

LAMBDA 465

Users Guide



Release History

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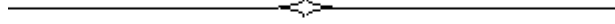
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Introduction

Overview

This manual provides instructions for installing and operating the Lambda 465 and UV Lab software. It also introduces and describes how to use basic features of the UV Lab software. For more detailed information on software features including bio tests, color analysis and MCA, refer to the UV Lab Software User Guide.

About This Manual

This user's guide is divided into following chapters:

Chapter 1 Introduction

This chapter contains a brief introduction on the instrument, the conventions and warnings used in the manual.

Chapter 2 Safety Practices

Important safety information is provided in this chapter.

Chapter 3 Lambda 465 Installation

Information on installing and re-installing your instrument should you ever need to move your system is provided.

Chapter 4 UV Lab Software Installation

The complete UV Lab software installation procedures for the Lambda 465 is in this chapter.

Chapter 5 Interface Setup

Interface procedures for the Lambda 465.

Chapter 6 Operating Procedure

This chapter contains information on operating the Lambda 465.

Chapter 7 Accessories

This chapter provides information on the accessories available for the Lambda 465.

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Basic Theory

Basic Theory of UV-Visible Spectrophotometer

Electromagnetic radiation can pass through most organic and inorganic compounds. Generally, the UV range is from 190 to 380 nm and visible range is from 380-800 nm.

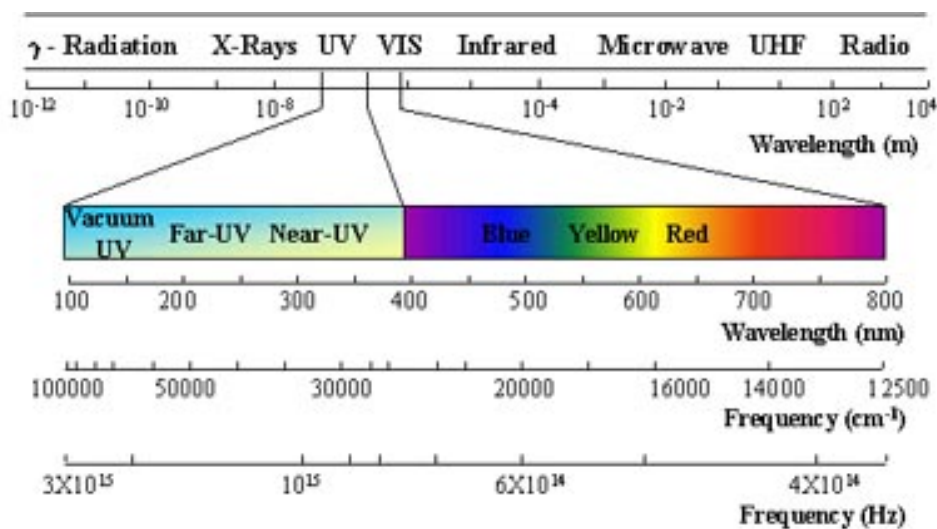


Figure 1. Electromagnetic Radiation

When continuous radiation passes through a sample, some is absorbed by the sample. An absorption spectrum can be obtained by monitoring the radiation that penetrates the sample and reaches a detector. For every substance, the absorption rate varies depending on the wavelength of the radiation. Data from absorption spectra can be used for qualitative and quantitative analysis.

A molecule remains in its ground state when it is stable, but it can transition to an excited state when light energy is absorbed. This is termed absorption. (Figure. 2) When the excited molecule returns to the ground state, it emits heat, radiation, fluorescence or phosphorescence. This is termed emission. A molecule whose functional group has a double bond between carbons or between carbon and another atom undergoes transitions in the UV-Visible range. Functional groups that absorb light energy are called Chromophores.

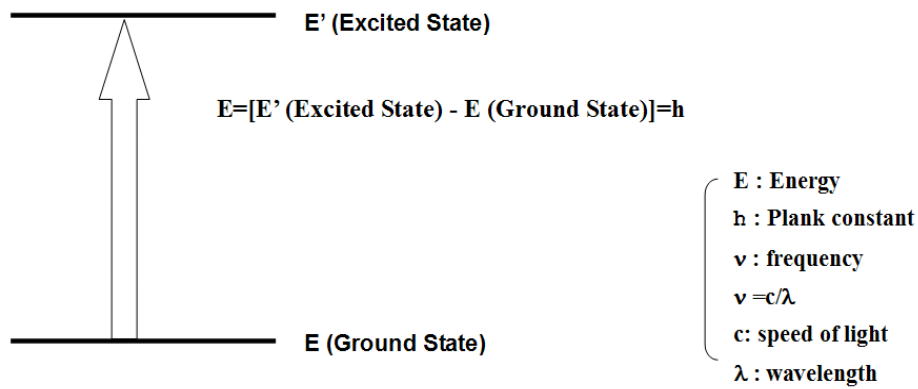


Figure 2. Energy Absorption

Once a sample absorbs light energy, the intensity of incoming light P_0 (the energy from the light source) reduces to P by losing some of its energy; therefore, we define the transmittance of a sample as follows:

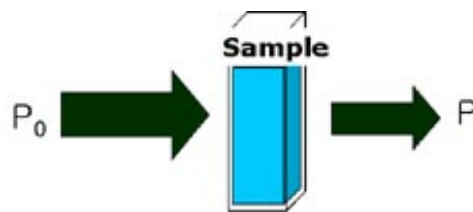


Figure 3. Sample Absorption

As a result of absorption by a sample, transmittance is defined as;

$$T = P / P_0$$

And Absorbance is defined as:

$$A = -\log T = \log(P_0 / P)$$

Absorbance is related to c (concentration) and b (pathlength of light) according to the Lambert-Beer law and the equation;

$$A = \epsilon bc$$

Where, ϵ , the molar absorption coefficient of a particular molecule, varies with the wavelength.

Although Beer's law has several limitations, it is widely applied to quantitative analysis.

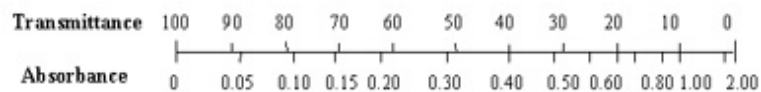


Figure 4. Transmittance and Absorbance





PDA UV-Visible Spectrophotometer

The PDA Spectrophotometer has a multi-channel detector controlled by a microprocessor which collects spectral data for several wavelengths simultaneously. In contrast, a PMT Spectrophotometer has a single channel detector which collects data for each specific wavelength in turn. Therefore the PDA Spectrophotometer is much faster and gives more reproducible results than the PMT Spectrophotometer which depends on a rotating grating or prism operated by a stepper motor to obtain individual wavelengths.

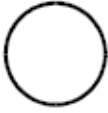
The Lambda 465 system is a multi-channel spectrophotometer with a 1 inch 1024 channel photodiode array for optimum wavelength resolution. One feature of a PDA is an integrating photo-detector, which integrates charge depending on the light intensity. The advantage of the integrating function is named Felgette's S/N advantage or Multi-channel advantage.

Safety Summary

The following safety symbols are used on this product.

Warning	Description
	<p>Always refer to the system manual when working near locations at which the alert mark shown on the left is attached. If the operation, etc., is performed without heeding the advice in the System manual, there is a risk of personal injury. In addition, the equipment performance may be reduced. Moreover, this alert mark is sometimes used with other marks and descriptions indicating other dangers.</p> <p>Il faut toujours voir le manuel du système lors de l'exécution de travaux près des endroits où le panneau d'alerte montré dans la colonne à gauche est placé. Il y a un risque de blessures, si le travail est effectué sans respecter les conseils dans le manuel du système. En outre, le rendement de l'équipement pourrait être réduit. Par ailleurs, ce panneau d'alerte est parfois utilisé avec d'autres panneaux comportant les indications de danger.</p>
 <p> Warning</p>	<p>When supplying power to this equipment, connect the accessory 3-pin power cord to a 3-pin grounded power outlet. If a grounded 3-pin outlet is not available, use a conversion adapter and ground the green wire. If power is supplied without grounding the equipment, there is a risk of receiving a fatal electric shock and equipment damage.</p> <p>Lors de l'alimentation de l'équipement, branchez le cordon d'alimentation accessoire à 3 broches dans une prise d'alimentation mise à la terre à 3 broches. Si une prise mise à la terre à 3 broches n'est pas disponible, utilisez un adaptateur de conversion en raccordant le fil vert pour réaliser la mise à la terre. Si l'alimentation est fournie sans mettre l'équipement à la terre, il y a un risque d'électrocution et de dommages à l'équipement.</p>
	<p>"On" (power)</p> <p>To indicate connection to the mains, at least for mains switches or their positions, and all those cases where safety is involves.</p> <p>"On" (Sous tension)</p> <p>Pour indiquer le branchement à l'alimentation du secteur, au moins pour les interrupteurs du secteur ou leur position, et tous les autres cas qui concernent la sécurité.</p>

"OFF" (power)



To indicate disconnection from the mains, at least for mains switches or their positions, and all those case where safety is involves.

