SPECTROPHOTOMETER

SP-UV1000

USER MANUAL

Contents

Safety

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

We recommends against the use of SP-UV1000 Spectrophotometer.

- Do not open the device.
- Disconnect the device from the mains supply before carrying out maintenance work or changing the fuses.
- 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 is in any way damaged or defective.
- Repairs may only be carried out by the service technicians fromus 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	1PC
10mm Glass Cuvette	4PCS
10mm QuartzCuvette	2PCS
Power Cord	1PC
User’s Manual	1PC
Dust Cover	1PC

Unpacking

Open the package, according to carefully check the packaging packing list items, if found inside the packaging are missing or damaged items please

contactus and authorized contractual partners.

Installation

1. Environment Required

To ensure the best performance, the following conditions are required:

- The best working temperature range is 16—35℃and the humidity is 45—80%.
- Keep it as far as possible away from the strong magnetic or electrical fields or any electrical device that may generate high-frequency fields.
- Set the unit up in an area that is free of dust, corrosive gases and strong vibrations.
- Remove any obstructions or materials that could hinder the flow of air under and around the instrument.
- The power requirement is 110±11V/60±1Hz or 220±22V/50±1Hz.
- Use the appropriate power cord and plug into a grounded outlet.
- If the local voltage is not stable, a voltage regulator is required.
- Be away from direct sunlight.

2. Install Spectrophotometer

Placement

Place the instrument on the stable table carefully.

Install Printer (Printer is Optional Accessories)

Check to confirm instrument power switch is turned off,connectthe printer’s data cable to the instrument’s parallel port.

Link the Power Cord

Check to confirm instrument power switch is turned off, the power cord plug into two separate power interface and power supply socket apparatus.

Overview

SP-UV1000 Spectrophotometer is an electrical measure instrument which is widely used in the laboratories.

- Use Frequency: Intermittence
- Excessive Voltage(Current): No
- Pollution Class: Class 1

Symbols

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

Caution, Danger!

Caution, High Voltage!

Caution, Hot!

Ground

Fuse

Recycle, this instrument will be called back by the appointed Electrical Treatment Department or by the original Manufacturer when wasted.

Main Specifications

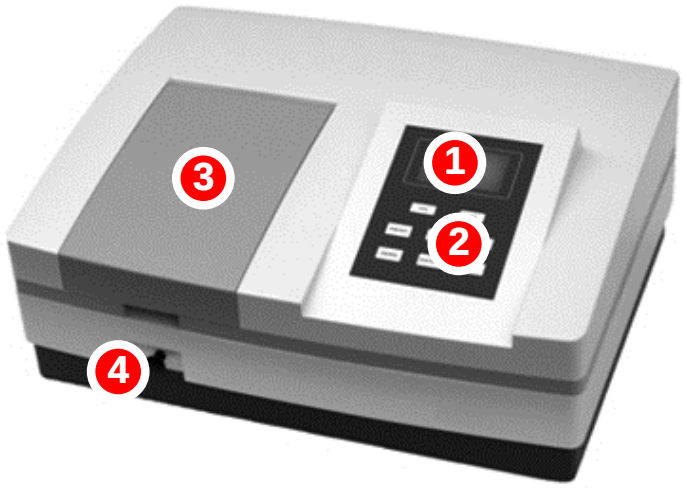
- **Optical System** Single beam
- **Wavelength Range** 200—1000nm
- **Wavelength Accuracy** ±2nm
- **Wavelength Repeatability** 0.8nm
- **Photometric Range** -0.3—3A, 0—200%T
- **Photometric Accuracy** ±0.5%T
- **Photometric Repeatability** 0.3%T
- **Spectral Bandwidth** 4nm
- **Stray Light** 0.3%T@220nm&360nm
- **Stability** ±0.002A/h@500nm
- **Work Mode** Photometry, Quantitation
- **Interface** USB, Parallel(printer)
- **Power Requirement** AC 110/220V, 50/60Hz

- **Dimensions** 490x360x210
- **Weight** 14kg
- **Work Environment** 15—35℃,15—70% relative humidity
- **StoreEnvironment** -10—50℃, 15—70% relative humidity

