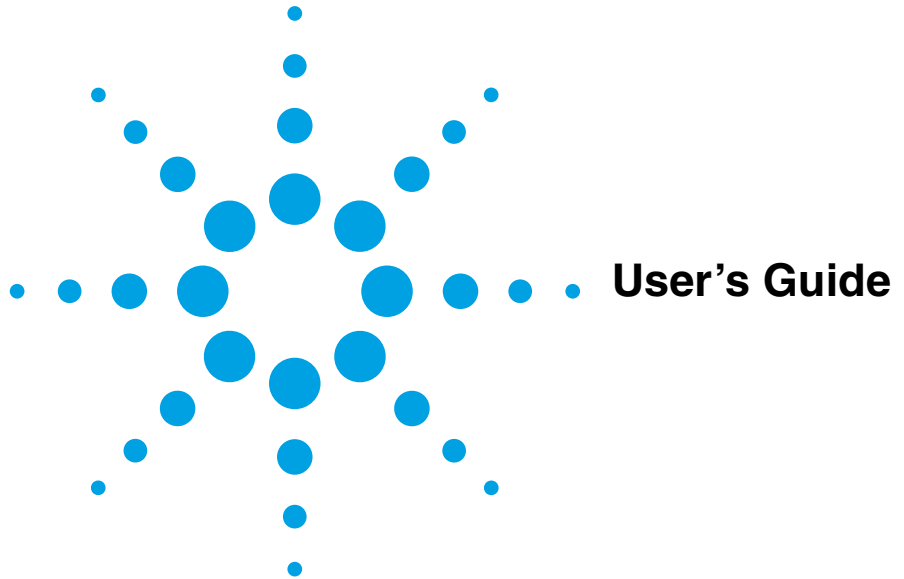


Agilent Technologies

Agilent 82350B PCI GPIB Interface



Contents

82350B PCI GPIB Interface User's Guide

Front Matter	5
Warranty Information	5
U.S. Government Restricted Rights	5
Declaration of Conformity	6
Radio and Television Interference	8
Support Information	9
User Guide Information	9
Chapter 1 - Installing the 82350	11
Getting Started.....	13
Steps to Use the 82350	13
Steps to Install the 82350	14
Step 1 - Before You Install the 82350.....	15
Check Your Shipment	15
Check System Requirements	16
Create an Emergency Repair Disk	16
Step 2 - Installing Agilent IO Libraries	17
Before You Install the Libraries	17
Installing the Agilent IO Libraries	20
Step 3 - Connecting the 82350	26
Installing the 82350 in Your PC	26
Connecting to GPIB Instruments	30
Step 4 - Configuring the 82350.....	33
Install Configuration Files	33
Configure the 82350 Interface	34
Step 5 - Programming via the 82350.....	37
Establishing Instrument Communication	37
Programming GPIB Instruments	38
Chapter 2 - Troubleshooting Information	41
Troubleshooting Flowchart	43
82350 Hardware Checks	44
Check Cables/Connections/Power	44
Check Device Manager	45
82350 Software Checks.....	46
Check for 82350 Driver Files	46
Disable IO Config Auto-Detection	47
Check BIOS/Interrupts Settings	47
Set 82350 Read/Write Performance Mode	49

Agilent IO Libraries Checks	51
Check IO Libraries Installation	51
Check IO Control Operation	52
Install IO Libraries (if 82350 was Installed First)	53
Appendix A - 82350 Specifications	55
Index	57

Front Matter

Notice

The information contained in this document is subject to change without notice.

Agilent Technologies shall not be liable for any errors contained in this document. *Agilent Technologies makes no warranties of any kind with regard to this document, whether express or implied. Agilent Technologies specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.* Agilent Technologies shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory, in connection with the furnishing of this document or the use of the information in this document.

Warranty Information

A copy of the specific warranty terms applicable to your Agilent Technologies product and replacement parts should have been shipped with your product or can be obtained from Agilent Technologies, Inc.

U.S. Government Restricted Rights

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as "Commercial computer software" as defined in DFAR 252.227-7014 (June 1995), or as a "commercial item" as defined in FAR 2.101(a) or as "Restricted computer software" as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies' standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Trademark Information

Adobe[®] and Acrobat[®] are trademarks of Adobe Systems Incorporated. Windows[®] 98, Windows[®] Me, Windows NT[®], Windows[®] 2000 and Windows[®] XP are U.S. registered trademarks of Microsoft Corporation. All other brand and product names are trademarks or registered trademarks of their respective companies.

Printing History

Edition 1 - July, 2002

Copyright Information

Agilent Technologies 82350B PCI GPIB Interface User's Guide
Manual Part Number: 82350-90002
© Agilent Technologies, Inc. 2002

Guide Contents

This *Agilent Technologies 82350B PCI GPIB Interface User's Guide* shows how to install, configure, and troubleshoot the Agilent 82350B PCI GPIB Interface (called the 82350 in this guide) on PCs with Windows 95, Windows 98, Windows Me, Windows NT 4.0, Windows 2000, or Windows XP operating systems.

Declaration of Conformity

See the next page for the Declaration of Conformity for the 82350B PCI GPIB Interface.



Agilent Technologies

DECLARATION OF CONFORMITY
According to ISO/IEC Guide 22 and CEN/CENELEC EN 45014



Manufacturer's Name: Agilent Technologies, Incorporated
Manufacturer's Address: 815 - 14th St. SW
Loveland, Colorado 80537
USA

Declares, that the product

Product Name: PCI GPIB Interface
Model Number: 82350B
Product Options: This declaration covers all options of the above product(s).

Conforms with the following European Directives:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC (including 93/68/EEC) and carries the CE Marking accordingly.

Conforms with the following product standards:

EMC	Standard	Limit
	IEC 61326-1:1997+A1:1998 / EN 61326-1:1997+A1:1998 ^[1]	Group 1 Class A
	CISPR 11:1990 / EN 55011:1991	4 kV CD, 8 kV AD
	IEC 61000-4-2:1995+A1:1998 / EN 61000-4-2:1995	3 V/m, 80-1000 MHz
	IEC 61000-4-3:1995 / EN 61000-4-3:1995	0.5kV signal lines, 1 kV power lines
	IEC 61000-4-4:1995 / EN 61000-4-4:1995	N/A
	IEC 61000-4-5:1995 / EN 61000-4-5:1995	3V, 0.15-80 MHz 1 cycle, 100%
	IEC 61000-4-6:1996 / EN 61000-4-6:1996	N/A
	IEC 61000-4-11:1994 / EN 61000-4-11:1994	
	Canada: ICES-001:1998 ^[2]	
	Australia/New Zealand: AS/NZS 2064.1	
Safety	IEC 61010-1:1990+A1:1992+A2:1995 / EN 61010-1:1993+A2:1995	
	Canada: CSA C22.2 No. 1010.1:1992	
	USA: UL 3111-1: 1994	

Supplemental Information

[1] This product was tested in a typical configuration with Agilent Technologies test systems.

[2] This ISM device complies with Canadian ICES-001-1998.

Cet appareil ISM est conforme à la norme NMB-001-1998 du Canada.

26 Jul 2002

Date

Ray Corson
Product Regulations Program Manager

For further information, please contact your local Agilent Technologies sales office, agent or distributor.

Radio and Television Interference

This device has been verified to comply with FCC Rules Part 15. Operation is subject to these two conditions: (1) this device may not cause radio interference, and (2) this device must accept any interference received (including interference that may cause undesired operation).

This equipment generates and uses radio frequency energy. If not installed and used in accordance with this manual, it can cause interference to radio and television communications. The rules with which it must comply afford reasonable protection against such interference when it is used in most locations. However, there can be no guarantee that such interference will not occur in a particular installation. If you think your computer is causing interference, turn off the system. If the radio or television reception does not improve, your computer is probably not causing the interference.

If your computer does cause interference to radio and television reception, you are encouraged to try to correct the interference by one or more of the following measures:

- Relocate the radio or television antenna.
- Move the computer away from the radio or television.
- Plug the computer into a different electrical outlet, so that the computer and radio or television are on separate electrical circuits.
- Make sure you use only shielded cables to connect peripherals to your computer.
- Consult your dealer, Agilent Technologies, or an experienced radio/television technician for other suggestions.
- Order the FCC booklet *How to Identify and Resolve Radio-TV Interference Problems* from the U.S. Government Printing Office, Washington DC, 20402. The stock number of this booklet is 004-000-00345-4.

Support Information

Support information for the 82350 follows.

- You can reach Agilent Technologies at these telephone numbers:

Americas Call Center: 1-800-452-4844
Canada Call Center: 1-877-894-4414
European Call Center: +31-20-547-9900
Japan Call Center: +81-426-56-7832

- For other countries, contact your country's Agilent support organization. A list of contact information for other countries is available on the Agilent Internet site:

www.agilent.com/find/assist

A list of other Agilent Websites follows.

URL	Description
www.agilent.com/find/assist	Agilent Technologies "Contact Us" page
www.agilent.com/find/iolib	Update the Agilent IO Libraries software
www.agilent.com/find/iolib_support	The latest customer support information
www.agilent.com/find/ADN	Connectivity resources all in one place
www.agilent.com/find/techsupport	Technical support information, including manuals, application notes, FAQs, and software and firmware downloads
www.agilent.com/find/connectivity	For connection, communication and control of test instruments from your computer, you can find out the latest in connectivity.

User Guide Information

Chapter	Description
<i>Chapter 1 - Installing the 82350</i>	Shows how to install the 82350 and the Agilent IO Libraries on your Windows PC.
<i>Chapter 2 - Troubleshooting Information</i>	Gives guidelines to troubleshoot the 82350 and the Agilent IO Libraries.
<i>Appendix A - 82350 Specifications</i>	Provides 82350 specifications.

Accessing an Electronic Copy of This Guide

There are three ways you can access an electronic (.pdf) version of this guide, as follows. You will need Adobe Acrobat Reader Version 3.0 or later to view the electronic version.

- **Access from the IO Control.** After the Agilent IO Libraries are installed, a blue IO icon appears on the right hand side of the Windows toolbar. To access an electronic version of this guide, click the IO icon, then click **View Documentation** and then click **82350 PCI GPIB Users Guide**.
- **Access from the Web.** On your Web browser address line, type: www.agilent.com/find/techsupport and navigate to the 82350 manual.
- **Access from the IO Libraries CD.** You can access an electronic copy of this guide from the Agilent *IO Libraries for Instrument Control* CD that shipped with the 82350. See “Accessing the User’s Guide” in *Chapter 1 - Installing the 82350* for details.

Related Documentation

Suggested documentation you can use for 82350 operation follows. After the Agilent IO Libraries have been installed on your PC, .pdf files of the Agilent IO Libraries, *VISA User’s Guide*, and *SICL User’s Guide* are available. Click the blue IO icon on the Windows taskbar and then click **View Documentation**.

Product	Related Documentation
Agilent IO Libraries	For additional information on the Agilent IO Libraries, see the <i>Agilent IO Libraries Installation and Configuration Guide for Windows</i> .
VISA	To develop and use VISA applications, see the <i>Agilent VISA User’s Guide</i> .
SICL	For SICL I/O applications, see the <i>Agilent SICL User’s Guide for Windows</i> .
Programmer’s Toolkit	To develop programs in Visual Studio.Net, see the <i>Agilent T&M Programmer’s Toolkit for Visual Studio.NET</i>

Installing the 82350

Installing the 82350

This *Agilent 82350B PCI GPIB Interface User's Guide* shows how to install and configure the Agilent 82350B PCI GPIB Interface (called the 82350 in this guide) and how to install the Agilent IO Libraries in PCs with Windows 95, Windows 98, Windows Me, Windows NT 4.0, Windows 2000, or Windows XP operating systems.

NOTE

The 82350 interface is not supported on PCs with Windows 3.1 or Windows 3.51 operating systems. In case of difficulty in installing the 82350, see Chapter 2 - Troubleshooting Information.

