Instruction manual

VWR® NANO SPECTROPHOTOMETER

EU cat. no 76777-152 NA cat. no 76777-150

Version 01 Issue 07/2023

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Warning

Any improper operation may cause injury. Please read this manual carefully and operate safely according to the guidelines.

The instrument is a normal indoor instrument which conforms to class Ⅰ of the GB 4793.1 standard.

This instrument is designed for use in a laboratory environment. The device must be operated by skilled laboratory personnel with appropriate training.

To prevent injury or voiding the warranty, the operator should not attempt to repair the instrument without explicit guidance from VWR. If service is required, please contact VWR service.

Safety Information

Avoiding Electrical Shock

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

Before powering on, confirm that the voltage used meets the electrical requirements of the instrument as stated on the rating plate. If the electric cord is damaged, replace it with the same type of cord. Hold the socket firmly before pulling the plug from an outlet. Do not pull the electric cord.

The instrument should be installed in an environment of standard room temperature, low dust, low humidity, and away from direct sunlight, electromagnetic interference, and heat sources. Do not block the vents on the instrument.

Always power off the instrument when you are finished using it. Unplug the power cord and cover the instrument with a cloth or plastic sheet to prevent excessive dust from entering the housing.

Pull the connector plug from the electrical outlet immediately and contact the vendor in the event of:

- Liquid entering the housing.
- Abnormal operation: such as any abnormal sound or smell.
- The instrument is dropped or there is any damage to the housing.
- Any malfunction.

Package Contents

Description	Quantity
VWR NANO SPECTROPHOTOMETER	1
Power Adapter (DC 24V 2A)	1
Power Line	1
Dust Cover	1
Logitech Mouse	1
Printer Paper	2
Glass Cuvette	2
Operation Manual	1
Performance Test Report	1
USB Drive	1

Installation

Required Installation Environment

Environmental Temperature: 5°C ~ 35°C

Relative Humidity: ≤ 70%

Input Voltage: DC 24V, 2A (Adapter CSA, UL, CE marked)

Intended use

For research use only. Not intended for any animal or human therapeutic or diagnostic use.

Product Specifications

Model		**VWR Nano Spectrophotometer**
Sample Size		0.5µL – 2.0µL
Path Length		0.2mm, 1mm
Light Source / Life		Xenon flash lamp / >10^9 flashes
Detector Type		2048 element linear silicon CCD array
Wavelength Range		200nm — 800nm
Wavelength Accuracy		± 1 nm
Spectral Resolution		≤ 3nm（FWHM@Hg 253.7nm）
Absorbance Precision		0.003Abs（1mm path length）
Absorbance Accuracy		± 1%（7.332Abs, at 260nm wavelength）
Absorbance Range		0.04 — 90（at 260 wavelength, 10mm equivalent）
Detection Concentration Range		2ng/µL dsDNA ～ 4,500ng/µL dsDNA
Detection Time		< 5 seconds
OD600	**Abs range**	0~4.000 Abs
	Abs stability	[0,3）≤0.5% [3,4）≤2%
	Abs repeatability	[0,3）≤0.5%, [3,4）≤2%
	Abs Precision	[0,2）≤0.005A, [2,3）≤1%，[3,4）≤2%
Voltage input		DC 24V, 2A
Power		25W
Dimensions（W×D×H）		20.8cm × 28.0cm ×18.6cm / 8.2in x 11.0in x 7.3in
Weight		3.6 kg / 7.9 lbs

Description of Buttons and Switches

Front View

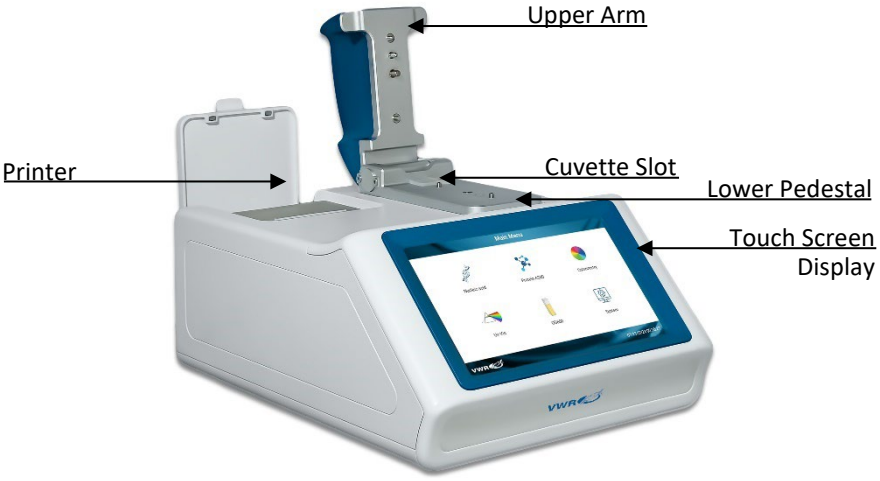

Fig. 1 Front View

Rear View

Fig. 2 Rear View

Operation

Start-up Interface

Upon powering on the instrument, it will perform a self-check, and the start-up screen will be displayed (**Fig. 3)**

Fig. 3 Start-up Interface

Main Menu Interface

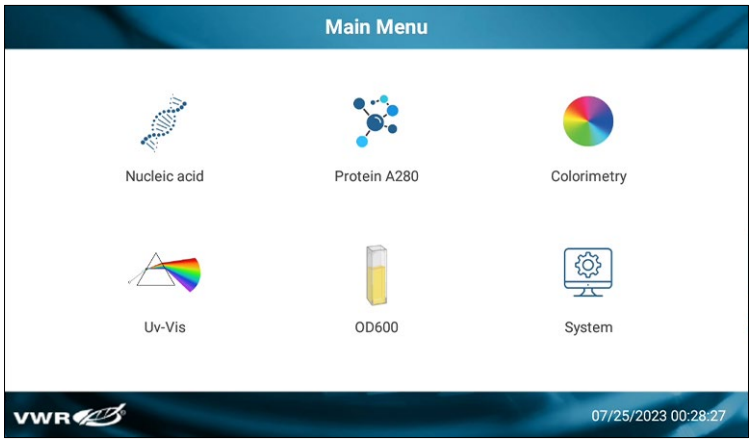

Fig. 4 Main Menu Interface

After start-up, the main menu interface will be displayed. There are 6 options: Nucleic Acids, Protein A280, Colorimetry, UV-Vis, OD600, & System Settings.

Nucleic Acids Interface

Beer-Lambert's Law for DNA/RNA quantitation

The following "Beer - Lambert" equation is used to calculate the concentration of nucleic acids:

$$C = \frac{A * \varepsilon}{b}$$

C = Sample DNA concentration, unit : ng/µL

A = Sample absorbance, unit : A

ε = extinction coefficient, unit: ng-cm/µL

b = Path Length, unit: cm

Standard DNA/RNA extinction coefficients :

dsDNA：50ng-cm/µL

ssDNA：33ng-cm/µL

RNA：40ng-cm/µL

When the sample column is used, highly concentrated nucleic acid samples can be measured without dilution using a 1.0mm or 0.2mm path length. The VWR Nano Spectrophotometer will measure and display sample absorbance values of the 10mm pathlength equivalent of up to 90 A. The instrument will accurately measure dsDNA samples up to 4500 ng/µL without dilution. To do this, the instrument automatically detects highly concentrated samples and adjusts the pathlength to 0.2mm to measure the sample absorbance.

