

# Optical Measuring Instrument Accessory

## Operation Manual

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### USPM-RU-W series USPM-45EXP

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#### Before use

We thank you for purchasing our 45-degree expansion unit. In order to derive the best performance of this product, and in order to use this product safely, be sure to read this instruction manual before use. Since the description of this document is limited to contents related to the 45-degree expansion unit, please also read the separate "**NIR Micro-Spectrophotometer USPM-W-B Operation Manual.**"

Always keep this manual at hand when you use this product. After reading this manual, keep it in a safe place. The guarantee form is included in this manual (on page 5). Fill in the form, check the descriptions, and keep it in a safe place.

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
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- To customers who execute micro-spectrometry by placing a sample on the tilt stage	

# Cautions regarding Parts, Ratings, and Pictogram Explanation

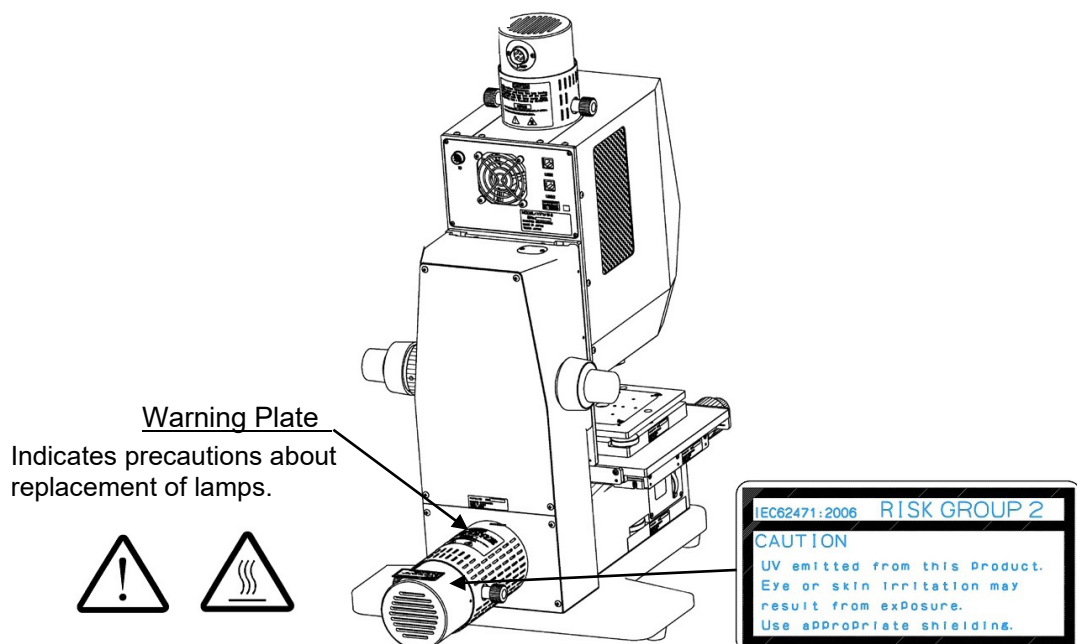
[Symbol marks related to safety]

On the Near-infrared Micro-spectrophotometer, the following marks are displayed. Understand the meaning of each mark, and handle the product safely.

Marks	Meanings
	Do not touch because the surface is hot. Otherwise you can get burned.
	This indicates a warning or caution covering a wide range; observe the direction described along with this mark on the product itself or in the operation manual.
	This indicates that the main switch is ON.
	This indicates that the main switch is OFF.

[Location of warning labels displayed]

Warning labels are displayed at the following locations. If a warning label is not present, or if it gets dirty or comes unstuck, contact your dealer or our sales department for replacement or other inquiries.



This product corresponds to RISK GROUP2 in the UV range (200-400nm) based on IEC62471-2.  
In addition, this product corresponds to RISK GROUP1 in the blue light range (300-700nm).

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[Symbol marks related to packaging]

The meanings of symbol marks indicated on the package of this product are as follows.



Indicates the proper upper direction of the packaged cargo



Indicates that the packaged cargo must not be exposed to rain



Indicates that packaged cargo must be carefully handled because contents are easily damaged



Indicates the recycle mark indicating compliance with China RoHS

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# Safety Precautions

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## Intended use of this product

This product is intended for use with the prismatic 45-degree reflection measurement in combination with "NIR Micro-Spectrophotometer (USPM-W-B)." Do not use this product for any other purpose.

For use of the "NIR Micro-Spectrophotometer (USPM-W-B)," please read its operation manual.

## About this operation manual

This operation manual includes indispensable information regarding how to use this product safely and effectively. Before use, be sure to read and thoroughly understand this operation manual and the manual of the device to be used in combination, and then use the products following the instructions.

If you use this product in any way other than instructed by this operation manual, safety cannot be guaranteed.

Keep this operation manual and the manual of the device to be used in combination at hand. If you have any question regarding the content of this operation manual, please contact your dealer or our sales department.

## Prohibition of repairs or modifications to the product

Do not disassemble or modify this product in cases other than those regarding the replacement of consumables. Doing so can cause damage to the user, the product, or the security of functions. If you assume that a repair is necessary, treat the problem by following "6. If Abnormality Occurs." If you cannot treat the problem using the means above, stop using the product and contact your dealer or our sales department.

## Warning indications in this manual

In this manual, the symbol marks and terms below are used in accordance with the description contents. The symbol marks and terms are described for each safety level. To use the product safely and properly, thoroughly understand the contents of symbol marks and terms.



Indicates that serious personal injury or death may result if this warning is not followed.



Indicates that moderate human injury or material damage to this device may result if this caution is not followed.

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■ Symbols denoting prohibition (prohibited actions)



Prohibited



Disassembly  
prohibited

■ Symbols denoting obligation (mandatory actions)



Mandatory



Unplugged



Grounded

■ Symbols denoting caution



Caution



Caution against  
ignition



Caution against  
electric shock

## General cautions on handling this product

Also check **NIR Micro-Spectrophotometer USPM-W-B Operation Manual - General precautions on handling.**

Strictly observe the following when handling this product. In addition, observe the warnings or cautions described in each chapter.



Prohibited

■ Gently operate each adjustment knob!

Gently turn the adjustment knobs used for the transmission measurement unit, the tilt stage, and the polarization unit. Applying excessive force while turning these knobs may result in damage to the knob screws, necessitating their replacement.

Do not attempt to rotate knobs over their respective stroke ends.

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## Warranty

### (1) Warranty form

***** WARRANTY CARD *****			
PRODUCT NAME: Reflectivity Measurement Unit for 45-Degree			
Model name: USPM-45EXP			
Serial number _____			
* The serial number is to be written in by the customer.			
Customer information _____			
Name _____			
Address _____			
Phone Number _____			
(Warranty Period)	One year from the date of purchase or after 2,000 usage hours, whichever comes first.		
(Date of Purchase)	(Month)	(Date),	(Year)
(Vendor)	_____		

### (2) Warranty conditions

This warranty card guarantees free-of-charge repair under the conditions described below

(Conditions regarding free-of-charge repair)

- (1) In the condition where the product is used in a proper manner conforming to the operation manual and the descriptions of the warning labels, if a failure should occur due to a defect in manufacturing within the warranty period, EVIDENT Corporation will repair the product free of charge.
- (2) This guarantee is not applied to any failure that has been caused by another reason (for example, a failure in a peripheral device or a problem in the installation location environment).
- (3) Repair in the following cases is to be paid repair even within the warranty period.
  - Defects or damage caused by improper handling;
  - Defects or damage caused by a natural disaster (e.g., lightning or flood), or by other unforeseen accidents;
  - Cases where the cause of failure is in a device other than this product;
  - Defects or damage in a part that has been repaired, adjusted, or modified by a person other than a EVIDENT Corporation-qualified service person, or other failure or damage caused by a repair, adjustment, or modification by a person other than a EVIDENT Corporation-qualified service person;
  - Failure due to a product that has been intentionally altered, or from which a part is intentionally removed; or
  - Failure due to service parts (treated as consumables),
- (4) For details of the repair of a failure that occurred in Japan or overseas, please

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inquire to the contact point listed in the attached sheet.

