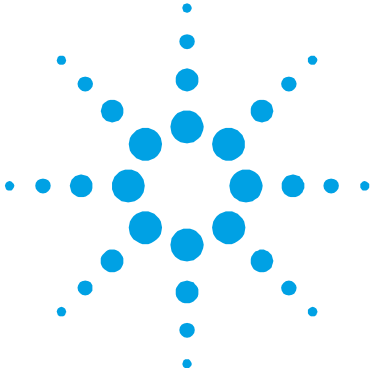

# Cary Eclipse

## Pre-Installation Manual

Agilent Technologies

# Notices



## Manual Part Number

8510174000

## Edition

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Printed in Australia

Agilent Technologies, Inc.

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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.**

## Request for Installation

All preparations have been completed. Please arrange for the installation to be completed as soon as possible. I understand that if the installation site is not prepared in accordance with the enclosed instructions, additional installation charges may apply.

Company name: _____

Company address: _____

_____

_____

Name: _____

Position: _____

Telephone: _____

Preferred installation date: _____

Signed: _____

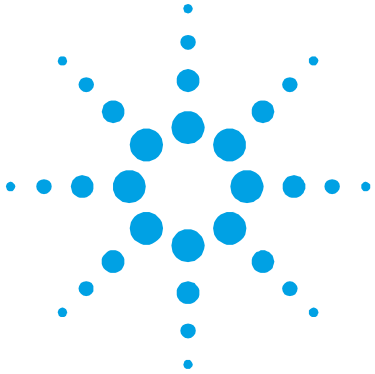
Date: _____

## Pre-Installation Checklist

Your site must meet all requirements before you request installation. Before unpacking the boxes, complete each requirement listed in the table. After completing each requirement, place a check in the appropriate checkbox. Ensure you compare each item inside the boxes with the packing list supplied with the boxes.

| **Requirements** | ☑ |
|---|---|
| The work area has been prepared and meets requirements (see Chapter 3). | ☐ |
| The power supply meets requirements (see Chapter 4). | ☐ |
| The optional nitrogen optics purge gas supply meets requirements (see Chapter 5). | ☐ |
| The Cary Eclipse and any accessories are on site and unpacked (see Chapter 6). | ☐ |
| The computer system meets requirements, and the Microsoft® Windows® operating system and Internet Explorer 4+ have been installed (see Chapter 7). | ☐ |
| A quartz fluorescence cell is available. | ☐ |
| Operator training is required (see Chapter 8). | ☐ |

# Contents



# 1. Introduction

The Agilent Cary Eclipse fluorescence spectrophotometer is designed to provide a complete analysis system for fluorescence, phosphorescence and chemiluminescence measurements. All Cary Eclipse instruments are tested and proven to specification before dispatch from the manufacturing plant.

This manual contains general information relevant to the preparation of an installation site, and details the facilities that must be provided to ensure that the system can be properly and safely operated. Detailed operating procedures are provided in the Cary Eclipse software online Help, and in the operation manual supplied with the instrument.

Installation of the Cary Eclipse is carried out by Agilent trained and qualified field service engineers. Before the representative attends your site to perform the installation, complete the pre-installation checklist on Page 4, then send a copy of the checklist to your local Agilent sales and service office or Agilent agent dealing with the installation of your equipment. On receipt of this document, the Agilent representative will contact you to arrange a convenient time for installation.

Typical installation for a standard Cary Eclipse system will be completed within four hours and the system will be ready for use. However, this time will be extended if the system includes major accessories. The installation time can be kept to a minimum by ensuring proper site preparation and easy access to all equipment.

**NOTE** The remainder of this manual contains information such as the environmental requirements and technical specifications for the Cary Eclipse, and it should not be discarded — keep this manual for future reference.

---

Your local Agilent office is:

Agilent office card to be attached here.

# 2. Safety Practices and Hazards



## Warning and caution messages

Carefully read all warnings and cautions and observe them at all times.