This chapter shows suggested steps to install the 82350, configure the 82350 interface, and guidelines to begin programming via the 82350 interface, including:

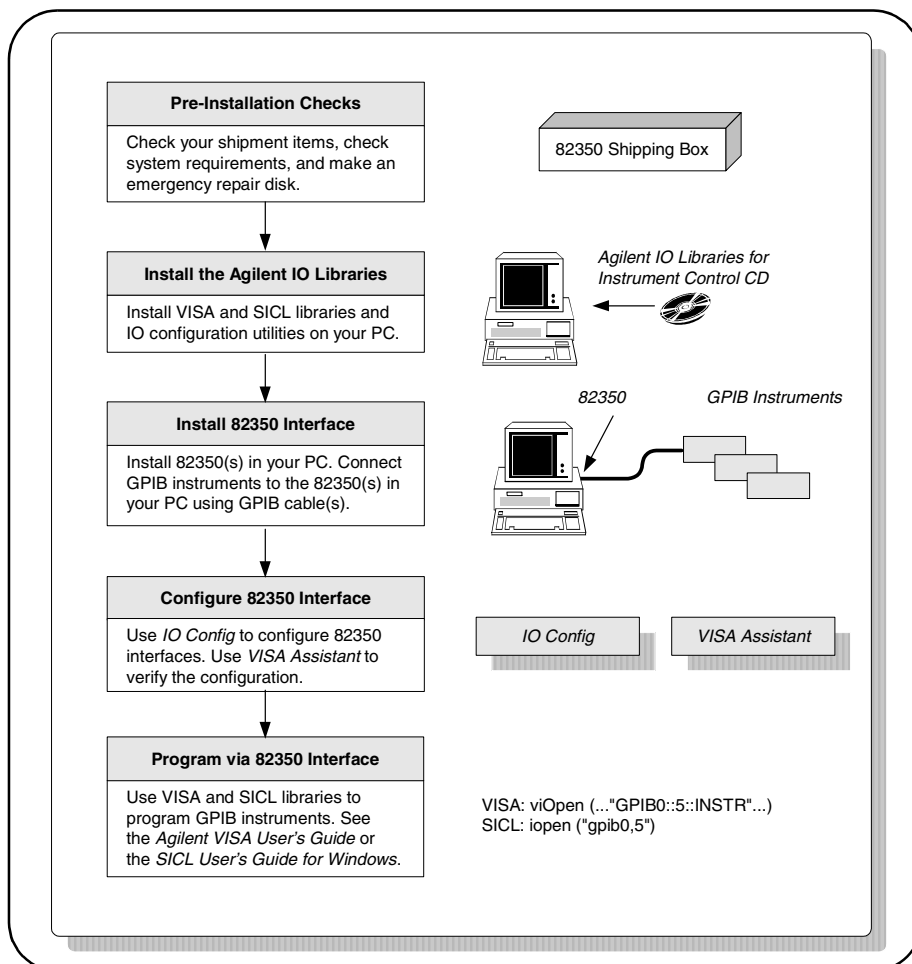
- Getting Started
- Steps to Install the 82350
- Step 1 - Before You Install the 82350
- Step 2 - Installing Agilent IO Libraries
- Step 3 - Installing the 82350
- Step 4 - Configuring the 82350
- Step 5 - Programming via the 82350

Getting Started

This section provides an overview of how to use and install the 82350, including steps to use the Agilent IO Libraries and steps to install the 82350 in a 5V PCI slot in your PC.

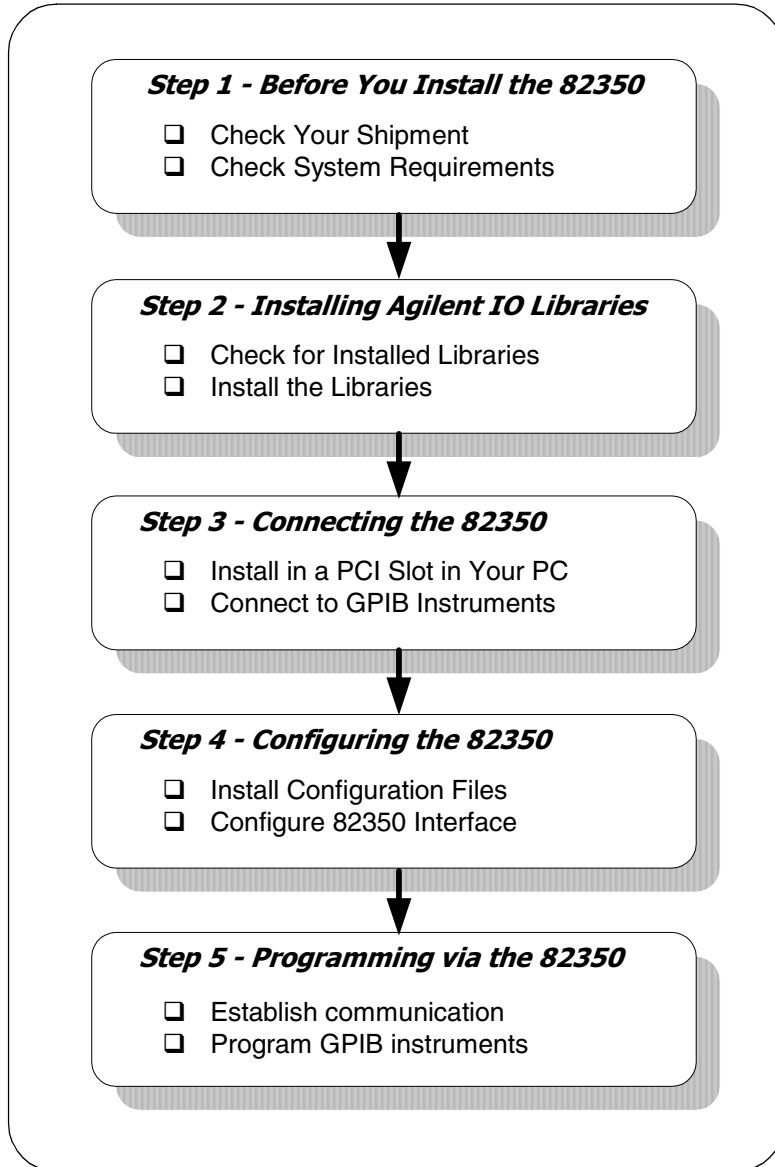
Steps to Use the 82350

The following figure shows a suggested sequence to use the Agilent IO Libraries and the 82350 to program connected instruments.



Steps to Install the 82350

This figure shows a suggested sequence of steps to install and configure the 82350 and to communicate between your PC and GPIB instruments.



Step 1 - Before You Install the 82350

Before you install the 82350, you should:

- Check Your Shipment
- Check System Requirements
- Create an Emergency Repair Disk

Check Your Shipment

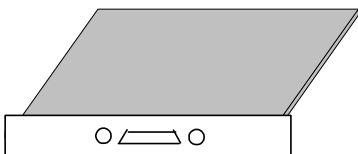
Your 82350 Interface shipment should include the items in the following figure. If any items are missing or damaged, keep the shipping materials and contact Agilent Technologies. See the *Front Matter* for addresses/telephone numbers.

CAUTION

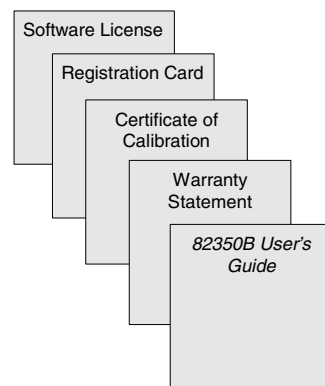
To reduce the risk of damaging the 82350 card, protect the card from static electricity. Leave the card in its anti-static bag until you are ready to install the card. Handle the card ONLY by the sheet metal frame or by the card edges. Never touch any other part of the card.

- Agilent Technologies 82350B PCI GPIB Interface Card
- Agilent IO Libraries for Instrument Control CD
- 82350B PCI GPIB User's Guide
- 82350B Certificate of Calibration
- 82350B Registration Card
- 82350B Warranty Statement
- Software License Agreement

82350B PCI GPIB Interface Card



Agilent IO Libraries for Instrument Control CD



Check System Requirements

Before you install the Agilent IO Libraries, you should verify that your system meets the **minimum** hardware and software requirements listed to install and use the Agilent IO Libraries. Adding additional RAM may improve overall system performance.

Item	Minimum Requirements	
Hardware Requirements		
PC Operation/Memory	100 MHz operation and 64 MBytes RAM	
Hard Drive Space	At least 50 MBytes for VISA and SICL installation.	
PCI Bus Slot	At least one 5V PCI Bus Slot (to install 82350B). 82350B is a 5V card and will not fit in a 3.3V PCI slot.	
Software Requirements		
Operating System	Windows 95/98/Me/NT 4.0/2000/XP	
Agilent IO Libraries Installation Sizes	<ul style="list-style-type: none"> - Core Installation (LAN and ASRL only) - Runtime Installation (adds hw drivers) - Full Installation (without manuals) - Full Installation (with manuals) - Add Adobe Acrobat Reader (version 5.05) 	<ul style="list-style-type: none"> 5 MB 9 MB 14 MB 34 MB 11 MB addl

Create an Emergency Repair Disk

The Agilent IO Libraries include I/O drivers for various PCI plug-in cards. Extensive testing of these drivers and cards has revealed that early revisions of the BIOS code in several PCs are not completely PCI-compliant. This has caused problems when running the Agilent IO Libraries, whether or not the PCI card is installed. Problems can include system errors, operating system crashes, or card initialization failures.

For Windows NT operating systems, most PC manufacturers recommend that before installing any PCI card, you first create an EMERGENCY REPAIR DISK. If your PC exhibits any abnormal behavior following installation of the Agilent IO Libraries, we recommend a BIOS upgrade to the PC. BIOS upgrades are available from most PC manufacturers' websites.

Step 2 - Installing Agilent IO Libraries

This step shows how to install a full version of the Agilent IO Libraries, using default settings.

Before You Install the Libraries

Before you install the Agilent IO Libraries, take a moment to learn about the IO libraries components, check for previously installed versions of the libraries, and determine the type of installation for the libraries.

Agilent IO Libraries Components

The Agilent IO Libraries software consists of Agilent VISA, SICL, and I/O configuration utilities. The software is contained on the Agilent *IO Libraries for Instrument Control* CD that shipped with your 82350. This table shows the parts of the Agilent IO Libraries that apply to the 82350.

Agilent IO Libraries	
Agilent VISA	Agilent <i>Virtual Instrument Software Architecture</i> (VISA) is an IO library that can be used to develop I/O applications and instrument drivers that comply with the <i>VXIplug&play</i> standards.
Agilent SICL	Agilent <i>Standard Instrument Control Library</i> (SICL) is an IO library developed by Agilent that is portable across many IO interfaces.
I/O Configuration Utilities	
IO Config	The <i>IO Config</i> utility is used by the Agilent IO Libraries to configure instrument I/O hardware interfaces. An interface must be configured with IO Config before it can be used with the Agilent IO Libraries.
VISA Assistant	<i>VISA Assistant</i> is an application program that can be used to control and communicate with VXI, GPIB, and serial instruments.
Agilent IO Libraries Control (blue IO Icon on the Windows Taskbar)	
Clicking the blue IO icon allows you to do these things (see the <i>Agilent IO Libraries Installation and Configuration Guide</i> for details)	<ul style="list-style-type: none"> ■ Run the VISA Assistant utility ■ Run the IO Config utility ■ Display online (.pdf) documentation ■ Run the Windows Event Viewer ■ Select Agilent VISA Options ■ Hide the Icon or Exit ■ View the Version of the Agilent IO Libraries

Step 2 - Installing Agilent IO Libraries

Checking for Installed Agilent IO Libraries

Before you begin installation, check for previously installed Agilent IO Libraries. If a version of the Agilent IO Libraries is installed on your PC, a blue IO icon may be displayed on the Windows taskbar (on the lower right-hand side of the screen).



- If the IO icon is displayed, click the icon and click **About Agilent IO Libraries Control** to display the version. The version must be L.02.01 or greater.
- If the IO icon is not displayed, a version may still be installed. To check this, click **Start | Programs** and look for the *Agilent IO Libraries* program group.
- If this group is displayed, click **Agilent IO Libraries | IO Control** to display the IO icon. Then, click the icon and click **About Agilent IO Libraries Control** to display the installed version (must be L.02.01 or greater).
- If neither the IO icon nor the Agilent IO Libraries program group is displayed, no Agilent IO Libraries are installed and you can use the steps in this chapter to install the libraries.
- If a version of the libraries less than L.02.01 is installed, do **not** use the steps in this chapter. Instead, use the steps in the *Agilent IO Libraries Installation and Configuration Guide*. See “Selecting the Type of Installation” (following) for guidelines.

Step 2 - Installing Agilent IO Libraries**Selecting the Type of Installation**

The L.02.01 version of the IO Libraries provides the installation options shown in the following table. Select the type of installation required for your application.