\* This warranty card guarantees free-of-charge repair under the conditions regarding usage and period as clarified in this card. Therefore, this warranty is not intended to restrict the customer's right. In addition, for repair after the warranty period has passed, please inquire to the contact point listed in the attached sheet.

- Although we have taken all possible measures to ensure the contents of this document, if you should notice any mistake or omission regarding a description, please inquire to the contact point listed in the attached sheet.
- Notwithstanding the foregoing, we cannot be held responsible for any influence caused by using the measurement results of this product.

## Features of this Product

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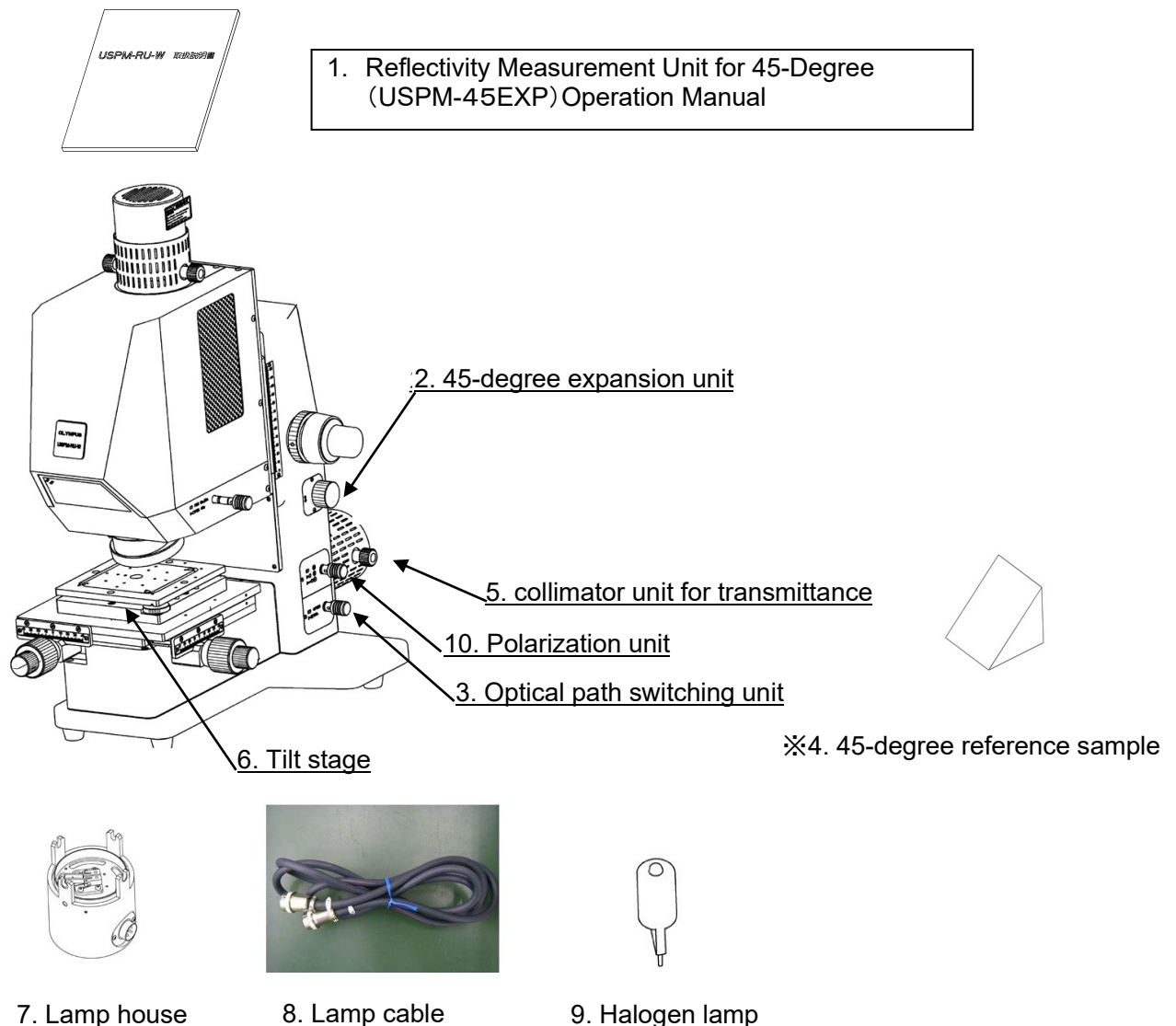
This 45-degree expansion unit is an optional unit used to enable prismatic 45-degree reflection measurement by mounting this product onto the Near-infrared Micro-spectrophotometer (USPM-W-B). Its measurement method is a comparison measurement where the spectral reflectance of the 45-degree reference sample is used as the reference and where the spectral reflectance of the sample is calculated.



# 1. Checking Delivered Items

Also check NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 1. Confirming the Package Contents.

Check that all the items of the main unit and accessories are delivered by referring to the table below, and check that there is no damage. If any item is missing or damaged, or if you have any question, do not use the unit and promptly contact your dealer or a branch of our company.



※It is a reference sample of 45 degrees for the reflection measurement. Reference data CD is attached. Because the mirror court is given, I will recommend the update of the reference data once a year. Please contact the shop or our business window of store purchased when you update it.

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**[45-degree expansion unit package]**

	Name	Quantity	Remarks
1	Reflectivity Measurement Unit for 45-Degree (USPM-45EXP) Operation Manual	1	This document
2	45-degree expansion unit (See Note 1.)	1	
3	Optical path switching unit (See Note 1.)	1	
4	45-degree reference sample (data CD included)	1	45-degree reflection measurement reference sample

**[collimator unit for transmittance & tilt stage package]**

	Name	Quantity	Remarks
5	collimator unit for transmittance (See Note 1.)	1	
6	Tilt stage (See Note 1.)	1	
7	Lamp house	1	
8	Lamp cable	1	
9	Halogen lamp (dedicated for this device)	5	Four lamps as spares

**[Polarization unit package] \* Option**

	Name	Quantity	Remarks
10	Polarization unit (See Note 1.)	1	

Note 1: These items are to be attached to the USPM-W-B main unit by a service person.

