

# Agilent Cary 60 Spectrophotometer

## User's Guide



# Notices

## Manual Part Number

G6860-90001

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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

### WARNING

understood and met.

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.

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

Information about safety practices appears throughout the documentation (both hard copy and online) provided with your instrument and accessories to help you safely operate the instrument and accessories. Before using the instrument or accessories, you must thoroughly read these safety practices. ALWAYS operate the instrument and accessories in accordance with these safety practices.

## User Documentation

You have been provided with the following documentation to help you set up and operate your Agilent Cary 60 spectrophotometer:

- Cary 60 Installation Card, with information on unpacking the instrument and setting up the system.
- This manual, with safety practices and hazards information, instructions for installing and maintaining the components of the Cary 60, and troubleshooting information.
- Cary Tutorials which provide step-by-step instructions for installing selected accessories and programming applications.
- Extensive Help (in English only) provided with the Cary WinUV 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 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+F3'.

### NOTE

Throughout this manual, UV Dissolution and UV Fiber Optic Dissolution users should replace "Cary WinUV Software" with "UV Dissolution Software" or "UV Fiber Optic Dissolution Software" respectively.

---

## Notes and Tips

A Note is used to give advice or information.

A Tip is used to give practical hints to help you achieve the best possible performance from your instrument.

## 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.



## General Information

### 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 light that can cause serious damage to eyes. To avoid eye damage, never operate the lamp outside the instrument.

### Modules Covers and Panels

The Cary 60 spectrophotometer module that operators and other personnel will routinely access is the sample compartment module.

The only other cover and panel that is customer accessible is the main cover and lamp module and is to be removed ONLY when changing the lamp module and aligning it. Consult the Cary WinUV Help for instructions and safety information.

Any other panels or covers that are retained by screws on the spectrophotometer and accessories may be opened ONLY by Agilent service engineers.

### Other Precautions

Do not block any ventilation grills present on the computer. Consult the manuals supplied with your PC, monitor and printer/plotter for their specific ventilation requirements.

Allow at least 50 mm (2 in.) of space on the sides, and 150 mm (6 in) at the rear of the system to permit free air circulation.

Use of the Cary 60 system and accessories may involve materials, solvents and solutions that 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 Other Symbols

The following is a list of symbols that appear in conjunction with warnings on the spectrophotometer. The hazard they describe is also shown.

A triangular symbol indicates a warning. The meanings of the symbols that may appear alongside warnings in the documentation or on the instrument itself are as follows.



*Electrical shock*



*Eye hazard*



*Heavy weight  
(danger to feet)*






*Heavy weight  
(danger to hands)*

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.



## General Information

The following symbols appear on the instrument for your information:

	<p>Indicates high voltage Xenon flash lamp operating under this cover. To avoid eye damage NEVER look at the light either directly or via a reflecting surface. ONLY Agilent trained and authorized personnel may remove this cover.</p> <p>Indique qu'une lampe Xénon flash haute tension fonctionne sous ce couvercle. Pour éviter toutes lésions oculaires NE JAMAIS regarder la lumière que ce soit directement ou par l'intermédiaire d'une surface réfléchissante. SEUL le personnel Agilent formé et autorisé peut retirer ce capot.</p>
 	<p>Indicates viewing hole to check the operation of the Xenon flash lamp.</p>

## CE Compliance

Your Agilent Cary 60 spectrophotometer has 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 these directives is indicated by:

- the CE Marking appearing on the rear of the product, and
- the documentation package that accompanies the product containing a copy of the Declaration of Conformity. The Declaration of Conformity is the legal declaration by Agilent that the product complies with the directives listed above and 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 Industrial, Scientific and Medical (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.

## General Information

### 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 판매자 또는 사용자는 이 점을 주의하시기 바라 며 , 가정외의 지역에서 사용하는 것을 목적으로 합니다 .

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## 2

# Specifications

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## Measurement Category

The Measurement category is IEC61010:I. Do not to use this equipment for measurements within measurement categories II, III and IV.

