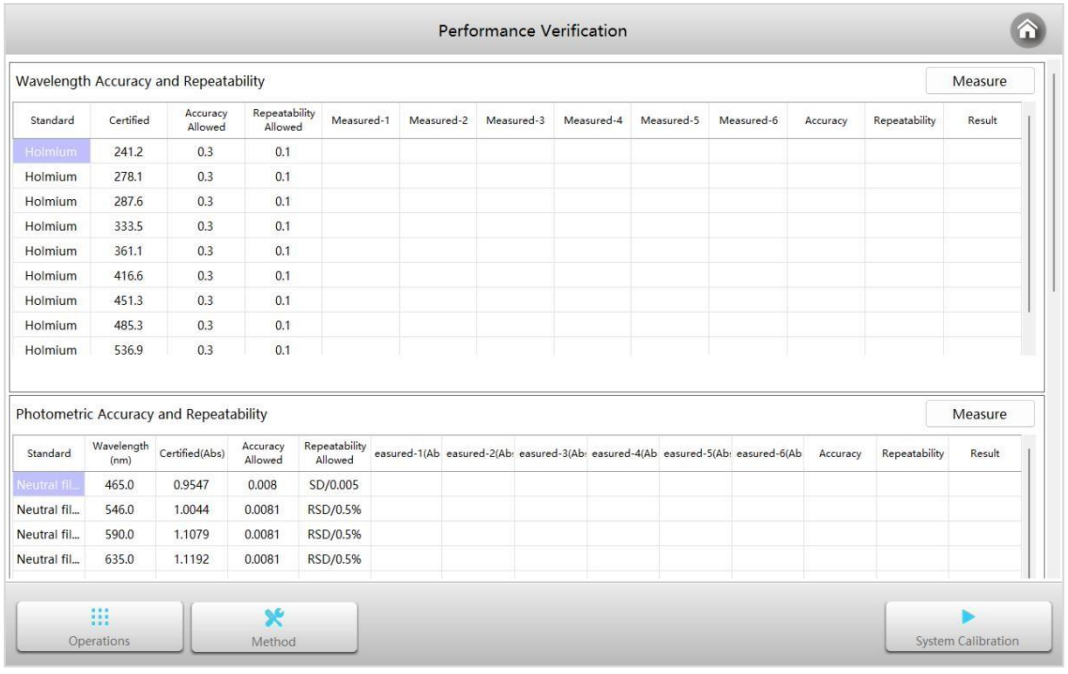
Delete calculation formula

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

Performance verification

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

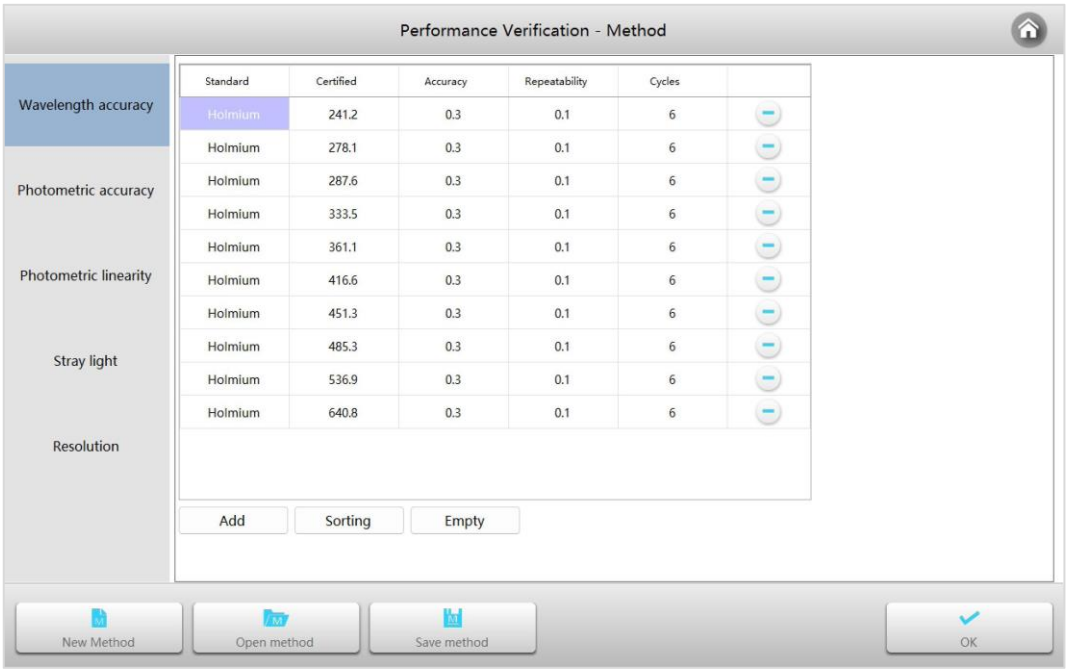
Main interface, click the icon  to start **Performance Verification**.