Select “Nucleic acid” from the main menu to enter the Nucleic Acids Interface. By default, the system will provide guidance for measuring blanks and samples, as shown below (**Fig. 5)**. Touch the screen to dismiss the message displayed. Protocol Guidance can be toggled on or off in the System Settings Interface (see *System Settings Interface*).

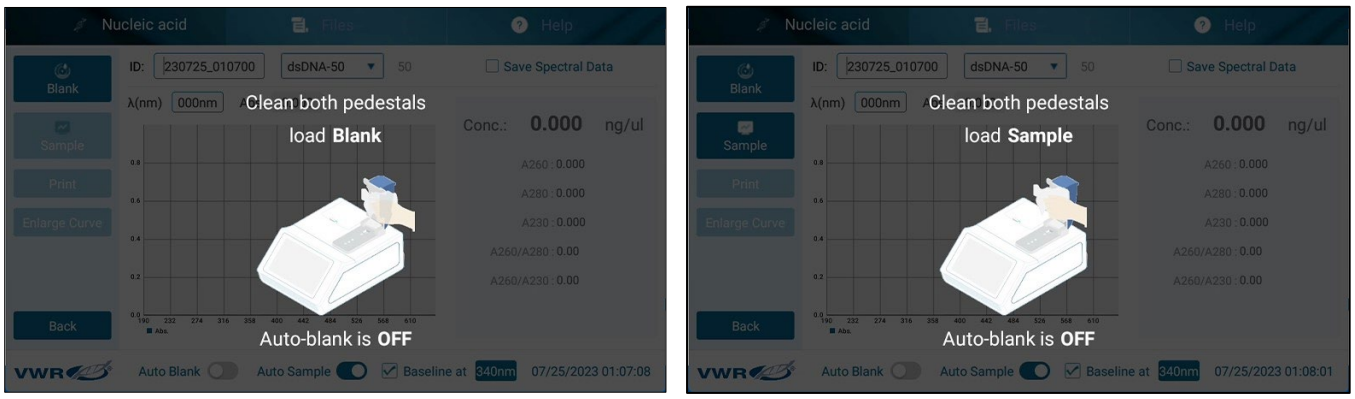

Fig. 5 Nucleic Acid Interface – Protocol Guidance

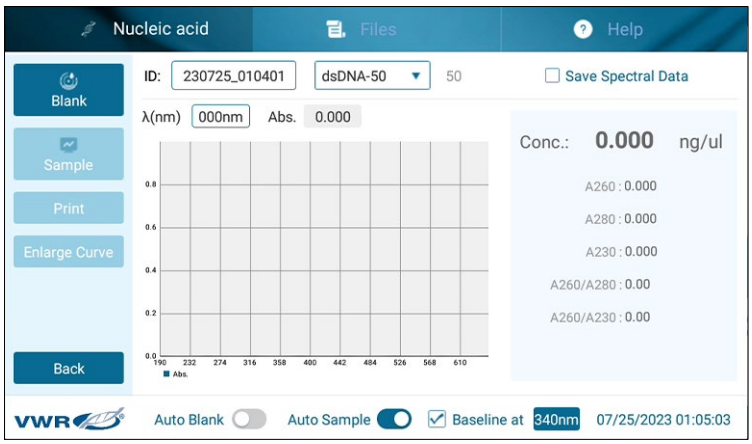

Fig. 6 Nucleic Acid Interface

Fig 5; there are three tabs in the Nucleic Acids Interface: Nucleic Acids, Files, and Help.

- ID : 191028_170755 : The sample ID name has a default value of the current date and time. Users can rename the sample ID. One sample ID can contain up to 1000 measurement values.
- DNA-50 : Select the sample type: DNA-50 for dsDNA, RNA-40 for RNA, ssDNA-33 for ssDNA. For a different nucleic acid type, select “others” and enter the extinction coefficient.
- Blank : Perform a blank reading. This step is essential before measurement. Blank absorbance values are typically in the range of 0.004-0.03 Abs and are valid for up to 30 minutes. The instrument will automatically remind the user to perform another blank reading after 30 minutes.
- Baseline at 340nm : Spectrum normalization; The baseline is automatically set to the absorbance of the sample at 340nm and can be modified. This feature can remove spectroscopic signals from sample measurements by subtracting the measured absorbance at a specified baseline correction wavelength from the absorbance values at all wavelengths of a measured sample.
    - **Note:** If baseline calibration is not performed, the spectroscopic signals will not be separated from interference/background effects and will lead to inaccurate results.
- Auto Blank : When turned on, the blank measurement starts automatically when the upper pedestal is lowered.
    - **Note:** The automatic blank only takes effect when no blank readings have been made in a current run.

- Auto Sample : When turned on, the sample measurement starts automatically when the upper pedestal is lowered.
    - **Note:** Automatic sample detection only takes effect after a blank reading has been performed.

- The icon appears in the upper right corner to indicate an error in reading blank/sample volumes. Please clean and wipe the pedestal and perform another blank reading. If the problem persists, contact VWR service.

Operation:

1. Set the Sample ID.
2. Clean the upper and lower pedestals with a lint-free wipe, add 2µL buffer solution to perform a blank reading.
3. Clean the buffer solution on the pedestals with a wipe.
4. Measure a 2µL sample volume and click “Measure” to detect the sample.

Note: A blank reading must be performed prior to sample measurements. The sample volume must be equivalent to the volume used to set the blank reading.

5. Clean and dry the pedestal between measurements.

The sample concentration and absorbance ratios will display on the right side of the interface **(Fig. 7)**.

Fig. 7 Sample Concentration & Absorbance Ratios

Conc.：Calculated nucleic acid concentration.

A260: The sample absorbance at 260nm (10mm pathlength equivalent).
A280: The sample absorbance at 280nm (10mm pathlength equivalent).
A230: The sample absorbance at 230nm (10mm pathlength equivalent).
A260/A280: The ratio of corrected absorbance values at 260nm to corrected absorbance values at 280nm. An A260/A280 ratio of ~1.8 is generally accepted as pure for DNA (~2.0 for RNA). Acidic solutions will under-represent the A260/A280 ratio by 0.2 – 0.3 units, whereas basic solutions will over-represent the A260/280 ratio by 0.2 – 0.3 units.

A260/A230：The ratio of corrected absorbance values at 260nm to the corrected absorbance values at 230nm.This ratio can be used as a secondary measure of nucleic acid purity. An A260/A230 ratio within the range of ~1.8 – 2.2 is considered as pure for nucleic acids. Lower ratio values indicate the presence of contaminants that absorb strongly at or near 230nm.

wavelength: 260nm Absorb:5.909 : Input a wavelength to view the corresponding sample absorbance value **(Fig. 8)**.