"OFF" (Hors tension)

Pour indiquer la coupure du secteur, au moins pour les interrupteurs du secteur ou leur position, et tous les autres cas qui concernent la sécurité.

The user cannot repair this equipment.

DO NOT attempt to open the case or to disassemble internal parts.

Only PerkinElmer service representative with knowledge of electrical fire and shock hazard should service this equipment.

Repair



 **Warning**

There are high-voltage parts in this equipment presenting a risk of severe injury or fatal electric shock to untrained personnel.

In addition, there is a risk of damage to precision parts.

L'utilisateur ne doit pas essayer de réparer cet équipement.

NE PAS tenter d'ouvrir le boîtier ou de démonter ses pièces internes.

Seul un représentant du service PerkinElmer qui est conscient des risques d'incendie et d'électrocution devrait réparer cet équipement.

Cet équipement contient des parties à haute tension présentant des risques de blessure grave ou d'électrocution au personnel non qualifié.



En outre, il existe un risque d'endommagement des pièces de précision.

Falling Over

 **Caution**

This equipment should be used in the correct position. If the equipment is turned on its side, etc., it will be unstable and may be damaged if it falls over as a result of receiving a slight mechanical shock.

Cet équipement doit être utilisé dans l'orientation correcte. Si, par exemple, l'équipement est couché sur un de ses côtés, il deviendra instable. S'il tombe à la suite d'un léger choc mécanique, il pourra être endommagé.

Warning	Description
<p>Changing Fuse</p>	<p>For continued protection against risk of fire, replace only with same type and rating of fuse.</p> <p>Before changing the fuses, ALWAYS remove the power cord from the power-outlet and replace the blown fuses.</p> <p>250V ~ T2.0AL indicates a time-lag fuse.</p>
<p> Warning</p>	<p>Pour assurer la protection contre le risque d'incendie, le fusible ne doit être remplacé qu'avec le même type et la même valeur nominale.</p> <p>Il faut TOUJOURS débrancher le cordon d'alimentation de la prise électrique avant de remplacer les fusibles grillés.</p> <p>250V ~ T2.0AL indique un fusible à action retardée.</p>
<p>Cleaning</p>	<p>Keep the equipment free of dust.</p> <p>Clean the power line regularly; if dust accumulates around the power pins, there is a risk of fire.</p> <p>Keep the equipment clean so that the ventilation holds are not obstructed. If the ventilation is obstructed, the system may overheat and catch fire.</p>
<p> Caution</p>	<p>Periodically clean your equipment's case using a damp cloth.</p> <p>Do not use abrasives, cleaning solvents or strong detergents, as they may damage the finish or affect the reliability of the structural components.</p> <p>Gardez l'équipement exempt de poussières.</p> <p>Nettoyez le cordon d'alimentation régulièrement. Les poussières qui s'accumulent autour des broches du cordon d'alimentation pourraient entraîner un risque d'incendie.</p> <p>Gardez l'équipement propre de sorte que les orifices de ventilation ne soient pas bouchés. Si les grilles de ventilation sont obstruées, le système pourrait surchauffer et s'enflammer.</p> <p>Nettoyez périodiquement le boîtier de l'équipement à l'aide d'un chiffon humide.</p>

If this equipment is used in a manner not specified by this manual, the protection provided by the equipment may be impaired.

Si l'équipement est utilisé d'une manière non spécifiée dans ce manuel, la protection fournie par l'équipement risque d'être altérée.

Instrument Shipping Kit

The following table shows what is included in the Lambda 465 Spectrophotometer shipping kit.

Item	Name	Qty.
Main Instrument	PDA UV-Lambda 465 Spectrophotometer	1
Accessories	Power Cord (US/EU/UK)	1/1/1
	Interface Cable (USB)	1
	Fuse AC 250V (T2.0AL)	2
	Wrench, 4 mm	1
	Document Pack CD	1
	UV Lab Software CD	1
	Single Cell Holder	1

Conventions Used in this Manual

Normal text is used to provide information and instructions.

Bold text refers to text that is displayed on the screen.

UPPERCASE text, for example ENTER or ALT, refers to keys on the PC keyboard. '+' is used to show that you have to press two keys at the same time, for example, ALT+F.

All eight digit numbers are PerkinElmer part numbers unless stated otherwise.

Notes, cautions and warnings

Three terms, in the following standard formats, are also used to highlight special circumstances and warnings.

NOTE: *A note indicates additional, significant information that is provided with some procedures.*

Note, attention et avertissement

Trois termes, dans les formats standard suivants, sont également utilisés pour mettre des circonstances et avertissements spéciaux en évidence.

NOTE: *Une note indique des renseignements supplémentaires et significatifs qui sont fournis avec certaines procédures.*

CAUTION	<i>We use the term CAUTION to inform you about situations that could result in serious damage to the instrument or other equipment. Details about these circumstances are in a box like this one.</i>
D	Caution (Achtung) <i>Bedeutet, daß die genannte Anleitung genau befolgt werden muß, um einen Geräteschaden zu vermeiden.</i>
DK	Caution (Bemærk) <i>Dette betyder, at den nævnte vejledning skal overholdes nøje for at undgå en beskadigelse af apparatet.</i>
E	Caution (Advertencia) <i>Utilizamos el término CAUTION (ADVERTENCIA) para advertir sobre situaciones que pueden provocar averías graves en este equipo o en otros. En recuadros éste se proporciona información sobre este tipo de circunstancias.</i>
F	Caution (Attention) <i>Nous utilisons le terme CAUTION (ATTENTION) pour signaler les situations susceptibles de provoquer de graves détériorations de l'instrument ou d'autre matériel. Les détails sur ces circonstances figurent dans un encadré semblable à celui-ci.</i>
I	Caution (Attenzione) <i>Con il termine CAUTION (ATTENZIONE) vengono segnalate situazioni che potrebbero arrecare gravi danni allo strumento o ad altra apparecchiatura. Troverete informazioni su tali circostanze in un riquadro come questo.</i>
NL	Caution (Opgelet) <i>Betekent dat de genoemde handleiding nauwkeurig moet worden opgevolgd, om beschadiging van het instrument te voorkomen.</i>
P	Caution (Atenção) <i>Significa que a instrução referida tem de ser respeitada para evitar a danificação do aparelho.</i>

**WARNING**

We use the term **WARNING** to inform you about situations that could result in **personal injury** to yourself or other persons. Details about these circumstances are in a box like this one.

D**Warning (Warnung)**

Bedeutet, daß es bei Nichtbeachten der genannten Anweisung zu einer **Verletzung** des Benutzers kommen kann.

DK**Warning (Advarsel)**

Betyder, at brugeren kan blive **kvæstet**, hvis anvisningen ikke overholdes.

E**Warning (Peligro)**

Utilizamos el término **WARNING (PELIGRO)** para informarle sobre situaciones que pueden provocar **daños personales** a usted o a otras personas. En los recuadros como éste se proporciona información sobre este tipo de circunstancias.

F**Warning (Danger)**

Nous utilisons la formule **WARNING (DANGER)** pour avertir des situations pouvant occasionner des **dommages corporels** à l'utilisateur ou à d'autres personnes. Les détails sur ces circonstances sont données dans un encadré semblable à celui-ci.

I**Warning (Pericolo)**

Con il termine **WARNING (PERICOLO)** vengono segnalate situazioni che potrebbero provocare **incidenti alle persone**. Troverete informazioni su tali circostanze in un riquadro come questo.

