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Cary Eclipse Fluorescence Spectrophotometer

User's Guide



Agilent Technologies

Notices

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Contents

1. Safety Practices and Hazards 7
Verifying Safe State 7
Lamp module 8
Ultraviolet radiation 8
Electrical hazards 9
Panels, covers and modules 10
Other precautions 10
Warning and information symbols 11
Color coding 13
CE compliance 13
Electromagnetic compatibility 14
EN55011/CISPR11 14
ICES/NMB-001 15
South Korean Class A EMC declaration 15
2. Introduction 17
Installation requirements 17
Documentation 17
Conventions 18
Specifications 18
Environmental 18
Weights and dimensions 19
Power 19

Connections 19
Fuses 20
Nitrogen supply 20
Computer placement 20

3. Installation 21

Single cell holder 22
Aligning 24
Other sample holders 25
Purging 25
Nitrogen 25
Pressure regulator and gauge 25
Supply tubing 25
Gas manifold 26
Flowmeter 26
Installing the software 26
Installing the USB-GPIB-HS Converter 28
Registering the Cary Eclipse software 28
Uninstalling the software 29
Software Status Bulletin 29

4. Maintenance and Spare Parts 31

Cleaning 32
Lamp module 32
Replacing 32
Aligning 35
Fuses 38

Replacing 38
Checking 39
Spare Parts 39

5. Troubleshooting 41
Instrument offline 42
Connect button instead of Start 42
Instrument performance testing 43

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1. Safety Practices and Hazards

Verifying Safe State	7
Lamp module	8
Ultraviolet radiation	8
Electrical hazards	9
Panels, covers and modules	10
Other precautions	10
Warning and information symbols	11
Color coding	13
CE compliance	13
Electromagnetic compatibility	14

Your Agilent Cary Eclipse instrument and accessories have been carefully designed so that when used properly you have an accurate, fast, flexible and safe analytical system.

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

Information on safety practices appears throughout the documentation (both hard copy and online) provided with your instrument and accessories. Before using the instrument or accessories, you must thoroughly read these safety practices.

Observe all relevant safety practices at all times.

Verifying Safe State

The following general safety precautions must be observed during all phases of operation, maintenance and service of this instrument.

To ensure continued safety of the instrument after maintenance or service procedures verify the instrument is returned to a safe state for the user. This includes running performance checks to verify the instruments safety systems are functioning correctly. Check the general condition of the instrument during operation for wear or signs of corrosion that are likely to inhibit function or safety.

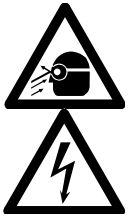
Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

Lamp module

The lamp is enclosed in a self-contained module. This module contains components operating at high voltages. To avoid electric shock, NEVER disassemble the module.

When operating, the lamp module emits high intensity visible and ultraviolet (UV) radiation that can cause serious damage to eyes. To avoid eye damage, never operate the lamp outside the instrument.

WARNING



Eye and Shock Hazard
High voltage Xe flashlamp operating at 1260 kPa. To avoid electric shock or eye damage, NEVER disassemble the module or look down the hole.

La lampe Xe haut voltage fonctionne à une pression de 1260 kpa. Pour éviter tout risque électrique et des problèmes oculaires ne jamais ouvrir le module ou regarder à l'intérieur.

Ultraviolet radiation

Hazardous ultraviolet (UV) radiation is emitted by the xenon flash lamp in the instrument. This radiation can cause serious damage to eyes. *Never* look directly at the UV source lamp.

Electrical hazards

The Cary Eclipse system and some accessories contain electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices and components can cause death, serious injury, or painful electrical shock.

Panels or covers which are retained by screws on the spectrophotometer and accessories and carry a warning may be opened ONLY by Agilent-trained, Agilent-qualified, or Agilent-approved customer service representatives. Consult the manuals or product labels supplied with your computer, monitor and printer to determine which parts are operator-accessible.

Good grounding is essential to avoid a potentially serious electric shock hazard. Ensure that there is an integral ground connection between the metal base of the spectrophotometer and accessories and the three pin earth-grounded receptacle. Consult the manuals or product labels supplied with your computer, monitor and printer for their grounding requirements.

NOTE The safety classification is given as Equipment Class I.

Application of the wrong supply voltage can create a fire hazard and a potentially serious shock hazard, and could seriously damage the Cary Eclipse system, accessories and any attached ancillary equipment.

Do not connect the Cary Eclipse, your computer, monitor, printer or accessories to the mains power supply until you have made sure that they are correctly set for the mains power supply in the specific outlet in your laboratory to which the equipment will be connected. Consult the manuals supplied with your computer, monitor and printer for their specific voltage requirements.