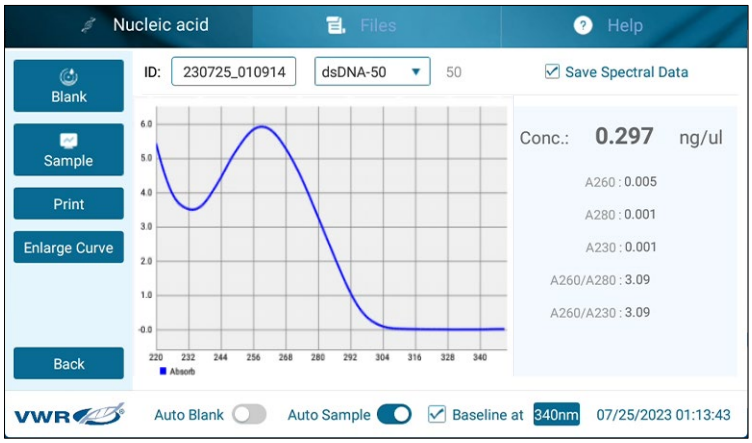

Fig. 8 Nucleic Acid Sample Absorbance Curve (220nm – 350nm)

Blank : Perform a blank reading
Sample : Perform a sample reading.

Print : Print the calculated data.
Save Spectral Data : Save the full spectrum absorbance data in 1nm steps.
Enlarge Curve : Zoom into the sample absorbance curve.
Back : Return to the main menu interface.

Nucleic Acid Files Interface

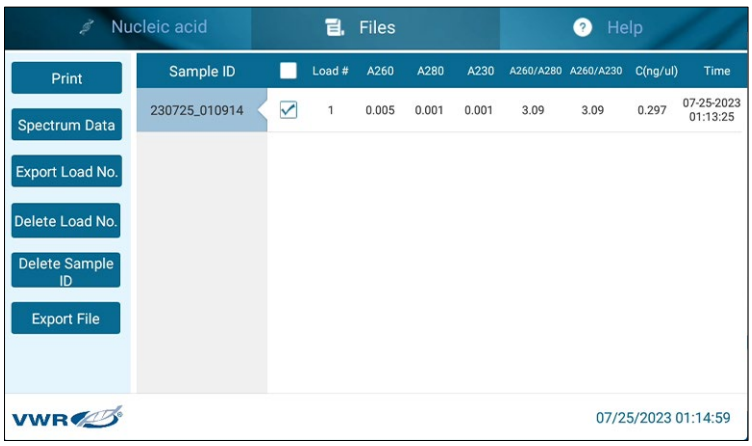

Fig. 9 Nucleic Acid Files Interface

Select the “Files” tab at the top of the Nucleic Acid Interface (**Fig. 9**). Users can select previously saved results by the file name.
Spectrum Data: View spectral data; To view sample absorbances at a specific wavelength, input a wavelength and the red coordinate line will display the corresponding absorbance value (**Fig. 10**).

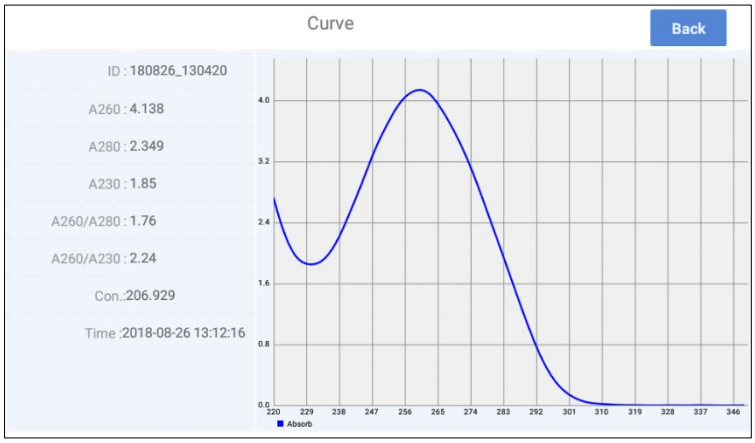

Fig. 10 Nucleic Acid Sample Absorbance Curve (220 – 350nm).

Export Load No. : Export the result to a USB flash drive
Delete Load No. : Delete the selected results.
Delete Sample ID: Delete the selected files

Protein A280 Interface

Introduction

The Protein A280 interface can be used to quantify purified proteins that contain amino acids such as tryptophan, tyrosine, or cys-cys disulfide bonds. These amino acids exhibit peak absorbance at 280nm. The following sample types can be selected: “A280”, “BSA”, “IgG”, “Lysozyme”, & “Others”.

This interface does not require the generation of a standard curve. Sample absorbance values (260nm & 280nm) and A260/A280 ratios can be measured and displayed. A baseline correction can be used for normalization. Like the Nucleic Acids interface, the Protein A280 interface automatically switches the pathlength to 0.2mm when a highly concentrated protein sample is detected and displays 10mm pathlength equivalent data.

Protein A280 Interface

Select “Protein A280” from the main menu interface.

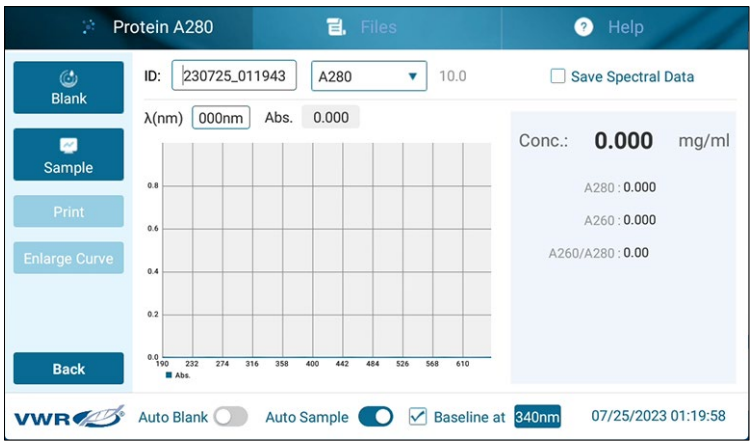

Fig. 11 Protein A280 Interface

Fig. 11; There are three options at the top of the screen, Protein A280, Files, and Help.

- **ID** : The sample ID name has a default value of the current date and time. Users can rename the sample ID. One sample ID can contain up to 1000 measurement values.
- **A280** : Select the sample type: A280, BSA, IgG, Lysozyme. Select “others” and type in the extinction coefficient.
- **Blank**: Perform a blank reading. This step is essential before measurement. Blank absorbance values are typically in the range of 0.004-0.03 Abs and are valid for up to 30 minutes. The instrument will automatically remind the user to perform another blank reading.
- **Baseline at 340** : Spectrum normalization; The baseline is automatically set to the absorbance of the sample at 340nm and can be modified. This feature can remove spectroscopic signals from sample measurements by subtracting the measured absorbance at a specified baseline correction wavelength from the absorbance values at all wavelengths of a measured sample.
    - **Note:** If baseline calibration is not performed, the spectroscopic signals will not be separated from interference/background effects and will lead to inaccurate results.
- **Auto Blank** : When turned on, the instrument will automatically perform a blank detection the first time the pedestal is lifted and closed
    - **Note:** The automatic blank only takes effect when no blank readings have been made in a current run.
- **Auto Blank** : When turned on, the instrument will automatically perform sample measurements once the sample column has formed.
    - **Note:** Automatic sample detection only takes effect after a blank reading has been performed.
- The icon appears in the upper right corner to indicate an error in reading blank/sample volumes. Please clean and wipe the pedestal and perform another blank reading. If the problem persists, contact VWR service.