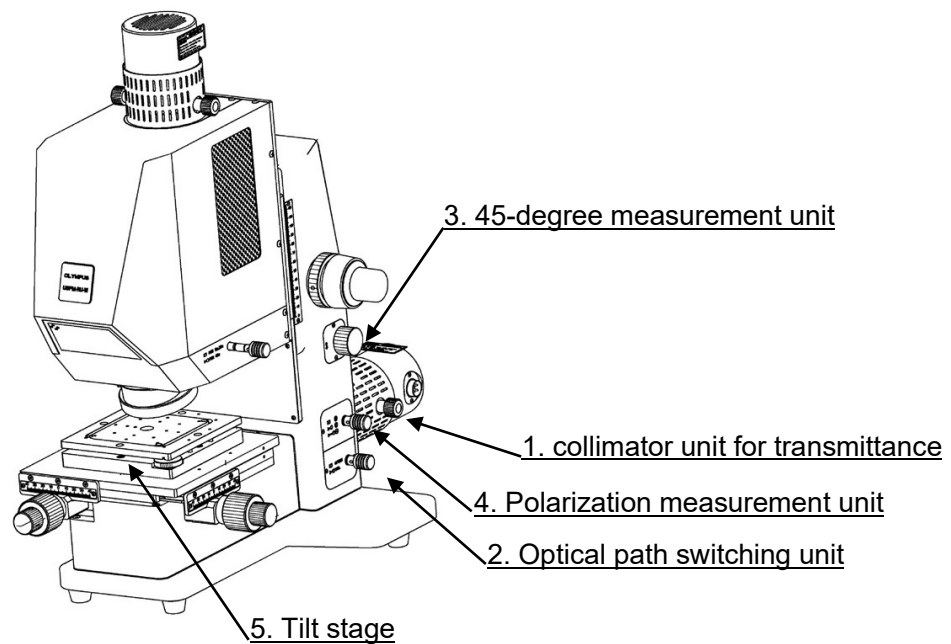
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## 2. Part Names and Functions/Specifications

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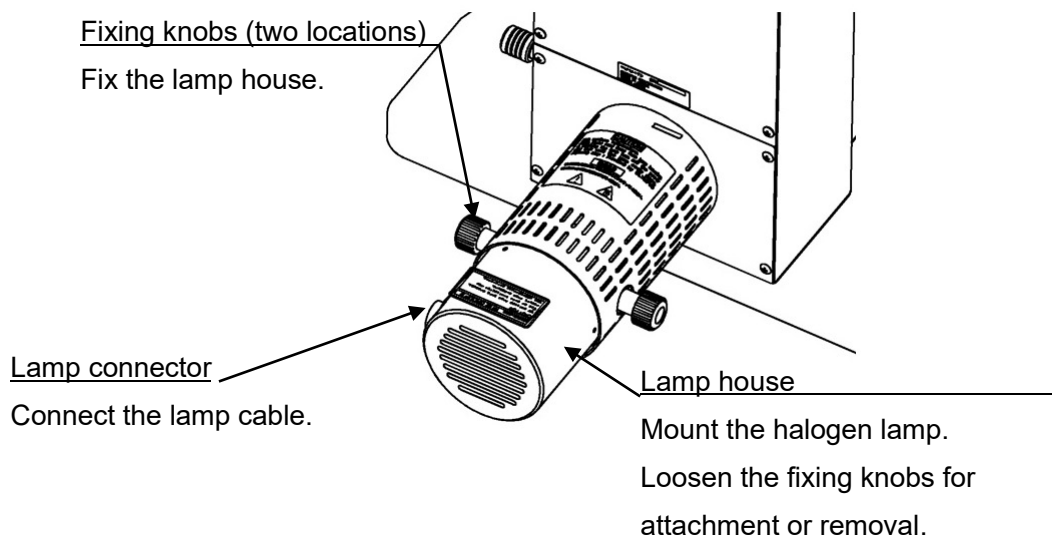
### 2.1. Main unit part names and functions

Also check **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 2.1. The names and functions of each part in the unit.**



The functions and the operations of each part in the unit are presented below:

1. collimator unit for transmittance  
Light source unit for optional transmission measurement or 45-degree measurement; to be used by fixing the lamp house using the fixing knobs (two locations). For a detailed explanation, see "3. Installation and Connection."



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2. Transmitted optical path switching unit  
Switch the optical path for the transmission measurement and the 45-degree measurement by using the transmitted optical path switching knob.
  3. 45-degree expansion unit  
Adjust the position of the outgoing beam in the vertical direction by using the outgoing beam height adjustment knob.
  4. Polarization unit  
Adjust the polarization condition between the P polarization, S polarization, and random polarization by using the polarization switching knob.

Outgoing beam height adjustment knob

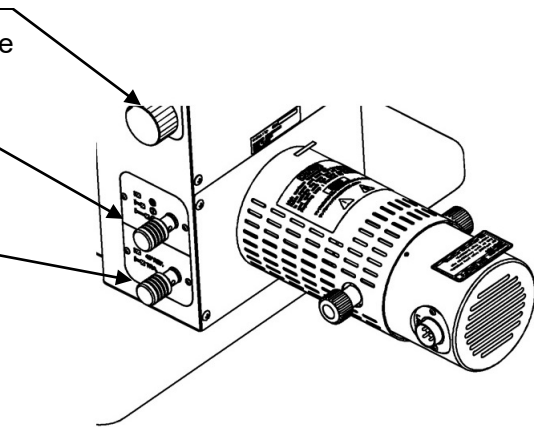
Adjust the outgoing beam position in the vertical direction.

Polarization switching knob

Switch the polarization direction.

Optical path switching knob

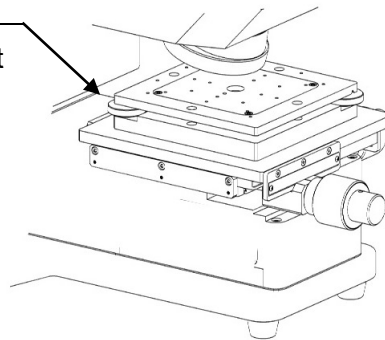
Switch the transmitted optical path.



5. Tilt stage  
Adjust the two-axis tilt against the optical axis by using the tilt stage adjusters.

Tilt stage adjuster

Adjust the two-axis tilt against the optical axis.



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## 2.2. Product specifications

Also check **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 2.3 Product specification**.

The described specifications are those when the Near-infrared Micro-spectrophotometer 45-degree expansion unit is mounted on the device.




Items	Specifications
Name	Reflectivity Measurement Unit for 45-Degree
Model name	USPM-45EXP
Wavelength range	380–1,050 nm
Wavelength resolution	Approximately 5 nm (wavelength indication resolution: 1 nm)
Repeatability(3 $\sigma$ )	$\pm 0.3[\%]$ or less (430–1,010 nm), $\pm 1.0[\%]$ or less (in other ranges)
Aperture	Approximately $\phi 2.0$ mm
Tilt stage	Loading space size: 140(W) $\times$ 140(D) mm Load capacity: 1 kg Movable range: (XT) $\pm 1^\circ$ , (YT) $\pm 1^\circ$
Weight of device	Main unit: Approximately 31 kg (excluding the computer) Controller supply unit: Approximately 6.7 kg
Dimensions of device	Main unit: 360(W) $\times$ 631(D) $\times$ 606(H) Controller supply unit: 250(W) $\times$ 270(D) $\times$ 125(H)