Replace blown fuses with fuses of the size and rating as stipulated in the text adjacent to the fuse holder or in the manuals where listed.

Replace or repair faulty or frayed insulation on power cords.

Do not replace the power cord with one of a lower rating than specified. Use only Agilent supplied power cords for your country.

WARNING



Shock Hazard
To avoid electrical shock this equipment must be disconnected from the mains supply before servicing.

Panels, covers and modules

You are permitted to remove the top colored cover to:

- Replace the lamp module.
- Adjust the lamp module.

Any other panels or covers, which are retained by screws on the spectrophotometer and accessories, may be opened ONLY by Agilent-trained, Agilent-qualified, or Agilent-approved service engineers. Consult the manuals or product labels supplied with your computer, monitor and printer to determine which parts are operator-accessible.

Operators and other unauthorized personnel are permitted access ONLY to the lamp module and the sample compartment of the Cary Eclipse. ALWAYS switch off the instrument and disconnect the mains cord before changing a lamp module.

Other precautions

The lamp module operates at a high temperature, and touching it may result in burns. Before replacing a lamp module that has been operating, switch off the Cary Eclipse and ensure that the lamp module has cooled, or protect your fingers from burns.

Do not block the ventilation grilles on the spectrophotometer and accessories. Consult the manuals supplied with your computer, monitor and printer for their specific ventilation requirements.

Use of the Cary Eclipse system and accessories may involve materials, solvents and solutions, which are flammable, corrosive, toxic or otherwise hazardous.

Careless, improper, or unskilled use of such materials, solvents and solutions can create explosion hazards, fire hazards, toxicity and other hazards which can result in death, serious personal injury, and damage to equipment and property.

ALWAYS ensure that laboratory safety practices governing the use, handling and disposal of such materials are strictly observed. These safety practices should include the wearing of appropriate safety clothing and safety glasses.

Warning and information symbols

The following symbols appear in conjunction with warnings on the spectrometer and associated documentation. The hazard they depict is shown below each symbol:



Corrosive liquid



Ejecting parts



Electrical shock



Extreme cold



Eye hazard



Fire hazard



Heavy weight (danger to feet)



Heavy weight (danger to hands)



Hot surface



Moving parts



Noxious gas



Sharp edge

The following symbol may be used on warning labels attached to the instrument. When you see this symbol, refer to the relevant operation or service manual for the correct procedure referred to by that warning label.



The following symbols also appear on the instrument or in the documentation:

I	Mains power on
O	Mains power off
	Single phase alternating current
	Fuse
 Xe	Indicates that a high voltage xenon flash lamp is present
	Caution, disconnect all supplies, risk of electric shock
	Delicate parts - install carefully

Color coding

The various indicator lights appearing on Agilent instruments and associated accessories are color-coded to represent the status of the instrument or accessory.

- A steady green light indicates the instrument is in normal or standby mode.
- A flashing green light indicates the instrument is scanning/reading.
- A steady orange light indicates the instrument is starting up.
- A flashing orange light indicates that there is a problem with the instrument, and it may require servicing.
- A steady yellow light indicates that the instrument is initializing.

CE compliance

Agilent Cary Eclipse instruments have been designed to comply with the requirements of the Electromagnetic Compatibility (EMC) Directive and the Low Voltage (electrical safety) Directive (commonly referred to as the LVD) of the European Union. Agilent has confirmed that each product complies with the relevant directives by testing a prototype against the prescribed EN (European Norm) standards.

Proof that a product complies with the directives is indicated by:

- The CE marking appearing on the rear of the product.
- The documentation package that accompanies the product, containing a copy of the Declaration of Conformity. This declaration is the legal declaration by Agilent that the product complies with the directives and also shows the EN standards to which the product was tested to demonstrate compliance.

Electromagnetic compatibility

EN55011/CISPR11

Group 1 ISM equipment: group 1 contains all ISM equipment in which there is intentionally generated and/or used conductively coupled radio- frequency energy which is necessary for the internal functioning of the equipment itself.

Class A equipment is equipment suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

This device complies with the requirements of CISPR11, Group 1, Class A as radiation professional equipment. Therefore, there may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted as well as radiated disturbances.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

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 one or more of the following measures:

1. Relocate the radio or antenna.
2. Move the device away from the radio or television.
3. Plug the device into a different electrical outlet, so that the device and the radio or television are on separate electrical circuits.
4. Make sure that all peripheral devices are also certified.
5. Make sure that appropriate cables are used to connect the device to peripheral equipment.
6. Consult your equipment dealer, Agilent Technologies, or an experienced technician for assistance.

Changes or modifications not expressly approved by Agilent Technologies could void the user's authority to operate the equipment.

ICES/NMB-001

This ISM device complies with Canadian ICES- 001.