NL**Warning (Waarschuwing)**

Betekent dat, wanneer de genoemde aanwijzing niet in acht wordt genomen, dit kan leiden tot **verwondingen** van de gebruiker.

P**Warning (Aviso)**

Significa que a não observância da instrução referida poderá causar um **ferimento** ao usuário.

Contact Us

Supplies, replacement parts, and accessories can be ordered directly from PerkinElmer, using the part numbers quoted in the guides provided with the instrument.

See our website:

<http://perkinelmer.com>

PerkinElmer's catalog service offers a full selection of high-quality supplies.

To place an order for supplies and many replacement parts, request a free catalog, or ask for information:

If you are located within the U.S., call toll free 1-800-762-4002, 8 a.m. to 8 p.m. EST. Your order will be shipped promptly, usually within 24 hours.

If you are located outside of the U.S., call your local PerkinElmer sales or service office.

Safety Practices

Overview

This chapter describes the general safety practices and precautions that must be observed when operating the Lambda 465.

This advice is intended to supplement, not supersede, the normal safety codes in the user's country. It is also a supplement to the PerkinElmer standard Safety and Health Policy. The information provided does not cover every safety procedure that should be practiced. Ultimately, maintenance of a safe laboratory environment is the responsibility of the analyst and the analyst's organization.

Please consult all manuals supplied with the Lambda 465 and accessories before you start working with the instrument. Carefully read the safety information in this chapter and in the other manuals supplied. When setting up the instrument or performing analyses or maintenance procedures, strictly follow the instructions provided.

Precautions



WARNING

Be sure that all instrument operators read and understand the precautions listed below. It is advisable to post a copy of the precautions near or on the instrument shelf.

Assurez-vous que tous les opérateurs d'instrument lisent et comprennent les précautions énumérées ci-dessous. Il est conseillé d'afficher une copie des précautions sur l'étagère d'instrument ou à proximité.

The following precautions must be observed when using the Lambda 465:

- Be sure that the voltage of the Lambda 465 corresponds to the voltage used in your laboratory.

Les précautions suivantes doivent être respectées lors de l'utilisation du Lambda 465:

- Assurez-vous que la tension du Lambda 465 corresponde à celle utilisée dans votre laboratoire.

General Operating Conditions

The Lambda 465 has been designed and tested in accordance with PerkinElmer specifications and in accordance with the safety requirements of the International Electrotechnical Commission (IEC). The Lambda 465 conforms to IEC61010-1 (Safety Requirements for electrical equipment for measurement, control and laboratory use) as it applies to IEC Class 1 (earthed) appliances and therefore meets the requirements of EC directive 2006/95/EC.

Only use the Lambda 465 indoors and under the following conditions:

Temperature	15 °C to 35 °C (59-95 °F)
Relative Humidity	Less than 80% relative non-condensing
Indoor only	Altitude up to 2000m

If possible, avoid any adjustment, maintenance and repair of the opened, operating instrument. If any adjustment, maintenance and repair of the opened instrument is necessary, this must be done by a skilled person who is aware of the hazard involved.

Whenever it is likely that the Lambda 465 is unsafe, make it inoperative. The Lambda 465 may be unsafe if it:

- shows visible damage
- fails to perform the intended measurement
- has been subjected to prolonged storage in unfavourable conditions
- has been subjected to severe transport stresses.



WARNING

If the equipment is used in a manner not specified herein, the protection provided by the equipment may be impaired.

Si l'équipement est utilisé d'une manière non spécifiée par ceci, la protection fournie par l'équipement risque d'être altérée.

Electrical Safety

The instrument has been designed to protect the operator from potential electrical hazards. This section describes some recommended electrical safety practices.



WARNING

Lethal voltages are present at certain areas within the instrument. Installation and internal maintenance of the instrument should only be performed by a PerkinElmer service engineer or similarly authorized and trained person. When the instrument is connected to line power, opening the instrument covers is likely to expose live parts. Even when the power switch is off, high voltages can still be present. Capacitors inside the instrument may still be charged even if the instrument has been disconnected from all voltage sources.

Des tensions mortelles sont présentes quelque part à l'intérieur de l'instrument. L'installation et la maintenance interne de l'instrument ne doivent être effectuées que par un technicien de maintenance PerkinElmer ou une personne pareillement autorisée et formée. Lorsque l'instrument est branché au secteur, l'ouverture de ses couvercles est susceptible d'exposer des parties sous tension. Même quand l'interrupteur d'alimentation est en position Off, des tensions élevées peuvent encore être présentes. Des condensateurs à l'intérieur de l'instrument peuvent être encore chargés, même si l'instrument a été débranché de toutes les sources de tension.

The instrument must be correctly connected to a suitable electrical supply. The supply must have a correctly installed protective conductor (earth ground) and must be installed or checked by a qualified electrician before connecting the instrument.



WARNING

Any interruption of the protective conductor (earth ground) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument dangerous. Intentional interruption is prohibited.

Toute interruption du conducteur de protection (mise à la terre) à l'intérieur ou à l'extérieur de l'instrument ou la déconnexion de la borne de conducteur de protection sont susceptibles de rendre l'instrument dangereux. L'interruption intentionnelle est interdite.

When working with the instrument:

- Connect the instrument to a correctly installed line power outlet that has a protective conductor connection (earth ground).
- Do not operate the instrument with any covers or internal parts removed.

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- Do not attempt to make internal adjustments or replacements except as directed in the manuals.
- Disconnect the instrument from all voltage sources before opening it for any adjustment, replacement, maintenance, or repair. If afterwards, the opened instrument must be operated for further adjustment, maintenance, or repair, this must only be done by a PerkinElmer Service engineer.
- Whenever it is possible that the instrument is no longer electrically safe for use, make the instrument inoperative and secure it against any unauthorized or unintentional operation. The electrical safety of the instrument is likely to be impaired if, for example, the instrument shows visible damage; has been subjected to prolonged storage under unfavorable conditions; or has been subjected to severe stress during transportation.

EMC Compliance

EC directive

The Lambda 465 has been designed and tested to meet the requirements of the EC directive 2006/95/EC. The Lambda 465 complies with the EMC standard EN61326, (EMC standard for electrical equipment for measurement, control and laboratory use).

FCC rules and regulations

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Installation Category

This product will operate safely in electrical power environments that are rated as Installation Category II in EN/IEC 61010-1.

Pollution Degree

This product will operate safely in environments that contain nonconductive foreign matter up to Pollution Degree 2 in EN/IEC 61010-1.

Warning Labels

	<p>When this label is attached to an instrument it means refer to the manual.</p>
<p>WARNING</p>	<p>Lorsque cette étiquette est attachée à un instrument, il est nécessaire de voir le manuel.</p>

See the following figure for the location of warning labels on the Lambda 465.

Warning labels on the back of the instrument:

**Warning
FUSE**

**Avertissement
FUSE**



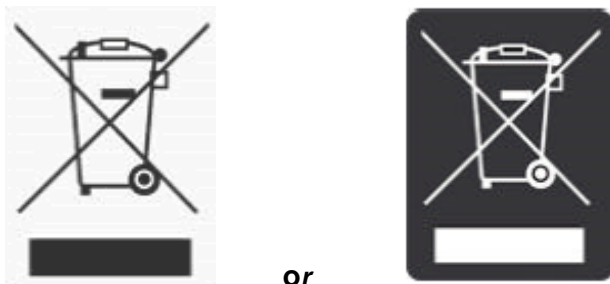
Warning
For continued protection against electrical shock, replace with same type and ratings of fuse.

Avertissement
Pour une protection soutenue contre les électro chocs remplacer avec un fusible de même type et caractéristiques.

Warning
To prevent electrical shock, do not open cover.
Refer all servicing to qualified personnel.

Avertissement
Afin d'éviter tout risque d'électrocution ne pas enlever ce couvercle.
Faire appel au service Après-Vente.

WEEE Instructions for PerkinElmer Products



A label with a crossed-out wheeled bin symbol and a rectangular bar indicates that the product is covered by the Waste Electrical and Electronic Equipment (WEEE) Directive and is not to be disposed of as unsorted municipal waste. Any products marked with this symbol must be collected separately, according to the regulatory guidelines in your area.

