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Cary Eclipse

Hardware

Operation manual

Installation Category II
Pollution Degree 2
Safety Class I (EN61010-1)

VARIAN

85 101758 00
May 2000

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CE

Declaration of Conformity

We hereby declare that the equipment listed below complies with the requirements of:
The Low Voltage Directive 73/23/EEC (93/68/EEC)
The EMC Directive 89/336/EEC (92/31/EEC and 93/68/EEC)

Applicable Standards

LVD	BS EN 61010-1:1993		
EMC	BS EN61326:1998	BS EN 55022:1998	BS EN 61000-3-2:1995
	BS EN 61000-3-3:1995	BS EN 61000-4-2:1995	BS EN 61000-4-3:1997
	BS EN 61000-4-4:1995	BS EN 61000-4-5:1995	BS EN 61000-4-6:1996
	BS EN 61000-4-11:1994		
Equipment Model Number		Cary Eclipse Fluorescence Spectrophotometer	

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Table of Contents

Safety practices and hazards **vii**

1 Introduction **1-1**

1.1 Installation requirements 1-1

1.2 Cary Eclipse documentation 1-1

1.3 Specifications 1-2

1.3.1 Power 1-2
1.3.2 Environmental 1-3
1.3.3 Weights and dimensions 1-4
1.3.4 Fuses 1-4

2 Installation **2-1**

2.1 Single Cell holder 2-2

2.1.1 Installation 2-2
2.1.2 Alignment 2-4
2.1.3 Other sample holders 2-4

2.2 Nitrogen purging 2-5

2.2.1 Nitrogen purging system—Cary Eclipse 2-5

3 Maintenance **3-1**

3.1 Cleaning 3-1

3.2 Lamp module 3-2

3.2.1 Lamp module replacement 3-2
3.2.2 Aligning the lamp module 3-5

3.3 Fuses 3-8

3.3.1 Replacing a fuse 3-8
3.3.2 Checking a fuse 3-9

4 Troubleshooting **4-1**

4.1 Installing a Cary Eclipse under Windows NT 4-1

4.1.1 Installing the Varian IEEE-488 (ISA) card drivers NT 4-2

4.1.2 Troubleshooting for the Varian IEEE-488 (ISA) card NT 4-2
4.1.3 Installing the National Instruments IEEE-488 (PCI) card drivers NT 4-3
4.1.4 Troubleshooting for the National Instruments IEEE-488 (PCI) card NT 4-4
4.1.5 Access denied 4-8
4.1.6 Start button replaced with Connect button 4-9
4.2 Installing a Cary Eclipse under Windows 98 4-10
4.2.1 Installing the Varian IEEE-488 (ISA) card drivers Windows 98 4-10
4.2.2 Troubleshooting - Varian IEEE-488 (ISA) card drivers Windows 98 4-11
4.2.3 Installing the National Instruments IEEE-488 (PCI) card drivers Windows 98 4-14
4.2.4 Troubleshooting - National Instruments IEEE-488 (PCI) card Windows 98 4-14
4.3 Instrument performance testing 4-18
4.4 Un-installing the OSI GPIB driver (All cards) 4-19
4.5 Un-installing the software 4-20
5 Spare parts 5-1

Safety practices and hazards

Your Varian 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 on-line) 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.

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

Ultraviolet radiation

Hazardous UV radiation is emitted by the Xe flash lamp in the instrument. This radiation can cause serious damage to eyes. NEVER look directly at the UV source lamp. ALWAYS wear safety glasses manufactured to an approved standard and which are certified or otherwise warranted to protect the eyes from UV radiation when the lamp is operating and the sample compartment is open.

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 Varian-trained, Varian-qualified, or Varian-approved customer service representatives (CSRs). Consult the manuals or product labels supplied with your PC, monitor and printer/plotter 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 PC, monitor and printer/plotter for their grounding requirements.

Note that the safety classification is given as Class 1 (EN 61010-1).

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 PC, monitor, printer/plotter 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 PC, monitor and printer/plotter 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.

Panels, covers and modules

You are permitted to remove the top colored cover to

1 Replace the lamp module.

2 Adjust the lamp module.

Publication date: 05/00

Any other panels or covers, which are retained by screws on the spectrophotometer and accessories, may be opened ONLY by Varian-trained, Varian-qualified, or Varian-approved service engineers. Consult the manuals or product labels supplied with your PC, monitor and printer/plotter 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 grills on the spectrophotometer and accessories. Consult the manuals supplied with your PC, monitor and printer/plotter 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.

Warnings and Cautions

Other specific warnings and cautions appear in this manual and in the on-line help where appropriate, and will detail the specific hazard, describe how to avoid it, and specify the possible consequences of not heeding the warning or caution.

Warning
A ‘Warning’ message appears in the manual or on the product when failure to observe instructions or precautions could result in death or injury. Symbols depicting the nature of the specific hazard are also placed alongside warnings.

Caution
A ‘Caution’ message is used when failure to observe instructions could result in damage to equipment (Varian supplied and/or associated equipment).

A ‘Note’ is used to give advice or information.

Read all warnings and cautions carefully and observe them at all times.

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


Electrical shock


Eye hazard


Noxious gases


Hot surfaces and cryogenic temperatures


Fire hazard


Sharp edge


Corrosive liquids


Moving part


Heavy Weight (danger to feet)


Heavy weight (danger to hands)


Part can be ejected

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



Color coding

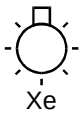
The indicator light (LED) appearing on the Cary Eclipse instrument been color coded to represent the status of the instrument.

steady green	normal / standby
flashing green	scanning / reading
steady orange	start up
flashing orange	a problem – may require servicing
steady yellow	firmware initialization

Information symbols

I	Mains power on
0	Mains power off
	Fuse
	Single phase alternating current
CE	When attached to the rear of the product, indicates that the product complies with the requirements of one or more EU Directives
	Focus
	Horizontal movement
	Vertical movement

When attached to the rear of the product, this symbol indicates that the product has been certified (evaluated) to CAN/CSA –C22.2 No 1010.1-92 and UL3101-1.



Indicates high voltage Xenon flash lamp present

Federal Communications Commission advisory

The following is a Federal Communications Commission advisory:

Caution

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

Cary Eclipse instruments have 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.

Varian 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 Varian that the product complies with the Directives, and also shows the EN standards to which the product was tested to demonstrate compliance.

It is also signed by Varian's Authorized Representative in the EU, and by the representative of the manufacturing plant.

Publication date: 05/00

1 Introduction

1.1 Installation requirements

Prior to receiving your instrument, you will have been provided with a Cary Eclipse Pre-installation manual (85-101740-00), which describes the environmental and operating requirements of the Cary Eclipse system. You must prepare your laboratory according to these instructions before the Cary Eclipse can be installed. You should keep the Pre-installation manual for future reference. If you have misplaced your copy, you can obtain a replacement from your local Varian office or from the Varian website at http://www.varaininc.com.