## Pollution Degree

The pollution degree is IEC61010:2. Pollution degree '2' applies to a normal indoor atmosphere.

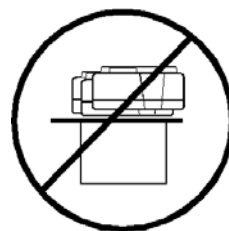
## Environmental Conditions



No draughts



No corrosive fumes



No vibration

**NOTE**

For **optimum analytical performance**, it is recommended that the ambient temperature of the laboratory be between **20 and 25 °C** and be held constant to within  $\pm 2$  °C throughout the entire working day.

The area should have a dust-free, low humidity atmosphere. Air conditioning is recommended. The room should be temperature-controlled if your analyses are particularly sensitive.

Condition	Altitude (m, ft)	Temp. (°C, °F)	Humidity (%RH) non-condensing
Non-operating (transport)	0–4600, 0–15000	-40 to 70, -40 to 158	<90
Operating within performance specifications	0–3100, 0–10000	5–40, 41–104	15–80

## Weights and Dimensions

### Weight

Packed 23 kg (51 lb)

Unpacked 18 kg (40 lb)

### Dimensions (width x depth x height)

Packed 595 x 710 x 350 mm (24 x 28 x 14 in)

Unpacked 477 x 567 x 196 mm (19 x 23 x 8 in)

The Cary 60 has been designed to withstand 10 kg, the approximate weight of a 17 in. LCD monitor.

The workbench should be about 90 cm (36 in) high. Remember to provide space for the computer, monitor and printer.

To avoid damage through spillage of solutions and samples being analyzed, the worktops should be covered with a material that is corrosion resistant and impervious to liquids.

Allow at least two inches of space on both sides, and six inches at the rear of the system to permit free air circulation. Power cord and all other connections are located at the rear of the instrument. The Power switch is located on the front panel.



# Electrical Specifications

## Mains Supply

A standard 3.2 A/12 V plug pack is provided. Power cords are provided based on the user's country requirements. Only the supplied power supply is to be used with this equipment.

**Table 1. System electrical specifications**

System unit	Required supply voltage
Spectrophotometer	90-265 V AC Frequency 47-63 Hz

The maximum power consumption is 60 VA, 38 W, 130 BTU/hr.

The installation of electrical power supplies must comply with the rules and/or regulations imposed by local authorities responsible for the supply of electrical energy to the workplace.

### WARNING



#### Shock Hazard

**Danger of electrocution. Good electrical grounding is essential to avoid potentially serious shock hazards. A 3-wire outlet with ground connection must be provided for the Cary 60. Make certain that power outlets are earth-grounded at the grounding pin.**

All power supplies for the Cary 60 must be single-phase, AC voltage, three-wire system (active, neutral, earth) and should be terminated at an appropriate power outlet receptacle that is within reach of the power cord. For safety reasons, a separate power outlet receptacle should be provided for each unit in the system. The use of extension cords or outlet adaptors is not recommended.

If necessary, replace the power cord only with a cord equivalent to the one specified above.

## Computer Requirements

The Cary 60 was evaluated under Agilent's ISO9001 procedures using Cary WinUV software and a desktop computer. We strongly recommend a computer configuration that matches the system that was used during evaluations.

Processor	Intel Core i5 8500 (3.0 GHz, 9MB cache)
Memory	8GB (1x8GB) DDR4-2666 nECC RAM
Storage	500GB 7200 RPM SATA 6G Hard Drive
Graphics	Intel UHD Graphics 630
Communications	Integrated Intel I218LM PCIe GbE Controller; 2 <sup>nd</sup> HP Serial Port Adapter
Optical Drive	9.5mm Slim DVD Writer
Audio	Integrated Conexant CX20632 5.1 HDA codec
USB	5 USB 3.0 ports, 3 USB 2.0

Locate the PC keyboard and mouse for ergonomically correct access.

## 3 Installation

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Use the following checklist to make sure you have the work area ready to install the Cary 60.