Cet appareil ISM est conforme à la norme NMB-001 du Canada.

South Korean Class A EMC declaration

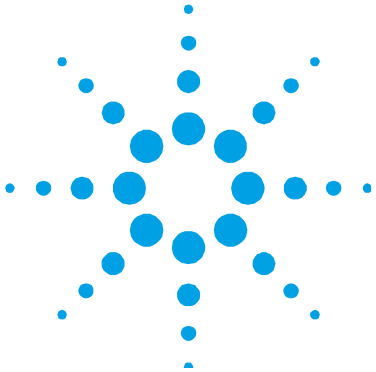
A 급 기기 (업무용 방송통신기자재)

This equipment is Class A suitable for professional use and is for use in electromagnetic environments outside of the home.

이 기기는 업무용 (A 급) 전자파적합기기로서 판 매자 또는 사용자는 이 점을 주

의하시기 바라 며 , 가정외의 지역에서 사용하는 것을 목적으 로 합니다 .

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2. Introduction

Installation requirements 17
Documentation 17
Specifications 18

Installation requirements

Before receiving your instrument, you will have been provided with a Cary Eclipse Site Preparation Guide, which describes the environmental and operating requirements of the Agilent Cary Eclipse system. You must prepare your laboratory according to these instructions before the Cary Eclipse can be installed. You should keep the site preparation guide for future reference. If you have misplaced your copy, you can obtain a replacement from your local Agilent office or from the Agilent website, www.agilent.com

Documentation

You have been provided with the following documentation to help you set up and operate your Cary Eclipse system:

- This user's guide, with safety practices and hazards information, instructions for installing and maintaining the components of the Cary Eclipse and software, and troubleshooting information
- Extensive Help (provided with the Cary Eclipse software) containing context-sensitive Help, step-by-step instructions for frequently performed analyses and instructions for using any accessories you ordered.

Conventions

The following conventions have been used in procedures throughout the documentation:

- Menus, menu items, buttons and check boxes have been typed in **bold**. (for example, 'click **OK'** and 'From the **Edit** menu, choose **Copy**'.
- ALL CAPITALS indicate keyboard commands. For example, 'press ENTER' and 'press SHIFT+F8'.

Specifications

The instrument is suitable for indoor use *only* and is classified Pollution degree 2 and Installation Category II (EN 61010-1).

Environmental

Table 1. Suitable conditions during instrument transportation, non-operation and operation

Condition	Altitude (m, ft)	Temperature (°C, °F)	Relative humidity, non-condensing (%)
Non-operating (transport)	0–2133, 0–7000	5–45, 41–113	20–80
Operating within performance specifications	0–853, 0–2800 853–2133, 2800–7000	10–35, 50–95 10–25, 50–77	8–80

For optimum analytical performance, it is recommended that the ambient temperature of the work area be between 20 and 25 °C (68 and 77 °F) and be held constant to within ±2 °C throughout the entire working day.

Weights and dimensions

Weight

Packed: 54 kg (119 lb)

Unpacked: 31 kg (68 lb)

Dimensions (width x depth x height)

Packed: 820 x 760 x 560 mm (32 x 30 x 22 in)

Unpacked: 600 x 610 x 280 mm (24 x 24 x 11 in)

Power

- Voltage: 100–240 VAC
- Frequency: 50–60 Hz Hz
- Consumption: 180 VA (approximately)
- Mains inlet coupler: 3/2 A 120/250 VAC 50–60 Hz IEC type

Connections

Mains power cord

Only use the country specific, Agilent supplied power cord with your Cary Eclipse.

Front

Accessory connection: 25-pin D-range connector (low voltage DC/AC and digital/analog lines)

Position the instrument on the bench to allow easy access to the power switch located on the front of the instrument.

Rear

IEEE 488 (GPIB Cary Eclipse system connection)

Sample compartment

- 9-pin D-range connector (low voltage AC/DC)
- 15-pin D-range connector (low voltage AC/DC)
- 25-pin D-range connector (low voltage AC/DC)

Fuses

T3.15 AH 250 V (5 x 20 mm) IEC127 Sheet 5

NOTE For safety reasons, any other internal fuse or circuit breaker is not operator accessible, and should be replaced only by Agilent-authorized personnel.

Fuse information on the rear of the instrument is the most up-to-date.

Nitrogen supply

70 kPa (10 psi)

Computer placement

Locate the PC keyboard and mouse for ergonomically correct access.

3. Installation

Single cell holder	22
Other sample holders	25
Purging	25
Installing the software	26
Installing the USB-GPIB-HS Converter	28
Registering the Cary Eclipse software	28
Uninstalling the software	29
Software Status Bulletin	29

The Agilent Cary Eclipse must be installed only by an Agilent-trained or Agilent-authorized representative.