# 3. Installation and Connection

## 3.1. Transportation and installation

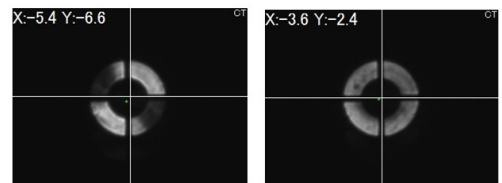
Refer to **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 3.1 To transfer and install the main unit.**

## 3.2. Halogen lamp attachment and replacement

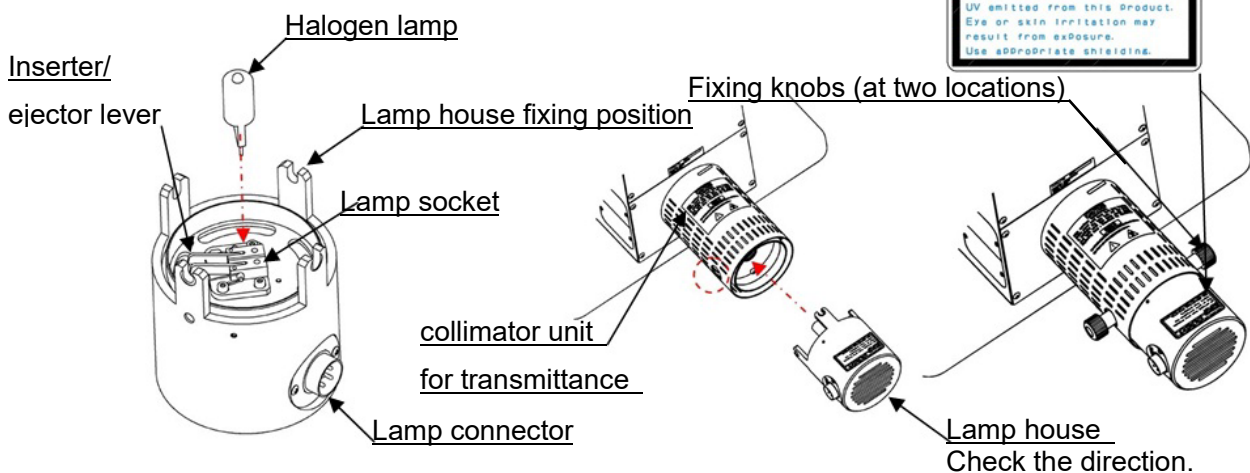
 <b>CAUTION</b>	<p>For safety reasons, before halogen lamp attachment or replacement, turn off the power switch, remove the power cord from the outlet, and wait until the halogen lamp and socket have adequately cooled down</p>
 <b>CAUTION</b>	<p>When attaching the halogen lamp, be careful not to directly touch it. If fingerprints or dirt adheres to the halogen lamp, wipe them off completely. Otherwise, the lifetime of the halogen lamp can be shortened.</p>
 <b>CAUTION</b>	<p>Checking is necessary for the lamp house. Execute checking by using <b><u>NIR Micro-Spectrophotometer USPM-W-B Operation Manual – Appendix: Checklist for inspection of the lighting device (lamp house).</u></b></p>

Usable light source lamp: JC12V55W (manufactured by Life Elex Inc.)

- (1) Loosen and remove the lamp house fixing knobs (at two locations) set in the collimator unit for transmittance, and pull out the lamp house.
- (2) The removed lamp house is equipped with a lamp socket in which a halogen lamp can be inserted. Flip down the inserter/ejector levers (at two locations) and mount the halogen lamp into the lamp socket. If the lamp does not lean or it is not inserted correctly, the unevenness of a ring image like the right photograph will occur. When unevenness is checked, please check whether insertion of a lamp is corrected.
- (3) Slowly lift your fingers off the inserter/ejector levers.
- (4) Insert the lamp house into the original position. The lamp connector must be positioned to the right of the device. Check the portion surrounded by a circle below and check the screw hole position and the lamp house fixing position, and then tighten the lamp house fixing knobs (at two locations) to fix the lamp house.



Unevenness of a ring image      Correct ring image



### 3.3. Device connection



Be careful not to apply excessive force to the cables, as they are easily damaged by bending or twisting.



For cable setting, keep cables away from something sharp.



Before wiring, check that all power switches are turned off and remove the power cord from the outlet.

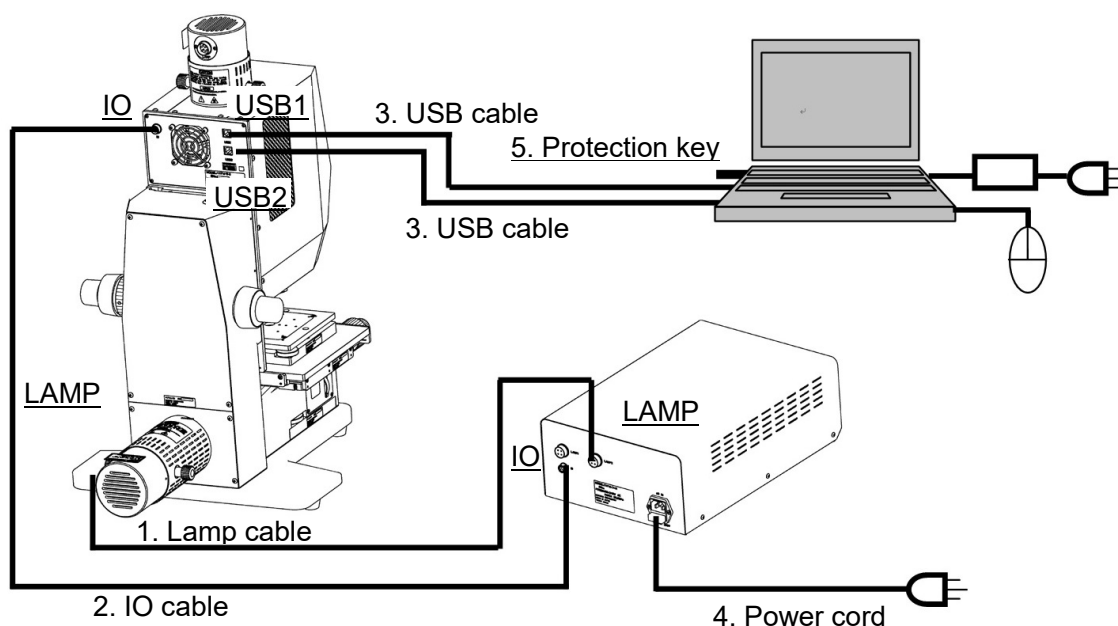


If the power cord contacts the lamp house, it can become melted and short-circuited. During installation, keep an adequate space between the power cord and the lamp house.



Be sure to use the supplied cable. If you use a cable other than that supplied, noises may be generated or a malfunction may occur due to external noises. The supplied cable cannot be used for other devices.

Configure the wiring as shown in the figure below.



	Name	Connection
1	Lamp cable	Connect the "LAMP" connector of the lamp house and the "LAMP2" connector of the controller supply unit.
2	IO cable	Connect the "IO" connector of the main unit and the "IO" connector of the controller supply unit.
3	USB cables (two)	Connect the "USB1" and "USB2" connectors of the main unit and any USB terminals of the personal computer (there is no specification for cables and ports).
4	Power cord	Connect the power plug to the 100–240 V power supply. Connect the power cord to a three-core grounded outlet. If the grounding terminal of the outlet is not connected, the intended safety performance cannot be ensured.
5	Protection key	Any USB port on the computer

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# 4. Operations

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This chapter describes the general operations of the unit. For details on the usage, each all personnel operating the unit should be sufficiently trained from the viewpoint of each specialized area.