The performance validation module has two built-in validation templates to meet the United States Pharmacopoeia (USP) and European Pharmacopoeia (EP) for direct use by the user. Users can modify based on the templates or create new test methods and save them for use during testing.

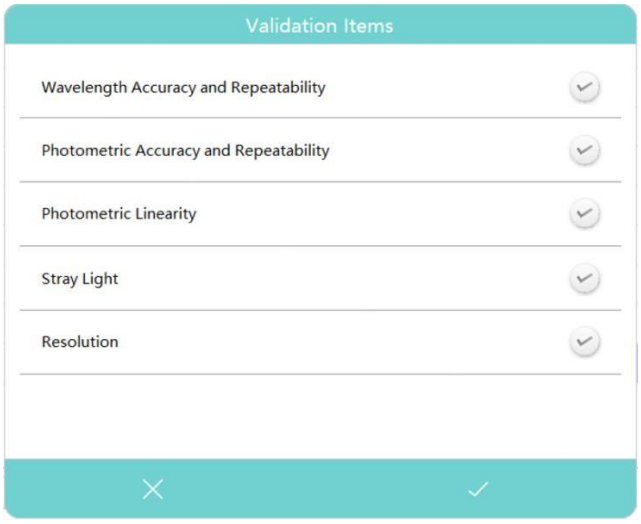
Establishing performance validation methods

Performance Verification interface, click the button  to enter the **Method** interface.



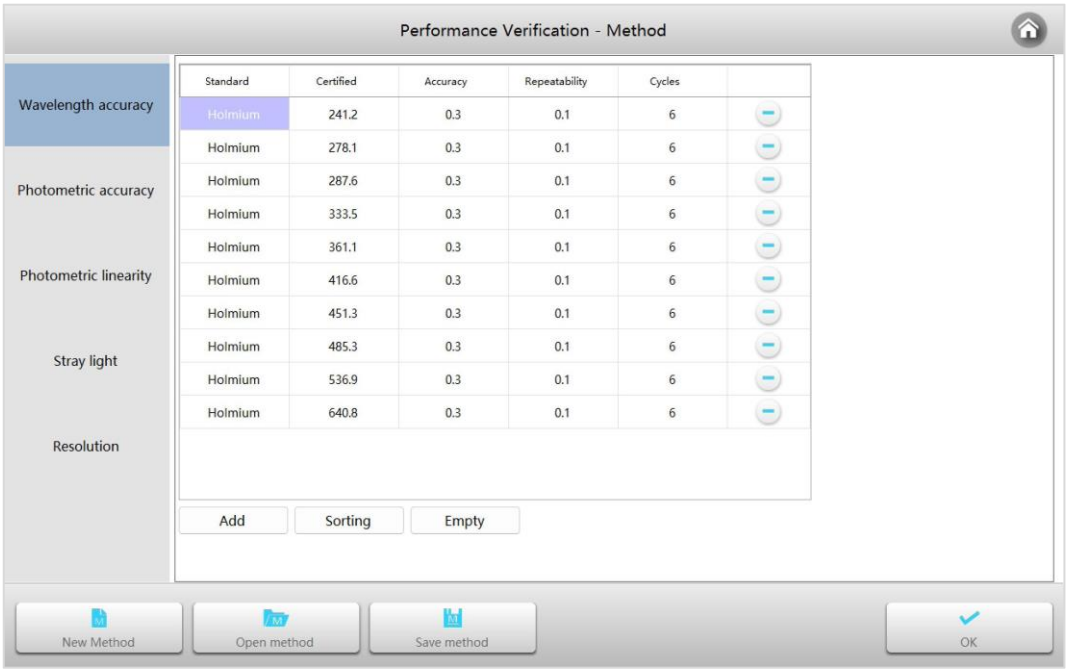
1 Selecting Validation Items

Click **New Method** to create an empty method template. In the **Validation Items** pop-up window, select the items that need to be validated and click  .