1.2 Cary Eclipse documentation

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

- ❑ This operation manual, with Safety practices and hazards information, instructions for installing and maintaining the components of the Cary Eclipse, and troubleshooting information
- ❑ Cary Eclipse software manual, with instructions for installing the Cary Eclipse software, an overview of the software and software related troubleshooting information
- ❑ Extensive on-line 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 throughout the documentation:

- *Italics* indicate menu items, menu options and field names (e.g. select *Copy* from the *Edit* menu).
- Keyboard and mouse commands have been typed in **bold** (e.g. press the **F2** key).
- Single quotes (‘ ’) indicate a selection you can make from several choices, such as radio buttons and checkboxes.
- Double quotes (“ ”) are used to signify the pushbuttons appearing throughout the software (e.g. select “OK”).
- ALL CAPITALS indicates text you must type in from the keyboard (e.g. type SETUP at the prompt).

1.3 Specifications

Your Cary Eclipse instrument is designed for indoor use. It is suitable for the categories stated on the front of this manual.

1.3.1 Power

Voltage

Cary Eclipse	85-264 VAC ±10%

Frequency 50 to 60 Hz ±1 Hz

Consumption

Cary Eclipse	180 VA (approx)

Mains inlet coupler:
3/2 A 120/250 VAC 50-60Hz IEC type

Connections

Mains power cord

Australia	10A 250VAC	Complies with AS3112
USA	10A 125VAC	Complies with NEMA 5-15P
Europe	6A 250VAC	Complies with CEE7 sheet vii or NFC61.303VA

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

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

T3.15AH 250V (5x20 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 Varian authorized personnel.

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

1.3.2 Environmental

Condition	Altitude	Temp t (°C)	Humidity (%RH) non-condensing
Non-operating (transport)	0-2133 m (0-7000')	5-45	20-80
Operating but not necessarily meeting performance specifications	0-2000 m (0-6562')	5-31 31-40	≤80 ≤{80-3.33(t-31)}
Operating within performance specifications	0-853 m (0-2800')	10-35	8-80
	853-2133 m (2800-7000')	10-25	8-80

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

1.3.3 Weights and dimensions

Weight

Packed 54 kg (119 lb)

Unpacked 31 kg (68 lb)

Dimensions (W x D x H)

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)

Nitrogen Supply

70 KPa (10 psi)

1.3.4 Fuses

Fuse T3.15AH250V

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

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

Publication date: 05/00

2 Installation

The Cary Eclipse must only be installed by a Varian-trained or Varian-authorized representative.





Warning
The Cary Eclipse weighs over 30 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.

Following the instructions in the Pre-Installation Guide you should have:

- ❑ Unpacked the fluorescence spectrophotometer and placed it on the intended workbench
- ❑ Unpacked the PC and placed it on the intended workbench
- ❑ Installed the operating system software on the PC.

This chapter describes how to install the sample holders used with the Cary Eclipse. Instructions for installing/replacing the lamp module are included in the next chapter.

2.1 Single Cell holder

A Single Cell holder is supplied as standard with the Cary Eclipse. Follow the instructions below to install and align it.

2.1.1 Installation

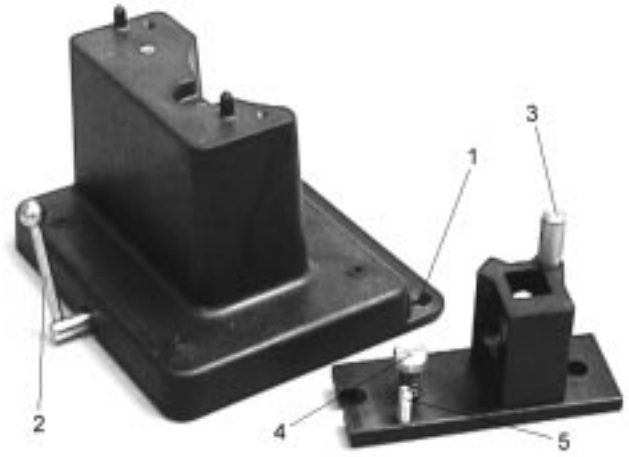
To install the single cell holder



Cary Eclipse showing the sample compartment lid (1) and front panel (2)

1. Slide back the sample compartment lid (1), lift up and remove the front panel (2) and check that the sample compartment is empty.
2. Position the cell holder base on the locating pins.
3. Lock the cell base by turning the lever to the right.
4. Place the single cell holder on the cell holder base so that the cell lifter is at the rear of the sample compartment.

Publication date: 05/00



Cell holder base (left) and Single cell Holder

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

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

For Cuvette Height Adjustment

1. Turning the cell lifter (3) in a clockwise direction will raise the cuvette.
2. Turning the cell lifter (3) in an anti-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.

For 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.

2.1.2 Alignment

To align the Single cell holder (containing a microcell)

1. Start the Align application by pressing the ‘Start’ button in the Windows Taskbar and selecting Programs > Cary Eclipse > Align.
2. Select the Cary Eclipse tab.
3. Place a fluorescent sample (eg. anthracene) in a microcell and adjust the excitation and emission wavelengths to get a signal.
4. Press ‘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 in 2.1.1.).
6. 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.

2.1.3 Other sample holders

Other sample holders are available for use with the Cary Eclipse. Instructions for their use are included in the on-line help provided with the Cary Eclipse software. Refer to the Cary Eclipse software manual (part number 85 101759 00) for details on using the on-line help.

Publication date: 05/00

2.2 Nitrogen purging

2.2.1 Nitrogen purging system—Cary Eclipse

The nitrogen purging system is NOT supplied by Varian, but the following items are available from appropriate commercial suppliers:

1. 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. 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.

2. 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.

3. Supply tubing

Use clean, flexible plastic tubing 6 mm (1/4 inch) inside diameter (Tygon PVC or equivalent). Never use rubber tubing because it may be treated internally with talc, which can be blown into the optical system.

4. 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.

5. 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 litres per minute (64 cubic feet per hour).

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3 Maintenance

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 Varian-trained, Varian-qualified or Varian-authorized customer service representative.



Warning
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 PC and printer manuals for their maintenance procedures, and to the Cary Eclipse on-line help for the maintenance procedures for any Cary Eclipse accessories you ordered.

3.1 Cleaning

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

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.

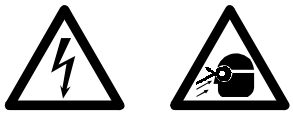
3.2 Lamp module

This section describes how to replace the lamp module and re-align the light beam. Before changing the lamp module, ALWAYS disconnect the Cary Eclipse from the mains supply.

✎ Note

These instructions are also provided on-line with the Cary Eclipse software, together with video to demonstrate the procedure. Refer to the Cary Eclipse software manual (publication number 85 101759 00) for details on using the on-line help.