## 4.1. Measurement flow

- (1) Start the controller supply unit and computer, and then start the software.  
-> See **4.2 Start-up**.
- (2) Configure the revolving nosepiece settings.  
-> See **4.3 Revolving nosepiece settings**.
- (3) Optical path switching settings  
-> See **4.4 Optical path switching settings**.
- (4) Polarization condition settings (for customers who purchased the optional polarization unit)  
-> See **4.5 Polarization condition settings**.
- (5) Configure the work setting file.  
-> See **4.6 Setting up the work configuration file**.  
For the reference settings, select [FILE], and select the file in the attached 45-degree reference sample data CD.
- (6) Set the supplied 45-degree reference sample.  
-> See **4.7 Setting the 45-degree reference sample**.
- (7) Adjust the position of the reference sample.  
-> See **4.8 Adjusting the position of the 45-degree reference sample**.
- (8) Set the sampling interval.  
-> See **4.9 Adjusting the sampling interval**.
- (9) Acquire the background value.  
-> See **4.10 Acquiring a background value**.
- (10) Acquire the reference value.  
-> See **4.11 Acquiring a reference value**.
- (11) Set the sample to be measured.  
-> See **4.12 Setting a sample to be measured**.
- (12) Adjust the position of the sample to be measured.  
-> See **4.13 Adjusting the position of a sample to be measured**.
- (13) Execute the measurement.  
-> See **4.14 Spectrometry**.



- (14) Check the result.  
-> See **4.15 Checking the results.**
- (15) Shut down the software, and then shut down the controller supply unit and computer.  
-> See **4.16 Quit.**


## 4.2. Start-up



For computer operation, refer to the instruction manual of the computer and use it in a proper manner.

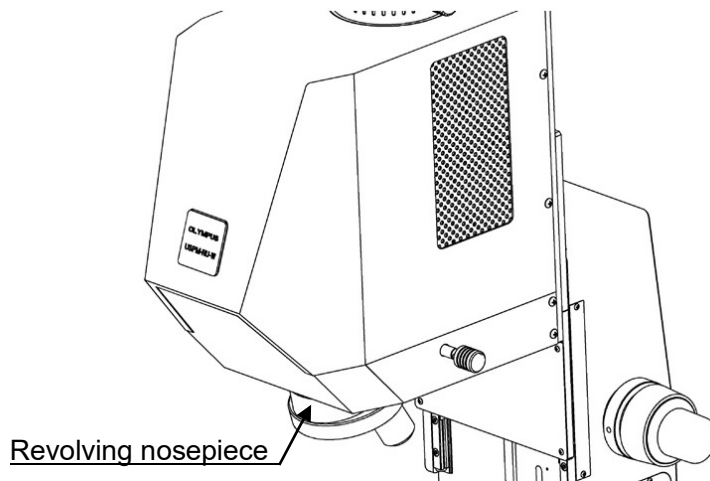


It takes approximately 15 minutes until the halogen lamp steadily operates after the lamp switch is turned on. Execute warm-up as necessary.

- (1) Turn on the power switch of the controller supply unit.
- (2) Turn on the "LAMP2" switch of the controller supply unit.
- (3) Start the computer, and then double-click the shortcut icon  on the desktop to start the program.

## 4.3. Revolving nosepiece settings

- (1) Configure the revolving nosepiece settings.  
When executing a 45-degree reflection measurement using the Reflectivity Measurement Unit for 45-Degree, adjust the revolving nosepiece position to the through position (the position where the objective lens is not set).



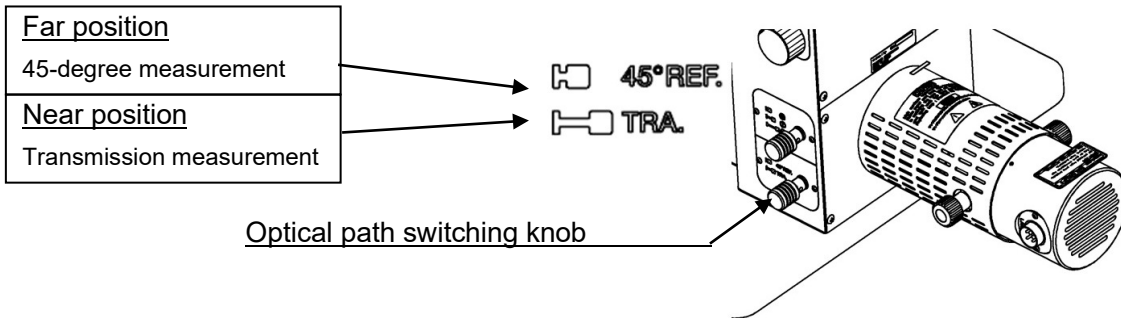
#### 4.4. Optical path switching settings



Gently operate the optical path switching knob used for the optical path switching unit. If you operate the knob with excessive force, it may become damaged, necessitating replacement.

- (1) Configure the optical path switching knob settings.

Position the optical path switching knob to the pushed position (45° REF).



#### 4.5. Polarization condition settings



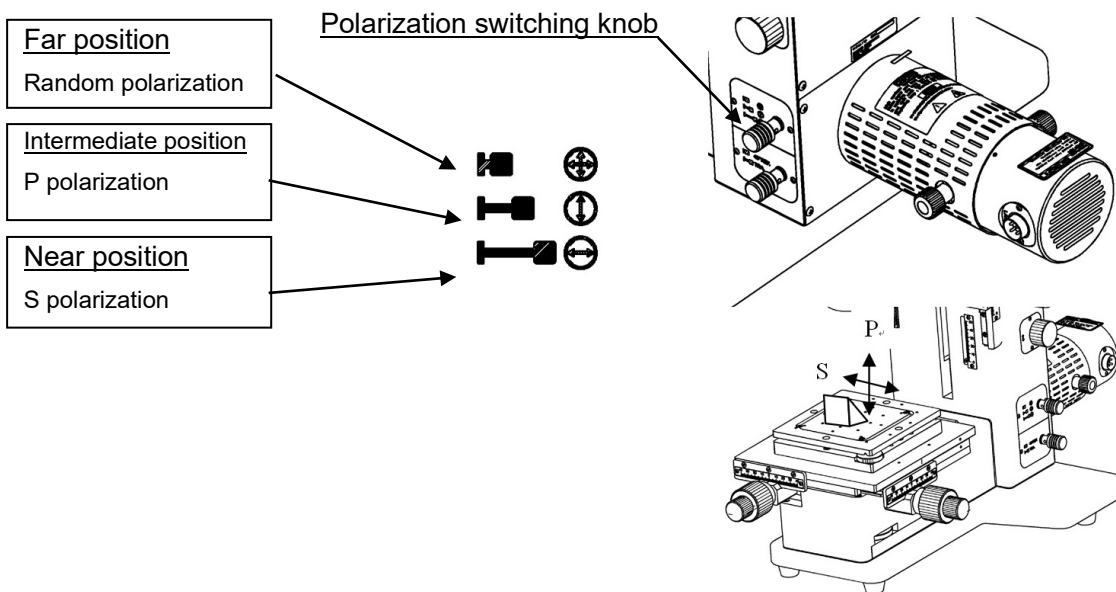
Gently operate the polarization switching knob used for the polarization element unit. If you operate the knob with excessive force, it may become damaged, necessitating replacement.