Operation:

6. Set the Sample ID.
7. Clean the upper and lower pedestals with a wipe, add 2µL buffer solution to perform a blank reading.
8. Clean the buffer solution on the pedestals with a wipe.
9. Measure a 2µL sample volume and click “Measure” to detect the sample.

Note: A blank reading must be performed prior to sample measurements. The sample volume must be equivalent to the volume used to set the blank reading.

10. Clean and dry the pedestal between measurements.

Fig. 12 Protein Sample Results

The sample concentration and absorbance ratios will be displayed on the right side of the interface **(Fig. 13)**.

Fig. 13 Sample Concentration & Absorbance Ratios

Conc.: Calculated protein concentration.
A260: The sample absorbance under 260nm (10mm pathlength equivalent).
A280: The sample absorbance under 280nm (10mm pathlength equivalent).
A260/A280: The ratio of corrected absorbance values at 260nm to the corrected absorbance values at 280nm.This ratio can be used as a secondary measure of nucleic acid purity. An A260/A280 ratio within the range of ~1.8 – 2.2 as pure for nucleic acids. Lower ratio values indicate the presence of contaminants that absorb strongly at or near 280nm.

: Input a wavelength to view sample absorbance values **(Fig. 14)**.

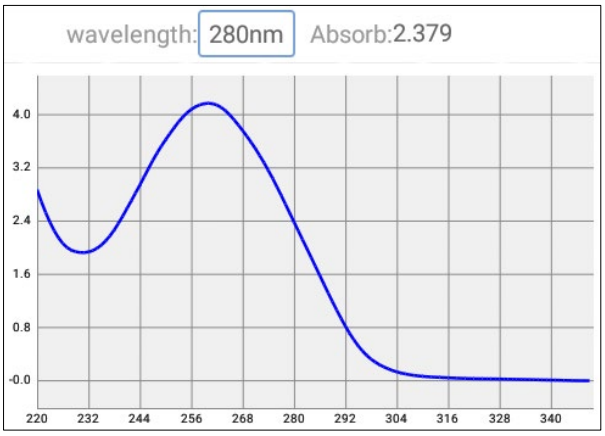

Fig. 14 Protein Sample Absorbance Curve (220nm – 350nm)

Protein A280 Files Interface

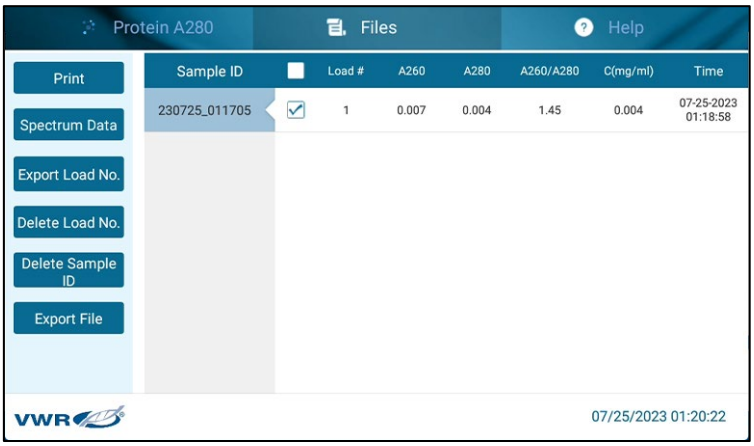

Fig. 15 Protein Files Interface

Note: This interface is similar to the Nucleic Acids detection interface (see **Nucleic Acids Interface**).
Spectrum Data : To view sample absorbances at a specific wavelength, input a wavelength and the red coordinate line will display the corresponding absorbance value (**Fig. 16**).

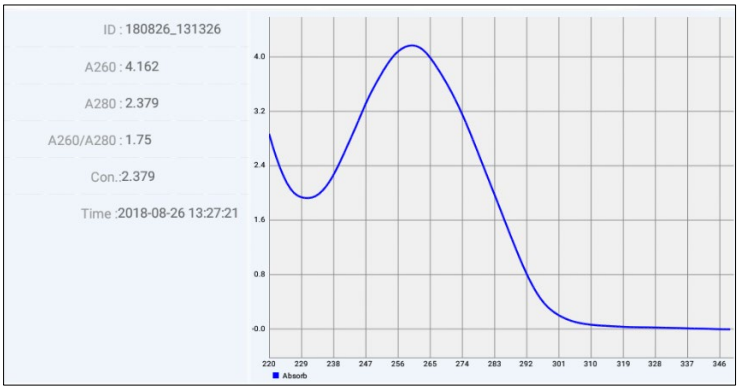

Fig. 16 Protein Sample Absorbance Curve (220 – 350nm)

Colorimetry Interface

Introduction
BCA, Lowry, & Bradford protein assays are measured using colorimetric methods, which requires the generation of a standard curve.

BCA Protein Assay:
The BCA Assay is an alternative method for determining protein concentration. It utilizes bicinchoninic acid as a detection reagent to measure protein concentrations in crude samples. This assay measures protein solutions at 562nm and uses a standard curve to calculate the concentration. A baseline-correction can be used for normalization. Bicinchoninic acid is used to detect Cu^{+1}, which forms when Cu^{+2} is exposed to an alkaline environment. A purple chelate is formed when two BCA molecules react with 1 Cu^{+1}. The Cu-BCA chelate is measured at 562nm and baseline-corrected using a 750nm absorbance value.

Lowry Assay:
Folin-Ciocalteu is used as the detection reagent to measure protein concentrations in unpurified protein samples. This assay measures the absorbance of protein solutions at 650nm and uses a standard curve to calculate the concentration. A baseline-correction can be used for normalization. When protein solutions are exposed to cupric sulfate in an alkaline environment, tetradentate copper protein complexes form. Folin-Ciocalteu is reduced in proportion to the chelated copper-complexes which results in the formation of a water-soluble blue product that is measured at 650nm and baseline-corrected using a 405nm absorbance value.

Bradford Assay:
The Bradford Assay is an alternative method commonly utilized for determining protein concentration. It is often used for more dilute protein solutions where lower detection sensitivity is needed. Like the BCA and Lowry Assays, the Bradford Assay requires a standard curve before each run. The Bradford uses the protein-induced absorbance shift of Coomassie Blue dye at 595nm to measure protein concentration. The bound protein-dye complex is measured at 595nm and baseline-corrected using a 750nm absorbance value.

Note: Please perform measurements quickly. Coomasie dye-dye & dye-protein aggregates can form the longer it sits, which will result in fluctuations in absorbance readings.

Colorimetry Interface
A standard curve must be generated prior to sample measurement.