3.2.1 Lamp module replacement

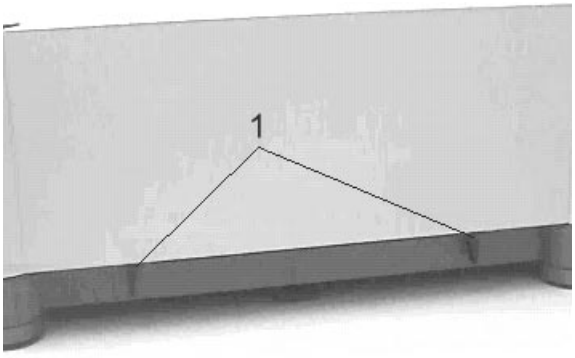


Warning
When operating, the lamp module emits high intensity light which can damage eyes. To avoid eye damage, never operate the lamp module outside the instrument.
The lamp module contains components operating at high voltages. To avoid electric shock, NEVER disassemble the lamp module.

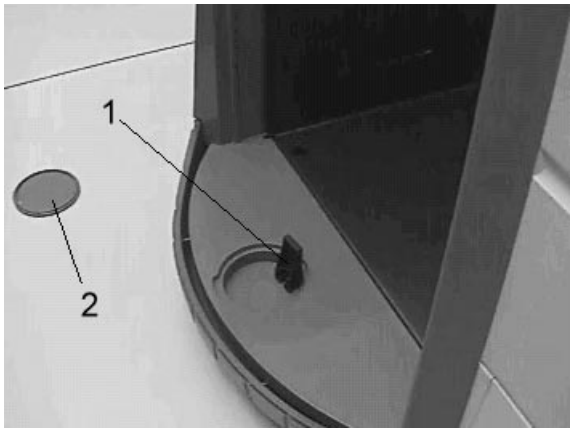
To remove the lamp module

1. Disconnect the Cary Eclipse from the mains power supply.

2. Undo the four clips, two on either side of the instrument and the clip at the front of the instrument under the circular plug (five clips in total) on the Cary Eclipse cover.



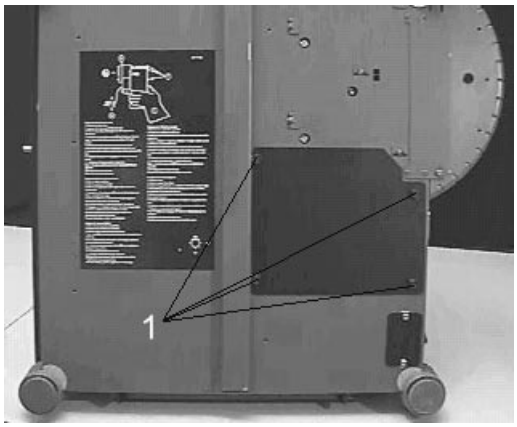
1. Clips on the side of the Cary Eclipse



1. Front clip
2. Circular plug

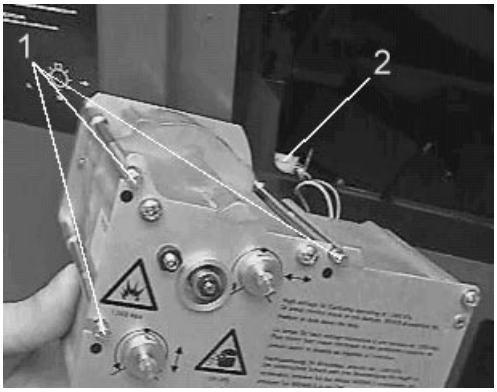
3. Lift the cover off.

4. Facing the front of the Eclipse - turn the instrument onto its right side to give access to the base.



1. Four thumb screws

5. On the base of the instrument, undo and remove the four thumb screws of the lamp module cover (as shown in the figure above).



1. Three lamp module bolts
2. Lamp module plug

6. Loosen the three bolts marked with a black dot (labeled 1 in the figure above), until the lamp module is free to move, through the front opening.
7. Move the lamp module towards the front of the instrument to disengage two guide pins at the rear.
8. Partially withdraw the module through the opening in the base.
9. Squeeze the clip on the plug (labeled 2 in the figure above) and remove it from its socket
10. Withdraw the lamp module completely



Warning
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.

Publication date: 05/00

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.
4. Replace the lamp module cover and tighten the four thumbscrews.
5. Return the instrument to its upright position
6. Replace the instrument cover.
7. Replace the power cable at the rear.
8. Turn the PC and the instrument on.

✎ Note — After replacing the lamp module you must align the lamp module.

3.2.2 Aligning the lamp module

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. Start the Align application by pressing the ‘Start’ button in the Windows Taskbar and selecting Programs > Cary Eclipse > Align.
2. Remove the panel in the front of the top colored cover to access the lamp alignment screws.
3. In the Align application, select the Cary Eclipse tab and setup the instrument parameters as follows:

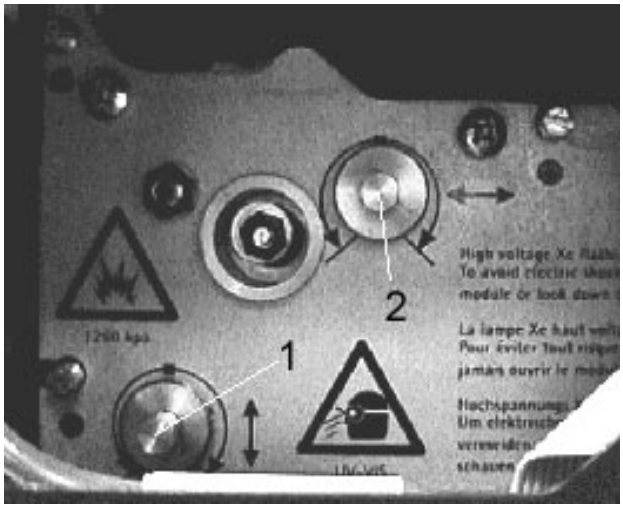
Ex. Wavelength (nm)	540
Ex. Slit (nm)	1.5
Ave. time (s)	0.1
PMT Voltage	Medium

✎ Note — Emission parameters are not important for this procedure.

4. Select the Graph Tab.
5. View the reference signal by pressing the Reference Signal button on the toolbar.
6. Click on the vertical rescale button  to find the signal range.
7. Click on 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) for maximum signal with the 5.5 mm hex driver supplied (you may need to adjust the y-axis scaling on the screen).

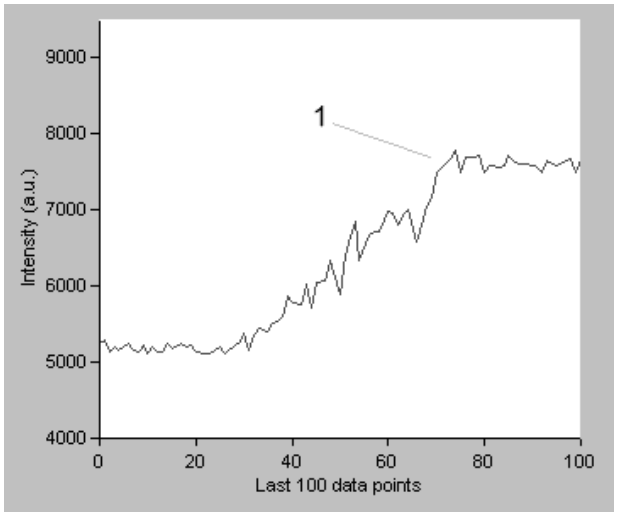
✎ Note — The brass adjustment screws for vertical and horizontal adjustment are clearly marked.