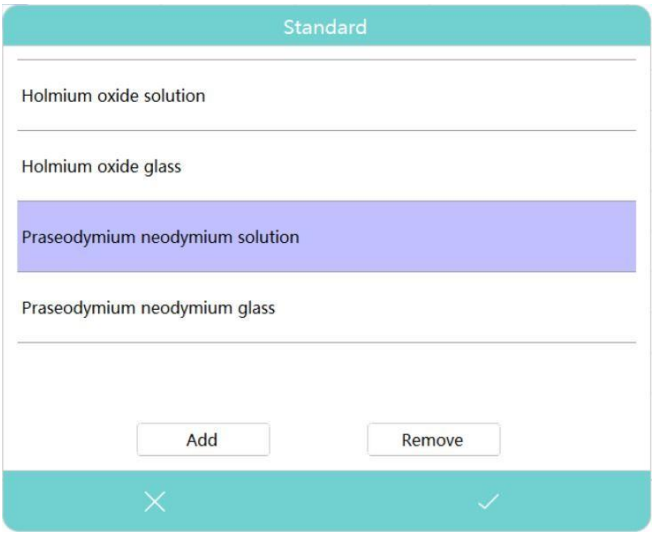
2 Edit wavelength accuracy verification

Click the **Wavelength accuracy** tab in the verification items column on the left. Enter the parameter editing interface for wavelength accuracy.



1) Click the button **Add** to add a test point;

2) Click the cell in the **Standard** column to select a standard;



Information ***If you are using a Standard that is not in the list, you can click the Add button to add it to the list, or you can remove the selected Standard from the list.***

3) Click the cell in the **Certified** column to enter a certified wavelength test point;

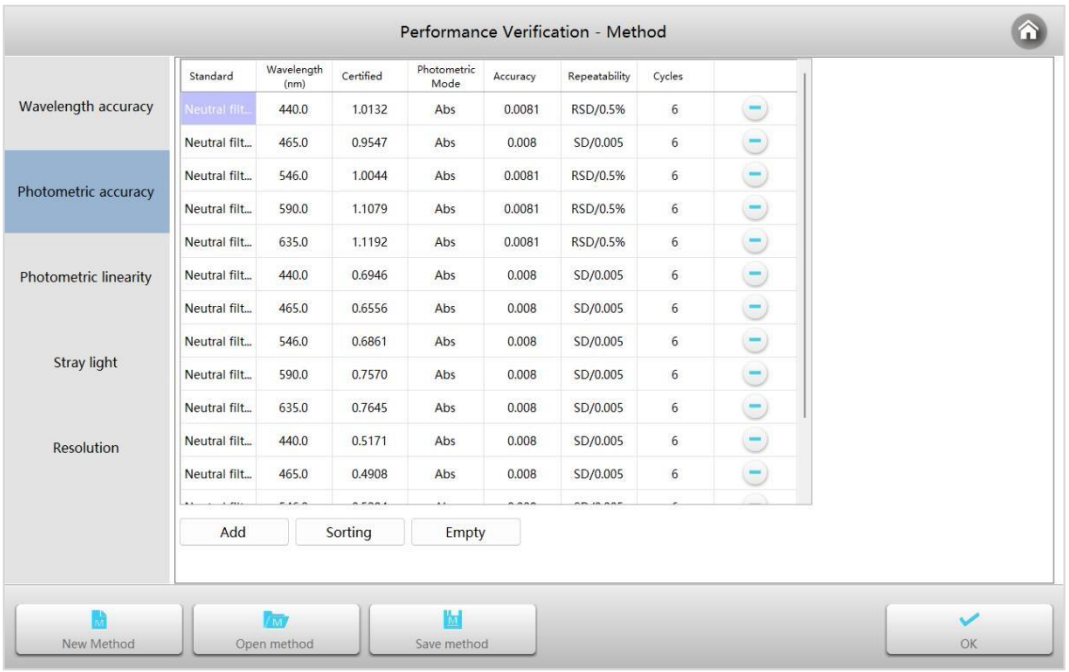
4) Click the cell in the **Accuracy** column to enter the allowable deviation for wavelength accuracy;

5) Click the cell in the **Repeatability** column to enter the allowable deviation for wavelength repeatability;

6) Click the cell in the **Cycles** column to enter the number of tests.