<b>Preparation requirement</b>	<b>Complete</b>
All equipment is on site and has been checked for damage.	<input type="checkbox"/>
The work area meets the environmental requirements (see Page 15).	<input type="checkbox"/>
A suitable workbench is available (see Page 16).	<input type="checkbox"/>
Suitable electrical power supplies are available (see Page 17).	<input type="checkbox"/>
A computer that meets requirements is available (see Page 18).	<input type="checkbox"/>
A working Microsoft Windows operating system is installed on the computer. For instructions on installing this, refer to the documentation supplied with the operating system.	<input type="checkbox"/>
The Cary 60 has been unpacked (see Page 20).	<input type="checkbox"/>

### Installation

The Agilent Cary 60 spectrophotometer is designed to be completely customer-installable. Instructions for setting up the system are included in the Cary 60 Installation Card supplied with the instrument and in the following sections.

If you are installing the Agilent Cary WinUV Pharma software, follow the software installation instructions provided with the software and then go to 'Installing the Hardware' on Page 22.

Installation includes:

- Unpacking.
- Installing the Cary WinUV software.
- Installing hardware.
- Validating and registering your Cary 60 and Cary WinUV software.
- Running the tutorials.

## Unpacking

### WARNING



#### Heavy Weight

**The Cary 60 weighs 18 kg. 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.**

---

After accepting delivery, take the equipment to the installation site. Agilent instruments are inherently robust, and the packaging is designed to prevent internal damage. However, the contents form part of a precision measuring system and all packages should be handled with care. In transit, sharp jolts must be avoided and the packages should not be inverted or tilted unnecessarily. Markings on the shipping cartons generally indicate which side of the package should be kept on top.

Unpacking the equipment is your responsibility. As the packages are opened, ensure you received everything you ordered. If there are any discrepancies, notify the supplier. If any items are found to be damaged, immediately notify the carrier and supplier.

You should have received:

- 1x Cary 60 spectrophotometer
- 1x power supply and power cable
- 1x USB cable
- 1x Cary WinUV software installation UFD
- This manual

## Installation

### NOTE

Accessories ordered are not listed here.

---

Any differences from the original order should be referred immediately to your Agilent sales office. All contents of the shipping packages should be assembled together when installation is to be carried out by Agilent service personnel. Do not discard any packaging components or filler materials.

### To unpack the Cary 60 spectrophotometer:

- 1 Open the packing box.
- 2 Two people should lift the Cary 60 from the packaging.

### Installing the Cary WinUV Software

- 1 Turn on the computer.

### NOTE

If the Agilent Cary WinUV icon is already present on the computer desktop, go to the 'Installing the Hardware' section on Page 22.

---

- 2 Insert the Cary WinUV UFD into the computer's USB drive and run 'AgilentCaryWinUVSetup.exe'.

### NOTE

The installation program should automatically launch. If it does not, navigate to the UFD and double click on AgilentCaryWinUVSetup.exe.

---

- 3 Click **Yes** if a 'User Account Control dialog appears.
- 4 Follow the on-screen instructions.
- 5 Follow the prompts for the 'Device Driver Installation Wizard'. Ensure the 'Always trust software from "Agilent Technologies, Incorporated"' box is checked and select **Install**.
- 6 Click **Finish** when the installation is complete.

## Installing the Hardware

### To install the Cary 60 hardware:

- 1 Plug in the USB cable.

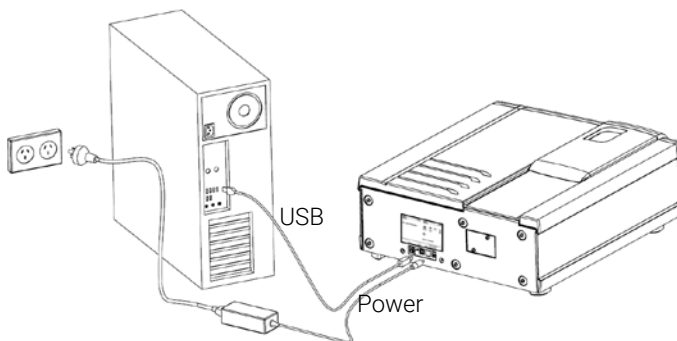


Figure 1. Hardware connections

- 2 Connect the power supply to the power cable and then plug in to the Cary 60 and wall power outlet. See Figure 1.
- 3 Turn on the computer (if it is not already on).
- 4 Turn on the Cary 60 (Figure 2) and wait 2 minutes for calibration to complete.