Publication date: 05/00



1. Vertical adjustment screw
2. Horizontal adjustment screw

9. Adjust the top right screw (horizontal adjustment) for maximum signal with the 5.5 mm hex driver supplied (you may need to adjust the y-axis scaling).



1. Maximum signal level

10. Select the Lamp Tab.

11. Click on the 'Save conditions' button to store instrument parameters.

✍ Note

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

12. In the Validation application, run the “Max Sig/Noise” test. This should pass if the lamp is aligned correctly.

3.3 Fuses

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

3.3.1 Replacing a fuse

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 5.

The fuses have a code marked on the cap (for example, T 3.15AH250V). 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
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 holers.

Publication date: 05/00

3.3.2 Checking a fuse

To check a fuse:

1. Disconnect the Cary Eclipse instrument from the mains power supply.
2. Prise up 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 section 3.3.1).
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 the instrument on.

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

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4 Troubleshooting

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

4.1 Installing a Cary Eclipse under Windows NT

Windows NT 4 is not Plug and Play. However it will report initialization failures of device drivers loaded during NT startup.

Make sure that you have completed all the following steps for an installation of the Cary Eclipse under Windows NT.

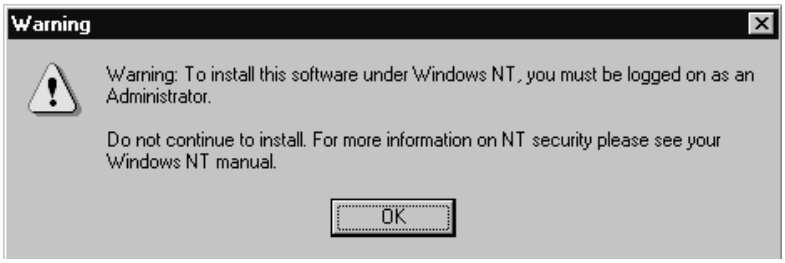
- ❑ Install Windows NT 4.01 or an NT foreign language version.
- ❑ Install Service pack 4 or greater
- ❑ Install Microsoft's Internet Explorer 4.0 or later
- ❑ Shut down Windows NT
- ❑ Restart the PC
- ❑ Ensure that all devices within the system have drivers installed and that the devices are operational. eg. Sound cards produce sound, SCSI cards allow access to drives. If another hardware device is installed the device drivers should be installed prior to installation of the software

✐ Note

Some PC's have hardware built into the motherboard (eg. Sound cards, Network adapters (NIC) etc. If you wish to use devices other than those available on the mother board you must disable the motherboard devices in the system BIOS (consult your PC documentation). This will free the device resources (ie. IRQ and I/O address space).

- ❑ Install the Cary Eclipse software.
- ❑ Install the National Instruments PCI / Varian IEEE (ISA) Card.

- Restart Windows NT
- Log on with Administrator rights and privileges. If you are unable to log on with administration rights, installation of hardware device drivers and associated registry entries will not be completed. You will see the following warning during the Cary Eclipse software installation. Speak to your system administrator about your access rights or have him/her install the Cary Eclipse software for you.



- Install the software

4.1.1 Installing the Varian IEEE-488 (ISA) card drivers NT

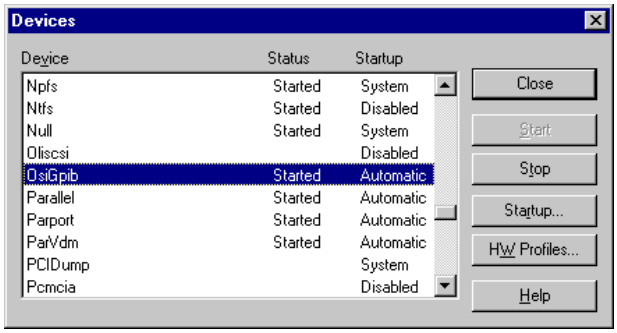
Manual installation of the IEEE-488 drivers is not required (it is carried out automatically at software installation), however the PC must be shut down after the installation of the software so that the new settings will take effect.

4.1.2 Troubleshooting for the Varian IEEE-488 (ISA) card NT

- Check the HDD directories for the following files:
  C:\winnt\system32
  OSIGPIB.dll
  C:\winnt\system32\drivers
  OSIGPIB.sys

- Check that the Varian IEEE (ISA) GPIB Device has started correctly.
  Select Start » Settings » Control Panel and double-click on the Devices icon.

Publication date: 05/00



4.1.3 Installing the National Instruments IEEE-488 (PCI) card drivers NT

✎ Note

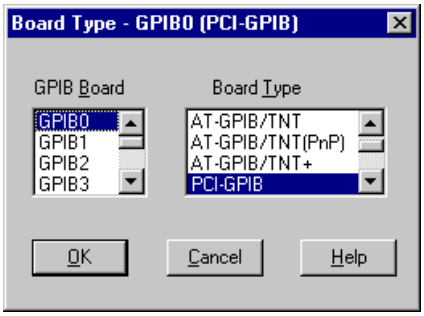
The National Instruments PCI card is also referred to as the Cary Eclipse GPIB card.

In Windows NT4 systems the PCI-GPIB card needs to be configured before it can be used.

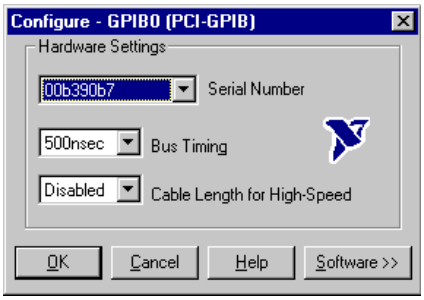
1. After the PCI-GPIB card has been installed, start the PC and login.
2. Select Start » Settings » Control Panel and double-click on the GPIB icon.
3. The GPIB Configuration Utility displays a list of all the GPIB boards and device names.



4. Select GPIB0.
5. Click on the Board Type button and select PCI-GPIB from the list that appears.



6. Click on the OK button.
7. Click on the Configure button to bring up the PCI-GPIB Configuration dialog box.
8. In the Serial Number drop-down list, select the serial number.



9. Click on the OK button.

In the GPIB Configuration dialog box, click on the OK button to save your changes and exit the utility.