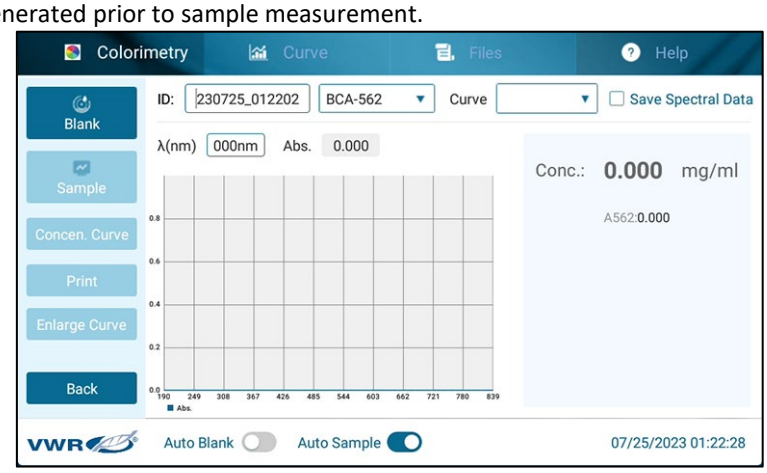

Fig. 17 Colorimetry Interface

BCA-562: Select the assay type: BCA-562, Bradford-595, Lowry-650.
Curve : Select the curve.

Operation:

1. Set the colorimetry and curve type.
2. Ensure that the upper and lower pedestals have been wiped clean. Pipette 0.5µL-2µL of buffer solution to perform a blank reading.
3. Wipe the buffer solution off the pedestals with a laboratory wipe.
4. Measure a 0.5µL-2µL sample. Select “Sample” to perform the reading. The sample volume must be equivalent to the volume used to set the blank reading. **Note:** A blank reading must be performed prior to sample measurements.
5. Clean and wipe the pedestals between each sample measurement.

Curve

To generate a standard curve, at least 5 standard sample concentrations are needed. The concentration range of the standards should cover all unknown sample concentrations.

Colorimetry Curve Interface:

Click the "Curve" tab to build a standard curve **(Fig.18)**.

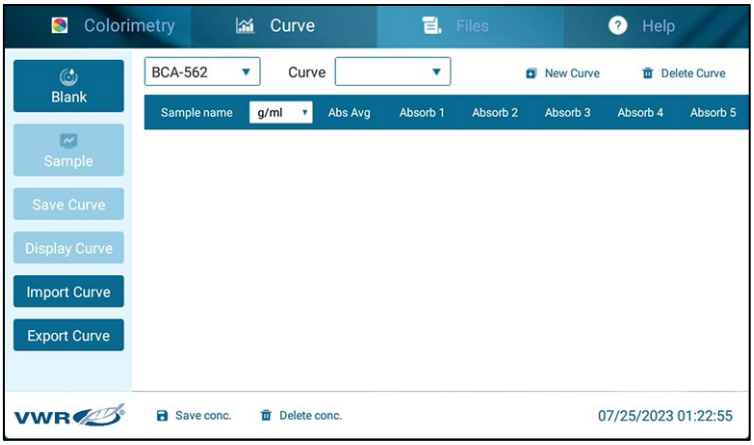

Fig. 18 Colorimetry Curve Interface

Standard Curve Generation:

Click **New Curve**, input the curve name, and click "Confirm". The standard curve table will be displayed.

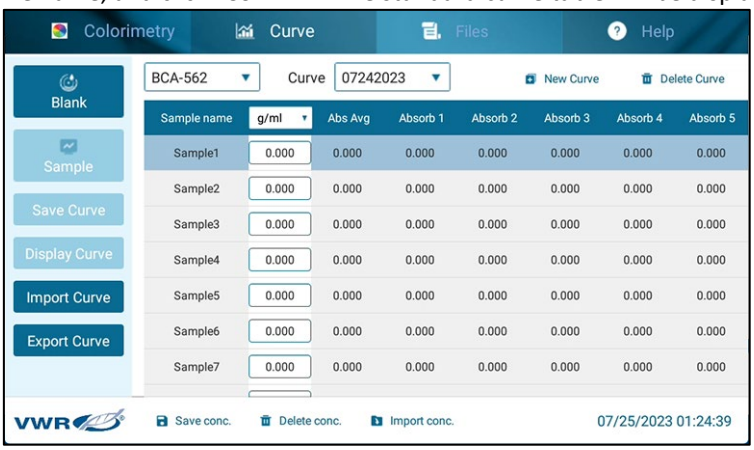

Fig. 19 Standard Curve Interface

Click g/ml to choose the unit for samples and Sample0 20 to input the concentration.

Select a standard sample and then click "Blank" to perform a blank reading. Then, click "Measure" to measure the absorbance of the standard sample.

Each standard sample can be measured up to 5 times, and the average value can be used to build the standard curve. Users can delete the standard sample values or delete single values amongst the 5 measurements of an individual sample.

After measuring all standards, click Save Curve to **save** the curve.

Display Curve : View the standard curve as below:

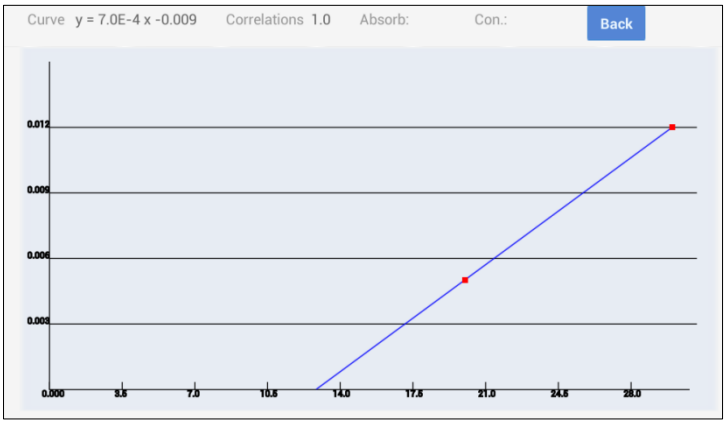

Fig. 20 Standard Curve

- Import Curve : Import a standard curve from a USB flash drive.
- Export Curve : Export a standard curve to a USB flash drive.
- Save conc : Save the input standard sample concentration value.
- Delete conc : Delete the input concentration value.

Colorimetry Files Interface

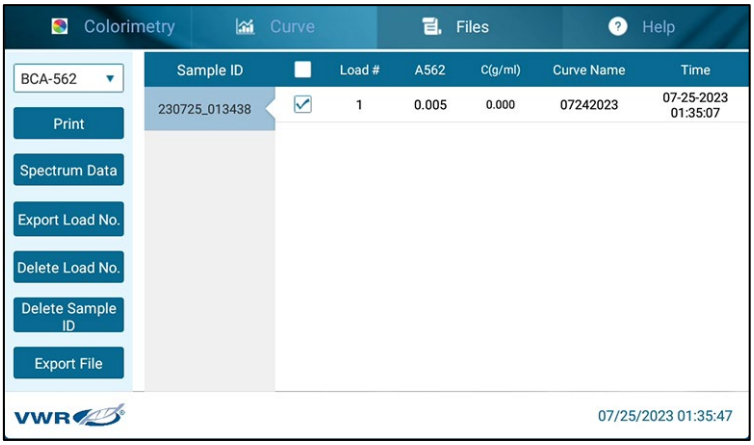

Fig. 21 Colorimetry Files Interface

This interface is similar to the Nucleic Acids detection interface (see **Nucleic Acids Interface**).

BCA-562 : Choose the assay type and the detection data will be displayed.

UV-Vis Interface

Introduction

The UV-Vis interface allows the VWR Spectrophotometer to function as a conventional spectrophotometer. Sample absorbances will display from 200nm to 800nm. Samples with high absorbance values (10mm pathlength equivalent of 90A) can be measured directly.