Figure 2. Power button and serial number location

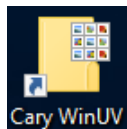
- 5 Remove the UFD.
- 6 Shut down and restart the computer.

## Registering and Validating Your Cary 60

### To register and validate your Cary 60:

- 1 Double-click the Cary WinUV icon on your computer desktop.

## Installation



- 2 Double-click the 'Validate' application.  
The Agilent Software Registration dialog box appears.
- 3 Click **Next** and follow the instructions.

### NOTE

The product key is found on the UFD case.

- 4 Click **Add** next to the 'Instrument Model' section of 'Product Details' dialog box.
- 5 Choose **Cary** from the 'Instrument Type' drop-down box.
- 6 Select the Model Name.
- 7 Enter the Cary 60 serial number. See Figure 2.
- 8 In the Accessories section, repeat Steps 4-7 for all accessories ordered.
- 9 Click **Next** and follow the instructions to finish registration.
- 10 Click **Start** when the Validate application appears.

### NOTE

The validation process takes approximately 7 minutes to complete.

- 11 Once validation is finished, print the generated report and then close the Validate application.

## Running the Tutorials

To run the Cary 60 tutorials, double-click the tutorial icon on your computer desktop.

The following tutorials are provided to get you started using the Cary WinUV software:

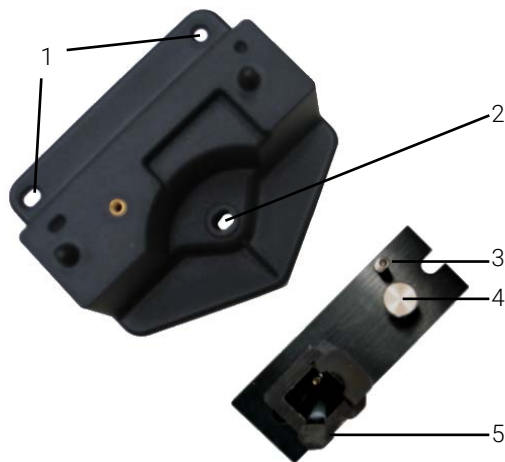
- Cary WinUV overview – describes the software layout, how to specify report settings and how to save and open methods.
- Measuring a sample at one or more wavelengths – describes how to perform absorbance readings of samples using the Simple Read application.
- Measuring multiple samples using the Multicell Holder accessory – describes how to measure multiple samples using the Advanced Reads application.
- Running a wavelength scan – describes how to scan multiple samples using the Scan application.

- Running a Concentration experiment using a Fiber Optic Dip Probe accessory – describes how to use the probe for rapid sample measurements.
- Running a temperature controlled single cell Kinetics experiment – describes how to use the Kinetics application to calculate reaction rates from absorbance versus time data.

To access the Cary WinUV Help either open the Cary WinUV folder on the computer desktop and then double-click the Cary WinUV Help, or press F1 on your keyboard with a Cary WinUV application open.

## Cell Holder

A Microcell Holder is supplied as standard with the Cary 60. Follow the instructions below to install and align it.



**Figure 3. Cell holder base (left) and Microcell Holder**

- |   |                                      |
|---|--------------------------------------|
| 1. Locating holes                       | 4. Microcell Holder thumbscrew       |
| 2. Cell holder base thumbscrew location | 5. Cell lifter                       |
| 3. Adjustment screw                     | 6. Hexagonal ball driver (not shown) |

## Installation

To install the Microcell Holder:



## Installation

- 1 Place a microcell in the Microcell Holder (if the cell has ground glass sides or sides featuring the Cary logo, hold the cell by these sides) and check that the cell aperture is vertically centered in the cell holder aperture.
- 2 If the cell aperture is not at the correct height, remove the cell and adjust the adjustment screw in the Microcell Holder accordingly using the hexagonal ball driver (2.5 mm). Replace the cell in the Microcell Holder.
- 3 Slide back the sample compartment lid. See Figure 4.