Option	Description	See:
Full Install	Installs SICL and Agilent VISA as primary VISA with the default options for your computer configuration. Installing this option allows development and runtime capabilities using SICL and Agilent VISA for all supported interfaces.	“Installing the Agilent IO Libraries” in this chapter
Runtime Install	Install SICL and runtime Agilent VISA as primary VISA with the default options for your computer configuration. This option allows runtime capabilities (not program development) using SICL and Agilent VISA for all supported interfaces.	<i>Agilent IO Libraries Installation and Configuration Guide for Windows</i>
Custom Install	Allows you to select a custom installation of Agilent IO Libraries components. Six options are available: <ol style="list-style-type: none"> 1. Full install with Agilent VISA as primary 2. Full install with Agilent VISA as secondary 3. Runtime install with Agilent VISA as primary 4. Runtime install with Agilent VISA as secondary 5. Install Agilent GPIB-VXI 6. Select individual components 	<i>Agilent IO Libraries Installation and Configuration Guide for Windows</i>

Accessing the Installation and Configuration Guide

To perform any type of installation other than Full Installation with default directories, you should use the steps in the *Agilent IO Libraries Installation and Configuration Guide for Windows*. To access an electronic (.pdf) version of the *Agilent IO Libraries Installation and Configuration Guide for Windows*:

- 1** Insert the *Agilent IO Libraries for Instrument Control* CD (shipped with your 82350) into your CD-ROM drive. When the InstallShield Wizard appears, click **Cancel**.
- 2** Use Windows Explorer to navigate to <drive> \ *Manuals* and then double-click *install.pdf*, where <drive> is your CD-ROM drive letter. If Adobe Acrobat Reader 3.0 or greater is installed on your PC, the *Agilent IO Libraries Installation and Configuration Guide for Windows* appears. (If Acrobat Reader is not installed on your PC, from your Web browser search for Adobe Acrobat and then click **Adobe Acrobat Reader** to obtain a free download of Adobe Acrobat Reader.)

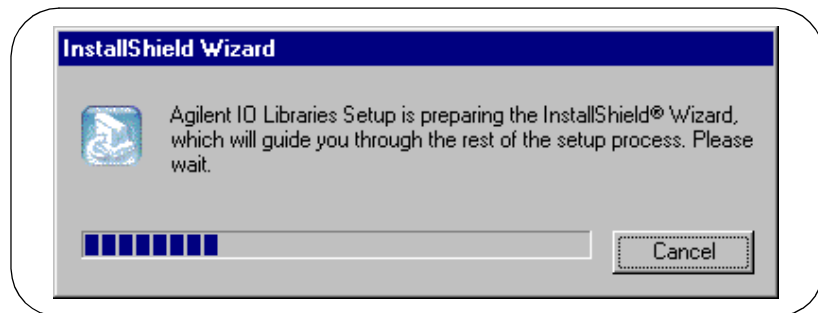
Installing the Agilent IO Libraries

This section shows suggested steps to perform a full installation of **new** Agilent IO Libraries, when Agilent IO Libraries **have not** been installed on your PC. The full installation installs all library components with recommended options for your computer and is applicable for most applications.

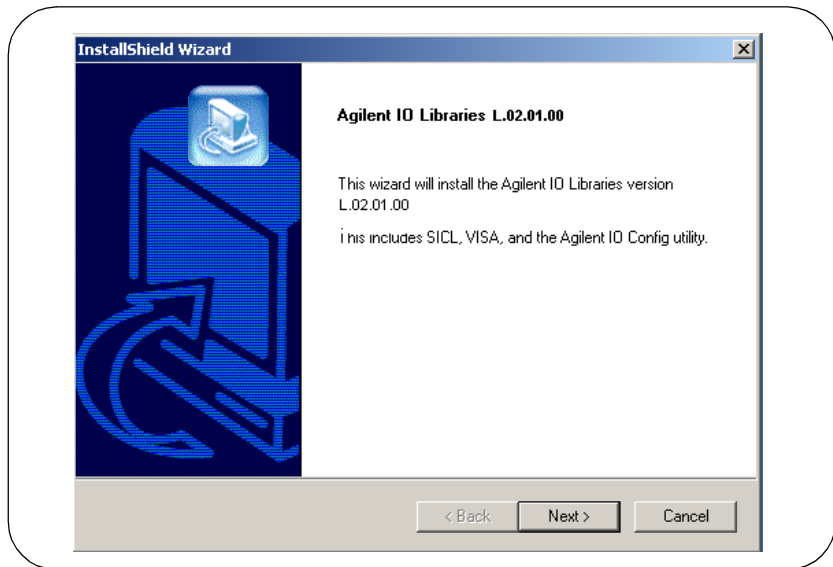
NOTE

If you do not want to perform a full installation of the libraries, do not use the following steps. Instead, use the steps in the Agilent IO Libraries Installation and Configuration Guide for Windows. See “Selecting the Type of Installation” on the previous page for guidelines to select the type of installation for your application.

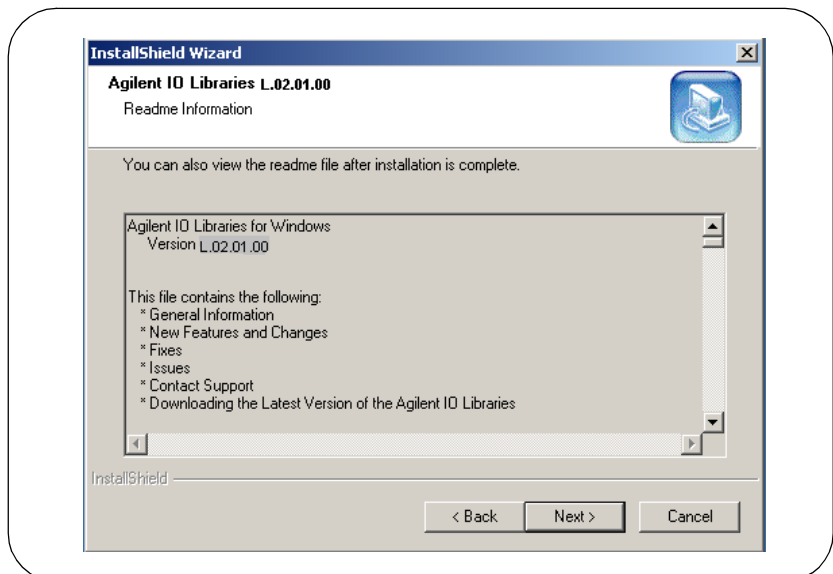
- 1** Turn your PC ON. Insert the *Agilent IO Libraries for Instrument Control* CD into the CD-ROM drive and wait a few seconds for the application to run.
- 2** The installer should automatically start when the CD is inserted. If not, select **Start | Run** and type **<drive>:setup.exe**, where **drive** is your CD-ROM drive.
- 3** The InstallShield® Wizard appears to begin the Agilent IO Libraries installation.



- 4 After a few seconds, the **Title Screen** appears.

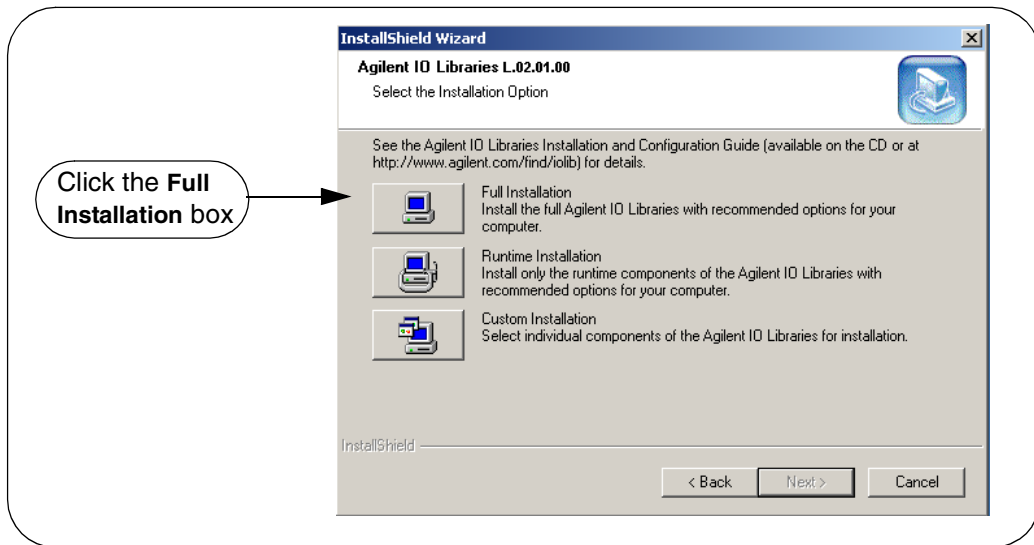


- 5 From the **Title Screen**, click **Next>** to go to the **License Agreement** screen. Then, click **Yes** to accept the license terms and to display the **Readme Information** screen.



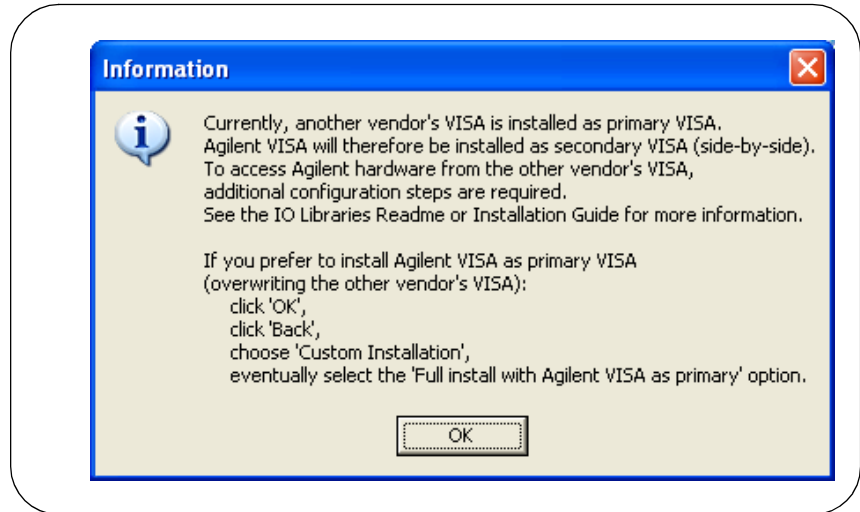
Step 2 - Installing Agilent IO Libraries

- 6 Scroll through the **Readme Information** screen to display the latest Agilent IO Libraries information.
 - We highly recommend you read the **Readme Information** screen for the latest installation information before proceeding further with the installation.
 - If you do not want to read the **Readme Information** screen at this time, after the Agilent IO Libraries are installed you can view the Readme information by clicking the blue IO icon on the Windows taskbar and clicking **View Documentation | IO Libraries Readme**.
- 7 When finished with the **Readme Information** screen, click **Next>** to display the **Select the Installation Option** screen. Click the **Full Installation** box and then click **Next>**.



Step 2 - Installing Agilent IO Libraries

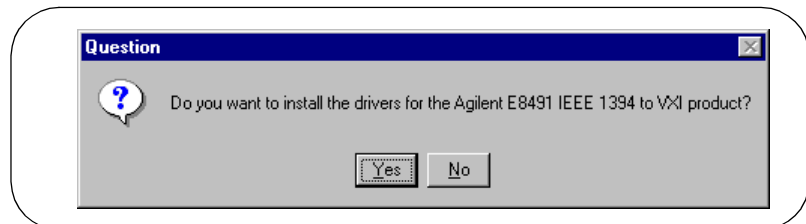
- a** If another vendor's VISA is currently installed, a side-by-side **Information** dialog box appears. If this dialog box appears, click **OK** to display the **Question** dialog box (for Windows NT 4.0 ONLY) (Step 8b) or to display the **Current Settings** dialog box (Step 9).



- b** For Windows NT 4.0 ONLY, the **Question** dialog box appears. Click **Yes** to install the drivers, **No** to not install the drivers. For other operating systems, the E8491 drivers are automatically installed, so this box does not appear.