Description of Appearance and Keys

1.Appearance

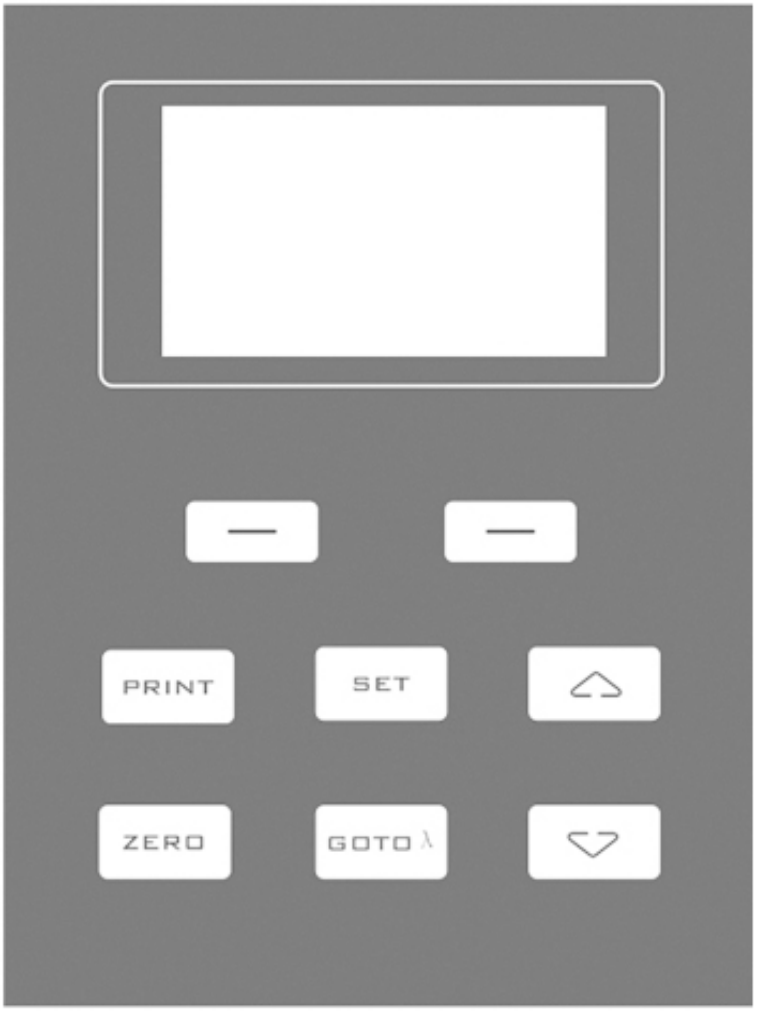
Front View



Back View

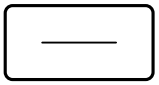
1 LCD Display
2 Keypad
3 Lid of Sample Room
4 Rod
5 LCD Contrast Adjust
6 Printer port
7 USB port
8 Cover of Fan
9 Power Socket
10 Power Switch
11 Cover of Cooling Vents

2. Keypad

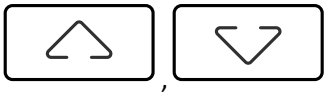


3. Description of Keys

SET	**SET Key:** Set Parameters
GOTO λ	**GOTO λ Key:** Set Wavelength
ZERO	**ZERO Key:** Blank
PRINT	**PRINT Key:** Print measuring result



Function Key: Functions according to the screen



UP, DOWN Keys: Scroll menu/data and set Y scale

Functions

Photometry
Display results as Abs, %T or Energy.

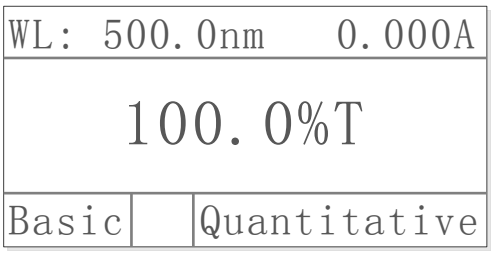
Quantitation
Use a Standard Sample to establish Standard Curve.

Getting Started

The following chart describes the basic operation of the instrument.

Turn On and Self-check
Switch on the power. Then the instrument begins to self-check and 20 minutes' warm up. Self-check includes the following steps:Turn on lamps → Check Sensor → Initialize AD → System position → Get Dark Current → Warm up.

After warm up, instrument displays Main Interface.



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.

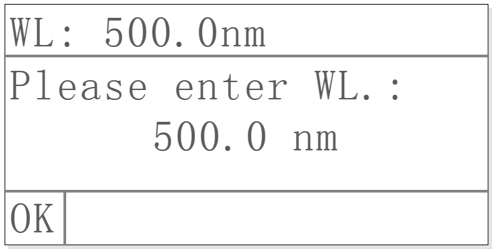
General Operating

Select Application

Main interface, press the key [—] (left) to enter into.

Set Wavelength

Test interface, press key [GOTO∧] to set wavelength, [△], [▽] to modify wavelength value, then press key [—] (left) to go to wavelength and blank.



Set Parameters

Press [SET] enter into setup interface, [△], [▽] to select items or input parameters, [—] (left) to confirm.

Delete the test result and stored data

Test Interface, press the key [PRINT], then press key [△], [▽] to select

“Clear Data, not Print ”, [—](left)to delete.

Blank

Put the Reference in the light path, press [ZERO] to do blank.

Measure Samples

Put the samples in the light path, press [—](left) to measure.

Print the test results

Test Interface, press the key [PRINT], [△], [▽]select “Print, clear data”, press the key [—](left) to print.

Store the Standard Curve

After got the Standard Curve by Marked, press[△], [▽]input the file name and press [—](left) to save.