WARNING



Heavy Weight Hazard

The Cary Eclipse weighs over 30 kg (66 lb). To avoid injury to personnel or damage to equipment, always use two or more people when lifting or carrying the instrument. *Never* attempt to lift the instrument alone.

This chapter describes how to install the:

- Sample holders used with the Cary Eclipse.
- Cary Eclipse software, in case you ever need to reinstall it.

Instructions for installing/replacing the lamp module are included in the ‘Maintenance’ chapter.

Single cell holder

A single cell holder is supplied as standard with the Cary Eclipse. Follow these instructions to install and align it.

To install the single cell holder:

1 Slide back the sample compartment lid ('1' in Figure 1), lift up and remove the front panel (2) and check that the sample compartment is empty.



Figure 1. Cary Eclipse showing the sample compartment lid (1) and front panel (2) and Lamp Access Panel (3)

2 Position the cell holder base on the locating pins.

3 Lock the cell base by turning the lever (‘2’ in Figure 2) to the right.

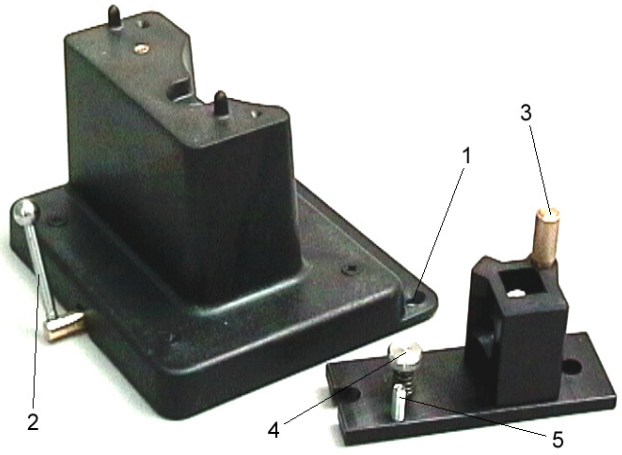


Figure 2. Cell holder base (left) and Single cell holder

1) Locating holes
2) Cell holder locking lever
3) Cell lifter and height adjuster
4) Cell holder thumbscrew
5) Pitch adjustment screw

4 Place the single cell holder on the cell holder base so that the cell lifter (3) is at the rear of the sample compartment.

5 Secure the cell holder by tightening the spring-loaded thumbscrew (4).

Cuvette height adjustment

- Turning the cell lifter (3) in a clockwise direction will raise the cuvette.
- Turning the cell lifter (3) in an counter-clockwise direction will lower the cuvette platform.

NOTE To lower the cuvette you will have to push the cuvette down because of the tension created by the single cell holder.

Cuvette pitch adjustment

1. Turning the pitch adjustment screw (5) in a clockwise direction will raise the front of the cell holder.
2. Turning the pitch adjustment screw (5) in an anti-clockwise direction will lower the front of the cell holder.

NOTE The pitch adjustment screw requires a 2.5 mm hex key.

Aligning

To align the single cell holder (containing a microcell):

1. Open the Cary Eclipse folder on the desktop and then double-click **Align** to start the Align application.
2. Click the **Cary** tab.
3. Place a fluorescent sample (for example, anthracene) in a microcell and adjust the excitation and emission wavelengths to get a signal.
4. Click **Apply**. (The wavelengths should change and the green power indicator on the instrument should continue flashing to indicate that the instrument is active.)
5. Place a small piece of white paper in the light path to the right of the cell (use a wavelength of 540 nm). If the beam appears as though it will strike the cell aperture, move the paper to the left of the cell and check that the beam is passing through the cell. (If the beam does not appear as though it will pass through the cell, adjust the height of the cell as described on Page 23).
6. Using the 2.5 millimeter hexagonal ball driver, adjust the pitch adjustment screw (‘5’ in Figure 2) and note the intensity of the light striking the paper. Continue to adjust the adjustment screw until the beam hitting the paper appears the most intense.

NOTE You may need to dim the room lights to see the light beam.

Other sample holders

Other sample holders are available for use with the Cary Eclipse. Instructions for their use are included in the Help provided with the Cary Eclipse software.

Purging

The nitrogen purging system is *not* supplied by Agilent, but the following items are available from appropriate commercial suppliers.

Nitrogen

Liquid nitrogen (in conjunction with a heat exchanger) is recommended because it is less expensive than compressed nitrogen and is usually of better quality. If compressed nitrogen must be used, the gas must be dry, oil-free and uncontaminated.