The objectives of this program are to preserve, protect and improve the quality of the environment, protect human health, and utilize natural resources prudently and rationally. Specific treatment of WEEE is indispensable in order to avoid the dispersion of pollutants into the recycled material or waste stream. Such treatment is the most effective means of protecting the customer's environment.

Requirements for waste collection reuse, recycling, and recovery programs vary by regulatory authority at your location. Contact your local responsible body (e.g., your laboratory manager) or authorized representative for information regarding applicable disposal regulations. Contact PerkinElmer at the web site listed below for information specific to PerkinElmer products.

Web address:

www.perkinelmer.com/WEEE

For Customer Care telephone numbers select "Contact us" on the web page.

Products from other manufacturers may also form a part of your PerkinElmer system. These other producers are directly responsible for the collection and processing of their own waste products under the terms of the WEEE Directive. Please contact these producers directly before discarding any of their products.

Consult the PerkinElmer web site (above) for producer names and web addresses.

Decontamination and Cleaning

Before using any cleaning or decontamination methods except those specified by PerkinElmer, users should check with PerkinElmer that the proposed method will not damage the equipment.

Decontamination

Customers wishing to return instrumentation and/or associated materials to PerkinElmer for repair, maintenance, warranty or trade-in purposes are advised that all returned goods must be certified as clean and free from contamination.

The customer's responsible body is required to follow the "Equipment Decontamination Procedure" and complete the "Certificate of Decontamination". These documents are available on the PerkinElmer public website:

Procedure:

http://las.perkinelmer.com/Content/technicalinfo/dts_instrumentdeconprocedure.pdf

Certificate form: <http://las.perkinelmer.com/OneSource/decontamination.htm>

If you do not have access to the internet and are located in the U.S., call toll free at 1-800-762-4000 or (+1) 203-925-4602, 8:30 a.m. - 7 p.m. EST and speak to Customer Support.

In Canada, call toll free 800-561-4646 and speak to Customer Support.

If you are located outside of the United States or Canada, please call your local PerkinElmer sales office for more information.

Cleaning the Instrument

Exterior surfaces may be cleaned with a soft cloth, dampened with a mild detergent and water solution. Do **not** use abrasive cleaners or solvents.

Fuses



WARNING

There is risk of receiving a fatal electric shock if the fuses are replaced with the power cord connected.

Il y a un risque d'électrocution si les fusibles sont remplacés tandis que le cordon d'alimentation est encore branché.

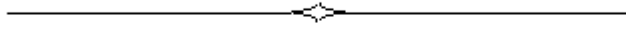
The fuse is located at the rear of the instrument.

1. Turn off and unplug the instrument.
2. Carefully open the compartment latch where the fuse is located.



Location of latch on the fuse compartment door

3. Disconnect the fuse.
4. Replace with two T2.0AL fuses, one for each phase.
5. Close the compartment door.
6. Plug in the instrument and turn on.



Lambda 465 Installation

Preparing the Laboratory

The compact size of the Lambda 465 enables you to install the spectrophotometer in a limited space.

Make Room for Installation

The Lambda 465 System needs sufficient space for a computer, printer and selected accessories such as the autosampler. The system dimensions are 541 mm (W) × 450 mm (D) × 232 mm (H) [21 in. (W) 18 in. (D) 9 in. (H)].



WARNING

In view of the electronic components in the Lambda 465 System, it should be positioned well away from any instruments emitting an electromagnetic field and any environment that may cause vibration.

Compte tenu des composants électroniques dans le Système Lambda 465, il doit être placé très loin de tous les autres instruments émettant des champs électromagnétiques et toutes les autres sources produisant des vibrations.

Power

A grounded AC power supply must be used. The Lambda 465 accepts 100 to 240 VAC at 50 Hz or 60 Hz.



WARNING

In order to protect the system from electrical noise and current surges, please connect the power cord to a GROUNDED OUTLET.

Afin de protéger le système contre les bruits électriques parasites et les surtensions de courant, veuillez brancher le câble d'alimentation à une prise d'alimentation mise à la terre.

Environmental Requirements

This system is for indoor use only.

Requirement	Description
Indoor use	Altitude up to 2000m (6,500 ft.) Pollution degree 2
Dimensions	541 mm(W) × 450 mm(D) × 232 mm(H) [21 in. (W) 18 in. (D) 9 in. (H)]
Weight	16.5 kg (36.3 lbs)
Electrical supply	AC 100-240V, 50/60Hz, 85W
Operating Temperature	15 - 35°C (59 - 95°F)
Operating humidity	Less than 80% relative, non-condensing

Minimum Computer Requirements

Requirement	Description
Hardware	PC (Intel® Core 1.5GHz or faster processor) At least 1 GB RAM 50 GB with 1 GB free HDD Color Monitor Display (1024 × 768) CD-ROM Drive Mouse & Keyboard USB port for the data acquisition
Operating System	Microsoft® Windows 7 (If using Security Software : Microsoft® Windows 7 Professional, Ultimate, Enterprise)
Output device	Microsoft® Windows compatible Printer

Installation

1. Carefully remove the instrument and all of its components from the shipping container.
2. Verify that all of the components received match the packing list.
3. Verify that all system components required for installation are present, this, must include:
 - Lambda 465 Spectrophotometer
 - Interface cable (USB)
 - Power Cord
 - UV Lab Software CD
 - Computer systems(see page 33 for computer requirements)

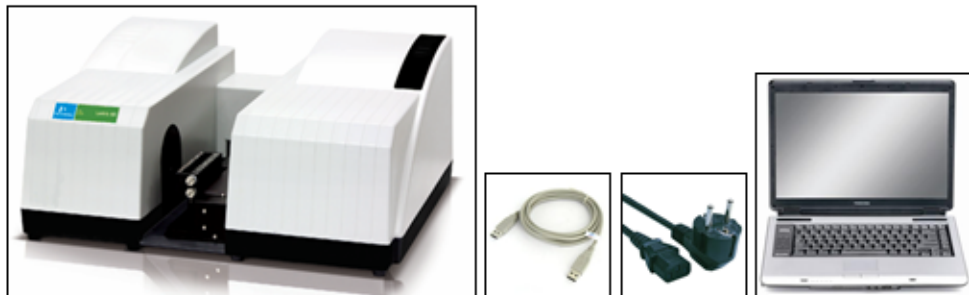


Figure 5 System components

4. Place the instrument in a location that is compatible with the required environmental conditions for operation. Connect the power cord to the plug; the power plug **must** be grounded.



- USB1: It's for communication between Lambda 465 and Computer.
- USB2: It's for Firmware updating or using rapid mixing accessory
- GPIO: It's for interface between Lambda 465 and rapid mixing accessory

Figure 6 System in location



WARNING

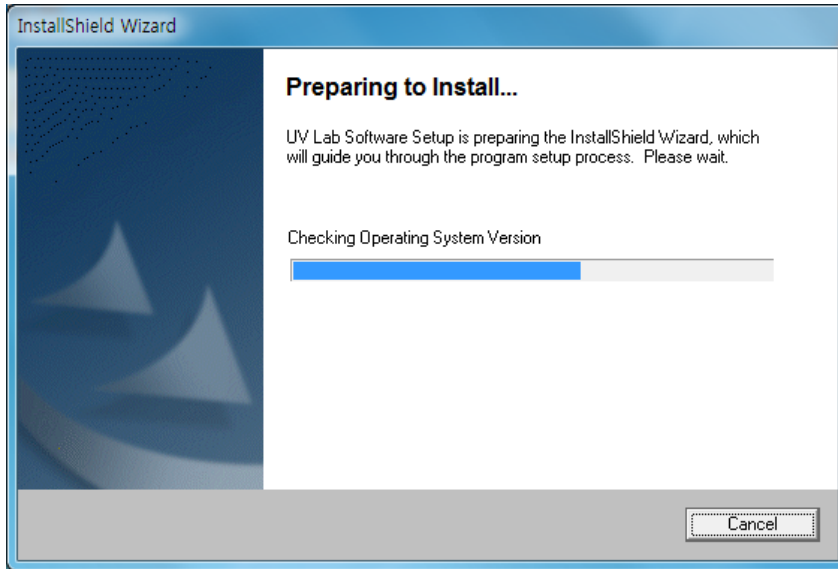
The electric power could be dangerous. Before connecting the power cord, verify that the main power switch is off.