Load the Standard Curve

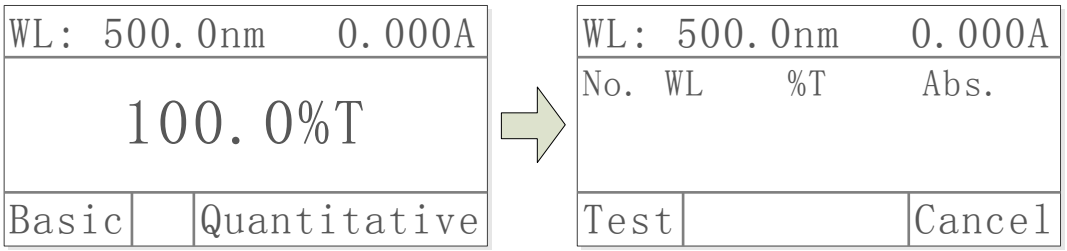
“Quantitative” interface, press[△], [▽]to select “Load Curve”, press [△], [▽]to choose the curve you want, press [—](left) to open.

Measuring

1.Photometry

Step 1. StartPhotometry

MainInterface, press key[—](left) to choose “Basic”.



Step 2. Set Wavelength

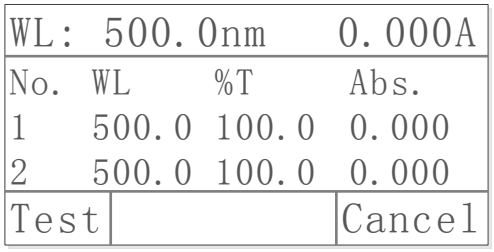
Press GOTOλ to set wavelength,press △, ▽ to input wavelength value, press — (left) to go to wavelength.

Step 3. Blank

Put the Reference in the light path and press ZERO to do blank.

Step 4. Measuresamples

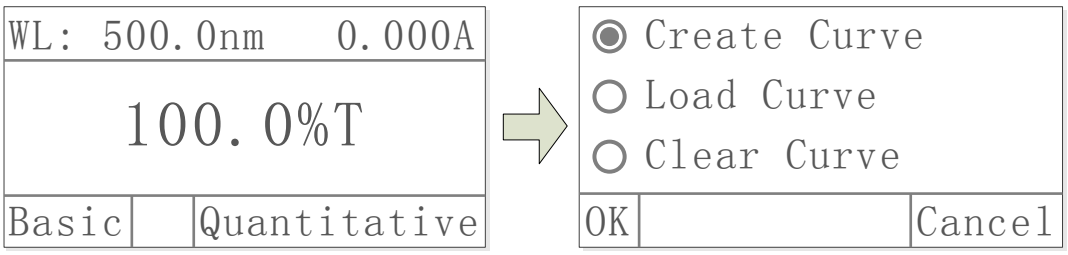
Put the sample in the light path, and then the result displays on the screen automatically, press — (left) to record.



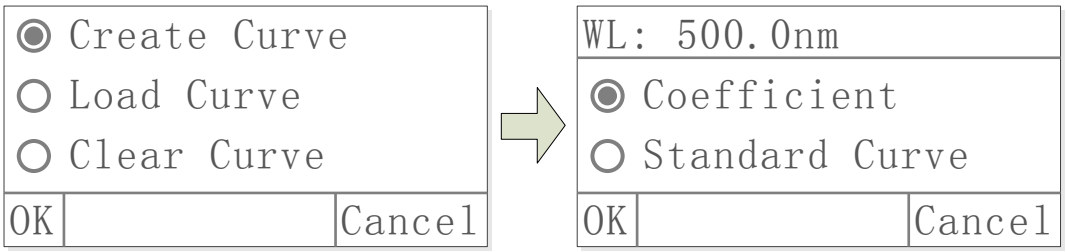
2.Quantitation

Step 1. Start Quantitation

Main Interface, press key — (left) to choose “Quantitative”.



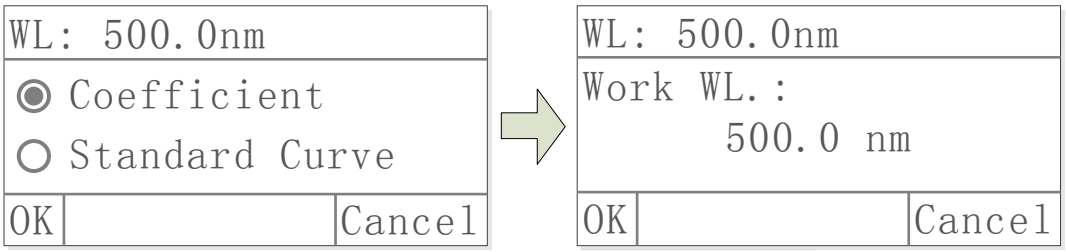
Step 2. Establishor call Standard Curve



2 methods to establish Standard Curve:

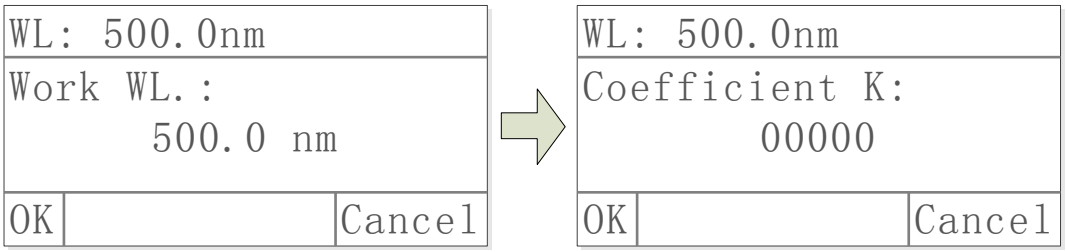
Method 1: Establish Standard Curve byinputting coefficients

1) **Starts establish.**Press , to select “Coefficient” , then press (left) to confirm.



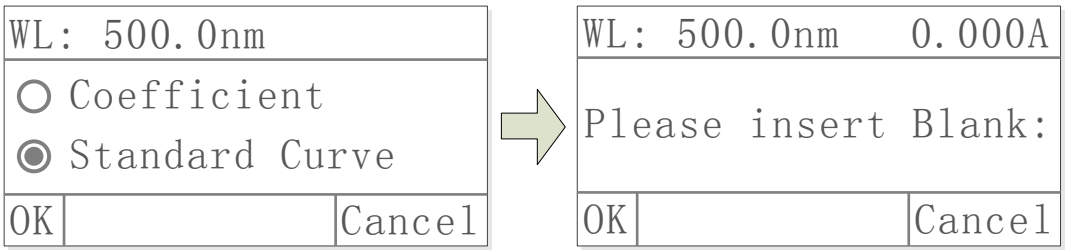
2) **Set wavelength. Press , to input test wavelength value, press (left) to confirm.**

3) **Set coefficient Kand B.** Press , toinput coefficient K, press (left), same way set B.



Method 2: Establish Standard Curve by using Standard Samples

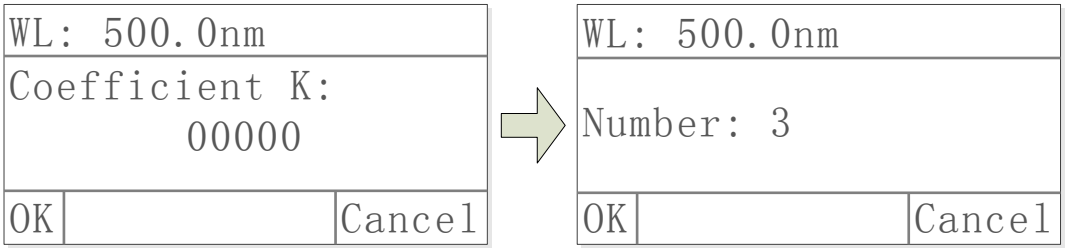
1) **Starts establish.**Press , to select “Standard Curve”, then press (left).



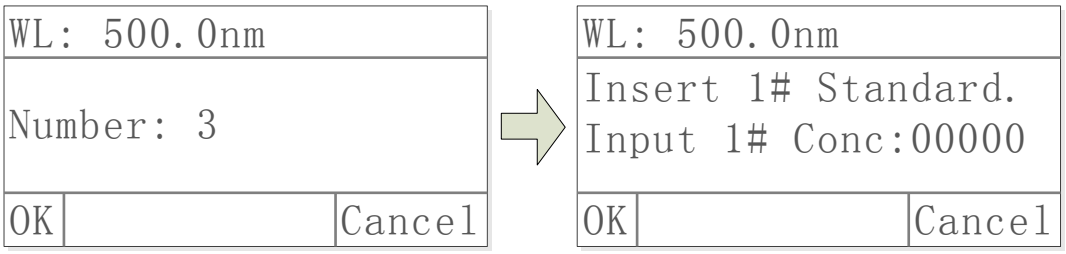
2) **Set Wavelength.** Press GOTO λ to enter to set wavelength, Press ∧, ∨ to input wavelength value, press — (left) to go the setting value.

3) **Blank.** Put the Reference in the light path, press — (left) to do blank.

4) **Setup number of Standard Samples.** Press ∧, ∨ toinput the quantity of standard sample(No more than 9 standard curve.), press — (left) to confirm.