- (1) This is for the customers who purchased the polarization unit. Set the polarization condition switching knob.

Set the polarization condition switching knob to the polarization direction with which you would like to execute the measurement.

The polarization direction is the direction against the stage surface.

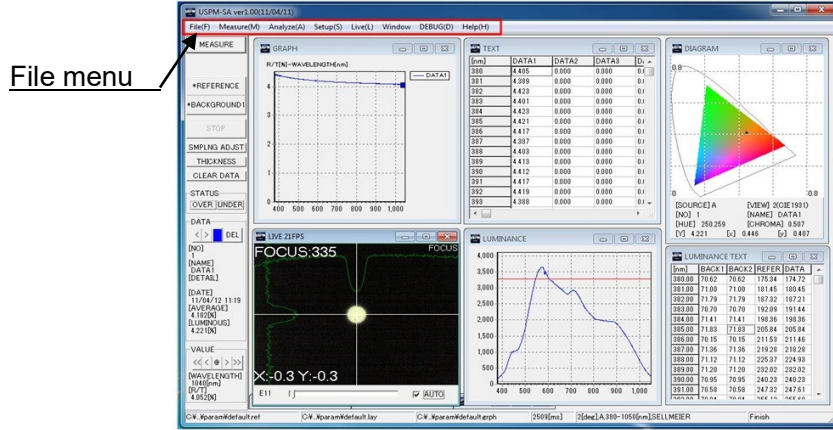
Refer to the figure below.



## 4.6. Setting up the work configuration file

For details, refer to **USPM-SA Software Operation Manual, 6.2 Work configuration.**

- (1) Choose [Setup]-[Work] on the File menu. The work setup window will open.



- (2) Configure the reference settings.



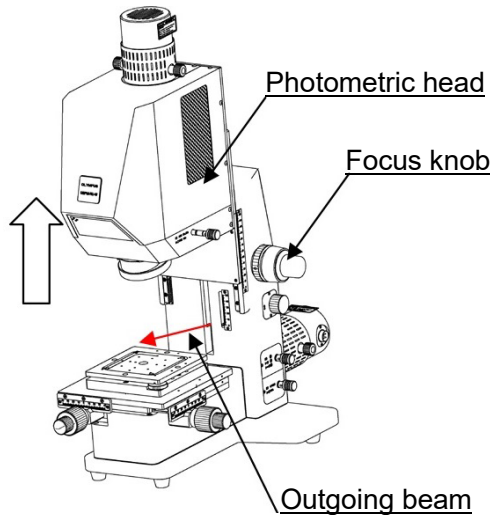
- (1) Click ▼ and select FILE.
- (2) Click the portion surrounded by a circle and open the " \* \* \* \* .rf" file.  
" \* \* \* \* .rf" file is in data CD.
- (3) The polarizing direction is set.  
Please select it from among R, S, and P.  
Polarization condition settings

## 4.7. Setting the 45-degree reference sample

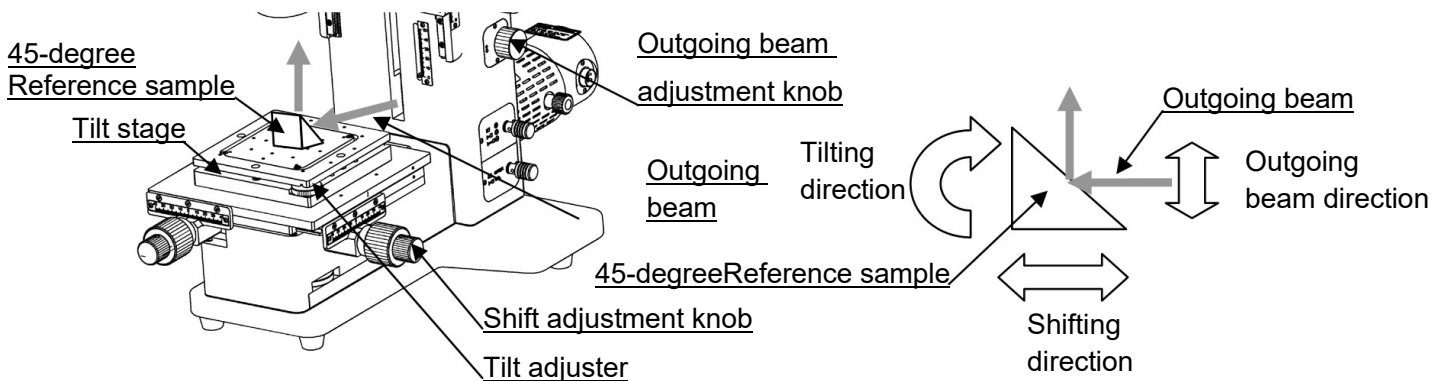


Gently operate the tilt adjusters used for the tilt stage.  
If you operate them with excessive force, it may become damaged,  
necessitating replacement.

- (1) Raise the photometric head by using the focus knob to adjust the position so that the outgoing beam's vignetting does not occur.



- (2) Set the 45-degree reference sample on the upper surface of the tilt stage.  
Locate the 45-degree reference sample in the hole at the center of the stage.

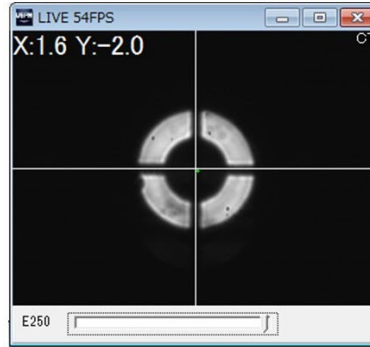
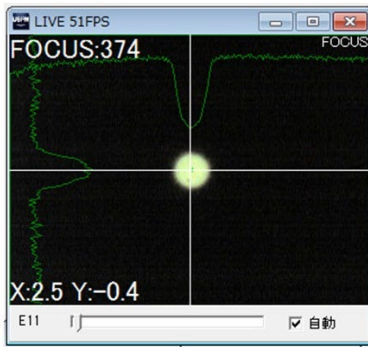


## 4.8. Adjusting the position of the 45-degree reference sample

[Switching windows]

Switch the FOCUS window and the CT window by double-clicking the black portion of the LIVE window. The FOCUS window or the CT window can be selected from the file menu [Live].

(The FOCUS window is displayed when the software is started.)

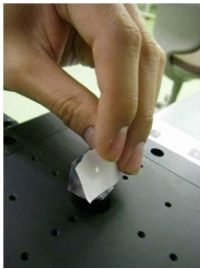


- (1) Select the AUTO check box at the lower right in the FOCUS window.



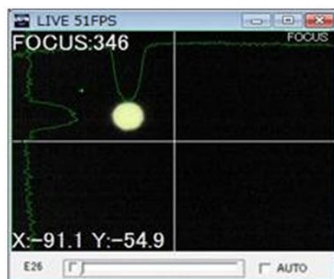
Do not roughly rotate the outgoing beam adjustment knob when it reaches the stroke end. Doing so can cause damage to the device.

- (2) Adjust the outgoing light of the measurement light flux. Adjust the outgoing beam position by using the outgoing beam height adjustment knob. Align the outgoing beam with the position at which the 45-degree reference sample is to be measured.