CAUTION Never use compressed nitrogen from a supplier who uses oil or water in the compression process. Such processes invariably leave fine particles of oil suspended in the nitrogen, which will form an oily deposit on optical surfaces. Use nitrogen from a supplier who fills containers from immersion pumps lubricated with liquid nitrogen.

NOTE The instrument warranty will be void if damage is caused by the use of unsatisfactory nitrogen.

Pressure regulator and gauge

Operating pressure is from 70 kPa (10 psi). Always use an appropriate regulator and gauge to ensure that the nitrogen supply is consistently maintained at the correct pressure.

Supply tubing

Use clean, flexible plastic (polyvinyl chloride (PVC) or equivalent) tubing of 6 mm (1/4 in) internal diameter.

CAUTION Never use rubber tubing, because it may be treated internally with talc, which can be blown into the optical system.

Gas manifold

A gas manifold should be fitted with an inlet suitable for connection to the nitrogen supply system and an outlet suitable for connection to the spectrophotometer.

Flowmeter

A flowmeter (complete with control valves) should be inserted in the system between the nitrogen supply system and the spectrophotometer. The flowmeter should be capable of monitoring flow rates between 0 and 30 liters per minute (64 cubic feet per hour).

Installing the software

To install the Cary Eclipse WinFLR software:

1. Log on to the instrument computer with Administrator privileges.
2. Insert the software disk, select the preferred language, and then click **OK**.
   - A User Account Control dialog box may appear. Click **Yes** for 'Do you want to allow the following program to make changes to this computer?'.

NOTE If no installation screen appears, run 'EclipseSetup.exe' from the CD directory.

3. Follow the prompts on the screen until the 'Select Destination Location' window appears. Confirm the directory in which you would like to install the application. Alternatively, click **Browse** to choose a different location. Click **Next**.

NOTE Agilent strongly recommends that the Agilent\Cary Eclipse WinFLR folder and applications be installed in the recommended directory.

4 The 'Folder Does Not Exist' dialog box may appear. Click **Yes** to create the folder.

5 Follow the prompts on the screen until the 'Ready to Install' window appears. Click **Install**.

NOTE During the installation of the .Net Framework and GPIB driver, the computer may appear frozen and the 'Cancel' button is unavailable. This is correct. The installation can take 3 to 5 minutes. Do not try to exit the installation during this time.

6 If prompted to complete installation of Cary WinFLR by restarting your computer, select **No, I will restart the computer later**. Click **Finish**.

7 Remove the Cary Eclipse Software disk from the CD drive and insert the Cary Eclipse Help disk, as prompted.

- A User Account Control dialog box may appear. Click **Yes** for 'Do you want to allow the following program to make changes to this computer?'.

NOTE If no installation screen appears, run 'CaryFlrHelp\setup.exe' from the CD directory.

8 Follow the instructions on the screen to install the Help.

9 When the status indicates 'Finished', click **Close**.

10 Remove the Help disk from the CD drive.

Installing the USB-GPIB-HS Converter

To install a National Instruments USB-GPIB-HS converter:

NOTE Ensure that the Cary Eclipse WinFLR software has been installed.

1. Turn off the computer.
2. Connect one end of the converter to the instrument and the other end to the USB connection on the back of the computer.
3. Turn on the computer.

Registering the Cary Eclipse software

To register the Cary Eclipse software:

1. Double-click the **Cary Eclipse** folder on the desktop and then the desired application.
2. The first time the Cary Eclipse software is opened a Software Registration dialog will appear. Click **Next**.

NOTE Ensure the software registration is completed by the user of the instrument. For further information refer to the Software Registration Help.

3. Complete all the fields on the 'Customer Details' page. Click **Next**.

NOTE The Product Key is found on the cover of the Agilent Cary Eclipse software CD/DVD case which was delivered with the instrument.

4. Complete all the fields on the 'Product Details' page. Click **Next**.
5. Complete all the fields on the 'Work Environment Details' page. Click **Register**.
6. A dialog appears stating 'Your Agilent Software Registration has been successful'.

NOTE If your computer is not connected to the internet, refer to the Software Registration Help for further information.

7 The application will now open, and you can collect your data.

TIP To familiarize yourself with the Cary Eclipse WinFLR software, browse the Help after installing the software. To access the Help, with a Cary Eclipse application open press F1 on your keyboard or open the Cary Eclipse folder on the computer desktop and then double-click the Cary Eclipse Help.

Uninstalling the software

To uninstall the Cary Eclipse software:

1 Uninstall the Cary Eclipse software.

   a For Microsoft Windows 10: Click **Start > Settings > System > Apps & Features**.

   b For Microsoft Windows 7: Click **Start > Control Panel > Programs and Features** or **Programs > Uninstall a program**.