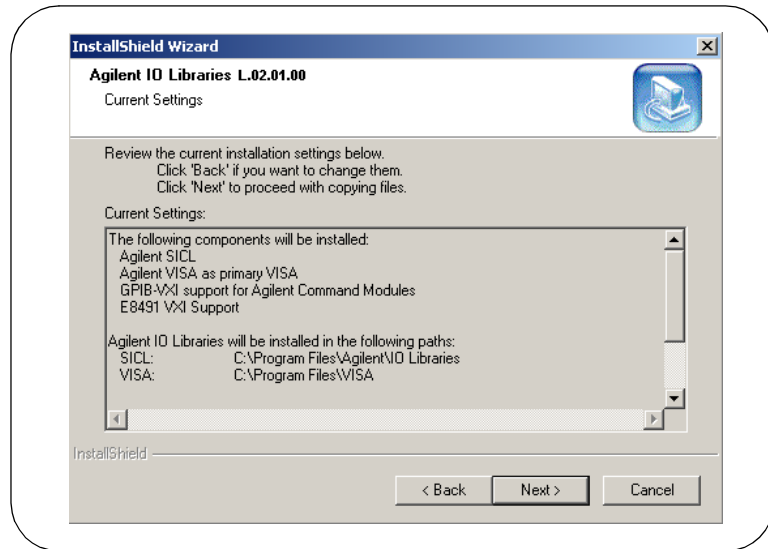
NOTE

*If an E8491 product is already installed in your system or if you plan to install and E8491 in the future, click **Yes** to install the latest driver. If an E8491 is not installed or you do not plan to install and E8491, click **No**.*



Step 2 - Installing Agilent IO Libraries

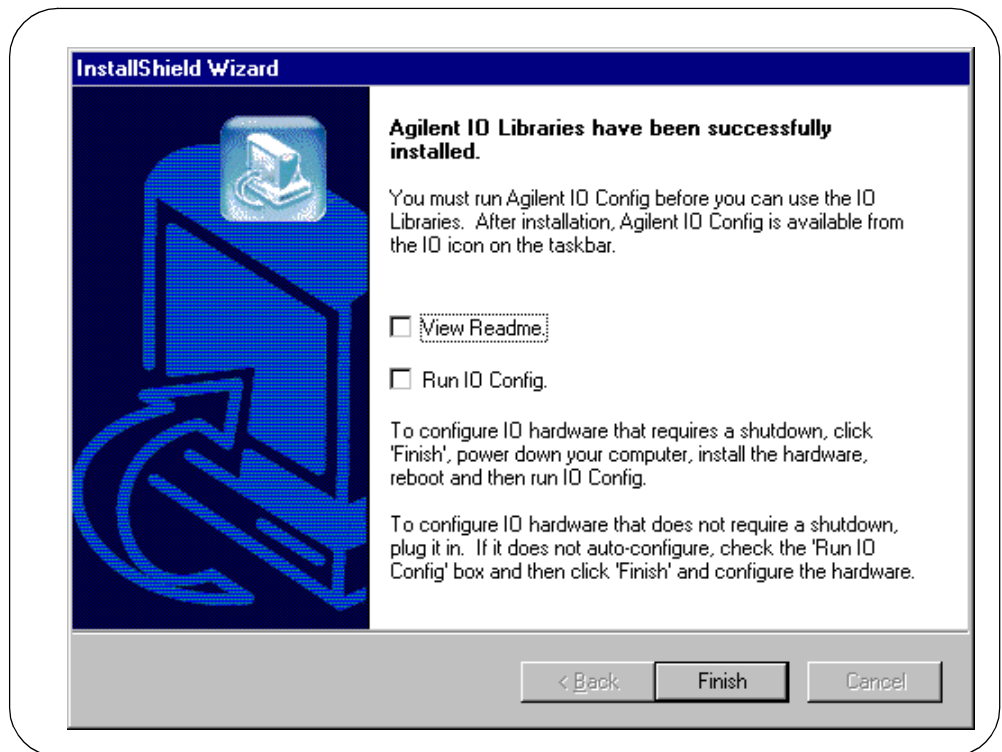
- 8** The **Current Settings** dialog box appears. This box shows the (default) paths in which SICL and VISA will be installed and the components that will be installed.

**NOTE**

If the side-by-side Information dialog box appears AND you want to set Agilent VISA as primary VISA, or if you want to change the settings listed, follow the instructions in "To Change the Settings." Otherwise, follow the instructions in "To Accept the Settings."

- **To Accept the Settings.** To accept the settings shown, click **Next>**. Setup will then install the files and display the **Agilent IO Libraries have been successfully installed** screen (see Step 10).
- **To Change the Settings.** To change the settings shown, click **<Back** to re-display the **Select the Installation Option** screen (see Step 8). From this screen, click the **Custom Installation** box and then click **Next>** to proceed with a custom installation. See "Installing a Custom Version of New Libraries" in the *Agilent IO Libraries Installation and Configuration Guide*.

- 9** When the **Agilent IO Libraries have been successfully installed** screen appears, do NOT check the **Run IO Config** box.
 - a** As desired, check the **View Readme** box on the **Agilent IO Libraries have been successfully installed** screen. Then, click **Finish** to complete the Agilent IO Libraries installation. If you checked the **View Readme** box, the Agilent IO Libraries Readme file is displayed.
 - b** Remove the *Agilent IO Libraries for Instrument Control* CD from the CD-ROM drive.



Step 3 - Connecting the 82350

This step shows how to install an 82350 interface card in a PCI slot in your PC and how to connect the 82350 card to GPIB instruments.

NOTE

If you have not yet installed the Agilent IO Libraries, go to Installing the Agilent IO Libraries and install the libraries BEFORE you install the 82350 in your PC.

CAUTION

To reduce the risk of damaging the 82350, only handle the card by the sheet metal frame or by its edges. Never touch any other part of the card, including the PCI connector.

Installing the 82350 in Your PC

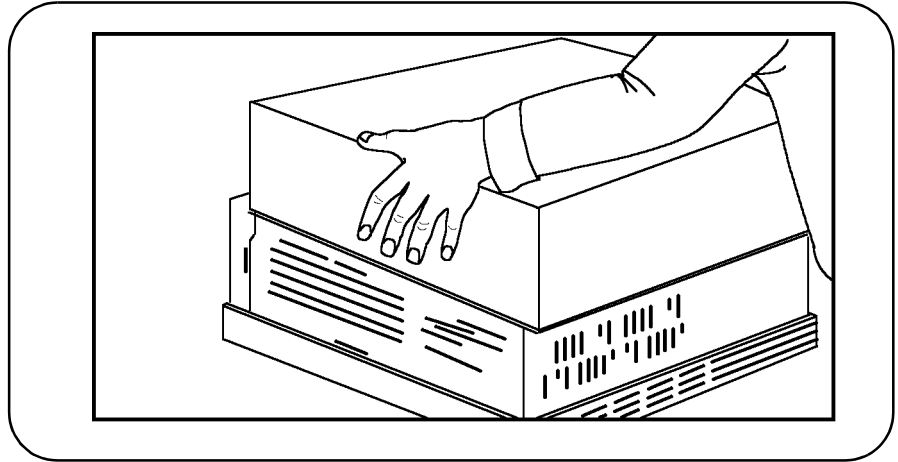
- 1 Remove the 82350 from its anti-static bag and record the 82350 Serial Number for future reference. The Serial Number is located on the white serial number label on the card. The label contains 24 characters, with the last 8 characters (plus US) being the 82350 Serial Number.

For example, if the numbers on the serial number label are 82350-66511-4224-01-42300113, since the last 8 characters are 42300113, the 82350 Serial Number is US42300113.

82350 Serial Number: US_____

- 2 Save the anti-static bag so you can protect the card if you need to remove the card from the PC.
- 3 Remove power from the PC and from all of its peripherals.
- 4 Remove the power cord from the PC.

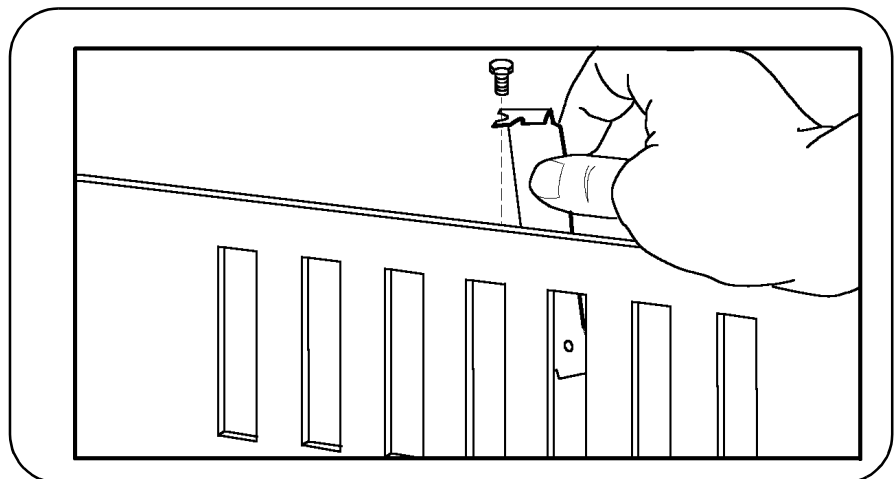
- 5** Unlock and remove the cover from the PC to allow access to the I/O slots. Refer to the PC documentation for detailed instructions.



- 6** Remove one of the PC back panel cover plates. Choose a 5V PCI slot that will give adequate clearance for the GPIB connector. See your PC documentation for PCI slot information.

NOTE

The 82350B is a 5V PCI card and will not fit in a 3.3V PCI slot. Also, the 82350 will not fit in an EISA or ISA slot.



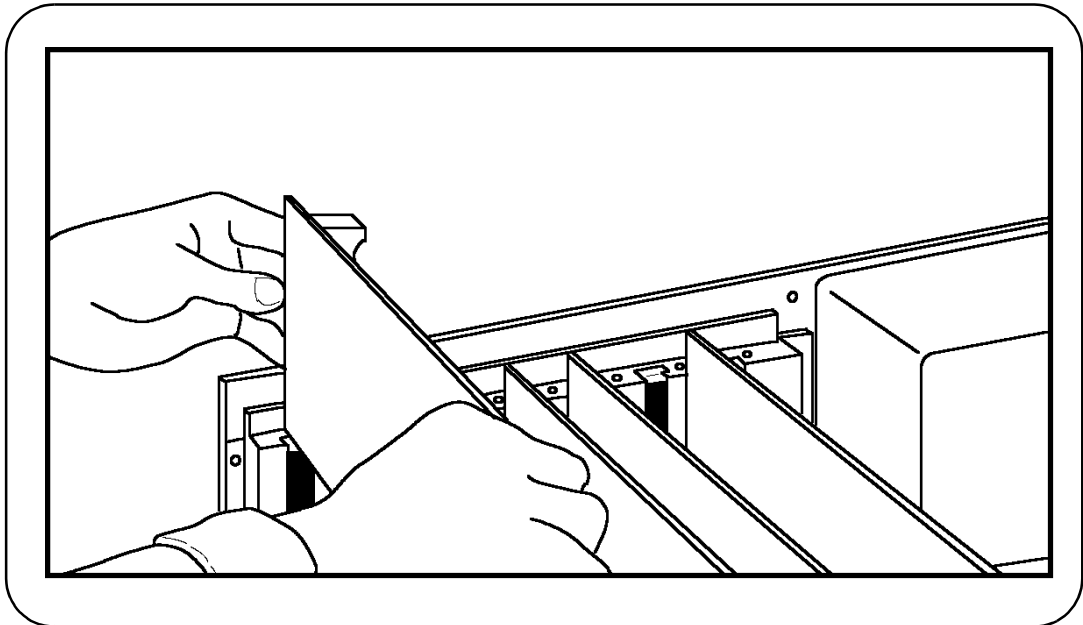
Step 3 - Connecting the 82350

- 7** Insert the 82350 card edge connector into the PCI expansion slot connector of the PC. Make sure the interface is fully seated by pushing firmly on the top edge of the card with the palm of your hand. The GPIB connector should extend through the back panel opening to allow GPIB cable connection.