A Warning message is used in the text when failure to observe instructions or precautions could result in death or injury. Warnings have the following format:

---

**WARNING**

**Hazard Type**
**Nature of the hazard, information on how to avoid the hazard, and possible consequences if you don't.**

---

The triangular symbols that appear in conjunction with warnings are outlined in the next section.

A Caution message is used when failure to observe instructions could result in damage to equipment (Agilent supplied and/or other associated equipment). Cautions have the following format:

**CAUTION** Caution information appears here.

## Information symbols

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

*Broken glass*

*Corrosive liquid*

*Ejecting parts*

*Electrical shock*

*Eye hazard*

*Fire hazard*

*Heavy weight (danger to feet)*

*Heavy weight (danger to hands)*

*Hot surface*

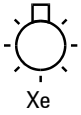
*Moving parts*

*Noxious gas*

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:

When attached to the rear of the instrument, indicates that the product complies with the requirements of one or more EU directives.




Indicates that a high voltage xenon flash lamp is present.

## US FCC advisory statement

The following is a United States Federal Communications Commission advisory statement:

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and operated in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case the user at his or her own expense, will be required to take whatever measures may be required to correct the interference.

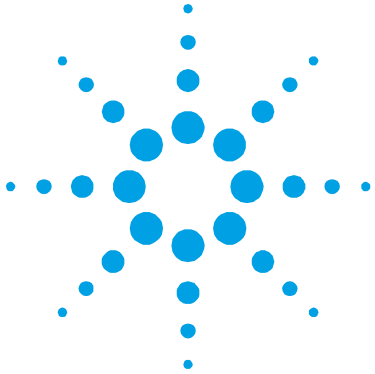
## CE compliant products

The Cary Eclipse has been designed to comply with the requirements of the Electro-magnetic 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 European Norm, EN, and 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. It is signed by Agilent's Authorized Representative in the EU, and by a representative from the manufacturing plant.



# 3. Work Area



## Suitability

The Cary Eclipse instrument is suitable only for indoor use. It is suitable for these categories:

- Installation category II
- Pollution degree 2
- Safety class 1 (EN 61010–1)

## Environmental conditions

You are responsible for providing an acceptable operating environment. Attention paid to the operating environment will ensure the continued high performance of your Cary Eclipse instrument. The instrument warranty will be made void if the equipment is operated in sub-standard conditions.

**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 |
| Non-operating but meeting dielectric strength tests | Sea level | 5–40, 41–104 | 90–95 |
| Operating but not necessarily meeting performance specifications | 0–2000, 0–6562 | 5–31, 41–88<br>31–40, 88–104 | ≤80<br>≤[80-3.33(t-31)] |
| Operating within performance specifications | 0–853, 0–2800<br>853–2133, 2800–7000 | 10–35, 50–95<br>10–25, 50–77 | 8–80 |

**CAUTION** Operating specifications for the computer, monitor and printer/plotter may differ from those required for the instrument. You must check the literature provided with these devices and arrange the operating environment to suit the complete system.

### Temperature

Air-conditioning is recommended. The room should be temperature-controlled if your analyses are particularly sensitive.

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.

**NOTE** As work area temperature increases, system reliability decreases. All electronic components generate heat while operating. This heat must be dissipated to the surrounding air if the components are to correctly operate.

### Humidity

The relative humidity of the operating environment should be between 8 and 80% with no condensation. Operating a Cary Eclipse in very low humidity may result in the accumulation and discharge of static electricity, which shortens the life of electronic components. Operating at high humidity will produce condensation and result in short circuits.

Agilent recommends that your work area is equipped with a temperature/humidity monitor. This will ensure that your work area is always in conformance with the temperature and humidity specifications.

### Particulate matter and fumes

Sample preparation areas and materials storage facilities should be located in a separate room. For optimum performance, the area should have a dust-free, low humidity atmosphere. A layer of dust on the electronic components could act as an insulating blanket and reduce heat transfer to the surrounding air.