Le courant électrique peut être dangereux. Avant de brancher le cordon d'alimentation, vérifiez que l'interrupteur du secteur soit en position Off.

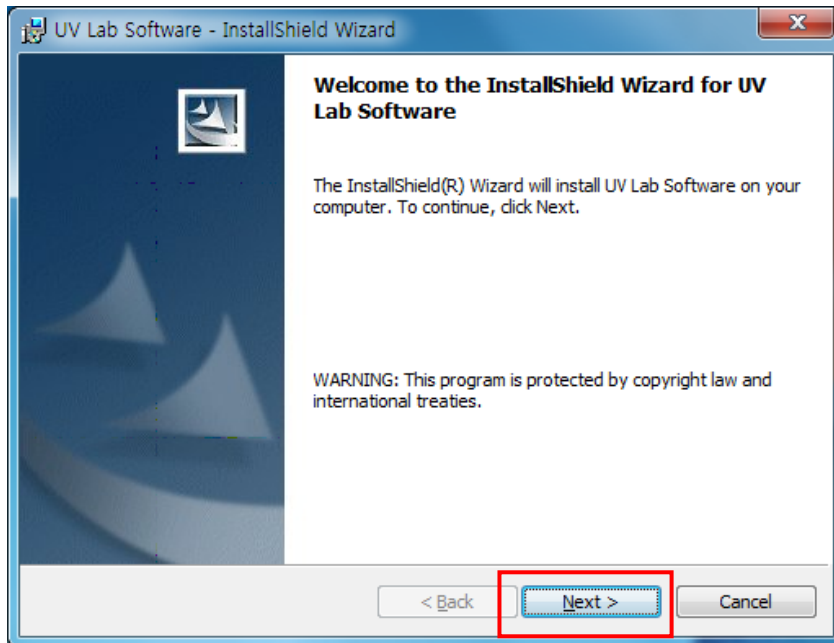
UV Lab Software
Installation

How to Install the UV Lab Software

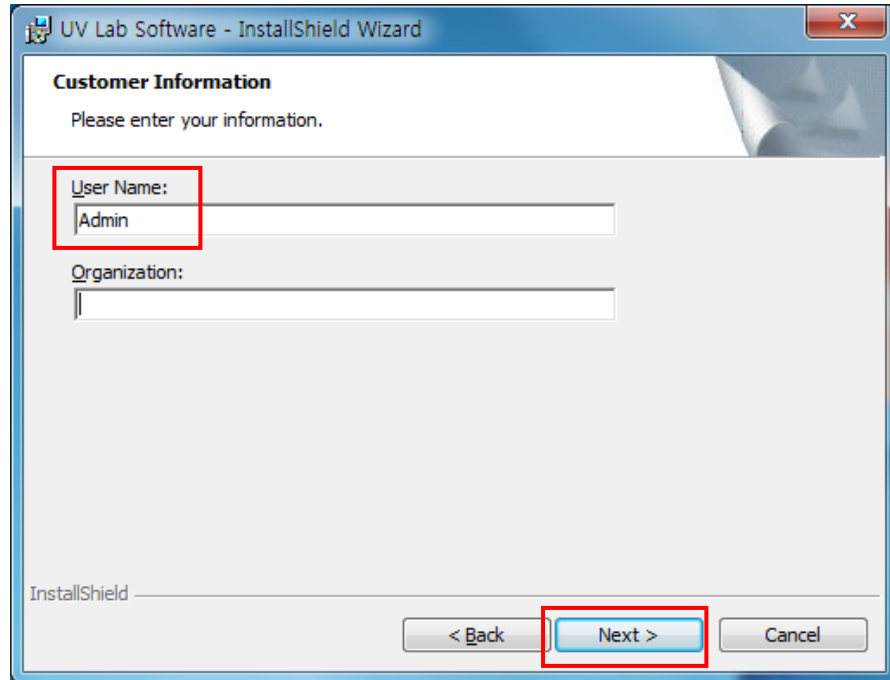
1. Insert the UV Lab installation CD into the CD-ROM drive. InstallShield® Wizard starts automatically.
2. InstallShield® Wizard does not start automatically, select **Computer** → **CD Drive**. Double click on **setup.exe**.



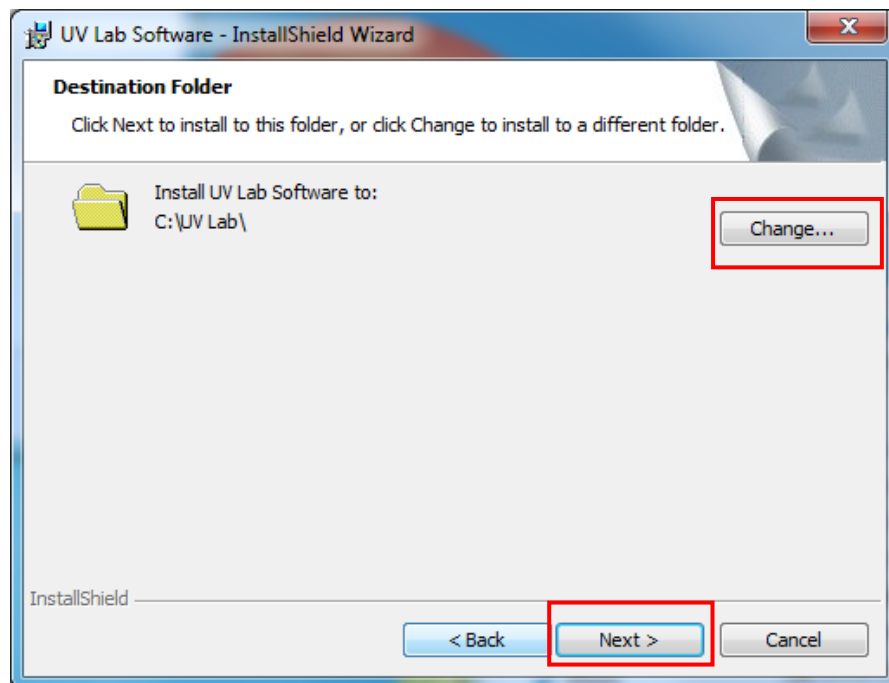
3. UV Lab InstallShield Wizard starts. Select **Next**.



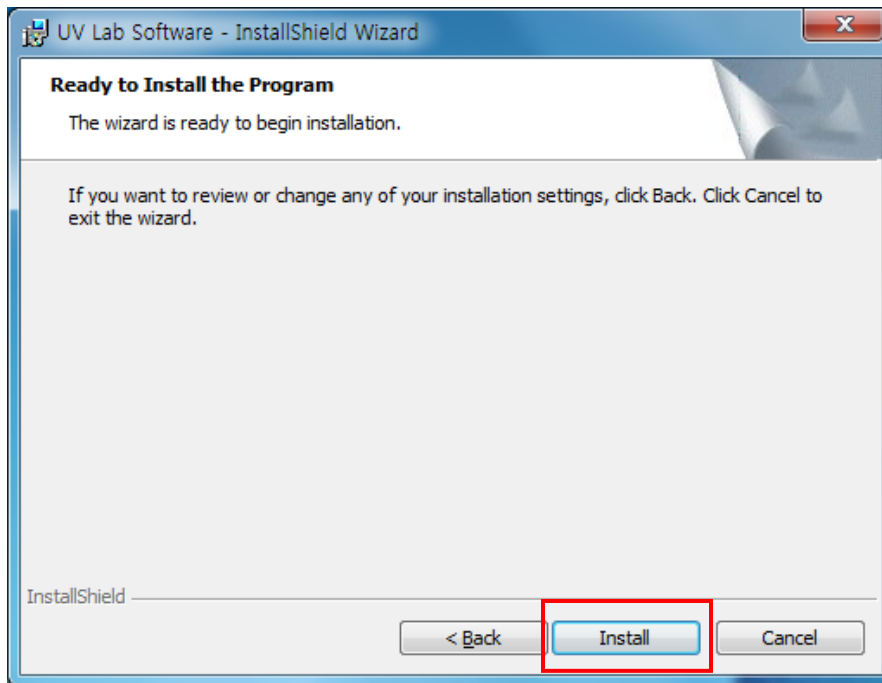
4. Enter customer information, if necessary, and select **Next**.