UV-Vis Measurement

Fig. 22 UV-Vis Interface

Click **Blank** set a blank reading. After setting a blank, click **Enlarge Curve** enter the full wavelength interface of the blank sample.

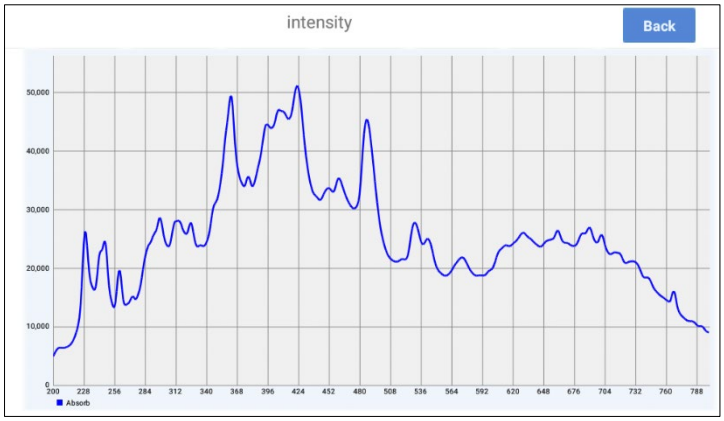

Fig. 23 Blank Full Wavelength Interface (200 - 800nm)

Users can input up to 5 wavelengths before detection and the corresponding absorbance values will be displayed after detection **(Fig. 24)**.

Fig. 24 Select Wavelengths for Measurement

After blank detection, click **Sample** to perform a sample reading. After sample measurements, click **Enlarge Curve** to enter the full wavelength interface of the sample.

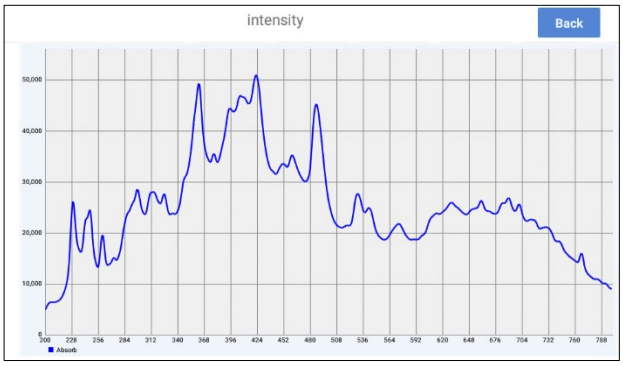

Fig. 25 Sample Full Wavelength Interface

Operation:

11. Set the Sample ID.
12. Clean the upper and lower pedestals, add 2µL buffer solution to perform a blank reading.
13. Clean the buffer solution on the pedestals.
14. Measure a 2µL sample volume and click “Measure” to detect the sample.

Note: A blank reading must be performed prior to sample measurements. The sample volume must be equivalent to the volume used to set the blank reading.

15. Clean and dry the pedestal between measurements.

UV-Vis Files Interface

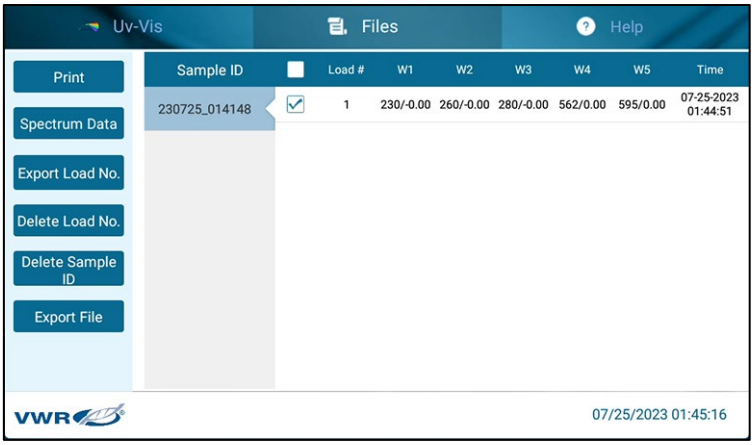

Fig. 26 UV-Vis Files Interface

Spectrum Data: Click to enter the UV-Vis Full Spectrum Interface. Input a wavelength to view the corresponding sample absorbance value **(Fig. 27)**.

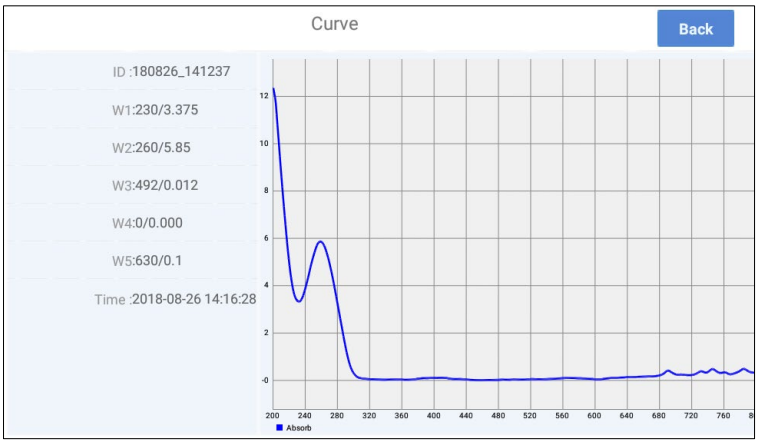

Fig. 27 UV-Vis Full Spectrum Interface

OD600 Interface

Introduction

The OD600 function allows for measuring absorbance values at 600nm. It is commonly used for measuring the growth rate of bacterial cell cultures by measuring absorbance of the culture in growth media at 600nm. The Beer-Lambert equation is used to calculate the concentration (see **Nucleic Acids Interface**). This interface does not require the generation of a standard curve.

OD600 Measurement

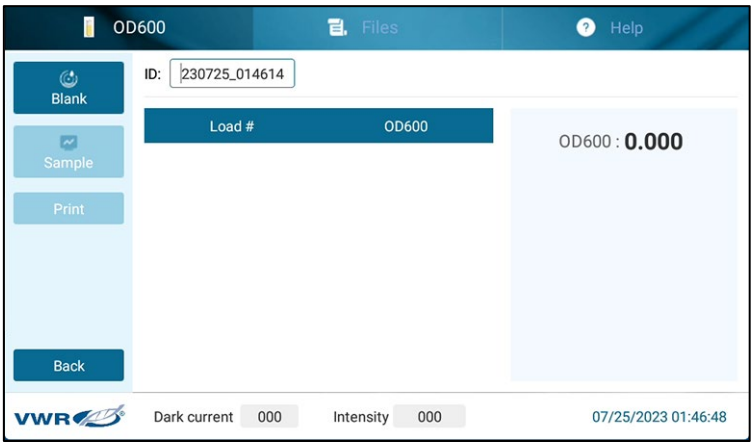

Fig. 28 OD600 Detection Interface

Operation:

1. Set the Sample ID.
2. Clean the upper and lower pedestals; add 2-3mL buffer solution to perform a blank reading.
3. Clean the buffer solution on the pedestals.
4. Measure a 2-3mL sample volume and click “Measure” to detect the sample. **Note:** A blank reading must be performed prior to sample measurements. The sample volume must be equivalent to the volume used to set the blank reading.
5. Clean and dry the pedestal between measurements.