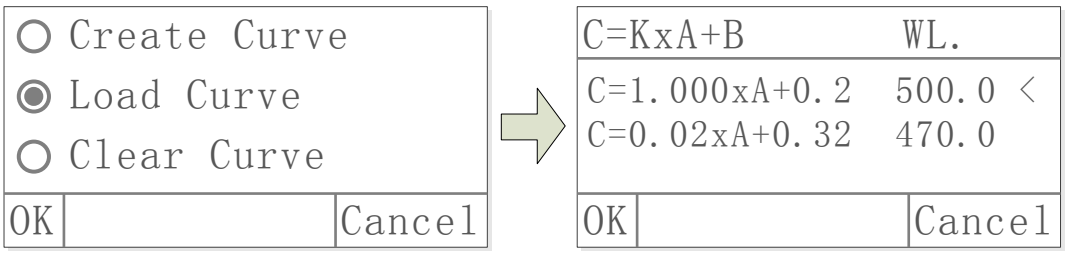


5) **Calibrate Standard Samples.** Put the corresponding standard samples in the light path as the screen indicates, press ∧, ∨ to input the concentration, press — (left) to confirm, to finish all the standard samples.



Load the Stored Curve

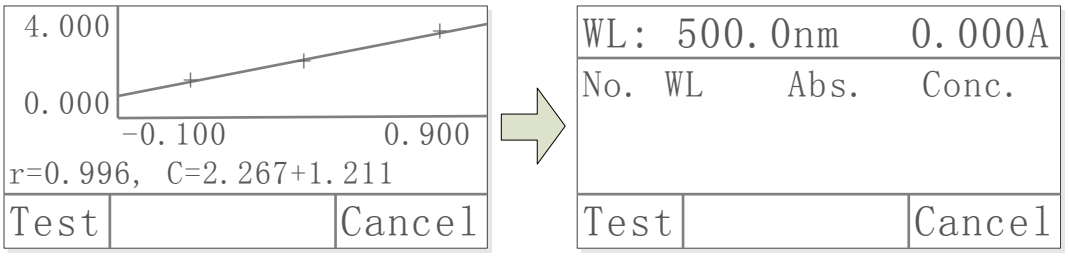
Press ∧, ∨ to choose “Load Curve”, press ∧, ∨ to choose the curve, press — (left) to confirm.



Press (left)to enter the test mode after building or loading standard curve.

Step 3. Enterinto MeasuringInterface

Press (left)to enter into the QuantitationMeasuringInterface.



Step 4. Blank

Put the Reference in the light path, press ZERO to do blank.

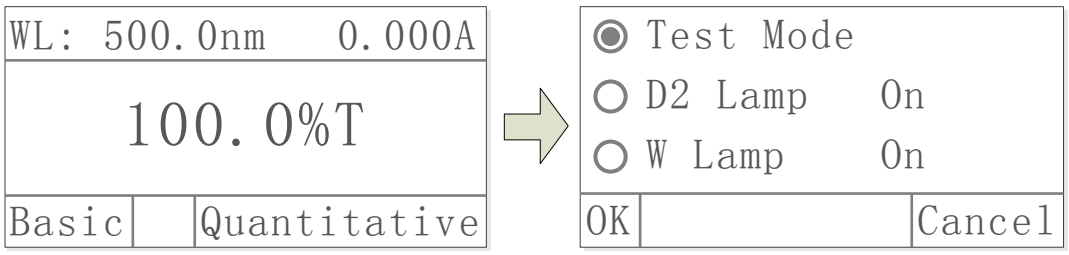
Step 5. Measure Samples

Put the sample to be tested in the light path, press (left)to measure. Then the test result will display in the data sheet. Repeat this step to finish measuring all the samples.

500.0nm			0.000A
No.	WL	Abs	Conc.
1	500.0	0.039	0.078
2	500.0	0.042	0.084
3	500.0	0.041	0.082

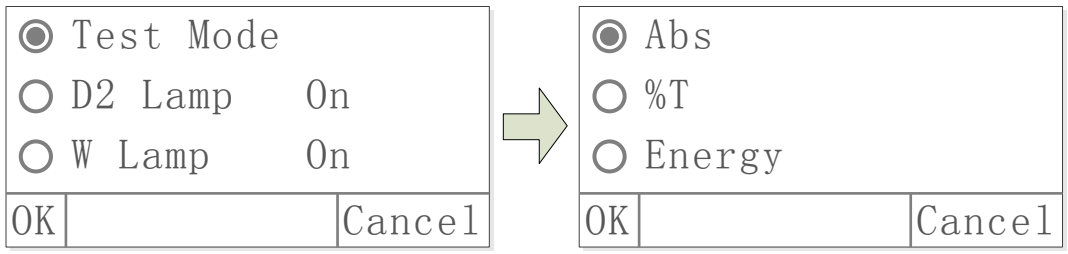
3.Utility

Main Interface, press SET to go into utility setting.