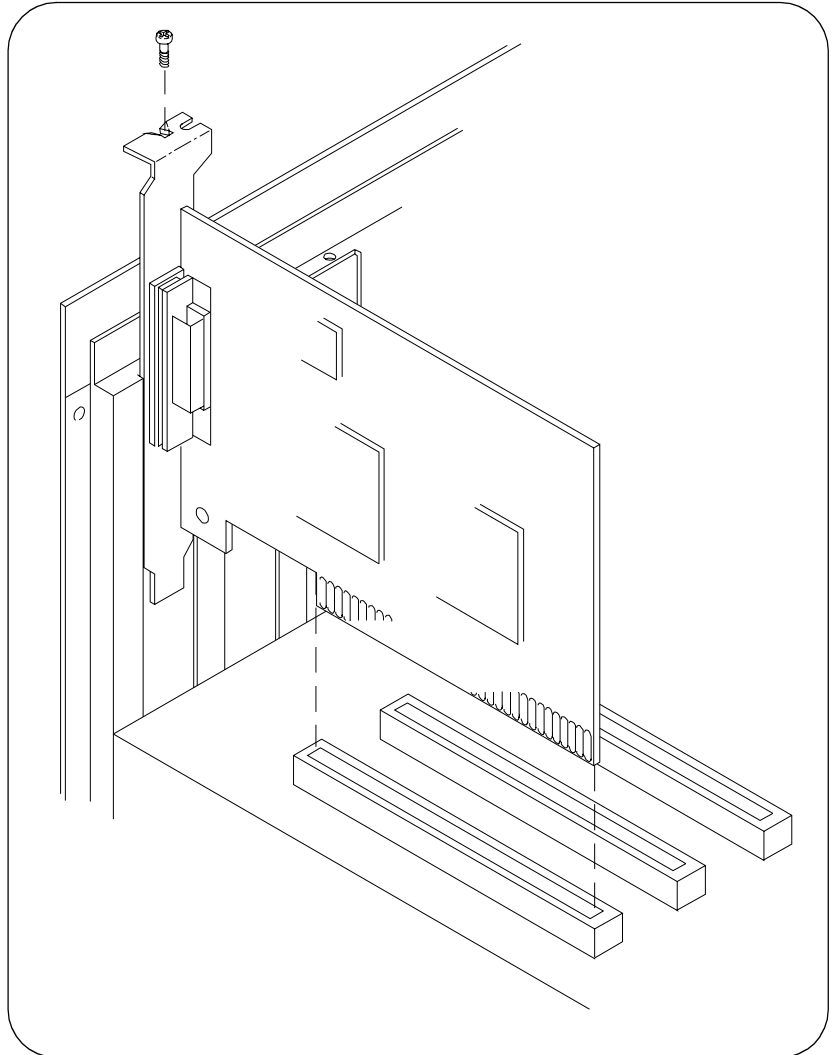
NOTE

If you are installing more than one 82350, you may not want to install the cards in adjacent slots, as this can cause problems when connecting the GPIB cables to the card connectors. Instead, you may want to install the cards so there is at least one empty slot between every two 82350s.

When inserting the 82350, be sure to hold the card by its edges. Also be careful with the metal faceplate around the GPIB connector as the faceplate can be bent.



- 8** Replace the cover plate screw to hold the 82350 in place. Save the blank cover plate for use if the 82350 is later removed. Replace the PC cover(s) as described in your PC documentation.



Connecting to GPIB Instruments

After the 82350 is installed in your PC, the next step is to connect the 82350 to GPIB instruments using GPIB cables.

- 1 Review Connection Guidelines.** The recommended method for connecting a GPIB system is linear with the system controller (PC) at one end of the system. However, a GPIB system can also be connected together in a star, linear, or a combination configuration as long as the total number of devices on the system is ≤ 15 and these guidelines are followed:
 - To minimize stress on connector mountings, no more than three cable connectors blocks should be stacked on top of one another. The GPIB connector screws should be finger-tightened only.
 - Minimize cable length as much as possible. All system devices must have tri-state drivers and must be powered on. Systems with devices not using tri-state drivers are limited to transfer rates < 250 Kbytes/sec. Turning devices on or off while a system is running may cause faulty operation.
 - For operation with data transfer rates < 500 Kbytes/sec, the total length of all GPIB cables is ≤ 2 meters times the number of devices connected together, up to a maximum of 20 meters.
 - For operation with data transfer rates > 500 Kbytes/sec, the total length of all GPIB cables is ≤ 1 meter times the number of devices connected together, up to a maximum of 15 meters.
 - The length between adjacent devices is not critical as long as the overall restriction is met. GPIB bus extenders are available that allow operation over much greater distances.

Step 3 - Connecting the 82350

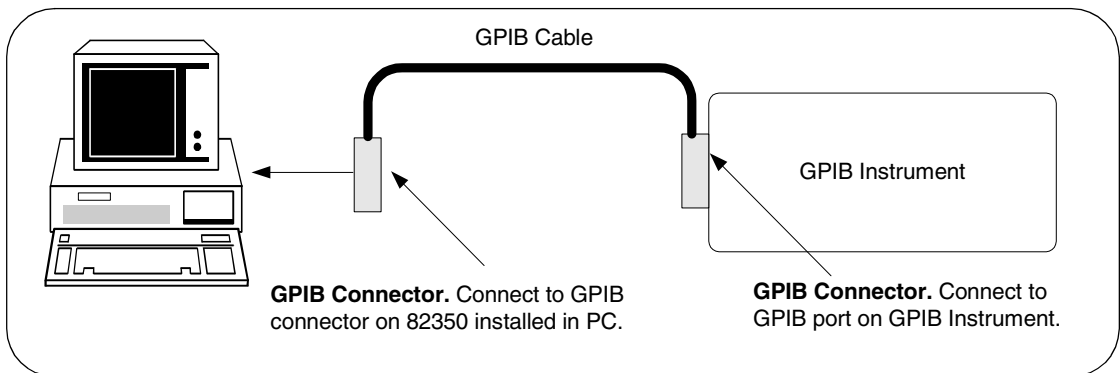
- 2 Connect GPIB Cables to the 82350.** Connect a separate GPIB cable to each installed 82350 using one of the following cables. Tighten the GPIB connector screws finger-tight only. (The screwdriver slots are for removal purposes only.) Then, go to 2a to connect a single GPIB instrument or go to 2b to connect multiple GPIB instruments.

- 10833A (1 meter)
- 10833B (2 meters)
- 10833C (4 meters)
- 10833D (0.5 meter)
- 8120-3448 (6 meters)
- 8120-3449 (8 meters)
- Other IEEE-488 GPIB interface bus cables, as applicable

- a Connecting to a Single GPIB Instrument.** The following figure shows connection from a single GPIB instrument to the GPIB connector of an 82350 installed in your PC. You may want to record the primary GPIB address of the attached instrument for future programming use.

CAUTION

To avoid damage to the connectors, only finger-tighten the connectors.

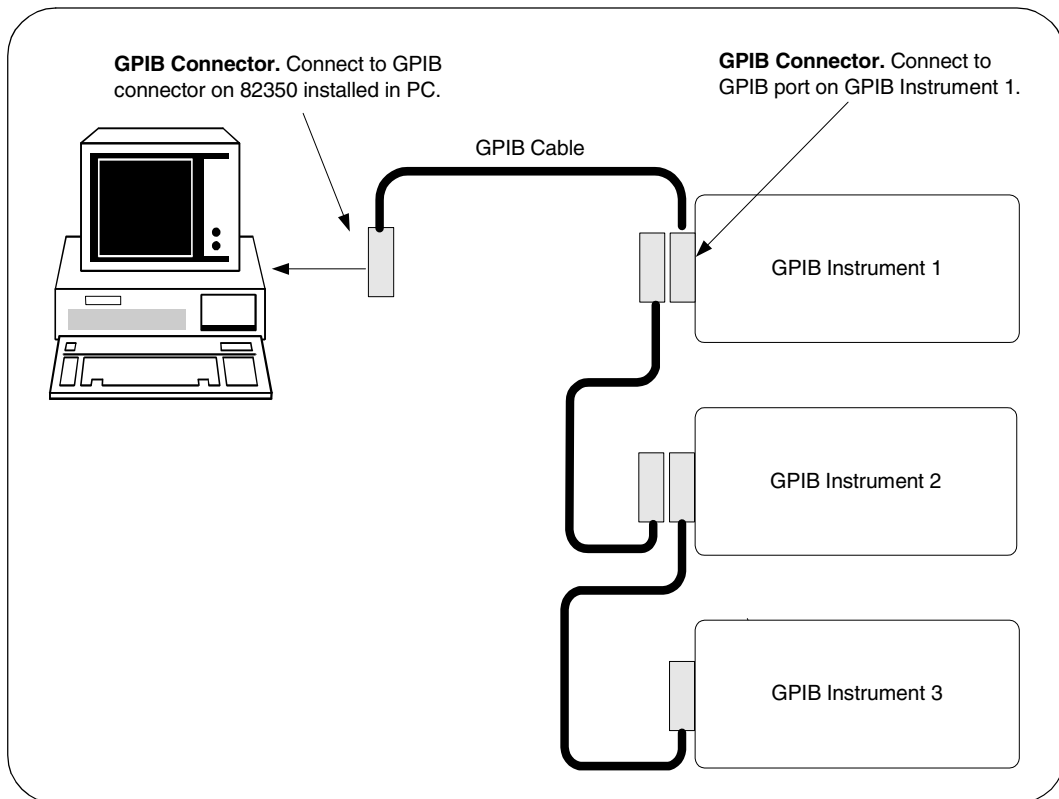


Step 3 - Connecting the 82350

- b Connecting to Multiple GPIB Instruments.** The following figure shows a typical way to connect three GPIB instruments to an 82350. You may want to record the primary GPIB address of each attached instrument for future programming use

NOTE

Although the figure shows 82350 connection to GPIB Instrument 1, the connection can be to any GPIB instrument in the system.



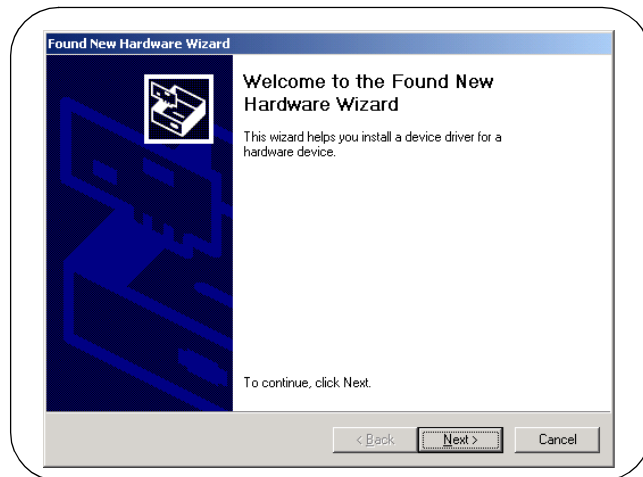
- 3** Reconnect the PC power cord and power-up the PC and attached peripherals/instruments.
- 4** When you have made the connections for your system, go to **Step 4 - Configuring the 82350.**

Step 4 - Configuring the 82350

This step shows how to configure a Windows 95/98/Me/2000/NT/XP operating system for a PC that has an 82350 installed.

Install Configuration Files

- 1 **Turn the PC ON.** As Windows 95/98/Me/2000/XP restarts, a **Found New Hardware Wizard** will start. This figure shows a typical Windows 2000 display. The display may be different for other operating systems.



- 2 **Install Files.** Use the following table for the actions to take for each operating system. Then, go to “Configure the 82350 Interface”.

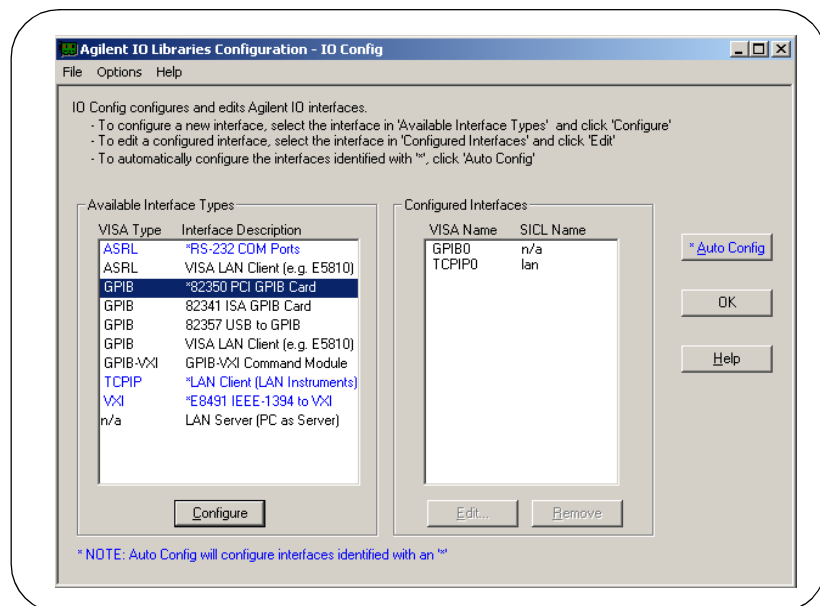
OS	Action
98/Me	<ul style="list-style-type: none">■ When the Wizard asks for the <i>Agilent IO Libraries</i> CD, click OK.■ When the Wizard asks for the <i>hpioclas.dll</i> file, browse to <i>C:\windows\system\</i> and click OK.
2000/XP	<ul style="list-style-type: none">■ Click Next> to accept the default suggestions.■ Click Finish to complete the installation.