OD600 Files Interface

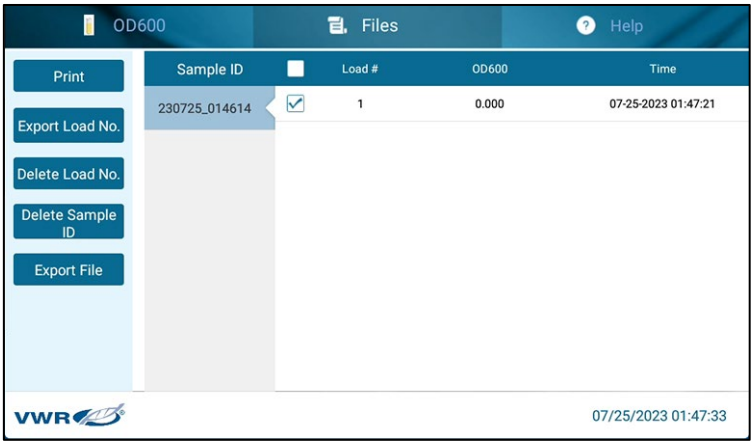

Fig. 29 OD600 Files Interface

This interface is similar to the Nucleic Acids detection interface (see **Nucleic Acids Interface**).

Performance Verification

Materials Needed for verification:

- Lint Free Laboratory Wipes
- Deionized Water (diH_2O)
- Calibrated Precision Pipettor (2µL)
- PV-1 Solution

Expiration Date: 1 year from date of production

Label	Description
20230411	Production date.
260:2.1221	Absorbance(@260nm with 1mm pathlength):2.1221
302:0.9810	Absorbance(@302nm with 1mm pathlength):0.9810

Step by Step Usage Instructions:

Step #	Step Description	Fig.
Step 01	From the Home Screen, Tap the **System** icon	Fig 30
Step 02	Tap the **PV** Button	Fig 30
Step 03	Tap on the **Std260(1mm)** entry box to display a number keypad. Enter the 260 value of the PV Solution (found on PV-1 tube label)	Fig 31
Step 04	Repeat **Step03** for the input value for **Std302(1mm)**.	Fig 31
Step 05	Pipette 2uL diH_2O onto pedestal, lower the arm, and tap **Blank**.	Fig 31
Step 06	Remove water from upper and lower pedestal surfaces using a clean, dry laboratory wipe.	
Step 07	Ensure PV-1 Solution is thoroughly mixed.	
Step 08	Pipette 2uL of the PV-1 solution onto the lower pedestal. Lower the arm and press **Sample** to begin the measurement.	Fig 31
Step 09	After the measurement is complete, remove sample from both upper and lower pedestal with a dry laboratory wipe.	
Step 10	Repeat **Steps 08** and **09** to measure 9 additional individual replicates of the PV-1 solution. Tap **List:** the individual results will be displayed on screen. **Note: If there is a significant error due pipetting, the individual measurements can be deleted via the List interface**	Fig 32
Step 11	**Analysis:** Select **Verification** to analyze the measurements. Interpreting results: **0.2mm |Avg*5/K1-Std302| ≤ Std302*0.013 , Pass** **1.0mm |Avg/K2-Std302| ≤ Std302*0.013 , Pass** **0.2mm Std. Deviation ≤ 0.013 , Pass** **1.0mm Std. Deviation ≤ 0.013 , Pass**	Fig 32 Fig 33

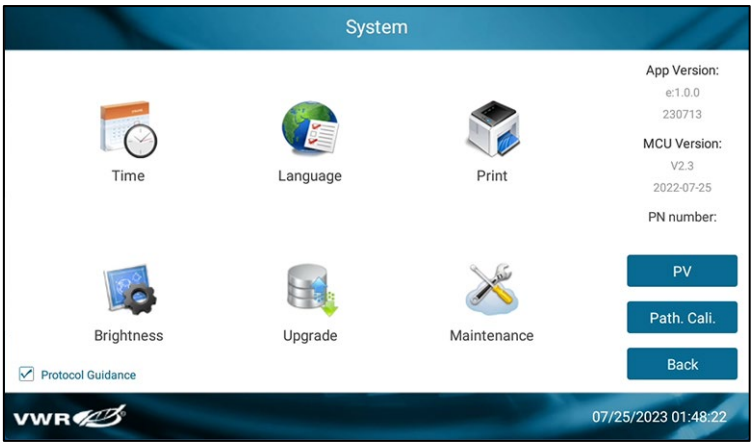

Fig. 30

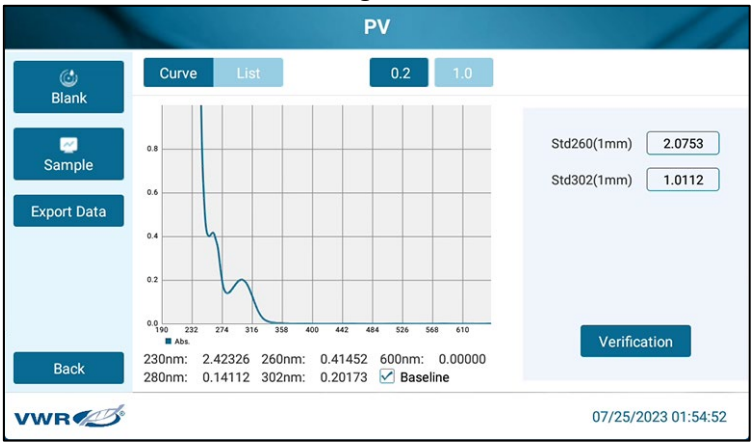

Fig. 31

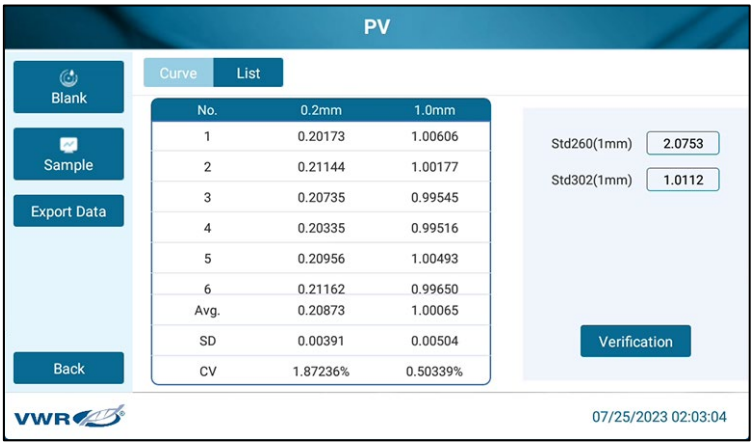

Fig. 32

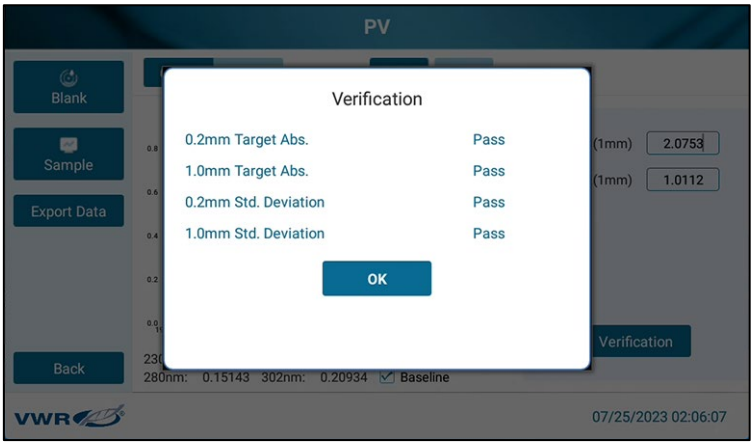

Fig. 33

Note: If any of the above (**Fig. 33**) results in a “FAIL”, please contact VWR Service.