4.1.4 Troubleshooting for the National Instruments IEEE-488 (PCI) card NT

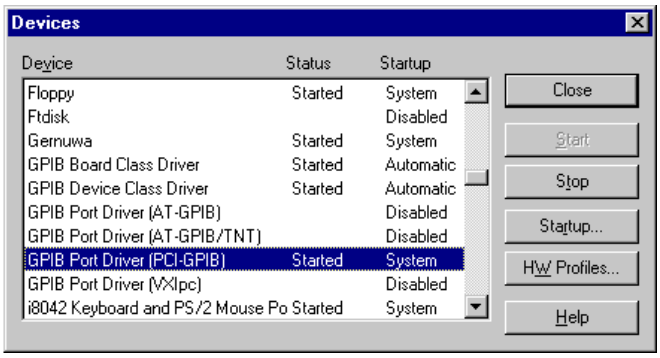
Check that the National Instruments IEEE driver is installed correctly (if applicable)

- Check the HDD directories for the following files:
  C:\windows\system32
  OSIGPIB.dll
  GPIB.dll
  C:\winnt\system32\drivers
  GPIBPCI.sys

Publication date: 05/00

GPIBCLSB.sys
GPIBCLSD.sys

- Check that the National Instruments GPIB Device has started correctly.
  Select Start » Settings » Control Panel.
  Double-click on the Devices icon.



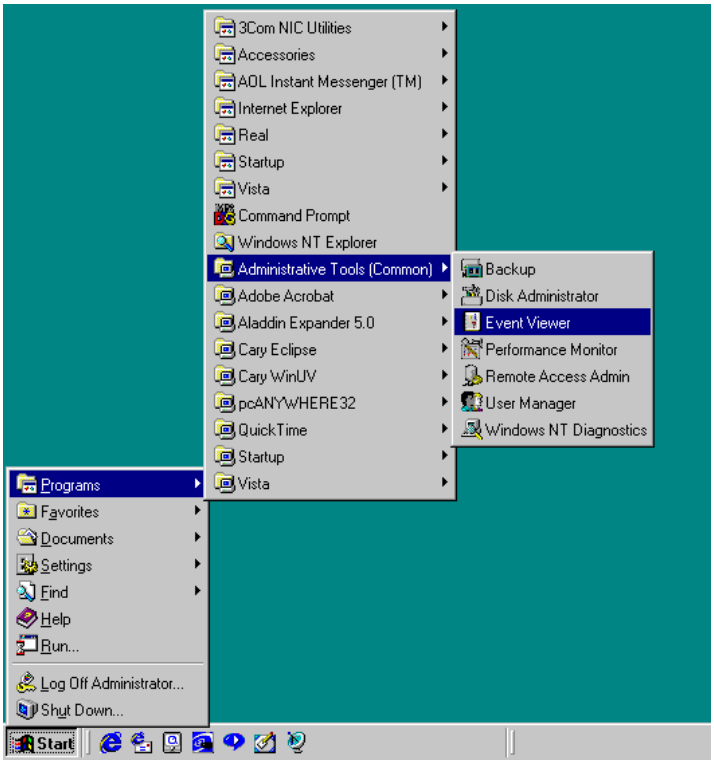
4.1.4.1 **WinNT Event Viewer (All cards)**

If the GPIB Devices did not start correctly, windows NT will bring up the following window.

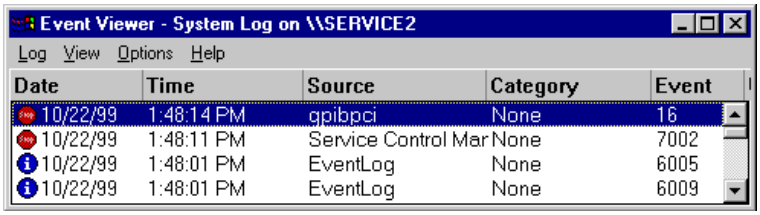


Windows NT will also provide a detailed description for each fault detected.
To view this detail, do the following:

1. Open the Event Viewer

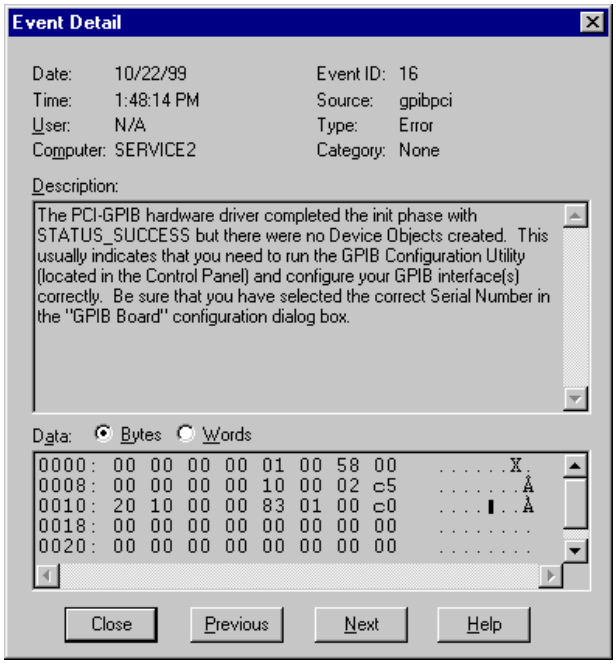


2. Check the Events that had problems

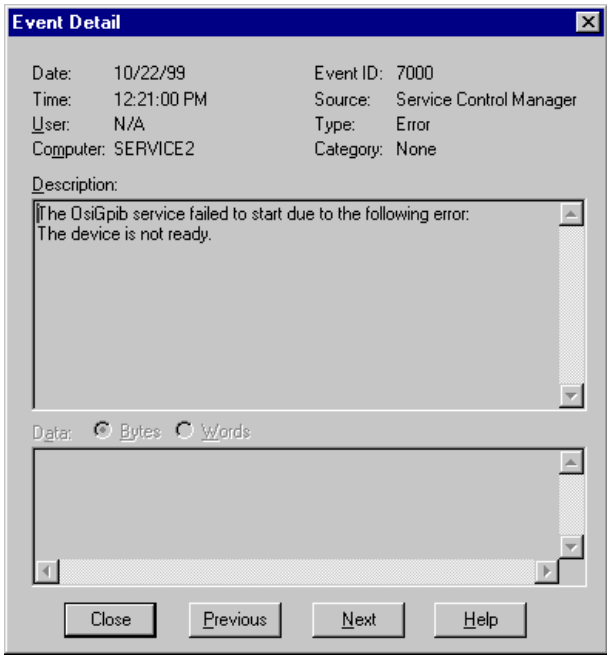


3. Double click on the fault (marked in red)

Publication date: 05/00



- Fault description of PCI card not starting



- Fault description of ISA card not starting. This generally means that the device driver loaded but there was no response from the Cary Eclipse instrument. This indicates that the Cary Eclipse interface hardware is not responding.
- Ensure that the Cary Eclipse GPIB card is installed correctly and that the interconnecting cable between the instrument and the PC is secure.
- It may indicate that the OSIGPIB device driver was not copied to the correct directory.

  The correct directory is –

  WinNT \ System32 \ osigpib.dll

  It is possible you do not have access rights to the installation drive. Logon with administration rights and perform the Cary Eclipse installation again.