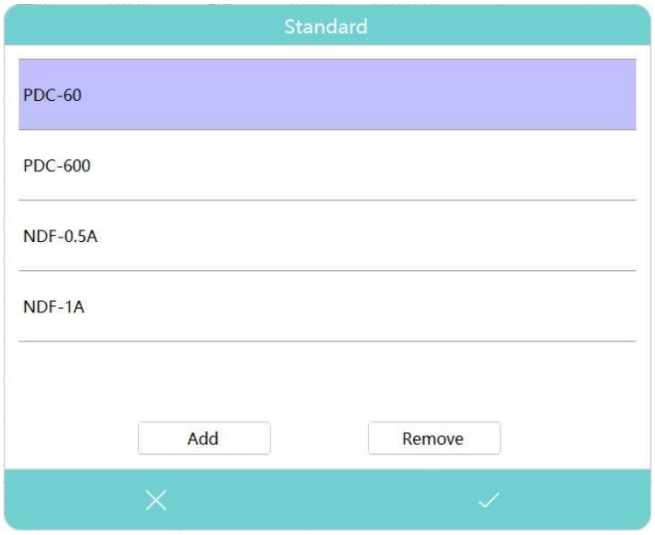
3 Edit photometric accuracy verification

Click the **Photometric accuracy** tab in the Verification Items column on the left. Enter the parameter editing interface for photometric accuracy.



1) Click the button **Add** to add a test point;

2) Click the cell in the **Standard** column to select a standard;

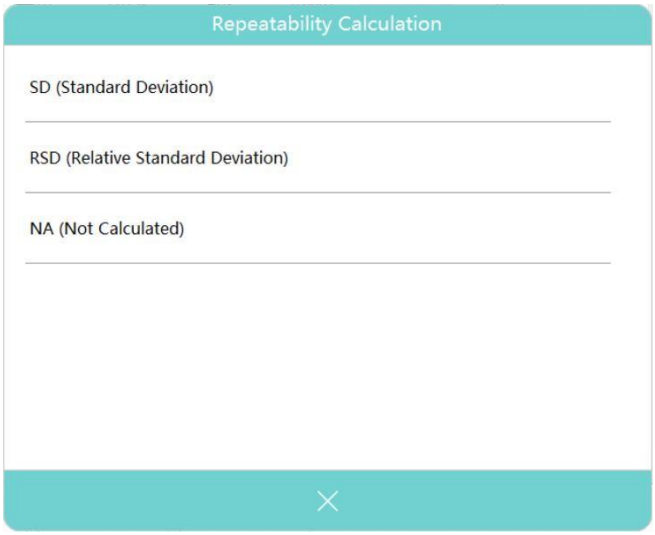


3) Click the cell in the **Wavelength** column to enter a wavelength test point;

4) Click the cell in the **Certified** column to enter a certified photometric test point;

5) Click the cell in the **Accuracy** column to enter the allowable deviation for photometric accuracy;