**CAUTION** The Cary Eclipse is designed for operation in clean air conditions. The work area must be free of all contaminants that could have a degrading effect on the instrument components. Dust, acid and organic vapors must be expelled from the work area.

### Exhaust system

It is your responsibility to provide an adequate exhaust system. An exhaust system is not required for normal operation of the instrument but should be installed if substances giving off toxic vapors are to be analyzed.

## Workbench

The Cary Eclipse system is designed to sit on a workbench that is wide enough to allow easy access to all system units and sturdy enough to support their combined weight.

**Table 2.** Equipment weights and dimensions

| System unit | Weight (kg, lb) | Width (mm, in) | Depth (mm, in) | Height (mm, in) |
|---|---|---|---|---|
| Cary Eclipse | 31, 68 | 600, 24 | 610, 24 | 280, 11 |
| Computer (typical) | 20, 44 | 520, 20 | 520, 20 | 400, 16 |
| Printer (typical) | 5.5, 12 | 380, 15 | 300, 12 | 120, 5 |

The bench tops should be large enough to permit a free circulation of air around each device. Remember to provide space for the computer, monitor and printer/plotter.

The workbench should be approximately 90 centimeters (36 inches) high.

**Table 3.**Recommended space behind and in front of the system

| Recommendation | Purpose | Recommended distance (mm, in) |
|---|---|---|
| Allow adequate space behind the system | Provide clear space for air circulation, gas, electrical and communication connections. | 110–200, 4–8 |
| Allow adequate space in front of the system. | Some accessories attach to the front of the instrument. These may overhang the bench if adequate space is not allowed. | 150, 6 when using the Extended Sample Compartment and thermostatted accessories. |

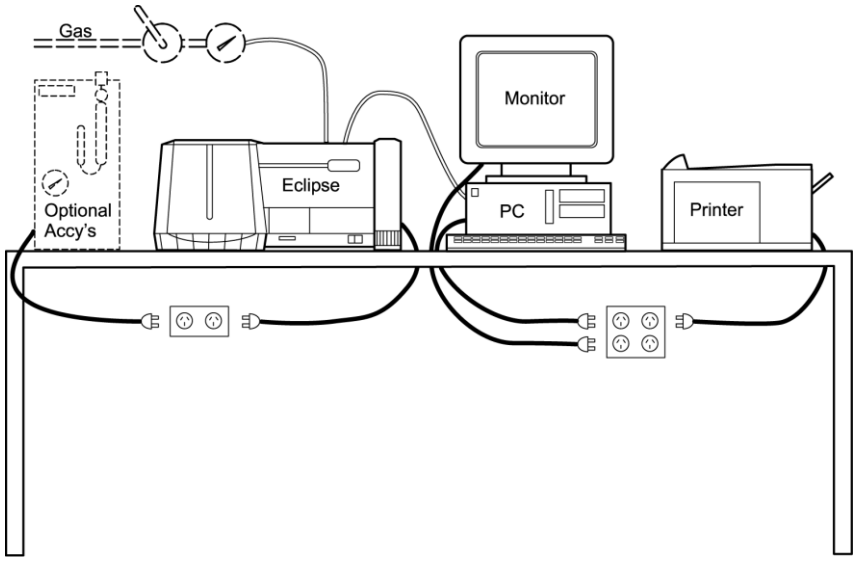



**Figure 1.** Recommended system layout

**NOTE** The gas line is required only if nitrogen purging of the optical windows and sample compartment are required.
Optional accessories may or may not require a power connection.

To avoid damage from spillage of the samples being analyzed, the bench tops should be covered with a material that is corrosion-resistant and impervious to liquids.

### Vibration

Ensure that workbenches are free from vibration. If possible, any equipment generating vibration during operation should be installed on the floor rather than alongside the system on the workbench.