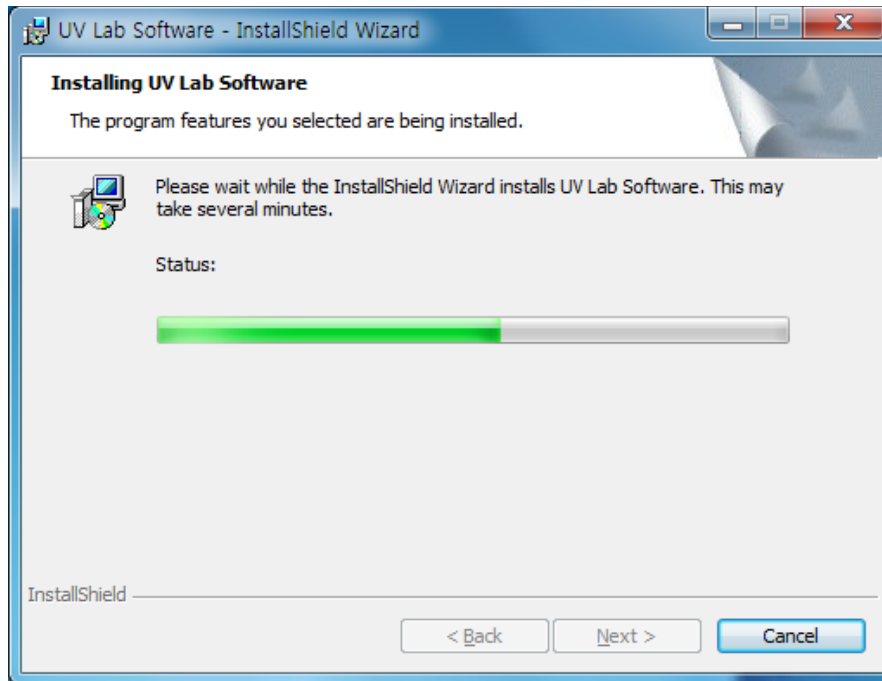
5. The software will be installed in C:\UV lab\ as a destination folder. To install the software to a different folder, select **Change** and select the desired folder.



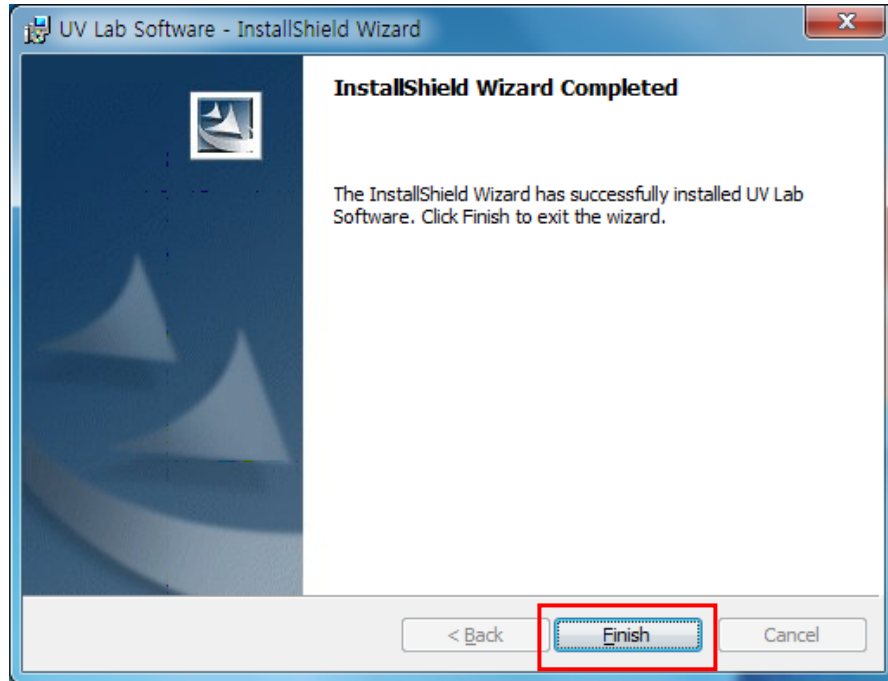
6. Verify the current settings and select **Install**.



7. The following window shows the status of the UV Lab installation.



8. After the setup is completed successfully, select **Finish**. The UV Lab software icon will appear on the Desktop.





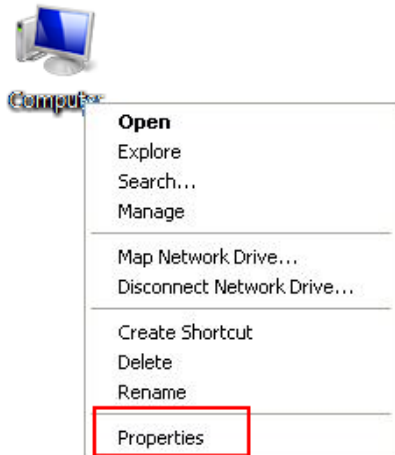
Interface Setup

USB Interface Setup

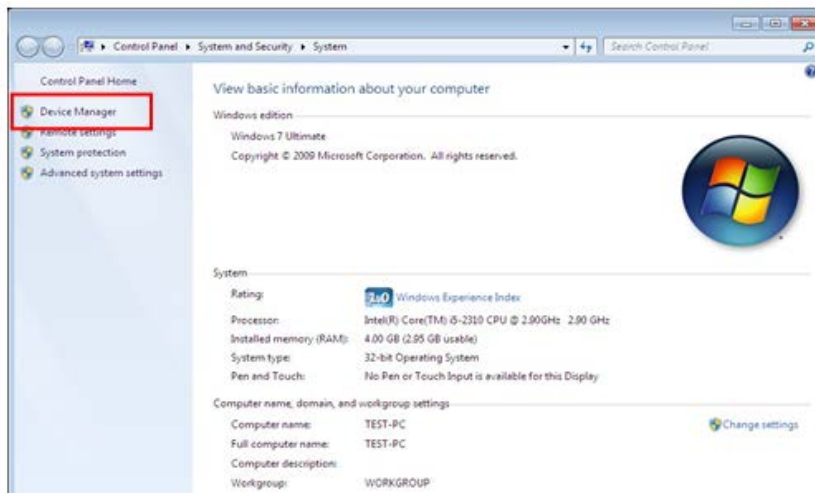
1. Turn on the computer and the instrument.
2. Connect the USB cable between the computer and instrument (USB1).



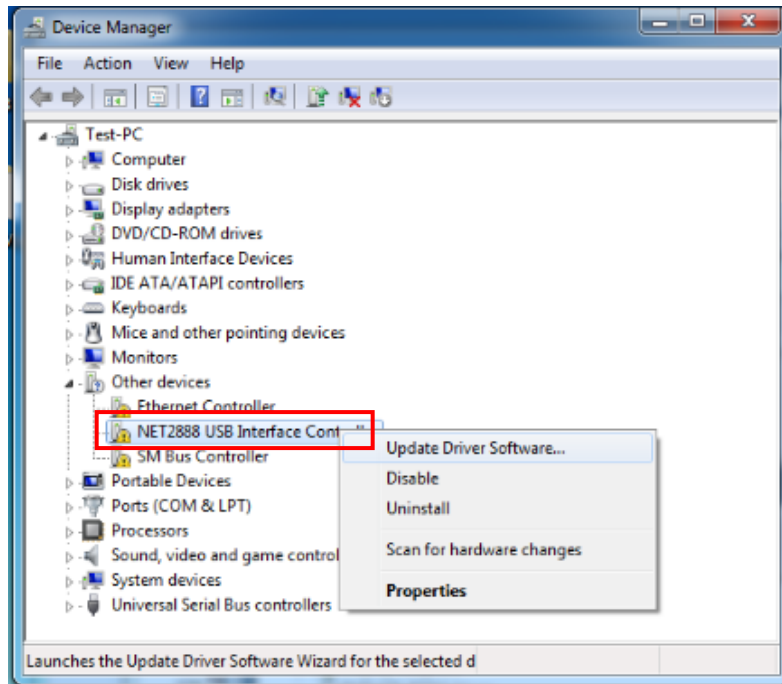
3. The **Driver Software Installation** is displayed on the screen. Select **Close**.
4. Select **Computer** → **Properties**.