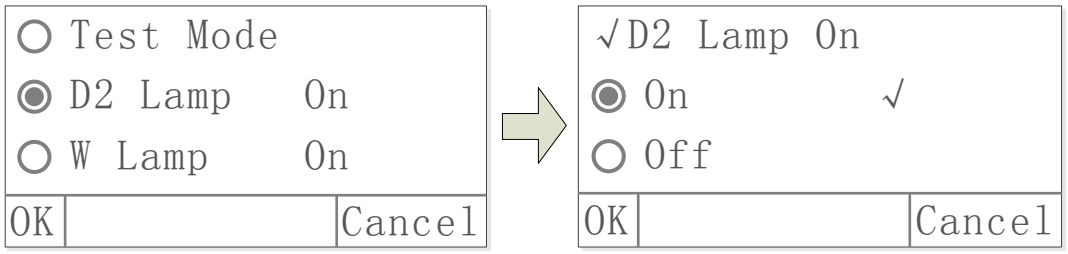
Test Mode

Press , to choose “Test Mode”, press (left) to enter,press , to choose “Abs”, “%T”,“Energy”, press (left) to confirm.



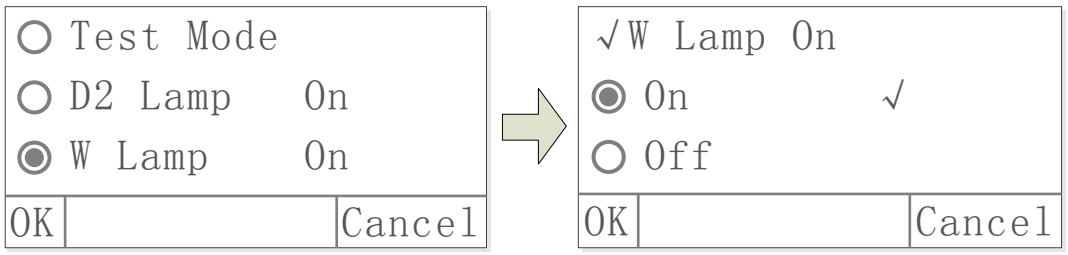
Turn On/Off D2 Lamp

Press , to choose “D2 Lamp”, then press (left) to enter into.Press , o choose “On” or “Off”, press (left) to turn on/off.



Turn On/Off W Lamp

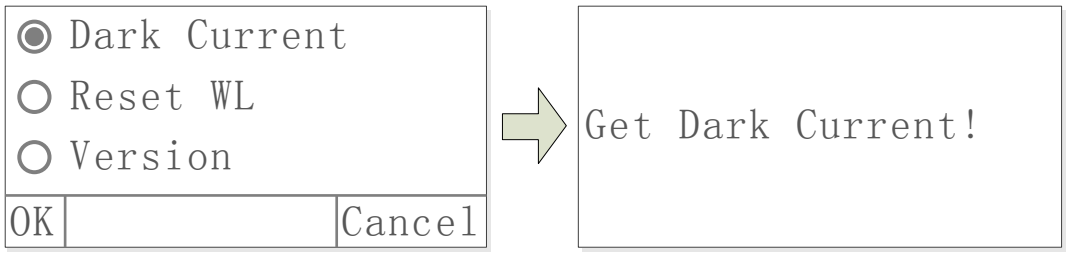
Press , to choose “W Lamp”, then press (left) to enter into.Press , to choose “On” or “Off”, press (left) to turn on/off.



Get Dark Current

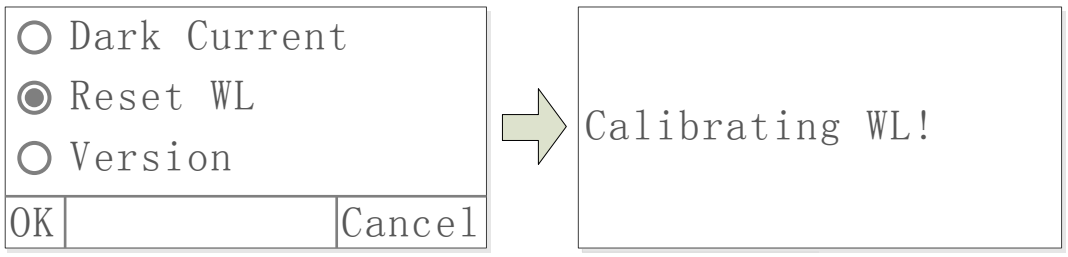
Keep the light path without anything blocking, press, to choose “Dark Current”, then press(left) to resample Dark Current.

Note: During the course, open the lid of the compartment is prohibited.



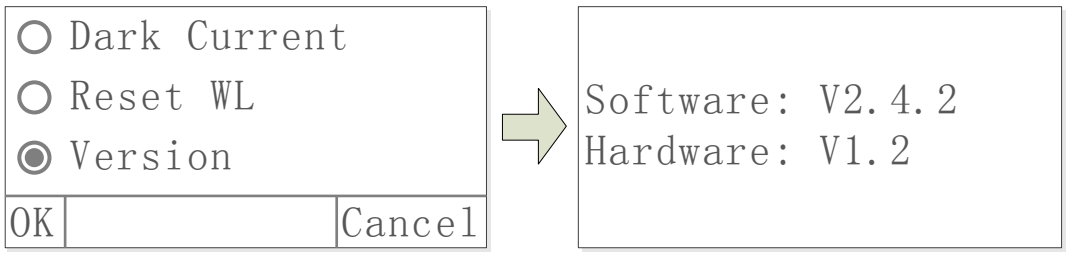
Reset Wavelength

Keep the light path without anything blocking, press, to choose “Reset WL”,then press(left) to reset wavelength.