☑ After the work area has been prepared and requirements have been met, check the checklist box: *The work area has been prepared and meets requirements.*

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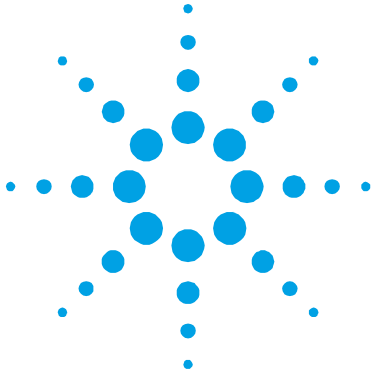

# 4. Electrical Specifications



## Mains supply

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**

**Electrical Shock Hazard**

**Good electrical grounding is essential to avoid potentially hazardous shock hazards. A 3-wire outlet with ground connection must be provided for the instrument. Ensure that power outlets are earth-grounded at the grounding pin.**

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

All Cary Eclipse instruments are supplied with a 2 meter (6 feet, 6 inch) long power cord and three-pin plug assembly that is compatible with common standards applicable in most areas.

Avoid using power supplies from a source that may be subject to electrical or RF interference from other services; for example, large electric motors, elevators, and welders.

**Table 4.** Mains voltage requirements

| System unit | Required supply voltage | Power rating (typical) |
|---|---|---|
| Cary Eclipse | 85–264 VAC, 47–63 Hz | 180 VA |
| Computer | 100, 120, 220, 240 VAC, 50/60 Hz | 300 VA |
| Printer | 100, 120, 220, 240 ±10% VAC, 50/60 ±1 Hz | 100 VA |

**NOTE** This table is indicative only. Refer to the literature provided with the computer and printer for details of individual power requirements.

## Fuses

Two fuses are used in the Cary Eclipse. Both are of type:

T3.15 AH 250 V IEC [2] Sheet 5 5 x20 mm

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

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

## External connections

Consult your computer, monitor and printer/plotter manuals for details of their individual cabling requirements, as well as the Cary Eclipse Hardware manual for details of the electrical connections required for operating the optional accessories.

### Mains inlet coupler

3/2 A 120/250 VAC 50–60 Hz IEC type

### Mains power cord

| Country | Mains power cord | Plug |
|---|---|---|
| Australia | 10 A 250 VAC | Complies with AS3112 |
| USA | 10 A 125 VAC | Complies with NEMA 5–15P |
| Europe | 6 A 250 VAC | Complies with CEE7 sheet vii or NFC61.303 VA |

### Rear

IEEE 488 (GPIB Cary Eclipse system connection)

### Front

25-way D-range (external accessory connection)

### Sample compartment

25-way D-range (internal accessory connection)
15-way D-range (internal accessory connection)
9-way D-range (internal accessory connection)

☑ After the power supply requirements have been met, check the checklist box: *The power supply meets requirements.*

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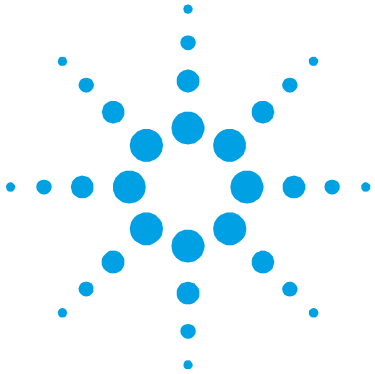


# 5. Optional Nitrogen Supply

The Cary Eclipse is fitted with a connection point for purging of the sample compartment windows and sample compartment. Purging may be required when using low temperature accessories that could cause condensation to form on the windows or cells as they cool. More details are provided in the Cary Eclipse software online Help.

Nitrogen supplies are not available from Agilent, but may be obtained from commercial suppliers. Liquid nitrogen (in conjunction with a heat exchanger) is recommended because it is generally less costly than compressed nitrogen and is of better quality. Where compressed nitrogen must be used, the gas must be dry, oil-free and uncontaminated.