While holding a sheet of white paper over the measurement surface of the 45-degree reference sample and checking the bright point, adjust the outgoing beam position as you like.

- (3) Adjust the tilt of the 45-degree reference sample.  
Adjust the tilt of the reference sample to the optimum position by using the tilt adjusters while watching the FOCUS window of the software.  
Make the adjustment so that the value of "X:\*\*\* Y:\*\*\*\*" shown at the lower left in the FOCUS window becomes the smallest. For a more precise measurement, it is recommended that you adjust the value of "X:\*\*\* Y:\*\*\*\*" to "X:0±1 Y:0±1".



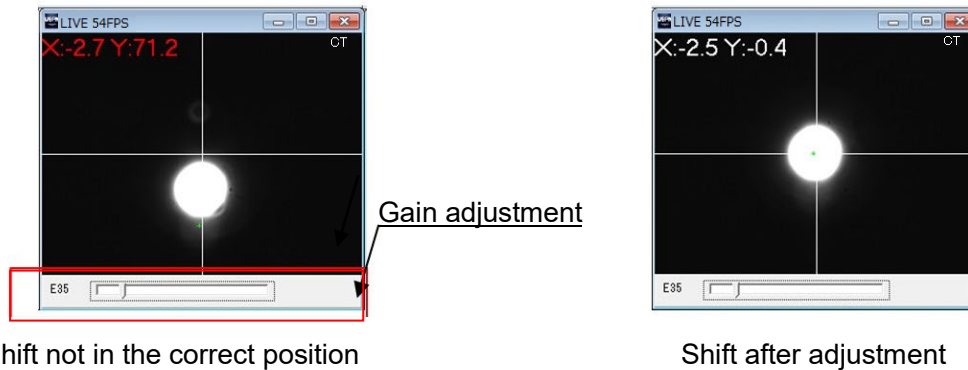
Tilt not in the correct position



Tilt after adjustment

- (4) Adjust the shift of the 45-degree reference sample.  
First, CT windows are switched .adjust the gain by clicking the portion marked in the figure below so that the image can be seen.  
The image should be seen in a round shape.

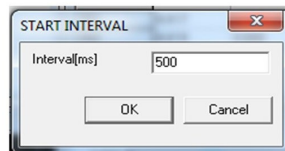
While checking the CT window, adjust the shift of one axis by using the shift adjustment knob (at the right of the device). This adjustment is only for the vertical direction (Y-axis direction). As for the horizontal direction, an appropriate angle for measurement is mechanically attained. Adjust the value of "Y:\*\*\*" shown at the upper left in the CT window to "Y:0±1".



#### 4.9. Adjusting the sampling interval

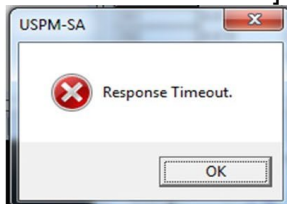
Adjust the sampling interval so that the spectroscopic light amount of the reference (light flux reference) does not exceed the maximum received light amount of the light-receiving element. Follow the procedures below to adjust the sampling interval.

- (1) Click **[SMPLNG ADJST]** in the operation panel.
- (2) When the START INTERVAL window is displayed, enter an appropriate value and then click the OK button. The shutter operates and the measurement is started.

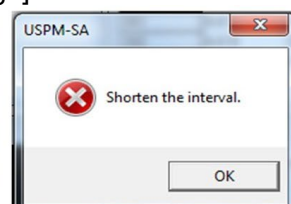
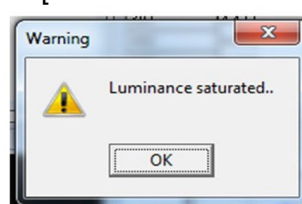


Reference: An error may be output depending on the entered value. If this happens, enter a value again according to the error message.

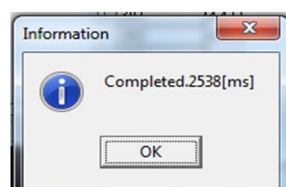
[Entered value too small]



[Entered value too large]



- (3) The Information window opens that displays the sampling interval. After that, Click OK to end the operation. Then, the shutter operates again.



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#### 4.10. Acquiring a background value

- (1) Click **BACKGROUND1** on the operation panel.  
A clicky sound is generated, and then a warning alarm sounds as the process finishes.  
As the data is saved, an asterisk (\*) appears at the left of **BACKGROUND1** in the operation panel.

#### 4.11. Acquiring a reference value

- (1) Click **REFERENCE** on the operation panel.  
The shutter sounds, the reference value is captured. After that, the shutter operates again, and a warning alarm sounds as the process finishes.  
As the data is saved, an asterisk (\*) appears at the left of **REFERENCE** in the operation panel.

#### 4.12. Setting a sample to be measured

- (1) Set the sample on the top surface of the tilt stage. Locate the sample in the hole at the center of the stage.

#### 4.13. Adjusting the position of a sample to be measured

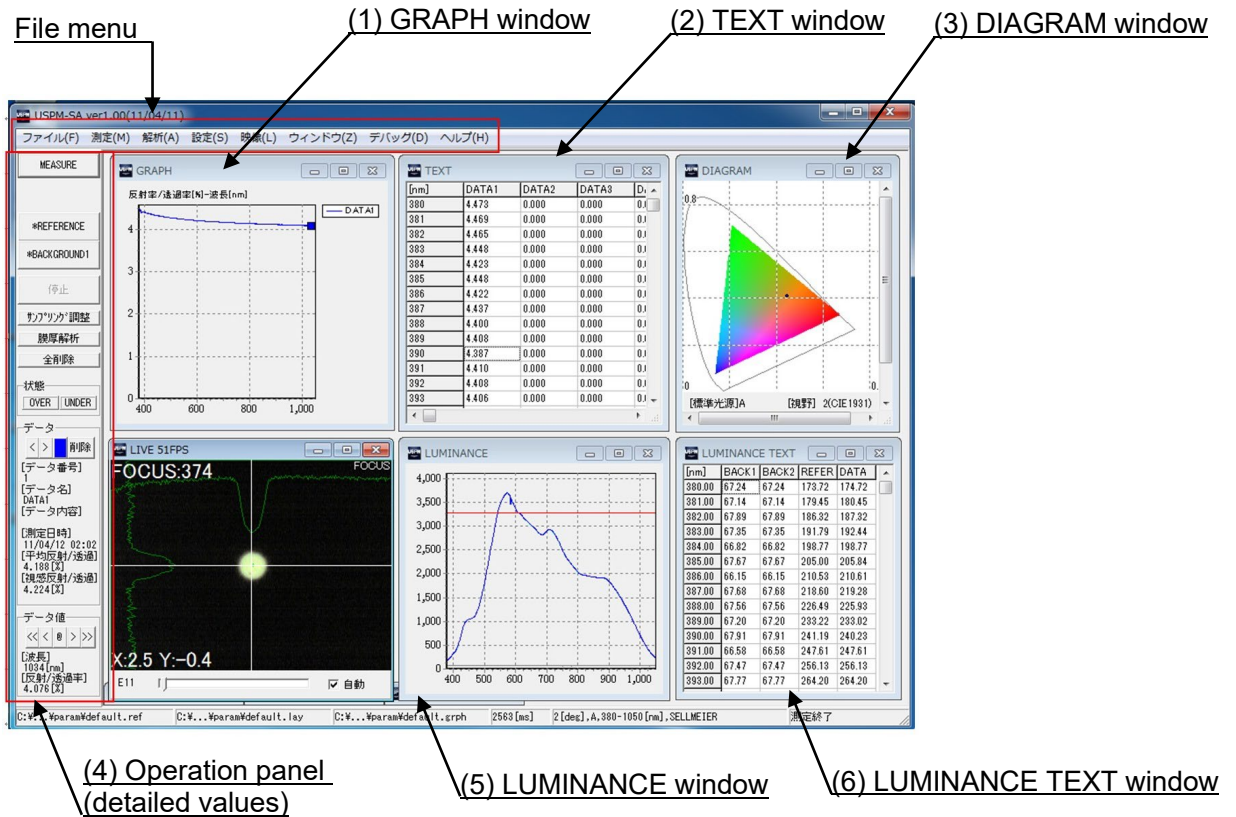
- (1) Adjust the tilt of the sample.  
See [4.8 Adjusting the position of the 45-degree reference sample \(3\)](#), and do the same for the sample tilt adjustment.
- (2) Adjust the shift of the sample.  
See [4.8 Adjusting the position of the 45-degree reference sample \(4\)](#), and do the same for the sample shift adjustment.