Step 4 - Configuring the 82350**Configure the 82350 Interface**

- 1 Introducing the IO Config Utility.** The 82350 interfaces are configured using the IO Config utility that was installed as part of the Agilent IO Libraries. An **IO interface** can be defined as **both** a hardware interface and a software interface. The purpose of the IO Config utility is to associate a unique software interface name with a hardware interface.

The Agilent IO Libraries use an **Interface Name** or **Logical Unit Number** to identify an interface. This information is passed in the parameter string of the **viOpen** function call in a VISA program or in the **iopen** function call in a SICL program. IO Config assigns an Interface Name and Logical Unit Number to the interface hardware, as well as other necessary configuration values for an interface when the interface is configured. Typically, the LU Number is automatically assigned and you can ignore its setting.

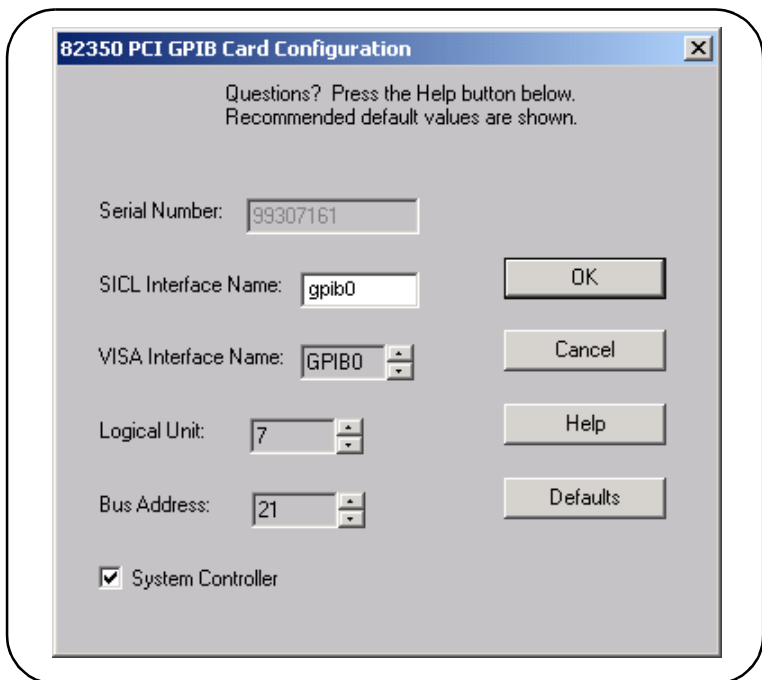
- 2 Configure 82350 Interfaces using IO Config.** Click the **Agilent IO Libraries Control** icon (blue icon on the Windows taskbar) and then click **Run IO Config**. When the main screen appears, highlight the **GPIB 82350 PCI GPIB Card** menu item and then click the **Configure** button.



- 3 When the **82350 PCI GPIB Card Configuration** screen appears, set the **VISA Interface Name**, **SICL Interface Name**, **Logical Unit** and **Bus Address** values as required. Also, verify that this is the **System Controller** for the GPIB to which it is attached (this is the typical operating mode). (See the System Controller discussion on the next page.) Then, click the **OK** button. Some guidelines to set these values follow.

NOTE

*After the system is configured, this screen may also display an **Edit VISA Config...** button. Clicking this button allows you to manually configure the interface as desired.*



Step 4 - Configuring the 82350

SICL Interface Name	Symbolic name that SICL uses to uniquely identify this GPIB interface. The default Interface Name is gpib0. The SICL Interface Name must be a unique string of alphanumeric characters, starting with a letter. Remember this value and the Logical Unit number to properly address GPIB devices in your SICL applications.
VISA Interface Name	Symbolic name that VISA uses to uniquely identify this GPIB interface. The default VISA Interface Name is GPIB0. The 82350 Interface Name for VISA must begin with the string GPIB and have an integer appended to it, such as GPIB0, GPIB1, GPIB2, etc. Remember this value to properly address GPIB devices in your VISA applications.
Logical Unit	Number that SICL uses to uniquely identify this 82350 interface. The Logical Unit number is an integer in the range of 0 - 10000. Remember this value and the SICL Interface Name to properly address the GPIB interface in your SICL applications.
Bus Address	address of this GPIB interface controller on the GPIB bus. It is usually 21 if the GPIB interface is a System Controller or 20 if the GPIB interface is a non-System Controller (see System Controller). These addresses are chosen by convention but any address in the range 0 - 30, inclusive, may be used.
System Controller	Determines if this interface controls which bus devices talk and which bus devices listen. If several devices exist on a bus, be sure each has a unique GPIB bus address and only one device is the System Controller (it is usually the device installed in the computer). Each GPIB interface has its own independent bus. Thus, each interface may be a System Controller as long as it is not chained together with other GPIB interfaces. However, two or more System Controllers on the same bus will cause the bus to be inoperative.

- 4** If the configuration values displayed are acceptable to you, click the **OK** button. Otherwise, you can change the configuration values by clicking the arrows next to the values. If there are no arrows, you can change the configuration values by typing in the values you want. At any time, you can press the **Defaults** button to return the configuration dialog box to its default configuration values for the GPIB interface.
- 5** When you have changed the desired values, either click the **OK** button to accept the changes or click the **Cancel** button to cancel the changes and return to the previous configuration values for the GPIB interface.
- 6** If you have installed more than one 82350 card in your system, repeat these steps for the remaining cards.

Step 5 - Programming via the 82350

After the 82350 has been configured and you have connected your GPIB instruments to the 82350, the next step is to establish communication between your PC and the instruments using *VISA Assistant*. After communication has been established, you can begin programming the instruments using VISA, SICL, or SCPI commands. This section includes:

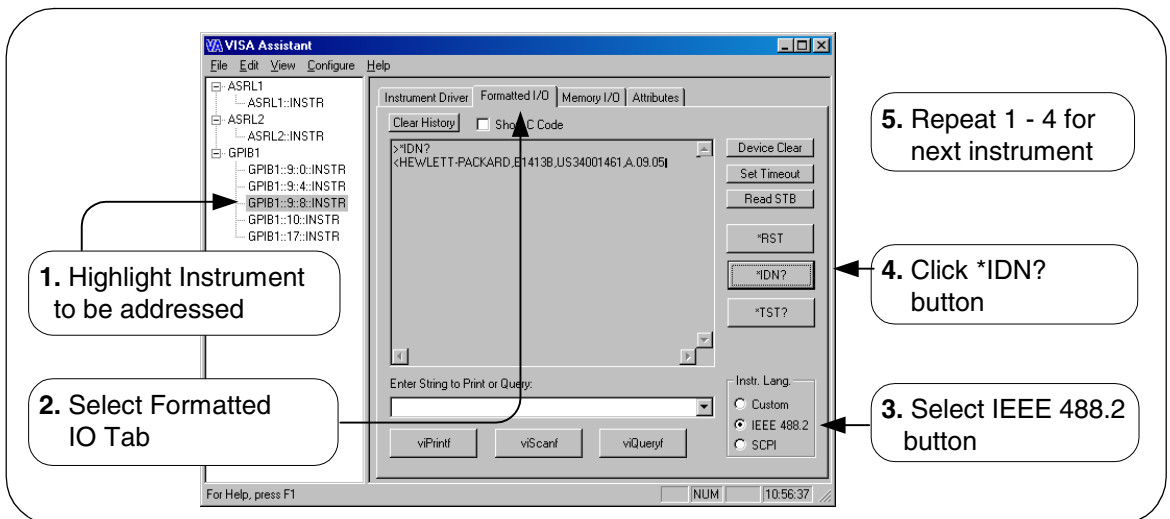
- Establishing Instrument Communication
- Programming GPIB Instruments

Establishing Instrument Communication

When the Agilent IO Libraries were installed on your PC, an IO configuration utility called **VISA Assistant** was also installed. You can use VISA Assistant to verify communication between your PC and connected GPIB instruments.

To use VISA Assistant for IEEE-488.2 or SCPI instruments, click the blue **IO** icon on the Windows taskbar (on the lower right-hand corner of the screen). Then, click **Run VISA Assistant** to display the VISA Assistant main screen. For example, the following figure shows steps you can use to return the ID string for an IEEE-488.2-compliant instrument.

When communication has been established with each GPIB instrument, you can begin to program the instruments using VISA or SICL commands. See the next section “Programming GPIB Instruments” for an introduction.



Programming GPIB Instruments

This section provides an introduction to programming GPIB instruments via the 82350 PCI GPIB interface using the Agilent VISA and SICL IO Libraries. You can program in various languages/applications, including Visual Basic, Visual C++, Intuilink, Agilent VEE, and National Instruments LabView.

See the applicable User's Guide, such as the *Visual Basic User's Guide*, for programming guidelines. You can also find additional programming examples using *VXIplug&play* drivers in the instrument *User's Guide*. After the 82350 is successfully installed and configured, the interface should act as a transparent interface for programming GPIB instruments.

For information on programming using Agilent VISA, see the *Agilent VISA User's Guide*. Also, see the *Agilent IO Libraries Installation and Configuration Guide* for further information on the Agilent IO Libraries.

Accessing VISA and SICL Manuals

You can access .pdf copies of the *Agilent VISA User's Guide* and the *Agilent SICL User's Guide for Windows* from the blue **IO** icon on the Windows taskbar. Adobe Acrobat Reader is required to view these manuals.

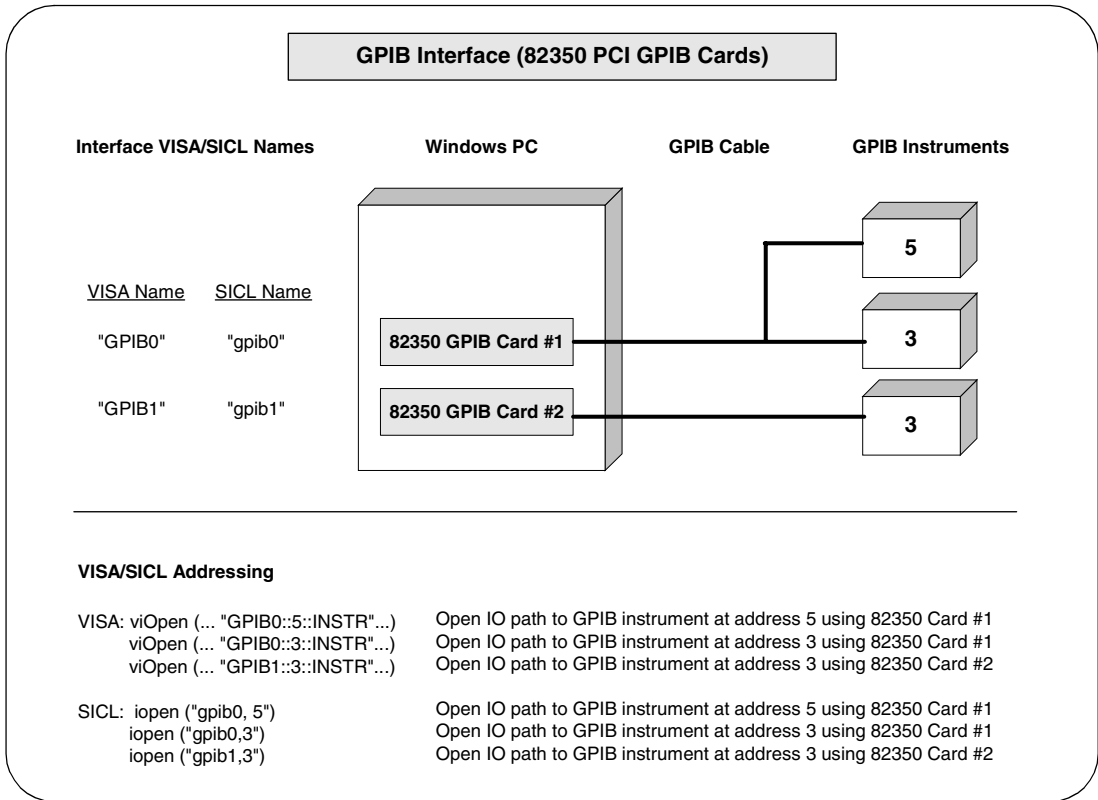
To access the *Agilent VISA User's Guide*, click the IO icon and then click **View Documentation | VISA Users Guide**. To access the *Agilent SICL User's Guide for Windows*, click the IO icon and then click **View Documentation | SICL Users Guide**.