4.1.5 Access denied

Problem

During the installation of the software, you may see the following message:



Solution

You must be logged on with administrator rights to install the software. Click on the Windows NT Start button, select Shutdown and then Close all programs and log on as a different user. When prompted, log on as an Administrator or ask your NT Administrator to log on for you. Start the installation process again.

Publication date: 05/00

4.1.6 Start button replaced with Connect button

Problem

I have a ‘Connect’ button instead of a ‘Start’ button. What does this mean?

Answer

Only one Cary Eclipse application can communicate with the instrument at a time. When you turn the PC on the System information application initializes the Cary Eclipse and checks that it is working correctly. If you start another application, e.g. Scan before this initialization has finished the application will have a ‘Connect’ button instead of a ‘Start’ button. Just wait for the status line at the bottom of the application to display ‘idle’ and then click on the Connect button and it will change to a Start button.

Problem

The Connect button will not change to Start.

Answer

If the Cary Eclipse software cannot locate the Varian GPIB card then the Connect button will not change to Start. This is due to either:

- A memory address conflict with the Varian GPIB card and another card in the PC.
- An IRQ conflict with another card
- An I/O address conflict with another card.

Under Windows NT the best way to fix the problem is to:

1. Remove as many other cards from the PC as possible e.g. sound or network card, de-installing their drivers as well.
2. De-install the Cary Eclipse driver (refer to 4.4)
3. Re-boot the PC.
4. Re-install the Cary Eclipse software.
5. Check that the PC is now communicating with the Cary Eclipse instrument (the Connect button should change to Start when you click on it).
6. Re-install the other cards, specifying another IRQ and/or memory address if possible. If you can’t change these then you

may have to purchase different cards, which allow more flexibility in changing the IRQ and/or memory address.

4.2 Installing a Cary Eclipse under Windows 98

Make sure that you have completed all the following steps for an installation of the Cary Eclipse under Windows 98.

- ❑ Install Windows 98 or a 98 foreign language version.
- ❑ Install Microsoft's Internet Explorer 4.0 or later
- ❑ Shut down Windows 98
- ❑ Restart the PC
- ❑ Ensure that all devices within the system have drivers installed and that the devices are operational. eg. Sound cards produce sound, SCSI cards allow access to drives. If another hardware device is installed the device drivers should be installed prior to installation of the software

✐ Note

Some PC's have hardware built into the motherboard (eg. Sound cards, Network adapters (NIC) etc. If you wish to use devices other than those available on the mother board you must disable the motherboard devices in the system BIOS (consult your PC documentation). This will free the device resources (ie. IRQ and I/O address space).

- ❑ Install the Cary Eclipse software.
- ❑ Install the National Instruments PCI / Varian IEEE (ISA) Card.
- ❑ Restart Windows 98

4.2.1 Installing the Varian IEEE-488 (ISA) card drivers Windows 98

1. Insert the Cary software CD. Select the Exit button.
2. Select Start/Settings/Control panel**.**
3. Select Add New Hardware**.**
4. Click Next**.**
5. Click Next**.**
6. Select **'**No, the device isn't in the list**'.** Click Next**.**

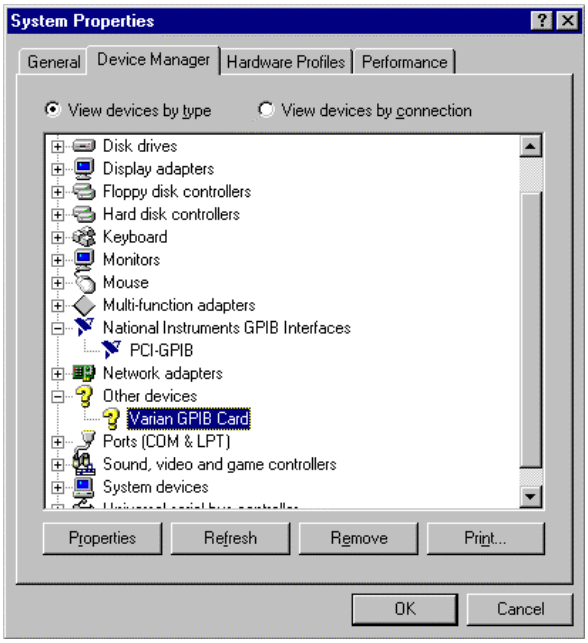
Publication date: 05/00

7. Select 'No, I want to select the hardware from a list'**.** Click Next**.**
8. Select 'Other devices'. Press Next.
9. Click on Have Disk button.
10. Enter your CD-ROM drive letter (e.g.'D') and press OK. Follow the instructions on the screen to complete the process. When you are prompted to restart the computer, select 'No'.
11. From the Control Panel, double click on the System icon. From the System Properties dialog, select the Device Manager tab and double click on the Other Devices item. Highlight VarianOSIGpib and select the Properties button.
12. From the Properties dialog select the Resources tab. Enable the 'Use automatic settings' check box (if not already checked) and select OK.
13. Select OK to exit Control Panel and restart your computer so that the new settings will take effect.

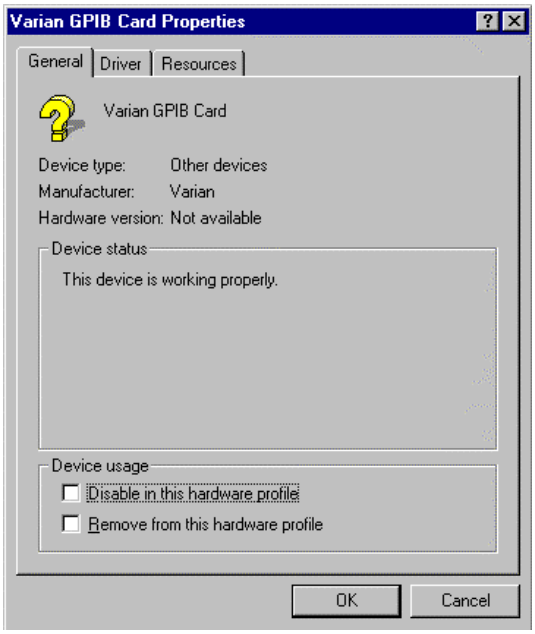
4.2.2 Troubleshooting - Varian IEEE-488 (ISA) card drivers Windows 98

- Check the HDD directories for the following files
  C:\windows\system
  OSIGPIB.dll
  OSIGPIB.vxd

- Check that the Varian IEEE (ISA) Properties are set correctly
  Select Start » Settings » Control Panel.
  Double-click on the System icon.
  Select Device Manager tab



- Open the Varian GPIB Properties and check that they are set correctly. Double click on the Other Devices.
  Double click on the Varian GPIB Card icon.