**CAUTION** Do not use compressed nitrogen from a supplier who uses oil or water in the compression process. These methods leave fine particles of oil or water suspended in the nitrogen that may be deposited on the instrument optics. Only use nitrogen from a supplier who fills containers from immersion pumps that are lubricated with liquid nitrogen.

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

All gas supply installations must comply with the rules and/or regulations that are imposed by the local authorities responsible for the supply of compressed gas energy to the workplace.

Portable cylinders containing gas under pressure should be kept vertical and firmly secured to a rigid structure. The storage area must be well ventilated. Never locate gas cylinders near a source of ignition or in a position that is subject to direct heat. Gas storage cylinders often incorporate a pressure relief device, which will discharge the gas at a pre-determined temperature, usually around 52 °C (125 °F).

If gases are to be plumbed from a remote storage area to the instrument site, ensure that the local outlets are fitted with shut-off valves and suitable regulators that are easily accessible to the instrument operator.

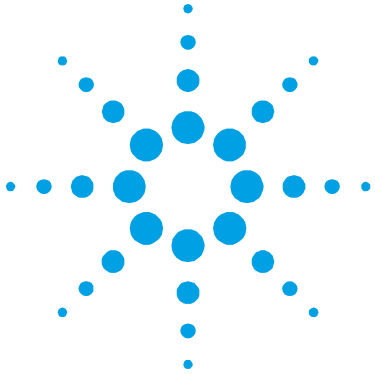
Nitrogen supply tubing should be clean, flexible plastic tubing of 6 millimeters (1/4 inch) internal diameter (Tygon polyvinylchloride or equivalent).

**CAUTION** Do not use rubber tubing, as this is usually treated internally with talc, which will be carried into and contaminate the instrument optics.

Operating pressure for the nitrogen purging system is recommended at up to 70 kPa (10 psi). Use a suitable regulator and gauge assembly to ensure that the nitrogen supply is maintained at correct pressure.

The nitrogen system should include a manifold assembly with inlet from the supply and two outlets for connection to the instrument. Manifold outlets should each be fitted with a stop valve and flow meter for control of gas flow to the instrument. Flow meters should be adjustable for flow rates of 0 to 30 liters per minute (0 to 64 cubic feet per hour).

☑ After the optional nitrogen optics purge gas supply requirements have been met, check the checklist box: *The optional nitrogen optics purge gas supply meets requirements.*



# 6. Equipment On Site



## Insurance

As the carrier's liability ceases when the equipment is delivered, Agilent recommends that the instrument owner arranges separate insurance to cover transportation from the delivery point to the installation site. The delivery point will vary according to the carrier, the shipping method and in some cases the terms of sale. Some carriers will deliver only to their own distribution centre, while others may deliver to the actual installation site.

## In-house transit routes

Before arranging for delivery of the Cary Eclipse to your facility, make sure that all passages to the site of installation are at least 1.1 meter (3.6 feet) wide. Allow additional room for maneuvering the shipping container around corners and/or through doors. Vertical, horizontal and turning clearances should be calculated from the shipping carton dimensions of the spectrofluorometer, which is the largest unit in any system configuration.

**Table 5** Shipping weights and dimensions

| System unit | Weight (kg, lb) | Width (mm, in) | Depth (mm, in) | Height (mm, in) |
|---|---|---|---|---|
| Cary Eclipse | 54, 119 | 820, 32 | 760, 30 | 560, 22 |
| Computer (typical) | 34, 75 | 1200, 48 | 600, 24 | 320, 23 |
| Printer (typical) | 7.5, 17 | 580, 23 | 550, 22 | 320, 17 |

## Inspecting for transit damage

Transit damage can be obvious or concealed and in either case will be admitted by the carrier only if it is reported within the terms of the carrier's agreement. For any claims against damage in transit, these general rules apply:

- Before accepting delivery, you must inspect the packages for signs of obvious damage. The nature of any obvious damage must be noted on the carrier's waybill, which then must be countersigned by a representative of the carrier.
- Within the time limit stated in the terms and conditions of carriage, a further inspection must be made for concealed damage. If any damage is found at this stage, the carrier must be notified in writing. You must retain all packaging material for subsequent inspection by a representative of the carrier.
- A copy of any damage report must be forwarded to the Agilent sales office dealing with the supply of the equipment.