Example: GPIB Interface Configuration

An **IO interface** consists of a hardware interface and a software interface. The purpose of the IO Config utility is to associate a unique software interface name with a hardware interface. The Agilent IO Libraries use an **Interface Name** or **Logical Unit Number** to identify an interface. This information is passed in the parameter string of the **viOpen** function call in a VISA program or in the **iopen** function call in a SICL program.

For example, the GPIB interface system in this figure consists of a Windows PC with two 82350 GPIB cards connected to three GPIB instruments via GPIB cables. For this system, the IO Config utility has been used to assign GPIB card #1 a VISA name of "GPIB0" and a SICL name of "gpib0".

IO Config has also been used to assign GPIB card #2 a VISA name of "GPIB1" and a SICL name of "gpib1". With these names assigned to the interfaces, the VISA/SICL addressing is as shown in the figure. Since unique names have been assigned by IO Config, you can use the VISA **viOpen** command to open the I/O paths to the GPIB instruments. Or, you can use the SICL **iopen** command to open the I/O paths shown.



Notes:

Troubleshooting Information

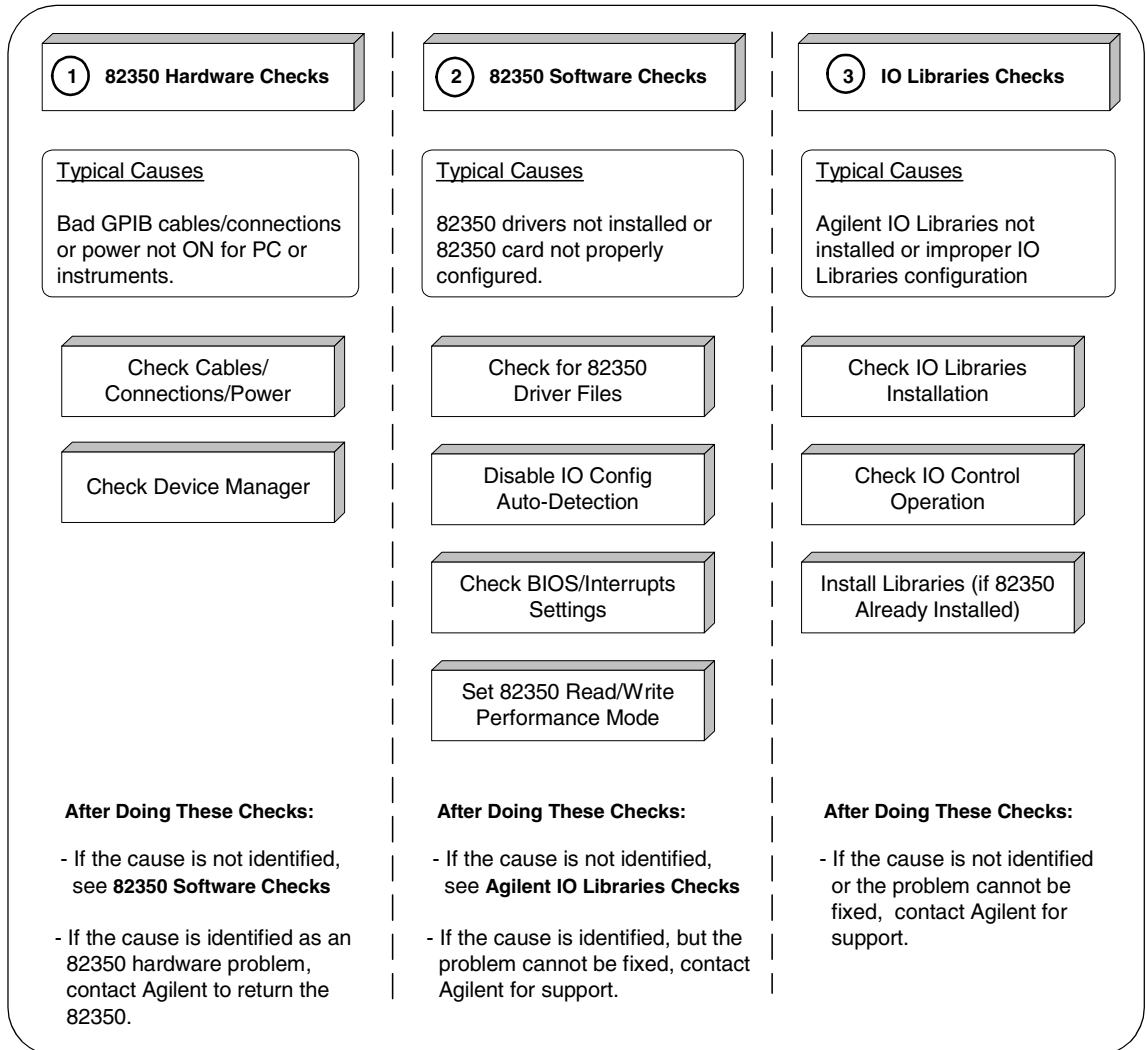
Troubleshooting Information

This chapter shows suggested steps to troubleshoot the 82350 and the Agilent IO Libraries, including:

- Troubleshooting Flowchart
- 82350 Hardware Checks
- 82350 Software Checks
- Agilent IO Libraries Checks

Troubleshooting Flowchart

A suggested troubleshooting flowchart for the 82350 and for the Agilent IO Libraries follows. We suggest you start at Step 1 and then go to Step 2 and then to Step 3, as required.



82350 Hardware Checks

This section gives guidelines to make hardware troubleshooting checks for the 82350, including:

- Check Cables/Connections/Power
- Check Device Manager

Check Cables/Connections/Power

We suggest you start your troubleshooting sequence by performing the following hardware checks. If the hardware checks do not solve the problem, see “82350 Software Checks”.

NOTE

There are no user-servicable parts for the 82350. If you suspect a hardware failure for the 82350, contact Agilent for instructions to return the unit. See Front Matter for telephone numbers/web site address.

- 1 Check GPIB Cable Connections.** Check all GPIB cables for good connection to the GPIB connector on the 82350 installed in your PC and the GPIB cable connections between all connected GPIB instruments. An improperly attached GPIB connector can cause the bus to malfunction.
- 2 Check GPIB Cables for Damage.** Check all GPIB cables for cuts/damage and check for bent/misaligned/crushed connector pins. Replace cables as required.
- 3 Disconnect/Reconnect GPIB Cables.** If Steps 1 and 2 do not solve the problem, try disconnecting and reconnecting (or replacing) GPIB cables.
- 4 Check PC/Instrument Power-on.** Verify that the PC and all connected GPIB instruments are functional and are powered ON. Verify that host computer is not in a Suspended power management state.
- 5 Reboot Your PC.** If doing Steps 1, 2, 3 or 4 does not solve the problem, reboot the PC. If this does not solve the problem, go to “Check Device Manager”.

Check Device Manager

You can use the Windows Device Manager to reinstall the 82350, as required. For example, with Windows 2000, go to **Control Panel** by selecting **Start | Settings | Control Panel**

Then, select **System | Hardware | Device Manager**. From Device Manager, select **82350** and then **Properties**. Tab to **Driver** and click **Reinstall Driver**. This will allow the Windows Plug and Play Manager to begin searching for a driver for the 82350. Since Device Manager may have disabled the 82350 device, click **Enable** to restart the 82350. If this does not resolve the problem, go to “82350 Software Checks”.

82350 Software Checks

This section provides guidelines for 82350 software checks, including:

- Check for 82350 Driver Files
- Disable IO Config Auto-Detection
- Check BIOS/Interrupts Settings
- Set 82350 Read/Write Performance Mode

Check for 82350 Driver Files

After installing the Agilent IO Libraries, check for installed 82350 driver files.

- 1 Check for 82350 Driver Files.** Files are listed in their default directories.
 - ❑ *C:/Program Files/Agilent/IO Libraries/drivers/ag350i32.dll*
OR
C:/Program Files/Agilent/IO Libraries/drivers/ag350i31.dll
(98 SE/Me)
 - ❑ *C:/Winnt/system32/drivers/agt82350.sys* (Windows 2000)
OR
C:/Windows/system32/drivers/agt82350.sys (98/Me/XP)
 - ❑ *C:/Winnt/inf/agt350.inf* (Windows 2000)
OR
C:/Windows/inf/agt350.inf (98/Me/XP)
- 2 Uninstall the Agilent IO Libraries.** If the driver files are not found, uninstall the Agilent IO Libraries by inserting the *Agilent IO Libraries for Instrument Control* CD and clicking **Remove** and **Next>**. Then, follow the instructions to remove the libraries.
- 3 Reinstall the Agilent IO libraries.** Remove and reinsert the *Agilent IO Libraries for Instrument Control* CD into the CD-ROM. Follow the instructions in *Chapter 1 - Installing the 82350* to install the libraries.

Disable IO Config Auto-Detection

If your PC sound card stops working after configuring interfaces, disable the auto-detection process in IO Config, as the auto-detection process in IO Config can cause sound and other cards to stop responding. To disable the auto-detection process, edit *c:\Program Files\agilent\IO Libraries\intfcfg\intfcfg.txt* and follow the instructions (comments in the *intfcfg.txt* file) to set all GPIB cards to be manually detected by IO Config.

Check BIOS/Interrupts Settings

If IO Config reports finding an 82350 card with Serial Number ffffffff, this is typically caused by PCI cards not properly configuring. Try the following steps. If these steps do not work, remove and re-install the 82350 and then reconfigure the card.

- 1 Check BIOS Setting.** For Windows NT, make sure the BIOS **Operating System** setting is set to **Not PnP OS** or to **Running Windows NT** or to **Other**. It should not be set to **Running Windows 95**, **Running Windows 98**, **Running Windows 2000**, or **PnP O/S**
- 2 Upgrade your system BIOS to the latest version.** New computers oftentimes have newer BIOSs available.
- 3 If your computer locks up or freezes after installing.** This is typically caused by interrupt conflicts with other drivers in the system. PCI allows sharing of IRQs, but this also means the drivers for cards which share an IRQ must be handling interrupt chaining properly. Both NT and Windows 9x allow multiple drivers to install interrupt service routines (ISRs) for a single IRQ. The OS keeps a list of all the ISRs installed for each IRQ.

When the IRQ is asserted, the OS calls each ISR in turn until one of them returns TRUE (meaning that it handled the interrupt). The ISR's responsibility is to correctly return TRUE if its device was interrupting or FALSE if not. Drivers that return TRUE, even though they did not service the interrupt, will cause problems. Try the following steps to perform driver workarounds:

- a Upgrade the drivers for devices sharing an IRQ with Agilent,** including, but not limited to, your video drivers, your LAN drivers, Agilent IDE and/or SCSI drivers, and your sound drivers.

82350 Software Checks

- b** For Windows NT, Click **Control Panel | Devices**. Select the **HP350i32**. Select **Startup...** and set to **System** instead of the default **Automatic**. (Running IO Config will set this back to **Automatic**.)
 - c** For Windows 9x, change your BIOS **Installed OS** setting. Try all the different values and use the one that works. For Windows 9x, make sure all devices sharing an IRQ with our card have drivers installed. Right-click **My Computer** and select **Properties**, then **Device Manager**. Highlight **Computer** and click **Properties**. Find the 82350 card and check that all other cards on the same IRQ have a valid driver, not the big yellow question-mark.
- 4 Re-Configure Your PC.** Configure your PC so as to not share IRQ lines. Many PCI cards have bugs when sharing IRQ lines. You may or may not be able to do this on all PCs. Many PCs can be configured using the setup option when the PC is first booting.
- 5 Upgrade your system BIOS.** New computers may have a newer BIOS available. When installing a new system BIOS:
 - a** Make sure the BIOS **Installed O/S** setting is set correctly. This determines what software will configure all the *VX|plug&play* cards in your system. Either the BIOS or the O/S can perform the task of querying all the cards to determine their resource needs, picking a valid configuration for all these cards, and telling the cards what their actual resource settings are.
 - b** If the BIOS **Installed O/S** is set to **Windows 95, Windows 98, Windows 2000** or **Running a PnP O/S**, the BIOS will not perform this task and will leave it to the O/S to do this. If the **Installed O/S** is set to **Windows NT, NOT PnP O/S**, or **Other**, the BIOS will perform this task and the system may not work properly.
 - c** For NT version 4.0 or earlier, the BIOS must perform this task as the O/S does not know how to do this. For Windows 9x, either the BIOS or the O/S can do this task, so try both. If you are running Windows 95, try all combinations of settings. If you are running Windows NT, set to **Running Windows NT, Not VX|plug&play OS** or **Other**.