**Figure 4. Cary 60 showing the sample compartment lid (1) and front door (2)**

- 4 Remove the sample compartment front door. See Figure 4.
- 5 If not already fitted, install the cell holder base in the sample compartment as follows:
  - a Place the cell holder base in the sample compartment, aligning the two locating holes over the two locating pins in the floor of the sample compartment.
  - b Firmly tighten the thumbscrew on the cell holder base (item 2 in picture above).
- 6 Place the Microcell Holder on the cell holder base by aligning the holes in the Microcell Holder over the raised black knobs in the cell holder base.
- 7 Tighten the thumbscrew on the Microcell Holder.

You should now align the Microcell Holder.

## Alignment

To align the Microcell Holder:

- 1 Double-click Align in the Cary WinUV folder located on the computer desktop.
- 2 Select the Cary tab.

- 3 Under Instrument Parameters, set the wavelength to 0 nm (white light) by selecting Zero Order.
- 4 Click Apply. The green power indicator on the instrument should start flashing to indicate that the instrument is active.
- 5 Place a cell in the Microcell Holder (if you have not already done so).
- 6 Place a small piece of white paper in the light path to the right of the cell. 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 in the 'Installation' section on Page 24.)
- 7 Using the hexagonal ball driver (2.5 mm), adjust the Microcell Holder adjustment screw (item 5 in picture above) 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 60, such as the Solid Sample Holder. Instructions for their use are included in the Help provided with the Cary WinUV software.

## Installing Accessories

For installation of all accessories to the Cary 60, please refer to the Cary WinUV Help. To access the Help, open the Cary WinUV folder on the computer desktop, double-click **Cary WinUV Help**, and then click **Accessories**. Also see the manual or instructions that came with the accessory.

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### Instrument Overview



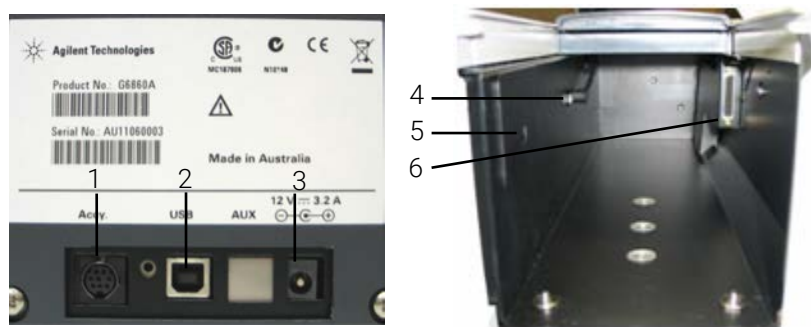
**Figure 5.** Cary 60 showing the sample compartment lid (1), sample compartment front door (2) and power button (3)

### Indicator Lamp

The indicator lamp on the power button has several conditions:

Color	State	Description
Green	Static on	Powered on; instrument is calibrated/initialized and not scanning.
	Flashing	Scanning (no fault condition exists).
Orange (yellow)	Static on	Instrument initializing (not scanning).
	Flashing	Scan in progress while initializing/calibrating.
Red	Static on	Initialization or calibration failed. Instrument is still allowed to operate.
	Flashing	Instrument is scanning after initialization or calibration has failed.

## Connections



**Figure 6. Back and sample compartment connectors**

Where:

1. 8-pin Mini Din socket at the back of the instrument for accessories.
2. USB Type B connector at the back of the instrument for connection to the computer.
3. 5.5/2.5 mm power jack at the back of the instrument for the 12 V power supply.
4. 8-pin DIN connector in the left side of the sample compartment for the diode detector.
5. 3.5 mm phono jack socket in the left side of the sample compartment for accessories.
6. 25-pin D-range connector in the right side of the sample compartment for accessories.