---

**WARNING**

**Heavy Weight Hazard**

**Many of the packages are large and heavy. To avoid the chance of injury to personnel or accidental damage to the equipment, always use two or more people when handling the packages or lifting equipment into position. NEVER attempt to lift the packages alone.**

---

## Unpacking

After accepting delivery, take the equipment to the installation site, then unpack and check the contents. 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 unnecessarily inverted or tilted. Markings on the shipping cartons generally indicate which side of the package should be kept on top.

---

**WARNING**

**Heavy Weight Hazard**

**Many of the packages are large and heavy. To avoid the chance of injury to personnel or accidental damage to the equipment, always use two or more people when handling the packages or lifting equipment into position. NEVER attempt to lift the packages alone**

---

Unpacking of the equipment is your responsibility and instructions are provided with the spectrofluorometer. As the packages are opened, the contents should be checked against the enclosed packing lists and 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.

☑ After the unpacking and placement requirements have been met, check the checklist box: *The Cary Eclipse and any accessories are on site and unpacked.*

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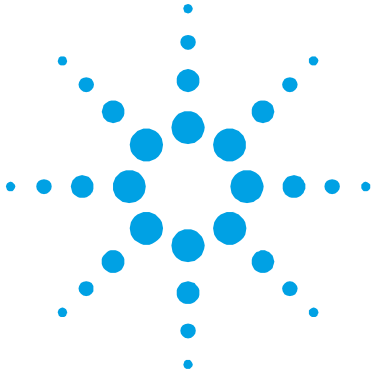


# 7. Computer System Requirements



## Minimum and recommended configurations

The minimum configuration (see Table 6) represents the absolute minimum computer specifications you will require to operate the Cary Eclipse. The recommended configuration is provided to allow sourcing of a new computer to be used with the instrument.

Agilent can supply a computer for the Cary Eclipse software in the recommended configuration (see Table 6), as part number 7910026300. The computer will be formatted, partitioned and loaded with Microsoft Windows 98. All software disks and manuals will be supplied.

**NOTE** Computers supplied with Letter of Credit orders will be an international brand and will be the recommended configuration or better.

Better computer components can be substituted for those listed. For example, processor type, amount of memory, screen size and resolution, operating system version, and so on.

**Table 6.** Minimum and recommended computer requirements

| Minimum | Recommended |
|---|---|
| IBM compatible | IBM compatible |
| Intel® Pentium® II processor | Intel Pentium II processor |
| 32 MB RAM | 64 MB RAM |
| 200 MB free space on hard disk | 500 MB free space on hard disk |
| 3.5 in 1.44 MB floppy disk drive | 3.5 in 1.44 MB floppy disk drive |
| Video card supporting 800 x 600 resolution, high color (16 bit) mode | Video card supporting 800 x 600 resolution, high color (16 bit) mode |
| Super VGA screen | Super VGA screen |
| 16 x CD-ROM drive | 24 x CD-ROM drive |
| 16 bit sound card | 16 bit sound card |
| Windows 101 key keyboard | Windows 101 key keyboard |
| Microsoft or compatible mouse | Microsoft or compatible mouse |
| One spare PCI expansion slot | One spare PCI expansion slot |
| Microsoft Windows 98 or Windows NT® (including Service Pack 4 or later) | Microsoft Windows 98 or Windows NT (including Service Pack 4 or later) |
| Microsoft Internet Explorer 4 or later is required for Windows NT systems | Microsoft Internet Explorer 4 or later is required for Windows NT systems |

## Recommended printer

You can use any printer supported by your Microsoft Windows operating system.