#### 4.14. Spectrometry

- (1) Click **MEASURE** on the operation panel.  
The shutter sounds, indicating the start of spectroscopy. When alarm sounds and spectroscopy is ended, a shutter sounds again.  
The result is displayed in the sub-windows. Up to 20 results can be stored.

## 4.15. Checking the results

For details of the main window of the software, refer to [USPM-SA Software Operation Manual, Chapter 4 Main Window](#).



### (1) GRAPH window

The GRAPH window shows the graph of the measurement result of the spectral reflectance. The vertical axis is for the reflectance, and the horizontal axis is for the wavelength.

### (2) TEXT window

The TEXT window shows the values of the measurement result.

### (3) DIAGRAM window

The measurement result of the chromaticity diagram is displayed.

The chromaticity diagram can show the XY chromaticity diagram and Lab chromaticity diagram. By double-clicking the window, the XY chromaticity diagram and Lab chromaticity diagram can be switched.





Alternatively, by configuring the graph setting, these two chromaticity diagrams can be switched.


For the graph settings, refer to [USPM-SA Software Operation Manual, 6.4 Graph setting](#).



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(4) Operation panel (detailed value)

In the DATA column of the operation panel at left in the main window, you can check the detailed values of the measurement results. To move the displayed wavelength, use the , , , and  buttons in the DATA column.

To delete the measurement result, click the  button.

(5) LUMINANCE window

The spectroscopic quantity of the lights of background, reference and measurement is indicated in a graph in black (grey), cyan and blue, respectively. The red line indicates the upper limit of the spectroscopic quantity defined in the system configuration window. (The pink line indicates the lower limit of the spectroscopic quantity defined in the system configuration window.)

(6) LUMINANCE TEXT window

The spectroscopic light amounts of the background, reference, or measurement are displayed. The display interval can be set in the graph settings window.


[Saving]

Choose [File]-[Save Data] on the File menu.

The dialog for saving will be shown. Save the data file by specifying a filename. By changing the file extension in the dialog for saving, the saving format can be changed.

[Printing]

Choose [File]-[Print] on the File menu.

The dialog for print settings will be displayed, in which you can configure your print settings. Click the  button to execute printing.

## 4.16. Quit

- (1) Choose [File]-[Quit] on the File menu to close the program.
- (2) Turn off the power switch of the controller supply unit.
- (3) Shut down the computer.

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## 5. Notes on Storing

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### 5.1. Storing

Refer to **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 5.1 Storage.**

### 5.2. Maintenance

Refer to **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 5.2 Maintenance.**

### 5.3. Wavelength offset

Means for spectral transmittance offset are not provided, and we do not execute offset. For the method for wavelength offset, refer to **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 5.3 Wavelength offset.**

## 6. If Abnormality Occurs

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Also check **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 6. Troubleshooting.**

Phenomenon	Cause and countermeasure
Light is not output.	<ul style="list-style-type: none"><li>(1) Check whether the lamp has been damaged.</li><li>(2) Check whether the lamp is firmly mounted.</li><li>(3) Check whether the lamp switch is turned on.</li><li>(4) Check whether the shifting stage is adjusted to the 0 point of the scale.</li><li>(5) Check whether the position of the optical path switching knob (optional) is appropriate.</li></ul>

## 7. Conforming to Laws and Regulations

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Refer to **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 7 Compliance with Regulations.**

# Appendix

## To customers who execute micro-spectrometry by placing a sample on the tilt stage

When a customer who has purchased both the transmission measurement set and the 45-degree expansion unit executes micro-spectrometry, we recommend that they adjust the tilt of the tilt stage to a position vertical to the optical axis.

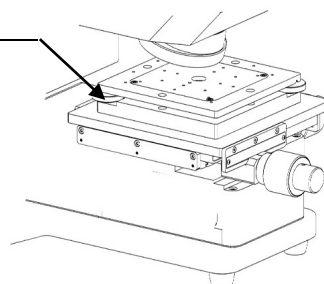
Customers who execute the lamina measurement must do this without fail.

[Adjusting the tilt of the tilt stage]

- (1) Execute the installation by referring to **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 3.7 Connection.**
- (2) Execute the start-up by referring to **NIR Micro-Spectrophotometer USPM-W-B Operation Manual – 4.2 Launch.**
- (3) Configure the revolving nosepiece settings.  
Adjust the revolving nosepiece position to the through position (the position where the objective lens is not set).
- (4) Set the BK7 reference sample on the tilt stage.
- (5) Adjust the tilt of the two axes to the optical axis using the tilt stage adjusters.

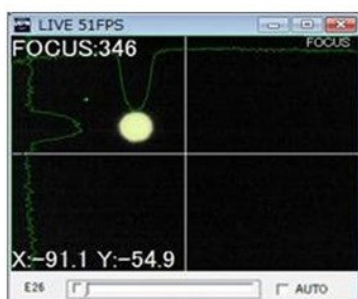
Tilt stage adjuster

Adjust the tilt of the two axes to the optical axis.

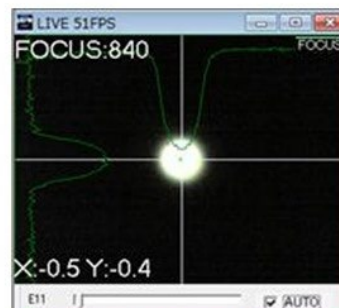


[Adjusting the tilt]

While checking the FOCUS window, make the adjustment so that the outgoing beam becomes parallel to the optical axis by using the tilt adjusters. Make the adjustment so that the value of "X:\*\*\* Y:\*\*\*" shown at the lower left in the window becomes the smallest. For a more precise measurement, it is recommended that you adjust the value of "X:\*\*\* Y:\*\*\*" to "X:0±1 Y:0±1".



Tilt not in the correct position



Tilt after adjustment

- (6) When you complete the tilt adjustment of the tilt stage, execute the measurement by following "NIR Micro-Spectrophotometer USPM-W-B Operation Manual – Chapter 4 How to Use."



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