System Settings Interface

Click “System” on the main interface to enter the System Settings Interface **(Fig. 35)**.

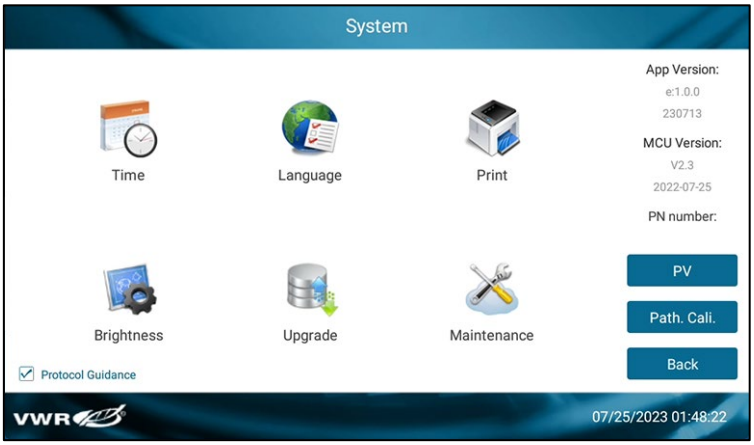

Fig. 34 System Settings Interface

Date & Time Settings Interface

Click the “Time” icon to enter the date and time settings interface.

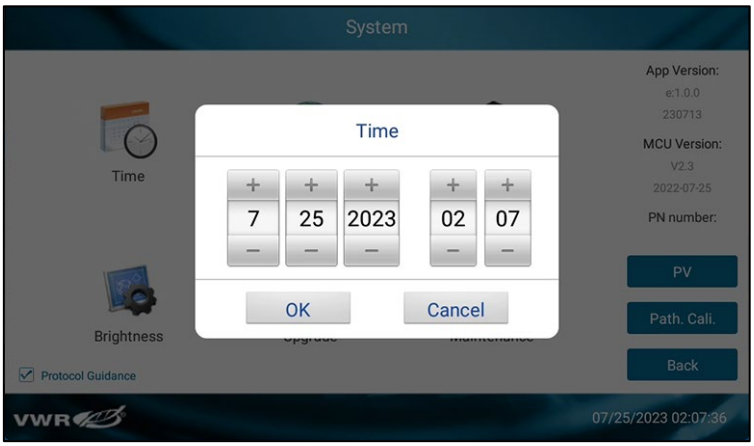

Fig. 35 Date and Time Settings Interface

Print

Click the “**Print**” icon to set the print mode. Select **Automatic Print** to enable automatic printing of results immediately after each measurement.

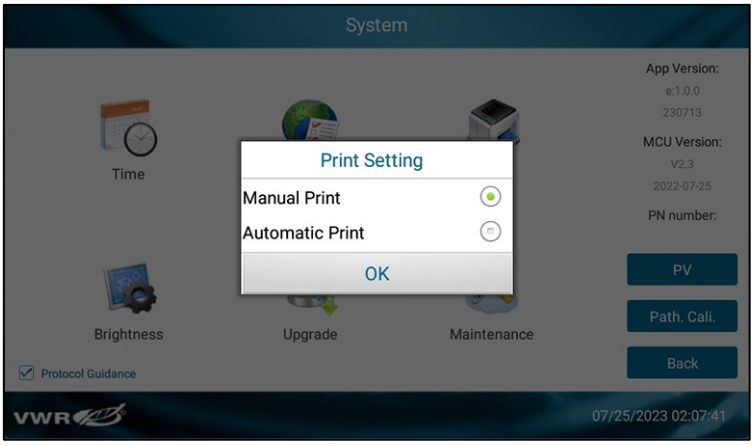

Fig. 36 Print Settings Interface

Brightness

Click the “Brightness” icon to enter the Brightness Settings Interface. Use the slider to adjust the brightness of the display.

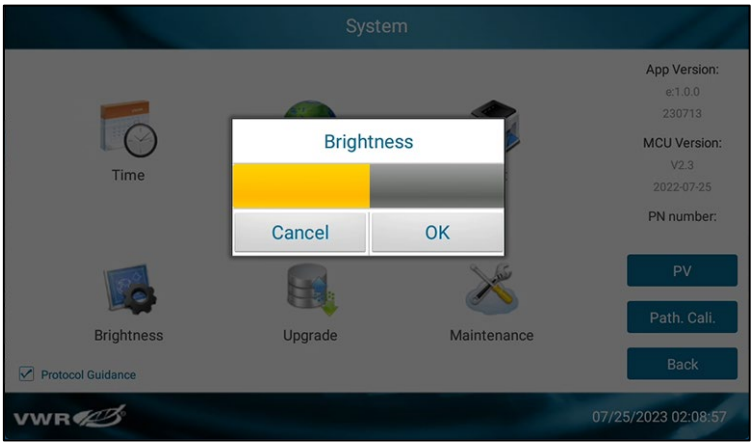

Fig. 37 Brightness Settings Interface

Troubleshooting

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

Problem	Cause	Solution
Measurement results not precise	**Unformed sample column**	Recondition the pedestal using the PR-1 kit.
	Calibration required	Perform a calibration verification check using the PV-1 kit. Contact VWR Service.
Instrument does not power on	**Power supply is not plugged into instrument**	Ensure power supply is plugged into outlet & instrument
	Defective power switch	Replace the power switch
	Defective power adapter	Contact VWR Service.
OD600 module failure	**Poor connection between cable and board.**	Contact VWR Service.
Insufficient light intensity error	**Analysis module defective, optical fiber broken.**	Contact VWR Service.
Touch Screen Error	**Ineffective grounding of power supply**	Provide effective grounding to power supply
Communication Timeout	**Communication failure of analysis module**	Contact VWR Service

Repair and Maintenance

Encountering problems

For inquiries on the repair and maintenance of the instrument, please contact your local VWR service center for assistance.

User Replaceable Accessories and Spare Parts

Description	Quantity	Cat. No.
VWR PRINTER PAPER SPECTROPHOTOMETER	3	76777-148
VWR CUVETTES GLASS SPECTROPHOTOMETER	2	76777-146

Technical service

Web Resources

Visit the VWR website at **www.vwr.com** for:

• Complete technical service contact information

• Access to the VWR Online Catalogue, and information about accessories and related products

• Additional product information and special offers

Contact us For information or technical assistance contact your local VWR representative or visit. www.vwr.com.

Warranty

VWR warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. 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.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Compliance with local laws and regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, 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.

Instead 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

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