2 Scroll until you find 'Cary Eclipse WinFLR'.

3 Click **Add/Remove** and then **Yes**. Follow the instructions on the screen.

NOTE During the uninstallation, you may be prompted to remove certain drivers/files. Click 'No' to these prompts, as other programs may rely on these files to run.

4 Repeat the process for the Cary Eclipse Help.

Software Status Bulletin

Before proceeding further, you should read the Software Status Bulletin document supplied with the software, and the Agilent Cary Eclipse WinFLR Release Notes.pdf located in the install directory. These documents contain the latest release information and important notes.

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4. Maintenance and Spare Parts

Cleaning	32
Lamp module	32
Fuses	38
Spare Parts	39

This chapter includes the maintenance procedures for the Cary Eclipse that may be carried out by an operator. Any maintenance procedures not specifically mentioned in this chapter should be carried out only by Agilent-trained, Agilent-qualified or Agilent-authorized customer service representative.

WARNING **Eye Hazard**



This instrument contains an intense light source. Viewing of the light source either directly or via a reflecting surface will cause eye damage. Operators and other unauthorized personnel must NEVER remove the black cover over the optics.

NOTE This section refers only to maintenance procedures for the Cary Eclipse fluorescence spectrophotometer. You should refer to your computer and printer manuals for their maintenance procedures, and to the Cary Eclipse Help for the maintenance procedures for any Cary Eclipse accessories you ordered.

Cleaning

Any spills in the sample compartment should be immediately wiped up.

The exterior surfaces of the Cary Eclipse spectrophotometer should be kept clean. All cleaning should be done with a soft cloth. If necessary, this cloth can be dampened with water or a mild detergent. Do not use organic solvents or abrasive cleaning agents.

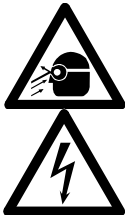
Lamp module

This section describes how to replace the lamp module and realign the light beam. Before changing the lamp module, *always* disconnect the Cary Eclipse from the mains supply.

NOTE These instructions are also provided in the Cary Eclipse Help, including videos to demonstrate the procedure. To access the Cary Eclipse Help, click the Cary Eclipse folder on the computer desktop and then double-click the Cary Eclipse Help.

Replacing

WARNING **Eye and Electrical Shock Hazards**



When operating, the lamp module emits high intensity light which can damage eyes. To avoid eye damage, never operate the lamp module outside the instrument.

The lamp module contains components operating at high voltages. To avoid electric shock, NEVER disassemble the lamp module.

To remove the lamp module:

1. Disconnect the Cary Eclipse from the mains power supply.
2. Remove the lamp access panel (see Figure 1).
3. Facing the front of the Eclipse, turn the instrument onto its right side to get access to the base.
4. On the base of the instrument, undo and remove the four thumb screws of the lamp module cover (see Figure 3).

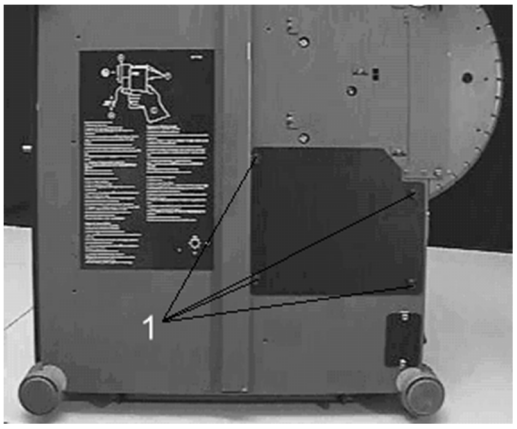


Figure 3. Base of the Eclipse showing the lamp module cover thumb screws (1)

5. Loosen the three bolts marked with a black dot (labeled '1' in Figure 4), until the lamp module is free to move through the front opening.

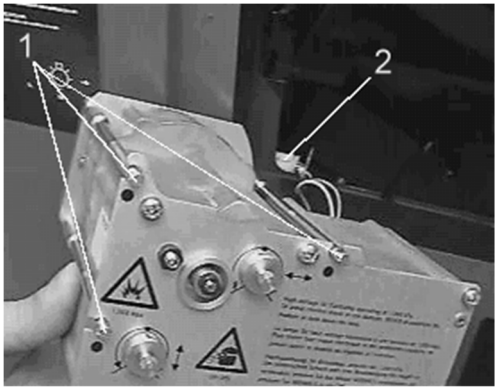


Figure 4. Lamp module showing 1) Bolts and 2) Plug

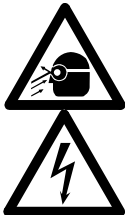
6 Move the lamp module towards the front of the instrument to disengage two guide pins at the rear.