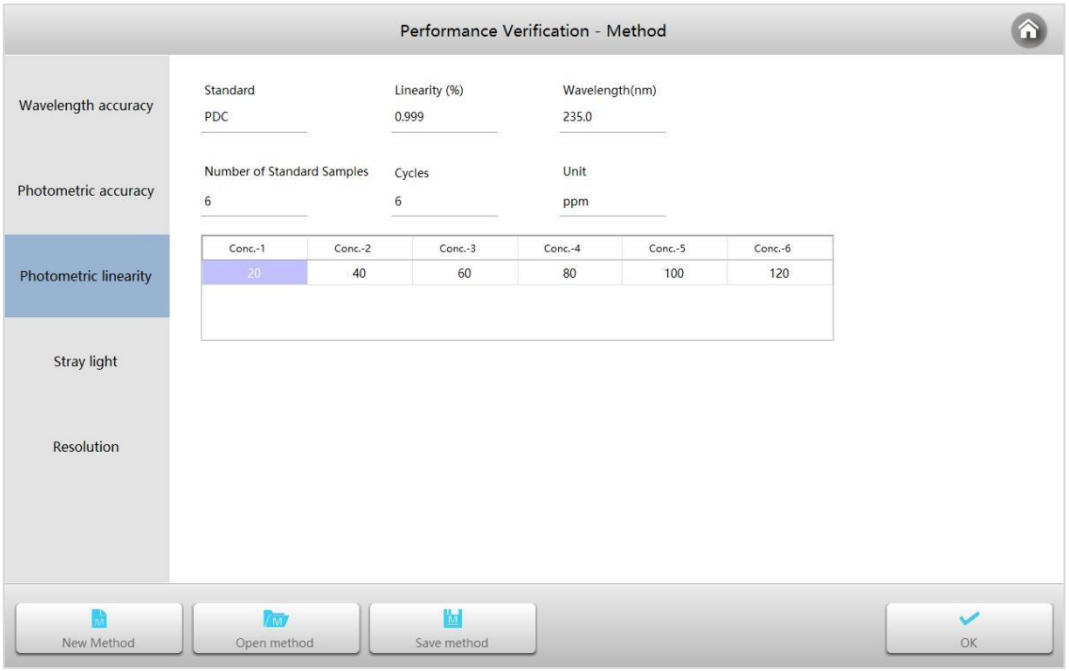
6) Click the cell in the **Repeatability** column to select the repeatability calculation method and enter the allowable deviation for photometric repeatability;



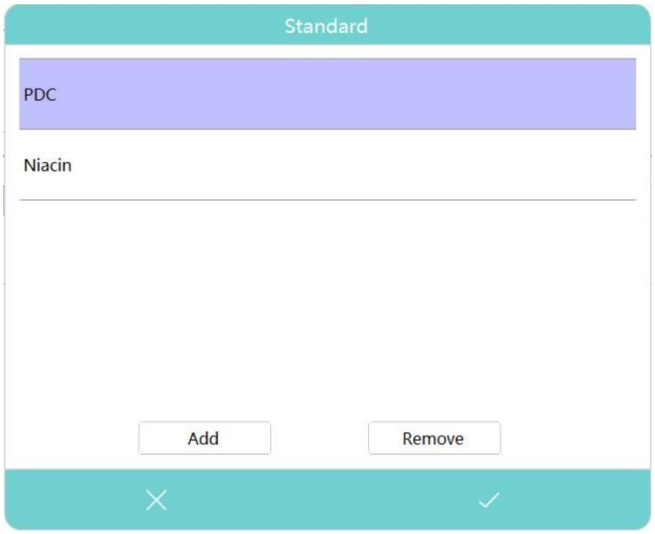
7) Click the cell in the **Cycles** column to enter the number of tests.

4 Edit photometric linearity verification

Click the **Photometric linearity** tab in the Verification Items column on the left. Enter the parameter editing interface for photometric linearity.



1) Click the cell in the **Standard** to select a standard;