## Using the Software

For information on how to use the software, please see the Cary 60 Tutorial and the Cary WinUV Help installed on your computer during the Cary WinUV software installation.

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This chapter contains troubleshooting information to help you solve various problems you may encounter when setting up or using your Cary 60 hardware. If the suggested solutions do not fix the problem, please contact your local Agilent field service engineer or representative.

### Access Denied

#### Problem

During installation of the Cary WinUV software, you see an 'Access is denied' message.

#### Solution

You must be logged on with administrator rights to install the Cary WinUV software.

- 1 Click the Windows **Start** button > **Log Off**.
- 2 Log on as an Administrator or ask your Administrator to log on for you.
- 3 Uninstall the Cary WinUV software.
  - a Right-click **Start > Apps and features**
  - b Select **Agilent Cary WinUV**.

- c Click **Uninstall** and then **Yes** if a 'User Account Control' dialog appears. Follow the instructions on the screen.

**NOTE**

You will need to contact your local Agilent office, as a service call will be required to uninstall Cary WinUV Pharma software.

- 
- 4 Uninstall the Cary 60 Driver.
    - a Click **Start > System > Apps and features**.
    - b Select Windows Driver Package - Agilent Technologies **Agilent Cary-60 USB Driver**.
    - c Click **Uninstall** and then **Yes** if a 'User Account Control' dialog appears. Follow the instructions on the screen.
    - d Restart the computer.
    - e Re-install the Cary WinUV software according to the Cary 60 Installation Card or in the 'Installation' chapter in this manual.

## No Green Light Indicating that the Cary 60 is Powered

The Cary 60 is powered from an external power supply. A green power indicator light on the front of the Cary 60 indicates when the instrument is powered.

### Problem

The power indicator on the Cary 60 does not light when it is switched on.

### Solution

Check the connection of the Cary 60 to the external power supply.

## Start Button Replaced with Connect Button

### Problem 1

I have a 'Connect' button instead of a 'Start' button.

## Troubleshooting

### Solution

Only one Cary application at a time can communicate with the instrument. If you want to change to another application you can press the 'Connect' button to bring this application online.

When you turn on the Cary 60, it performs an initialization routine. If you start another application such as Scan etc., before this initialization has finished, the application's 'Start' button will be grayed out. Wait for the status line at the bottom of the application to display 'Idle' and the 'Start' button will become active.

### Problem 2

The 'Start' button will not become active or the 'Connect' button will not change to 'Start'.

### Solution

If the Cary WinUV software cannot locate the Cary 60, the 'Start' button will not become active or the 'Connect' button will not change to 'Start'. This could be caused by:

- the power supply not connected
- the USB cable not connected
- the Cary 60 driver not installed
- A defective Cary 60 main board. Contact your Agilent field service engineer to replace this board if fixing the problems listed above does not help.
- Reboot the Cary 60 and wait for the power LED to turn solid green
- Reboot the controlling PC

## Absorbance is 10 Abs and Fluctuates Wildly During a Scan

### Problem

The Cary 60 is reporting 10 Abs and a scan like that shown below is displayed on the screen:

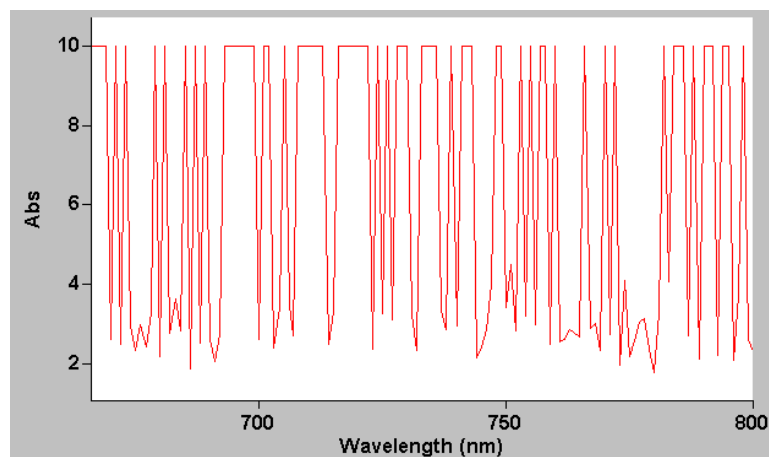


Figure 7. Wild absorbance fluctuation during a scan

### Solution

The detector cable inside the Cary 60's sample compartment is not connected. Check that the 8 pin plug on the left side of the sample compartment is firmly plugged in.