7 Partially withdraw the module through the opening in the base.

8 Squeeze the clip on the plug (labeled '2' in Figure 4) and remove it from its socket

9 Completely withdraw the lamp module.

WARNING



Eye and Electrical Shock Hazards
When operating, the lamp module emits high intensity light which can damage eyes. To avoid eye damage, never operate the lamp module outside the instrument.

The lamp module contains components operating at high voltages. To avoid electric shock, NEVER disassemble the lamp module.

To install the lamp module:

1 Plug the connector of the new lamp module into the socket in the instrument.

2 Fit the lamp module in the base of the Cary Eclipse, ensuring that the two guide pins are correctly located and that the wiring is kept clear of the other parts of the instrument.

3 Tighten the three bolts through the front panel. Replace the lamp access panel.

4 Replace the lamp module cover and tighten the four thumbscrews.

5 Return the instrument to its upright position

6 Replace the power cable at the rear.

7 Turn on the computer and the instrument.

NOTE After replacing the lamp module, you must align the lamp module.

Aligning

For optimum performance of the instrument, the lamp module must be aligned.

To align the lamp module:

NOTE The instrument power must be on for the alignment procedure.

1. Open the Cary Eclipse folder on the desktop and then double-click **Align** to start the 'Align' application.
2. Remove the lamp access panel (see Figure 1) to access the lamp alignment screws.
3. In the Align application, click the **Cary** tab and set up these instrument parameters:
   - Ex. Wavelength (nm): 540
   - Ex. Slit (nm): 1.5
   - Ave. time (s): 0.1
   - PMT voltage: Medium

NOTE Emission parameters are not important for this procedure.

4. Click the **Graph** tab.
5. View the reference signal by clicking the **Reference Signal** button on the toolbar.
6. Click the **Vertical Rescale** button  to find the signal range.
7. Click the **Scale** button  and enter an upper limit that is 20% higher than the current signal and a lower limit that is 20% lower than the current signal. This will make the adjustment easier when observing the graph.
8. Adjust the bottom left screw (vertical adjustment, labeled '1' in Figure 5) for maximum signal with the supplied 5.5 millimeter nut driver (you may need to adjust the y-axis scaling on the screen).

NOTE The brass adjustment screws for vertical and horizontal adjustment are clearly marked.

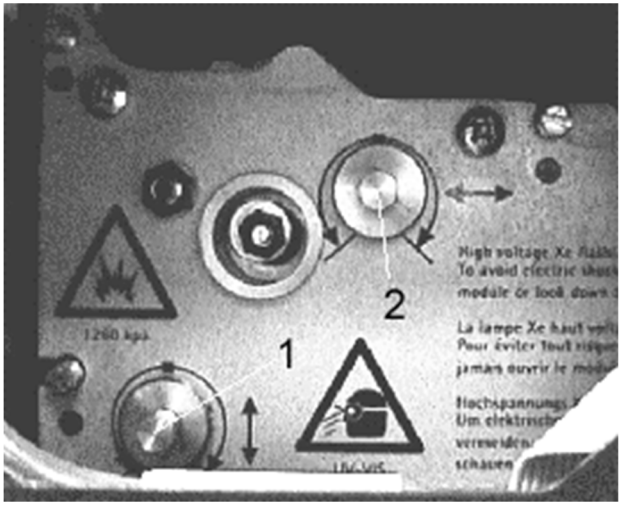


Figure 5. 1) Vertical adjustment screw 2) Horizontal adjustment screw

9 Adjust the top right screw (horizontal adjustment, labeled '2' in Figure 5) for maximum signal (see Figure 6) with the supplied 5.5 millimeter nut driver (you may need to adjust the y-axis scaling).

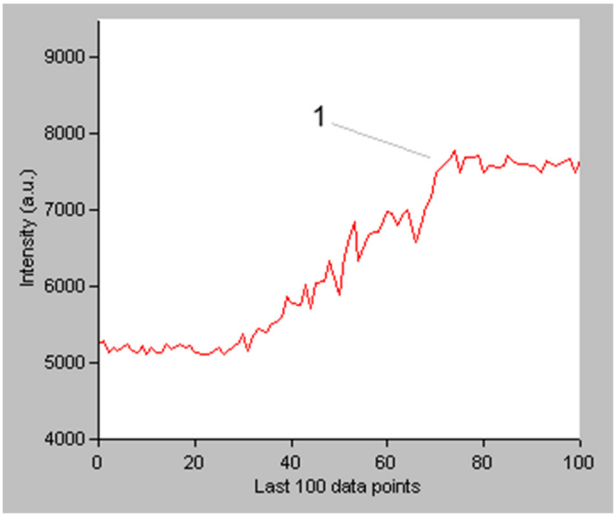


Figure 6. 1) Maximum signal level

10 Click the **Lamp** tab.

11 Click the **Save conditions** button to store instrument parameters.

NOTE Clicking the 'Save conditions' button will store the current instrument parameters as well as the maximum reading.