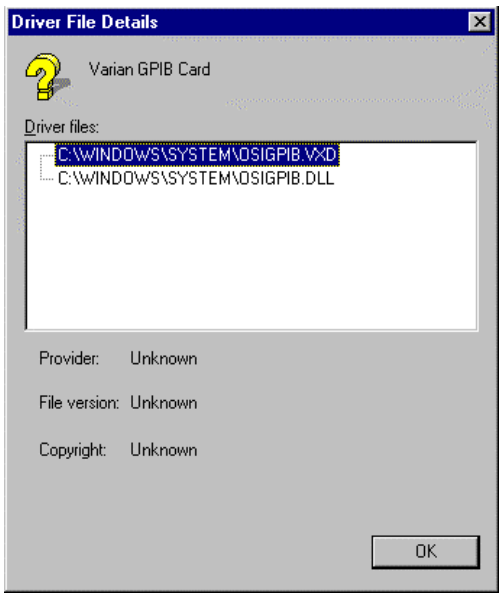


Publication date: 05/00

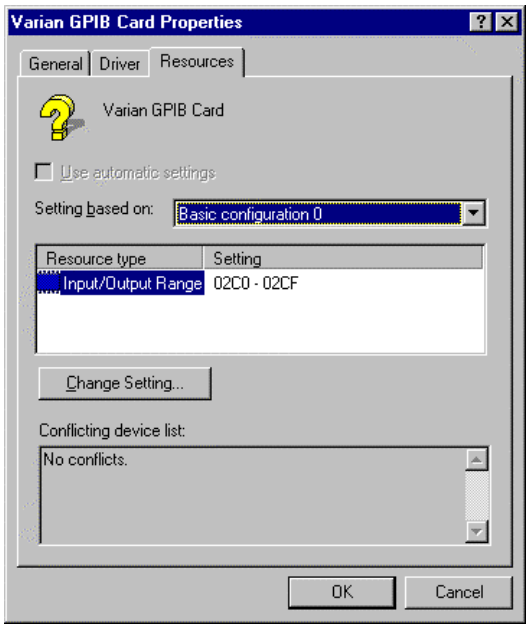
- Check the status of the device.



- Click on the Driver tab then on Driver File Details…



- Check that the Driver File Details page matches the one above, then click OK.



- Click on the Resources tab and check there are no conflicts.

4.2.3 Installing the National Instruments IEEE-488 (PCI) card drivers Windows 98

✎ Note

The National Instruments PCI card is also referred to as the Cary Eclipse GPIB card.

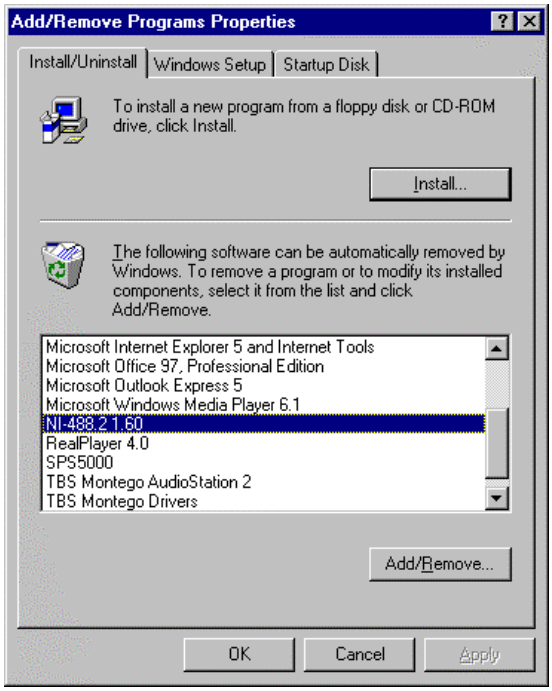
Manual installation of the IEEE-488 drivers is not required (it is carried out automatically at software installation), however the PC must be shut down after the installation of the software so that the new settings will take effect.

4.2.4 Troubleshooting - National Instruments IEEE-488 (PCI) card Windows 98

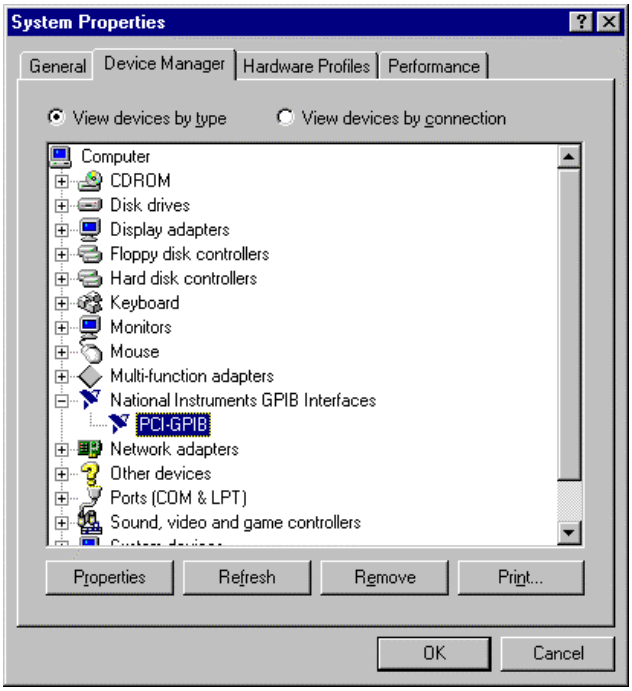
- Check the system directories for the following files
  C:\windows\system
  OSIGPIB.dll
  OSIGPIB.vxd
  GPIB.dll

- Check that the driver has been installed correctly. Select Start »

Settings » Control Panel. Double-click on the Add/Remove icon.

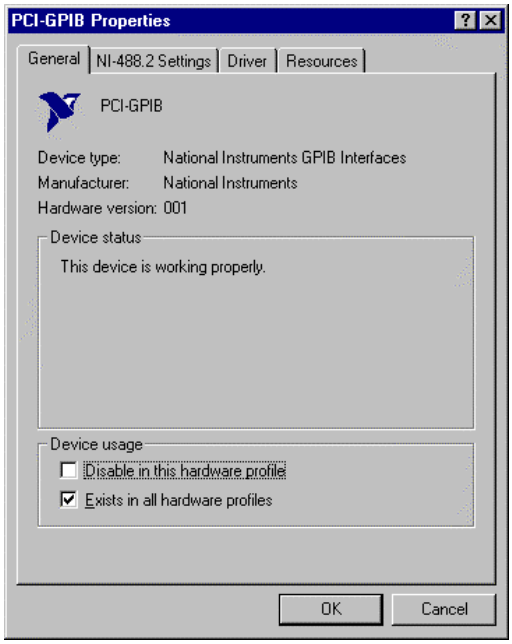


- Check that the PCI-GPIB Properties are set correctly.
  Select Start » Settings » Control Panel.
  Double-click on the System icon.
  Select Device Manager tab.