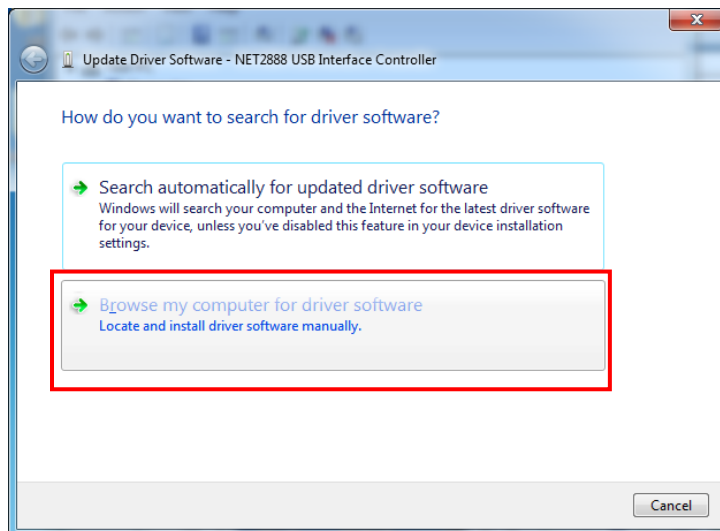
5. Select on **Device Manager**.



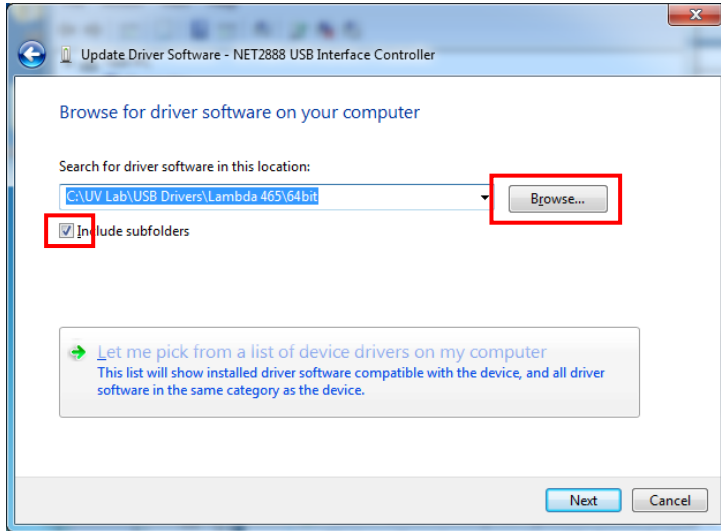
6. Right-click on **NET2888 USB Interface Controller** and select **Update Drive Software**.



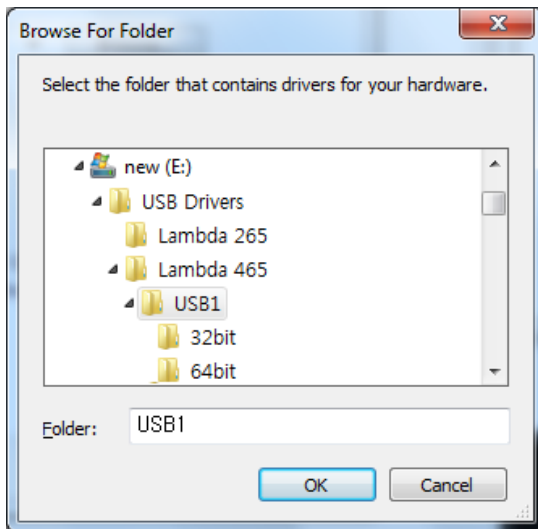
7. Select **Browse my computer** for driver software from the **Update Drive Software** window.



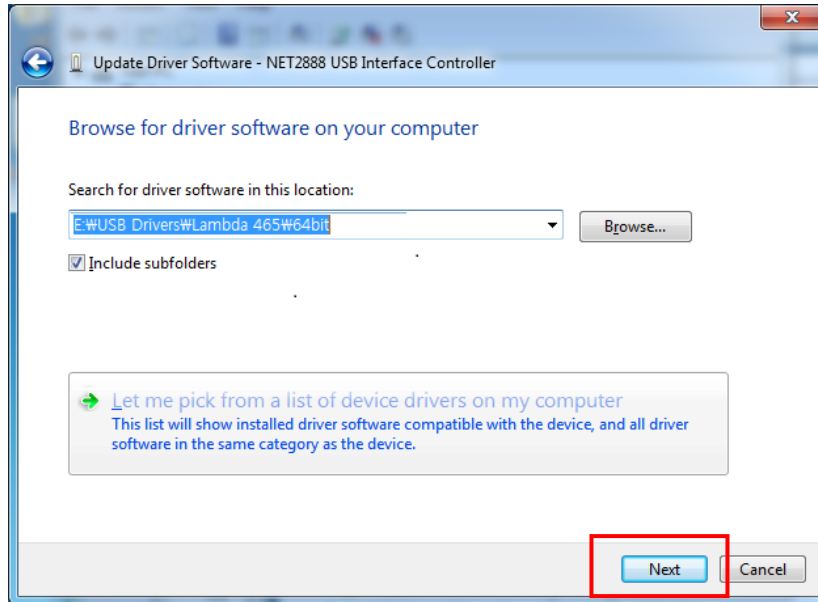
8. Check the box next to Include subfolder and select **Browse**.



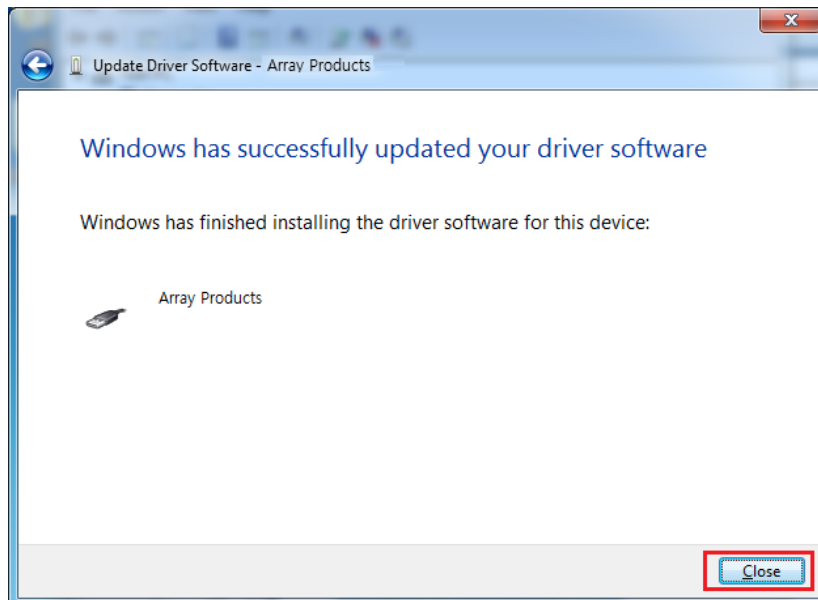
9. **Select CD Driver:USB Drivers\Lambda 465\USB1 or C: UV Lab\USB Drivers\Lambda 465\USB1.** Select 32bit or 64bit folder by your computer system and click **OK**.