About Version

Press, to choose “Version”,press (left) to view version information,press any key to return.



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 connectivity
	Fuse burning	Replace fuse
Measurement uncertainty	Warm up is not enough	Warm up more time
	Sample is not Stable	Improve the sample
	The concentration of sample is too high	Diluted 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 Calibrate Failed	Something block the Light path	Remove it, calibrate again
Power on, back light is OK, but nothing display on the screen or display is not clear	Display Contrast problem	Adjust the contrast potentiometer
Measurements inaccurate	Cuvettes were contaminated	Clean cuvettes
	Samples were contaminated	Improve samples
	Worse matching of the cuvettes	Improve the matching of the cuvettes
	Dark current error	Resample dark current

Repair and Maintenance

1. Daily Maintain

Check the 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 wiped off immediately.

Surface Clean

The cover of the instrument is with paint. Please use wet towel to wipe off the drips on the surface immediately. Organic solution is forbidden to be used to clean the cover. Please wipe off the dirt on the cover timely.

Clean 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.

2. Spare Parts Replacement

Replace the Fuse

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

Step 1. Tools preparation

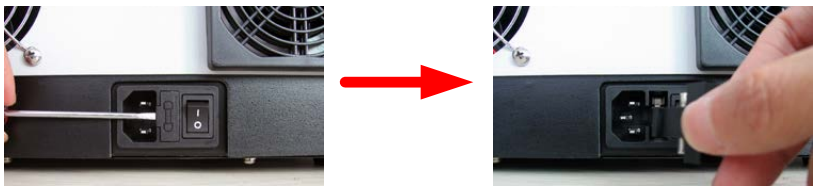
Prepare a 3×75 Flat Blade screwdriver.

Step 2. Switch Off the power supply

Switch off the power supply, and unplug the socket.

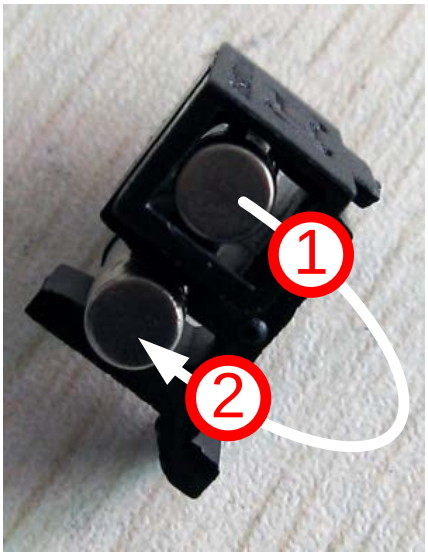
Step 3. Take out the Fuse Seat

Take out the fuse seat by the screwdriver.



Step 4. Replace a new fuse

Pick out the spare fuse (3.15A/250V) and replace it to the working position.



Step 5. Reset the fuse seat

Replace the fuse seat in the power socket.

Step 6. Switch on the power

Plug the socket and switch on the power.

Replace Lamps

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

Step 1. Tools preparation

Prepare a 6×150mm Cross Blade screwdriver and a pair of glove.

Step 2. Power Off

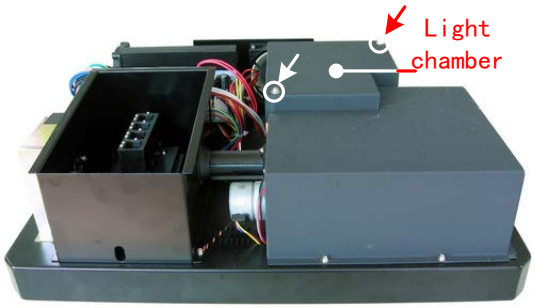
Switch off the power supply and unplug the socket.

Step 3. Open the cover

Unscrew the 4 screws indicated(Each side with 2 screws)and remove the cover.

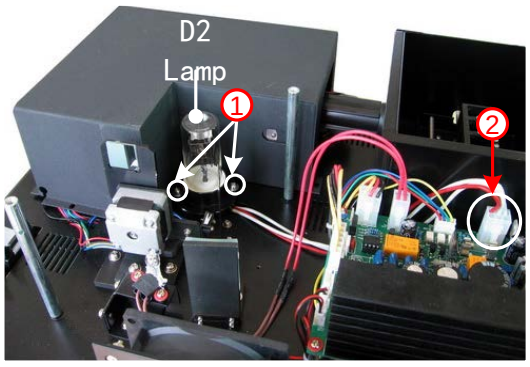
Step 4. Open the cover of the light chamber

Unscrew the 2 screws on the light chamber cover and remove it.