Set 82350 Read/Write Performance Mode

The 82350 card read and write calls use one of two modes:

- **Polling.** Bytes are transferred to/from the card, one at a time. Polling mode is advantageous for transferring a small number of bytes because the setup overhead is very low, but it does require CPU involvement for each byte transferred.
- **Interrupt.** An entire buffer is transferred to/from the card without CPU involvement. Interrupt mode is advantageous for transferring large buffers because the higher per byte transfer rate more than compensates for the relatively long interrupt setup overhead.

The default behavior of the 82350 driver is to use **Polling** mode for transfers of 256 bytes or less and to use **Interrupt** mode for larger transfers. You can modify this default behavior by doing the following:

SICL: The SICL `ihint(id, hint)` function can be called to modify the read/write behavior for on a SICL session. The `hint` values allowed are:

- **I_HINT_DONTCARE** (default value) Use Interrupt mode for transfer requests larger than 256 bytes, otherwise, use Polling mode.
- **I_HINT_USEPOLL** Use the Polling mode.
- **I_HINT_IO** Use the Interrupt mode.

VISA: The VISA `viSetAttribute(vi, VI_ATTR_DMA_ALLOW_EN, attrValue)` function can be called to modify the read/write behavior for a VISA session. The `VI_ATTR_DMA_ALLOW_EN` values allowed are:

- **VI_TRUE** (default value) Use Interrupt mode for transfer requests larger than 256 bytes, otherwise, use Polling mode.
- **VI_FALSE** Use the Polling mode.

Some additional factors to consider are:

- The settings discussed above are per session. This means you can open multiple sessions to a device and set different transfer modes for different sessions. The actual mode used will then depend on which session you are using for the read/write calls.
- In both SICL (with `hint = I_HINT_DONTCARE`) and VISA (with `VI_ATTR_DMA_ALLOW_EN = VI_TRUE`), the size of the read request (as specified by `bufsize` in a SICL `iread()` or `count` in a VISA `viRead()` function call) will determine the mode used even if the number of bytes actually read is less.

82350 Software Checks

- The default formatted IO read buffer size is 4096 so when using this default size, formatted reads in SICL (with `hint = I_HINT_DONTCARE`) and VISA (with `VI_ATTR_DMA_ALLOW_EN = VI_TRUE`) will use Interrupt mode even when a small number of bytes are expected.
- The default formatted IO write buffer size is 128 so when using this default size, formatted writes in SICL (with `hint = I_HINT_DONTCARE`) and VISA (with `VI_ATTR_DMA_ALLOW_EN = VI_TRUE`) will use Polling mode even when a large number of bytes are being sent.
- In SICL, Polling mode will always be used for the `iread()`, `ifread()` and `iscanf()` regardless of the above settings, when a `termchr` is set (`itermchr()` is not set to -1).
- In VISA, Polling mode will always be used for `viRead()`, `viBufRead()` and `viScanf()` regardless of the above settings, when `VI_ATTR_TERM_CHAR_EN = VI_TRUE`.

The **crossover point** at which the Interrupt mode becomes faster than the Polling mode depends on the CPU speed, with a faster CPU having a higher crossover point.

Agilent IO Libraries Checks

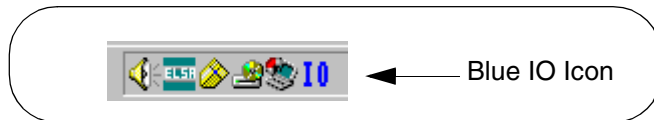
This section gives guidelines to make troubleshooting checks for the Agilent IO Libraries, including:

- Check IO Libraries Installation
- Check IO Control Operation
- Install IO Libraries (if 82350 Was Installed First)

Check IO Libraries Installation

Start your Agilent IO Libraries troubleshooting sequence by verifying IO Libraries installation. If the IO Libraries are installed, go to “Check IO Control Operation”.

- 1 Check Agilent IO Libraries Version.** If a version of the Agilent IO Libraries has been installed, a blue IO icon is normally displayed on the Windows taskbar (on the lower right-hand side of the screen).



- a** If the IO icon is displayed, click the icon and click **About Agilent IO Libraries Control** to display the version. The version must be L.02.01 or greater.
- b** If the IO icon is not displayed, a version may still be installed. To check this, click **Start | Programs** and look for the *Agilent IO Libraries* program group.
- c** If this group is displayed, click **Agilent IO Libraries | IO Control** to display the IO icon. Then, click the icon and click **About Agilent IO Libraries Control** to display the installed version (must be L.02.01 or greater).
- d** If neither the IO icon nor the Agilent IO Libraries program group is displayed, no Agilent IO Libraries are installed. In this case, or if the installed version is not L.02.01 or greater, you must install the newer version (see Step 2).

- 2 Install Agilent IO Libraries (as Required).** If Version L.02.01 or greater of the Agilent IO Libraries is not installed on your PC, install the libraries as shown in *Chapter 1 - Installing the 82350*. Otherwise, go to “Check IO Control Operation”.

Check IO Control Operation

When the Agilent IO Libraries were installed, an IO Control was created. When the IO Control is active, it is displayed as a blue IO icon on the Windows taskbar. If the IO Control is deactivated, SICL/VISA applications that are running with the 82350 will be unable to open sessions.

By default, the IO Control is always active after the Agilent IO Libraries are installed and the blue IO icon is displayed. However, the IO Control may be active even though the blue IO icon is not displayed. There are two ways that the blue IO icon can be hidden:

- 1 Click Hide Agilent IO Libraries Control.** Clicking the blue IO icon and then clicking **Hide Agilent IO Libraries Control** hides the blue IO icon, but does **not** deactivate the IO Control.
- 2 Click Exit.** Clicking the blue IO icon and then clicking **Exit** causes a dialog box to appear that asks you if you want to terminate the Agilent IO Libraries Control. Clicking **Yes** hides the blue IO icon **and** deactivates the IO Control.

If the blue IO icon is not displayed, either the blue IO icon display has been turned off and/or the IO Control (and associated **iprocsvr.exe**) is not active. In this case, click **Start | Programs | Agilent IO Libraries** and then click **IO Control** to re-start the IO Control and to display the blue IO icon.

Install IO Libraries (if 82350 was Installed First)

If you installed the 82350 before installing the Agilent IO Libraries software, use the applicable step for your operating system to install the Agilent IO Libraries. After the drivers for all new cards are installed, you can run **Setup** from the *Agilent IO Libraries for Instrument Control* CD to install and configure the Agilent IO Libraries.

NOTE

On older operating systems, you may be asked insert the 'HP I/O Libraries' CD. You should use the Agilent IO Libraries CD in this case. The card will be identified as a Hewlett-Packard card. This is necessary for backward compatibility.

- **Windows 2000:** The **Found New Hardware Wizard** will identify this card as a **PCI Simple Communications Controller**. The driver is located in the `\Windows 2000` directory on the *Agilent IO Libraries for Instrument Control* CD.
- **Windows NT 4.0:** Since Windows NT is not a *VXIplug&play* OS, all necessary driver installation and configuration is performed when you install the Agilent IO Libraries.
- **Windows 95/98:** The **Add New Hardware Wizard** will identify this card as a **PCI Communication Device**. The files needed for this device are located at the root of the *Agilent IO Libraries for Instrument Control* CD. After searching for a driver, Windows will find an updated driver for a 'Hewlett-Packard 82350A PCI HP-IB'.

Notes:

A

82350 Specifications

82350 Specifications

This appendix lists 82350B PCI GPIB Interface technical specifications and supplementary information.

General Requirements	
Minimum System Requirements	Windows 95/98 /Me/2000/XP, Pentium® -200, 32 MB RAM, 50 MB free disk space, PCI port (OS may require more resources)
Supported Standards	IEEE-488.1 and IEEE-488.2 compatible, SICL and VISA 2.2
Supported Applications (with IntuiLink)	Microsoft Excel 97 and 2000; Microsoft Word 97 and 2000. Check the web for latest supported applications.
Supported Software Development Applications	Visual Basic 6.0, Visual C++ 6.0, Visual Studio 6.0, Agilent VEE 6.0 or greater, BASIC for Windows, LabVIEW 6.0 or greater
General Characteristics	
Power Supply Voltage	+4.75 volts (minimum) to +5.25 volts (maximum)
Power Supply Current	1.3 Amps (typical)
Warranty	3 years
Environmental Specifications	
Operating Temperature	0°C to 55°C
Storage Temperature	-40°C to +70°C
Operating Humidity	15% RH (minimum) to 95% RH (maximum)
Storage Humidity	up to 90% RH/24 hours
Ordering Information	
Interface	82350B PCI GPIB Interface
GPIB cables (order separately)	<ul style="list-style-type: none"> - 10833A (1 meter) - 10833B (2 meters) - 10833C (4 meters) - 10833D (0.5 meter) - 8120-3448 (6 meters) - 8120-3449 (8 meters) - Other IEEE-488 GPIB interface bus cables, as applicable
Supplementary Information	
IEEE-488.1/IEEE-488.2 Compliance	The 82350 is in full compliance with IEEE-488.1 and IEEE-488.2 specifications.

82350

- 82350, steps to use, 13
- 82350 driver files, checking, 46
- 82350 hardware checks, 44
- 82350 software checks, 46
- 82350 specifications, 56

A

- Acrobat Reader, 19
- Agilent IO Libraries
 - components, 17
 - installation sizes, 16
- Agilent SICL, 17
- Agilent VEE, 38
- Agilent VISA, 17
- Agilent websites, 9

B

- BIOS/interrupts settings, checking, 47
- Bus Address, 36

C

- checking shipment, 15
- configuration files, installing, 33
- copyright information, 6
- crossover point, 82350, 50

D

- Declaration of Conformity, 6
- Device Manager, checking, 45

E

- emergency repair disk, 16
- Event Viewer, 17
- example: GPIB Interface Configuration, 38

F

- Found New Hardware wizard, 53

I

- ihint, 49
- installing the 82350
 - before you install the 82350, 15
 - configuring the 82350, 33
 - connecting the 82350, 26
 - connecting to instruments, 30
 - installing Agilent IO Libraries, 17
 - installing configuration files, 33
 - programming GPIB instruments, 38
 - programming via the 82350, 37
 - steps to install, 14
- interface name, 34, 38
- interrupt mode, 82350, 49
- Intuilink software, 38
- IO Config auto-detection, disabling, 47
- IO Config utility, 17, 34
- IO Control operation, checking, 52
- IO interface, 38
- IO Libraries
 - another vendors VISA installed, 23
 - CD, 19
 - checking for installation, 18
 - electronic version, 19
 - install (82350 was installed first), 53
 - installation, checking, 51
 - installing, 20
 - IO icon, 18
 - selecting installation type, 19
- iopen, 34, 38
- ipocsvr.exe, 52

L

Logical Unit, 36
logical unit number, 34, 38

P

performance mode, setting, 49
polling mode, 82350, 49
printing history, 6
programming GPIB instruments, 38

R

restricted rights, 5

S

SICL interface name, 36
specifications, 82350, 56
static electricity, avoiding, 15
System Controller, 36
system requirements, checking, 16

T

trademark information, 6
troubleshooting
 82350 driver files, 46
 82350 hardware checks, 44
 82350 software checks, 46
 auto-detection, disabling, 47
 BIOS/interrupts, checking, 47
 check Device Manager, 45
 flowchart, 43
 IO Control operation, 52
 IO Libraries install, checking, 51

U

user guide
 electronic copies, accessing, 10
 related documentation, 10

V

viOpen, 34, 38
VISA Assistant, 17, 37
VISA Interface Name, 36
viSetAttribute, 49
VXIplug&play drivers, 38

W

warranty, 5
websites, Agilent, 9



Agilent Technologies



Part Number: 82350-90002
Printed in U.S.A. July 2002 E0702



Agilent Technologies