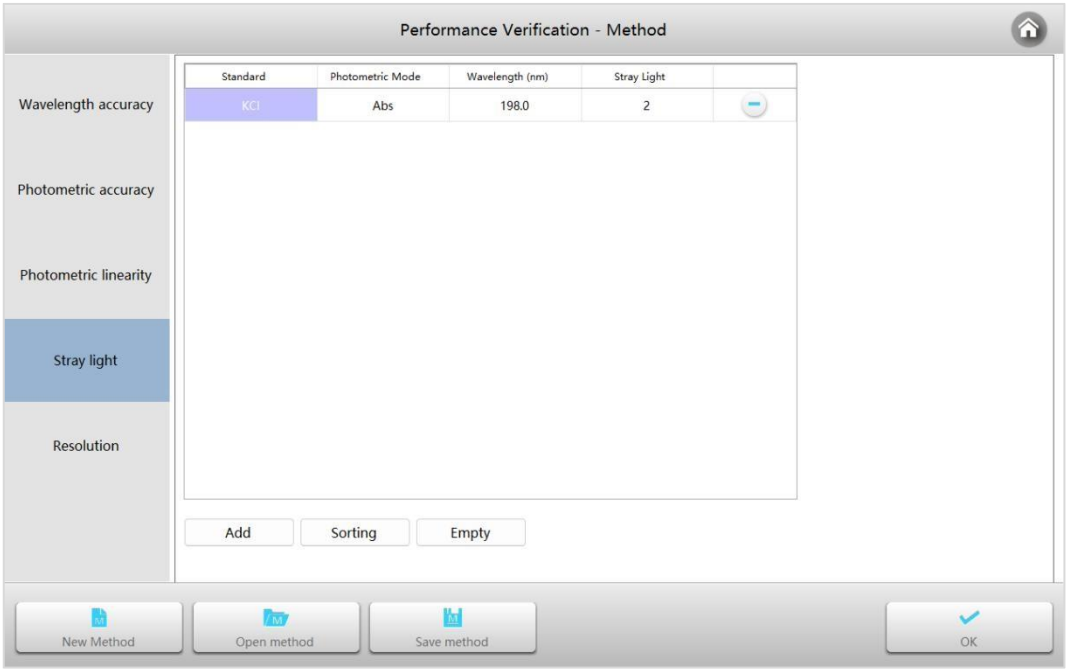


2) Click the parameter item to set the parameter;

3) Enter the concentration of the standard sample in the table.

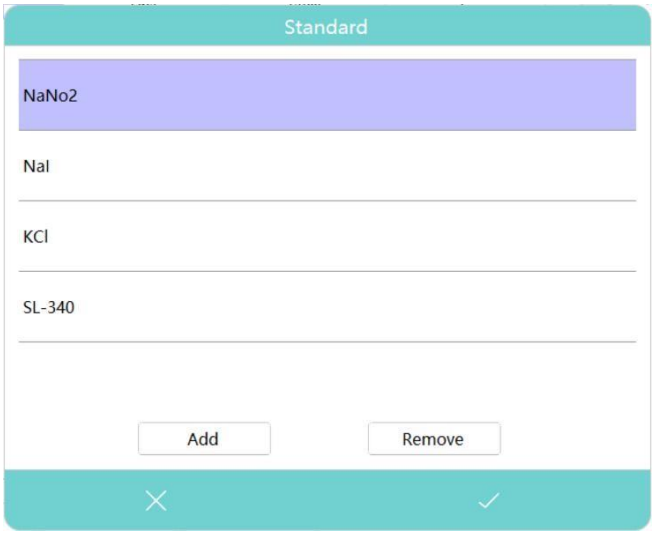
5 Edit stray light verification

Click the **Stray light** tab in the Verification Items column on the left. Enter the parameter editing interface for stray light.



1) Click the button **Add** to add a test point;

2) Click the cell in the **Standard** column to select a standard;



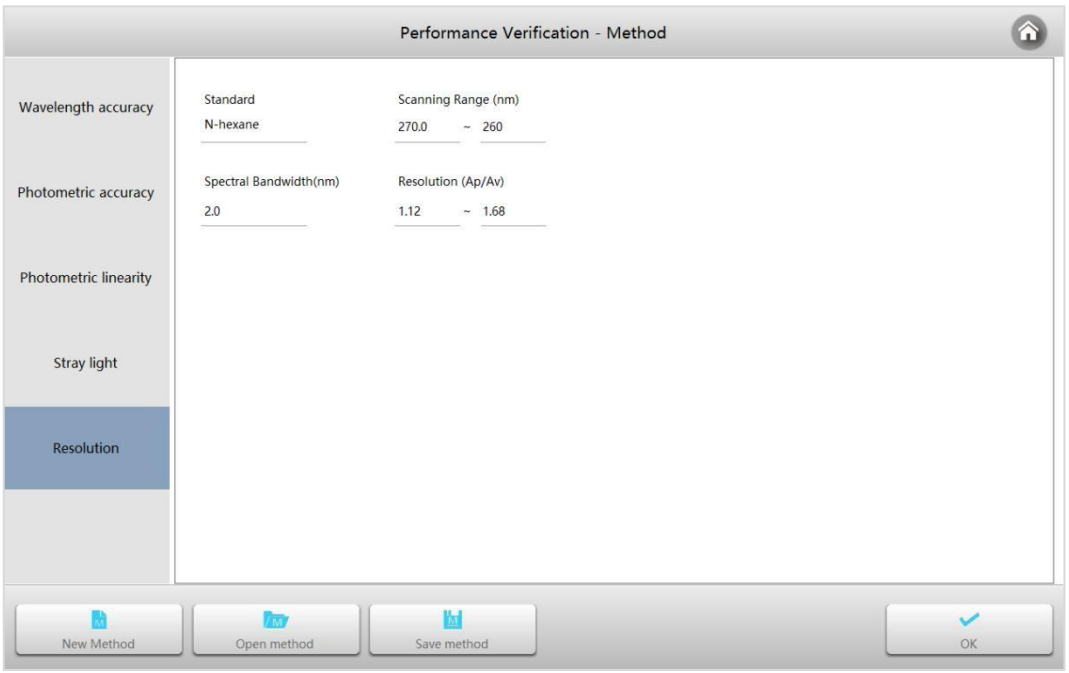
3) Click the cell in the **Photometric Mode** column to select Abs or %T;