Fuses

The Cary Eclipse spectrophotometer contains two fuses that are located at the back of the instrument.

Replacing

To replace a fuse:

1. Disconnect the Cary Eclipse instrument from the power supply.
2. Replace the blown fuse with one of the same type and rating, as indicated in Chapter 2.

The fuses have a code marked on the cap (for example, T 3.15 AH 250 V). This refers to the fuse characteristic ('T': time lag, 'F': fast-acting), the current rating ('x': amperes), the braking capacity ('H': heavy, 'L': low) and the voltage rating ('y': volts).

NOTE Fuse information on the rear of the instrument is the most up-to-date.

WARNING



Electrical Shock and Fire Hazards
To prevent reduced safety protection or unwanted fusing, *always* ensure that the code on the fuse cap matches the information printed next to the fuse holders.

Checking

To check a fuse:

1. Disconnect the Cary Eclipse instrument from the mains power supply.
2. Open the hinged cap and pull out the fuse holder (lower red section). Both fuses are held in this fuse holder.
3. Check that each fuse is the correct type and that they are not damaged. If necessary, replace the fuse (refer to Page 38).
4. Place the fuses into the red fuse holder and push this red fuse holder into the main fuse holder and then lower the cap.
5. Reconnect the Cary Eclipse instrument to the mains power supply and turn on the instrument.

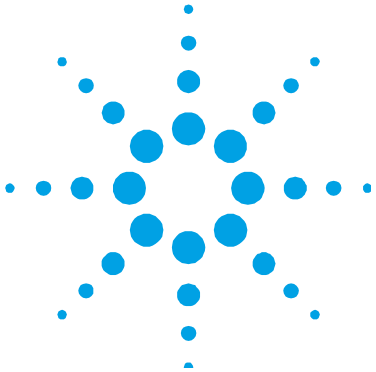
NOTE If a fuse repeatedly blows, it may indicate other problems with the Cary Eclipse instrument.

Spare Parts

Please see the Agilent website for a complete listing of spare parts:

www.agilent.com

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5. Troubleshooting

Instrument offline 42
Connect button instead of Start 42
Instrument performance testing 43

This chapter contains troubleshooting information to help you solve various problems you may encounter when setting up or using your Cary Eclipse.

If you are having problems with your software, check the information in this chapter to see if there is a solution to your problem. You may also find a solution to your problem in the:

- 'Troubleshooting' section of the Help. To view this, open the Cary Eclipse folder on the desktop and then double-click the Cary Eclipse Help. Click 'Troubleshooting' and follow the links.
- Software Status Bulletin documents that were shipped with the Cary Eclipse WinFLR software.

If you still have not found the solution to your problem, contact your local Agilent office or representative.

Instrument offline

Problem

When I start the Cary WinFLR software, the application reports that the instrument is ‘Offline’.

Solutions

- Make sure the computer has been restarted after the Cary Eclipse WinFLR software is installed.
- Check the connection of the main instrument cable (USB-GPIB-HS) attaching the computer to the instrument.
- Ensure the instrument has completed its initialization tests before you start the Cary Eclipse WinFLR software.
- Contact your local Agilent office.

Connect button instead of Start

Problem

When I start the Cary Eclipse WinFLR application, I want to use the ‘Start’ button but it has changed to a ‘Connect’ button — why?

Solution

Check to see if you have any other Cary applications running. If they are not collecting data, click the ‘Connect’ button to get control of the instrument.

Instrument performance testing

Problem

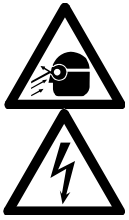
The results of your instrument performance tests do not meet specifications (the results obtained during factory testing are included in the packing crate with the instrument).

Solution

Check the following:

- The sample compartment is empty.
- The cable connecting the instrument to the computer is correctly connected and the retaining screws are tightened.
- The lamp is pulsing during initialization. This is indicated if the green power indicator on the front of the instrument flashes (you should be able to hear the lamp and you should also be able to hear the monochromator and the filter wheel moving). If the lamp is not pulsing you may have a hardware conflict.
- The lamp is correctly aligned (refer to Chapter 4 for instructions on aligning the lamp).

WARNING



Eye and Electrical Shock Hazards
When operating, the lamp module emits high intensity light which can damage eyes. To avoid eye damage, never operate the lamp module outside the instrument.

The lamp module contains components operating at high voltages. To avoid electric shock, *never* disassemble the lamp module.

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In This Guide

The guide describes the following:

- Safety Practices and Hazards
- Introduction
- Installation
- Maintenance
- Troubleshooting

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