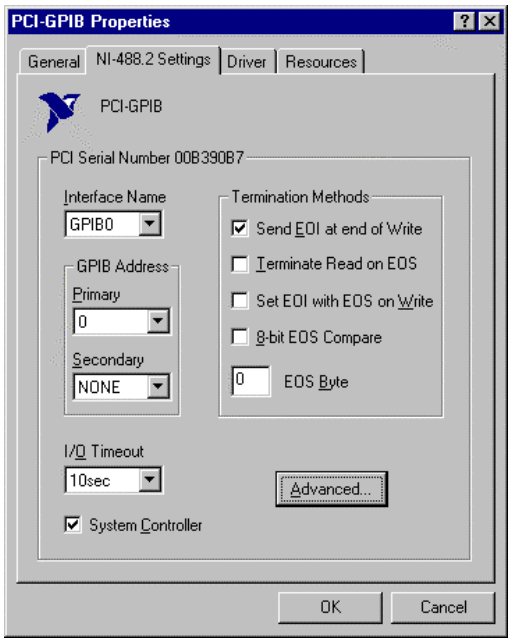


- Open the PCI-GPIB Properties and check that they are set correctly. Double click on the National Instruments GPIB interfaces**.** Double click on the PCI-GPIB icon.

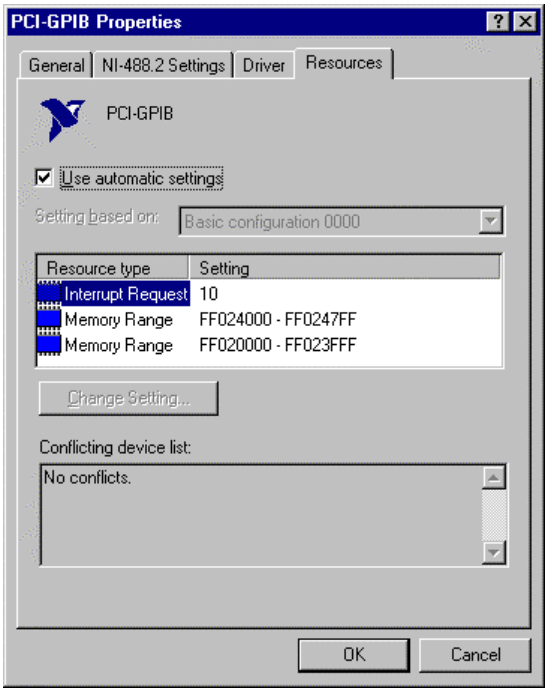
Publication date: 05/00



- Check the device is working properly.



- Check that the settings match as above.



- ❑ Make sure that the ‘Use automatic settings’ check box is checked.

4.3 Instrument performance testing

Problem

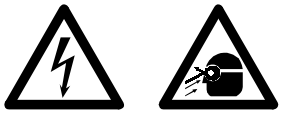
The results of your instrument performance tests do not meet specifications (the results obtained during factory testing are included in the packing crate with the instrument).

Solution

Check the following:

- ❑ The sample compartment is empty.
- ❑ The cable connecting the instrument to the PC 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 monchromator 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 3 for instructions on aligning the lamp).

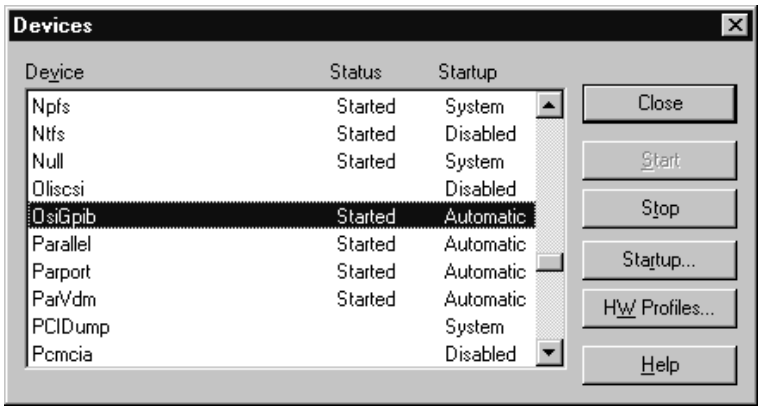


Warning
When operating, the lamp module emits high intensity light which can damage eyes. To avoid eye damage, never operate the lamp module outside the instrument.
The lamp module contains components operating at high voltages. To avoid electric shock, NEVER disassemble the lamp module.

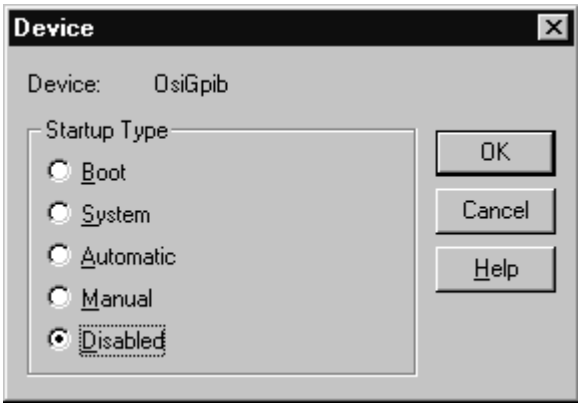
4.4 Un-installing the OSI GPIB driver (All cards)

Windows NT

1. Click Start, Settings, Control Panel, Devices.



2. Use the scroll bar to locate the OSIGPIB device and click on it.
3. Click Startup.



4. Select Disabled then click OK.
5. Click Close.
6. You now need to to restart the PC. To do so, click Start, select Shutdown and then Restart the computer. Click OK and wait for the PC to restart. The OSIGPIB driver will be disabled when the PC restarts.

Windows 98

1. Click Start, Settings, Control Panel, System.
2. On the Device Manager tab click on the + icon next to Other devices.
3. Click on OSIGPIB and then click on Remove.
4. You should now restart the PC.

4.5 Un-installing the software

1. Click the Windows Start button.
2. Select Settings, Control panel, Add/Remove programs.
3. Scroll the list on the Install/uninstall tab until you find Varian Cary Eclipse .
4. Click Add/Remove and then Yes. Follow the instructions on the screen.

✎ Note

You may be prompted during the uninstall to remove certain drivers/files. Click 'No' to these prompts as other programs may rely on these files to run.

5. You should also repeat the process for the Cary Eclipse help & Videos.

Publication date: 05/00

5 Spare parts

The following spare parts are available for use with your Cary Eclipse instrument. Always use Varian-supplied spare parts, unless otherwise indicated.



1. Sample compartment lid
2. Sample compartment front panel

Xenon Lamp module	01 106660 90
Varian IEEE ISA Card	02 101274 90
NI IEEE PC card	02 101688 00
Fuse T3.15AH250V	19 100107 00
Cary Eclipse IEEE cable	59 100438 00
Mains Cable (Australia)	59 100515 00

Mains Cable (US)	59 100520 00
Mains Cable (Europe)	59 100521 00
3M Disposable Grounding Wrist Strap	79 100313 00

Ordering details for other Cary Eclipse accessories are available in the Parts and Supplies catalog included on-line with the Cary Eclipse software.

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