The sample compartment is empty.

The beam inside the sample compartment is not clipped.



# 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 lamp is pulsing. This is indicated if the green power indicator on the front of the instrument flashes (you should also hear the monochromator and the filter wheel moving). You should also turn the instrument on its side and look through the small lamp viewing hole in the base of the instrument while the instrument is scanning.
- The lamp is correctly aligned (refer to the Cary WinUV Help for instructions on aligning the lamp).
- 'Uncalibrated' appears on the 'Calibration' tab in **System Information**. To open System Information, double-click the Cary WinUV folder on the computer desktop, and then double-click on the 'System Information' icon. If the text reads 'Uncalibrated' on the 'Calibration' tab turn the Cary 60 off and then back on again. Wait for the instrument to finish initializing and calibrating. When the calibration routine finishes, the text will change to 'Calibrated'. Your instrument is now calibrated and is ready to use.

Repeat the Instrument Performance Test suite in Validate.

# Wavelength Calibration

## Problem

The position of an absorption (transmission or reflectance) peak appears to shift over a prolonged period of time.

## Solution

Restart the Cary 60. The calibration procedure occurs automatically on start up. Agilent recommends that as part of your standard operating procedure you restart the Cary 60 monthly. Perform the Instrument Performance Test suite in 'Validate' to ensure the instrument results meet specification.

## Front Panel LED Troubleshooting

### LED Won't Light Up

#### No power to the instrument.

Check power cables and power point switches (if applicable).

#### Solid Red LED

The instrument is available to use but the previous initialization or calibration has failed.

#### Initialization or calibration failed.

Check or perform the following:

- The sample compartment for items blocking the beam.
- The cuvette is inserted correctly and clean.
- Reboot the Cary 60.
- Contact your local Agilent field service engineer or representative.

#### Flashing Red LED

The instrument is scanning but the previous initialization or calibration has failed.

#### Initialization or calibration failed.

Check or perform the following:

- The sample compartment for items blocking the beam.
- The cuvette is inserted correctly and clean.
- Reboot the Cary 60.
- Contact your local Agilent field service engineer or representative.

## 6 Maintenance and Spare Parts

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### Maintenance

Any procedures not specifically mentioned in this chapter or in the Cary WinUV Help should be carried out only by Agilent field service engineers.

#### WARNING



#### Eye Hazard

**This instrument contains an intense light source. Direct viewing of the light source will cause eye damage. Operators and other unauthorized personnel must NEVER remove the main cover.**

#### NOTE

This section refers only to maintenance procedures for the instrument. You should refer to your PC and printer manuals for their maintenance procedures, and to the Cary WinUV Help for the maintenance procedures for any accessories you ordered.

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

The exterior surfaces of the Cary 60 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.

For additional maintenance procedures, please see the Help provided with the Cary WinUV software.

### Spare Parts

The following spare parts are available for use with your Cary 60 spectrophotometer. Always use Agilent-supplied spare parts, unless otherwise indicated.

Part	Part Number
Sample compartment lid	6210133900
Sample compartment front door	110855700
USB cable – 3 m gray	8121-0905
Cary 60 power supply	G6860-61008
Lamp module	110639690

Ordering details for other Cary 60 accessories are available on the Agilent Technologies website, [www.agilent.com](http://www.agilent.com)



## In This Book

The manual describes the following:

- General Information and Safety Practices and Hazards
- Specifications
- Installation
- Introduction
- Troubleshooting
- Maintenance and Spare Parts

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