4) Click the cell in the **Wavelength** column to enter the test wavelength;

5) Click the cell in the **Stray Light** column to enter the allowable deviation for stray light.

6 Edit resolution verification

Click the **Resolution** tab in the Verification Items column on the left. Enter the parameter editing interface for resolution.



1) Click the cell in the **Standard** to enter standard name;

2) Click **Scanning Range** to set the scanning wavelength range;

3) Click **Resolution** to enter the allowable deviation for resolution.

7 Finished

Click the button **Save method** to save the verification method. Establishment of the validation method is complete.

Verify performance

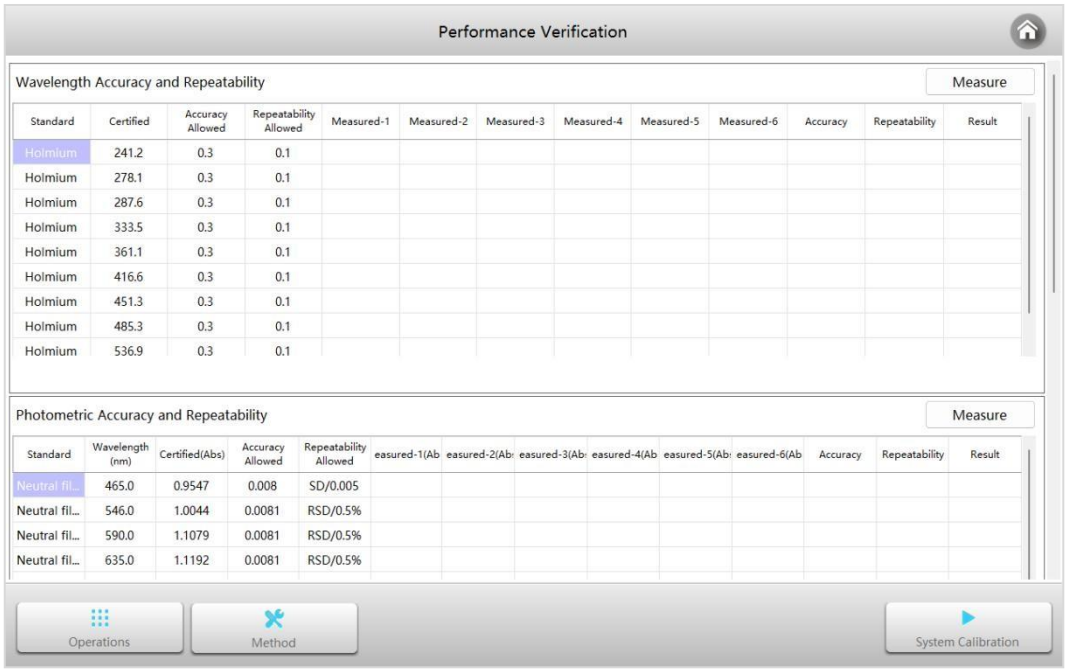
1 Preparing

- 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 standard material used for verification must be within the validity period of the test.

> ***Note*** ***Standard filters used to verify the performance of the instrument are not supplied with the device.***

2 Open the performance verification method

Performance Verification interface, Click the button **Method**, **Open method** to open a performance verification method, click the button  .



3 System calibration

Remove anything from the measurement and reference channels and close the sample chamber lid. **Performance Verification** interface, click the button  to do system calibration.

4 Verify

Click the button **Measure** and follow the prompts of the software to put the **reference** or **standard** to complete the test.

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