10. Select **Next**.

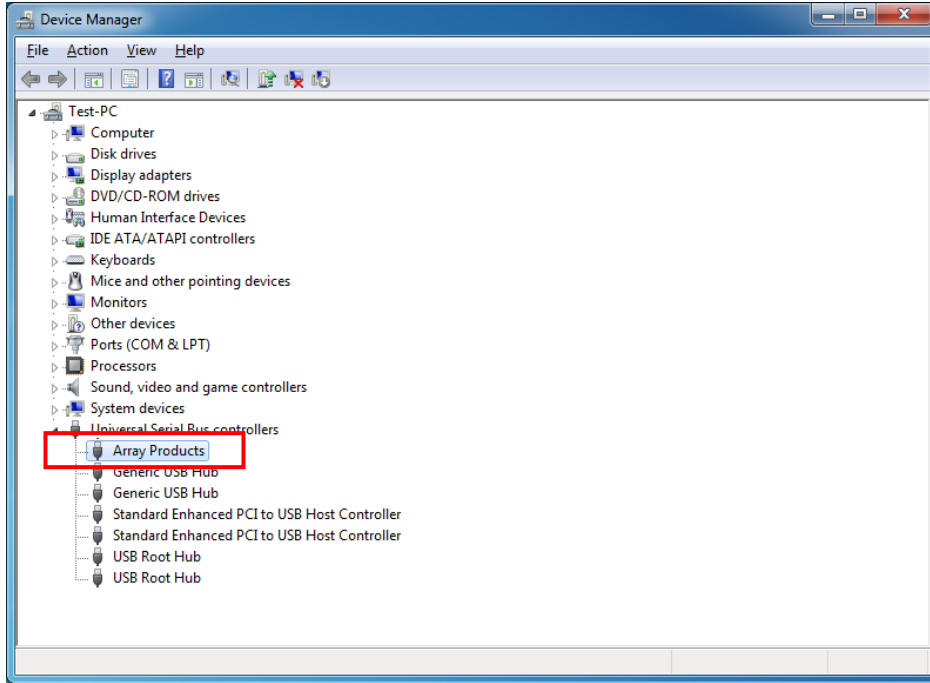


11. After installation is completed successfully, select **Close**.



12. Select **Control Panel > System** from the **Start Menu**.

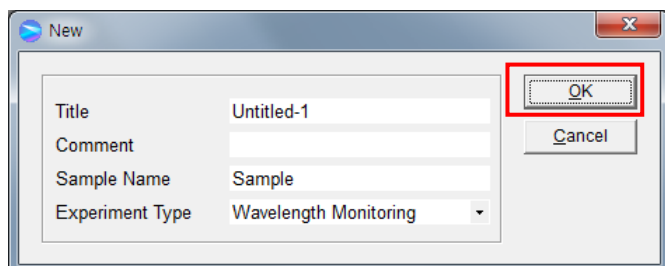
13. Select **Device Manager**. The USB driver [Array Products] is visible when the driver installation is completed successfully.



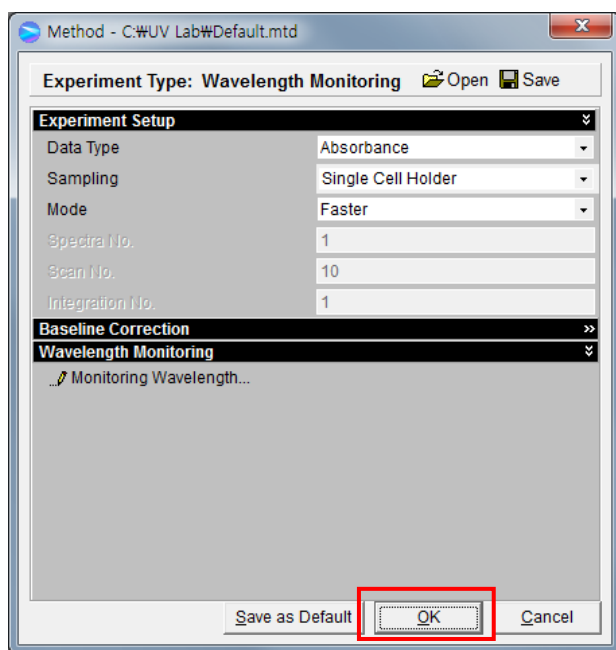
Operating Procedure



Procedure

1. Turn on the power switch and allow the instrument to warmup for at least 20 minutes.
2. Start the **UV Lab** software.
3. Enter a Title, Sample Name and choose the **Experiment Type**. Select **OK**.



4. Set the method parameters. Select **OK**.



5. Prepare the blank and the sample solutions.
6. Fill a 10 mm pathlength cell to ~80% of its volume with the blank solution and place it into the cell holder. Click  **Blank** or select **Run Blank** from the **Measure** menu.
7. Remove the cell from the cell holder.
8. Fill a 10 mm pathlength cell to ~80% of its volume with the sample solution and place it into the cell holder. Click  **Sample** or select **Run Sample** in the **Measure** menu.
9. Print and save the spectral data.

Accessories

Accessories for the Lambda 465

Every day you can count on PerkinElmer to provide you with solutions that deliver reliable performance, control operating costs and maximize operational time. Our complete portfolio of consumables, parts, supplies, training and service helps you meet both routine and demanding measurement challenges. We invest heavily in testing and validating our products to ensure you receive guaranteed compatibility and performance-on-time, every time, for every instrument in your laboratory.

Supplies, replacement parts, and accessories can be ordered directly from PerkinElmer, using the part numbers quoted in the guides provided with the instrument.

See our website:

<http://perkinelmer.com>

PerkinElmer's catalog service offers a full selection of high-quality supplies.

To place an order for supplies and many replacement parts, request a free catalog, or ask for information:

If you are located within the U.S., call toll free 1-800-762-4000, 8 a.m. to 8 p.m. EST. Your order will be shipped promptly, usually within 24 hours.

If you are located outside of the U.S., call your local PerkinElmer sales or service office.

Single Cell Holder

Designed for a standard cell with a 10 mm pathlength.



Water Jacketed Single Cell Holder

Use this accessory to control the temperature of a sample in a standard 10 mm rectangular cuvette. This accessory needs a circulator for control temperature with a separately purchased circulator.



Magnetic Film Holder

Use this accessory to hold thin films in the spectral position.



Variable Pathlength Cell Holder

Use this accessory to hold rectangular cells with 5, 10, 20, 40, 50, 100 mm pathlengths. A moveable block secures cells in position.



Variable Angel Transmission Holder

Use for measuring the transmittance of various features of Film, Glass, and Plate, etc according to the variable angle.



Advanced Transmission Holder

Use this accessory to measure the transmittance spectrum of various solid samples including films, glass, filters and optical components.



Reflectance Holder

Use this accessory to test coatings and semi-conductor wafers; especially effective for measuring film thickness.



DRA-100

Used for measuring the diffuse reflectance of solid samples such as; metals, glass, textiles, paper, gems, and powders. It can also be used for measuring sample color using UV Lab software's Color Analysis feature.



Water Jacketed Automatic Referencing Stage

Developed to minimize drift caused by the variation of light intensity and temperature over long-term kinetics measurements. This accessory needs a circulator for control temperature with a separately purchased circulator. Optional stirring is available with a separately purchased stir controller. This accessory is controlled by UV Lab software.



8 Cell Water Jacketed Cell Changer

Use this accessory to measure multiple samples automatically. Move quickly from sample to sample and acquire full-spectrum data for all eight cells in less than 20 seconds. This accessory needs a circulator for control temperature with a separately purchased circulator. Optional stirring is available with a separately purchased stir controller. This accessory is controlled by UV Lab software.



Peltier Control Single Cell, with Peltier Controller

Control the temperature of a single 10 mm pathlength rectangular cell between -10 and 100°C. Peltier control offers fast ramping with recirculating liquid for exceptional temperature control. Integrated purging capability can be used to decrease condensation. This accessory includes a temperature probe, temperature controller, Peltier accessory and all accessories necessary for its operation and connection to the instrument. This accessory is controlled by UV Lab software.



Peltier controller

Peltier Control Multi-Cell, with Peltier Controller

Control the temperature of up to eight, 10 mm pathlength rectangular cell between -10 and 100°C. Peltier control offers fast ramping with recirculating liquid for exceptional temperature control. Integrated purging capability can be used to decrease condensation. This accessory includes two temperature probes, a temperature controller, Peltier accessory and all accessories necessary for its operation and connection to the instrument. This accessory is controlled by UV Lab software.



Peltier controller

Autosampler

Automate the measurement of up to 360 samples at a time with an autosampler accessory. Two and four rack configurations are available. This accessory system, including the automated sipper, is fully controlled by UV Lab software.



Rapid Mixing Accessory

Use this accessory to make full-spectrum millisecond kinetics measurements. The rapid mixing accessory incorporates temperature control and the interface module allows complete connectivity with the UV Lab software.



Nano Stick

Use this accessory to measure micro-volume sample such as DNA, RNA and Protein.





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