## Setting up your computer

The Cary Eclipse software requires the Microsoft Windows 98 or Windows NT operating system to be installed on your computer. For instructions on installing Windows, refer to the documentation supplied with your operating system.

**NOTE** The Cary Eclipse software is **not** supported for use on Windows 95 operating systems.

Ensure that you have your display resolution set to at least 800 x 600 pixels and that the color palette is set to High Color (16 bit). For instructions, refer to the documentation supplied with your operating system.

**NOTE** The Agilent representative will install the Cary Eclipse software. Installation of the Windows operating system is **not** included as part of the standard instrument installation.

## Internet browser

When installing on Microsoft Windows NT operating systems, it is important that Microsoft Internet Explorer 4 or later be installed **before** installing the Cary Eclipse software. Installation of the browser is required to provide files required for the Cary Eclipse online Help to function. Internet Explorer 4 can be downloaded from the Microsoft Web site, www.microsoft.com, or obtained from your local software retailer. You can continue to use your preferred browser, and shortcuts to the Internet Explorer 4 program can be removed from the desktop and program selection, if desired.

**NOTE** A Windows update disk (containing Internet Explorer 4) is shipped with the Cary Eclipse software.

If you are using Windows 98, no browser installation is required, as the required browser files are installed with the operating system.

## IEEE 488 interface

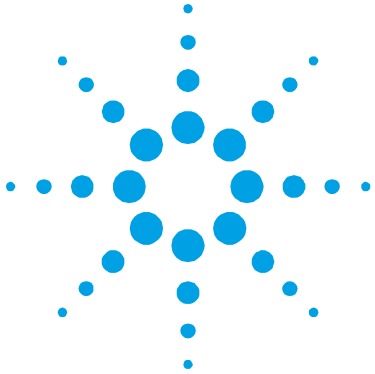
The Cary Eclipse requires an IEEE-GPIB card to be fitted in the computer. This card is included with your instrument.

The Agilent representative will install the GPIB card in your computer. If you are providing your own computer, you will need to install the card yourself. The Cary Eclipse Hardware manual supplied with the instrument contains installation instructions for the IEEE-GPIB card.

## Interconnecting cables

The monitor, printer/plotter, keyboard and Cary Eclipse are connected to the computer by cables that plug into the back of the computer. The Cary Eclipse is connected via a shielded IEEE 488 cable provided with the instrument. Consult your monitor printer/plotter and keyboard manuals for details of their individual cabling requirements.

☑ After the computer requirements have been met, check the checklist box: *The computer system meets requirements, and the Microsoft® Windows® operating system and Internet Explorer 4+ have been installed.*



# 8. Operator Training

During the installation procedure, the Agilent field service engineer will demonstrate the basic operating procedures. The engineer however, is not necessarily experienced in complex analytical routines and is not authorized to conduct extensive training.

To ensure that you maximize the benefit of witnessing the installation performance tests, operator training should be completed before your equipment is installed. It is strongly recommended that you take advantage of the special training courses that are conducted at various locations by the Agilent customer support and sales organization.

In some areas, it may be possible to arrange for operator training to be carried out after installation, using your own instrument. To investigate this possibility, contact your local Agilent sales and service office.

The initial software installation and preliminary operational tests will take your Agilent representative around thirty minutes. There is then a period of two hours that must be allowed for instrument warm-up before the detailed instrument tests for conformance to specification can be carried out. During this time, the representative will demonstrate some of the basic system operating procedures. An automated software process performs operational tests that will take around thirty minutes. The results from these tests can be directly compared against the same tests completed at the factory before shipment.

**NOTE** You must have a working knowledge of the computer operating system, as this type of instruction is not provided by Agilent. The literature supplied with the Cary Eclipse provides step-by-step instructions for setting up the system and detailed operating instructions for the analysis procedures — it does not include instructions for operation of the computer.

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☑ If operator training is required, check the checklist box: *Operator training is required.*