Step 5. Replace the D2 lamp

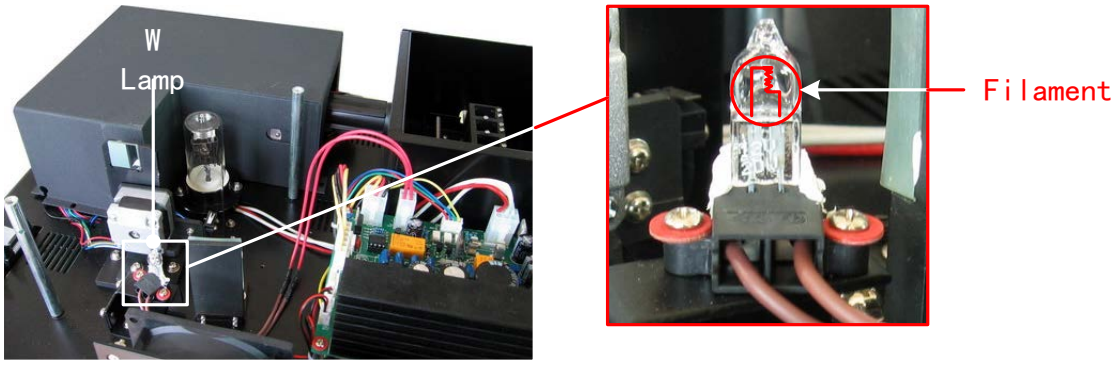
Unscrew the 2 screws on the D2 Flange (No.1), unplug the connector in the Power Board (No. 2)and remove the D2 lamp. Draw on the cotton glove and replace a new lamp. Fix the 2 screws and plug the connector again.



Step 6. Replace W lamp

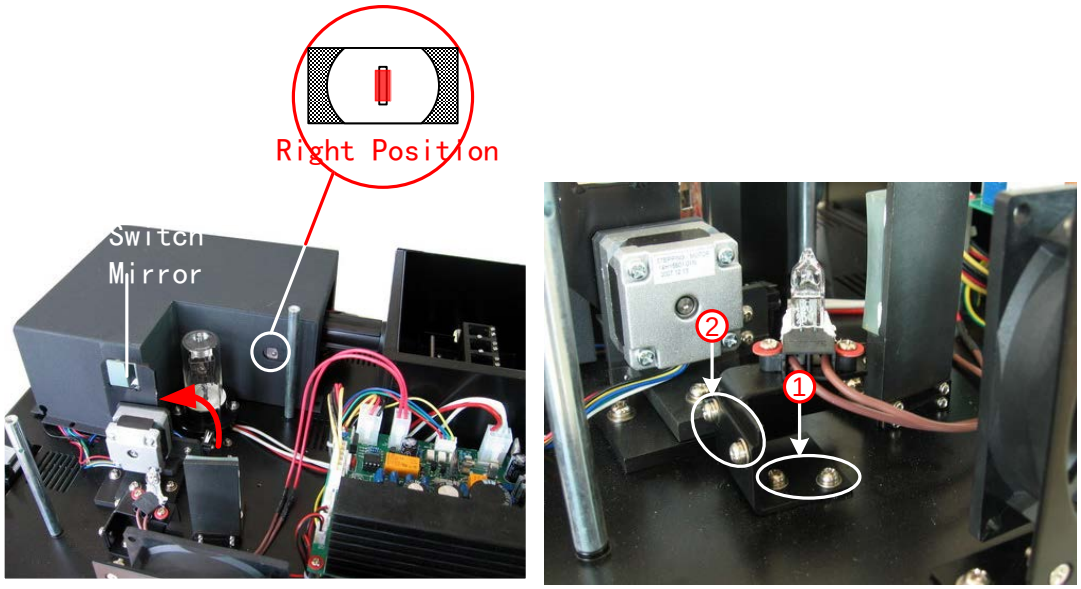
Pull out the defected W lamp and draw on the cotton glove. Insert the new W lamp as deep as possible on the lamp seat. Be sure to keep the

filament in the same direction as the old one face.



Adjust the position of the W lamp

Switch on the power(the Switch Mirror should be placed to the position asindicates). Observe the entrance facular, and it should in the center of the entrance hole.If the facular deviate to Left or Right, then loosen the No.1 screws in Fig. 5-8 and move the lamp seat to Left or Right until it focus on the center of the slot. Then fix the screws. If the facular deviate to Up and Down, then loosen the No.2 screws and move the lamp seat Up and Down until the facular focus on the center of the slot. Then fix the No. 2 screws again.



Step 7. Finish

Reset the cover of the light chamber and fix the screws. Reset the cover of the instrument and fix the screws. Recover the Pole in the

compartment, then the course finished.

Warranty

Wewarrant that this product will be free from defects in material and workmanship for a period of one (1) year from date of purchase. If a defect is present, we will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, 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.

For your protection, items being returned must be insured against possible damage or loss. This warranty shall be limited to the replacement of defective products. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

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!

DLAB Scientific Inc.

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