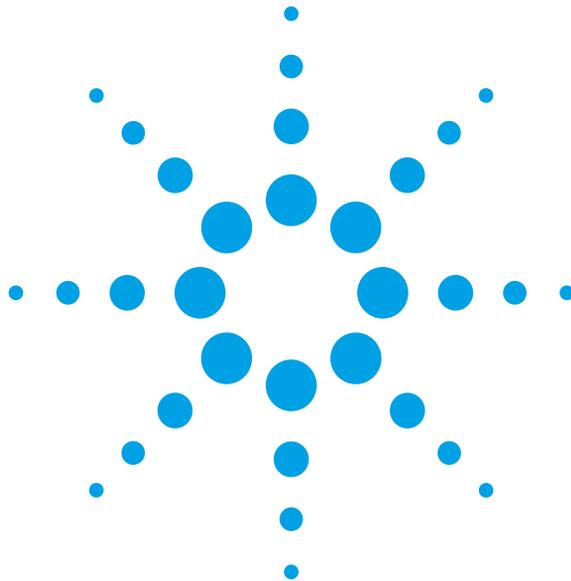


Agilent Technologies

Agilent 82350B PCI GPIB Interface



Installation and Configuration Guide



Agilent Technologies

Contents

82350B Installation and Configuration Guide

Chapter 1 - Installing and Configuring the 82350	5
Getting Started.....	7
Step 1 - Before You Install the 82350	9
Check Your Shipment	9
Check System Requirements	10
Create an Emergency Repair Disk	10
Step 2 - Installing Agilent IO Libraries Suite	11
Checking for Installed Agilent IO Libraries	11
Installing Agilent IO Libraries Suite	12
Step 3 - Connecting Your Instruments.....	14
Installing the 82350 in Your PC	14
Connecting Instruments to the 82350	17
Step 4 - Configuring the 82350	20
Installing Configuration Files	20
Configuring the 82350 Interface	21
Step 5 - Communicating with Instruments	24
Verifying Instrument Communication	24
Programming Your Instruments	25
Chapter 2 - Troubleshooting Guidelines	29
Troubleshooting Overview	31
82350 Hardware Checks	32
82350 Software Checks.....	36
Agilent IO Libraries Suite Checks	41
Chapter 3 - 82350 Guide Information	45
Guide Contents	47
Guide General Information	49
Notice	49
U.S. Government Restricted Rights	49
Warranty Information	50
Trademark Information	50
Printing History	50
Copyright Information	50
Declaration of Conformity	50
Radio and Television Interference	52
Contacting Agilent.....	53
Index	55

Installing and Configuring the 82350

Installing and Configuring the 82350

This *Agilent 82350B PCI GPIB Interface Installation and Configuration Guide* shows how to install and configure the Agilent 82350B PCI GPIB Interface (called the 82350 in this guide) and shows how to use the Agilent IO Libraries Suite to configure the card in PCs with Windows® 98, Windows Me, 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.

The 82350 interface is supported on PCs with Windows NT® 4.0, but the latest version of Agilent IO Libraries Suite is not supported on NT. To use Windows NT, go to <http://www.agilent.com/find/iolib> and download Agilent IO Libraries M.01.01. Refer to the IO Libraries M.01.01 documentation for installation and configuration instructions.

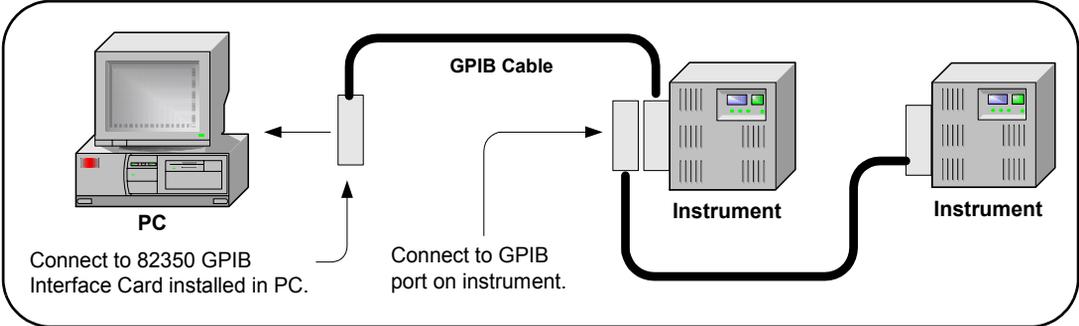
In case of difficulty in installing the 82350, see Chapter 2 - Troubleshooting Information.

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

- Getting Started
- Step 1 - Installing the Agilent IO Libraries Suite
- Step 2 - Installing the 82350 in Your PC
- Step 3 - Connecting Instruments to the 82350
- Step 4 - Configuring the 82350
- Step 5 - Communicating with Instruments

Getting Started

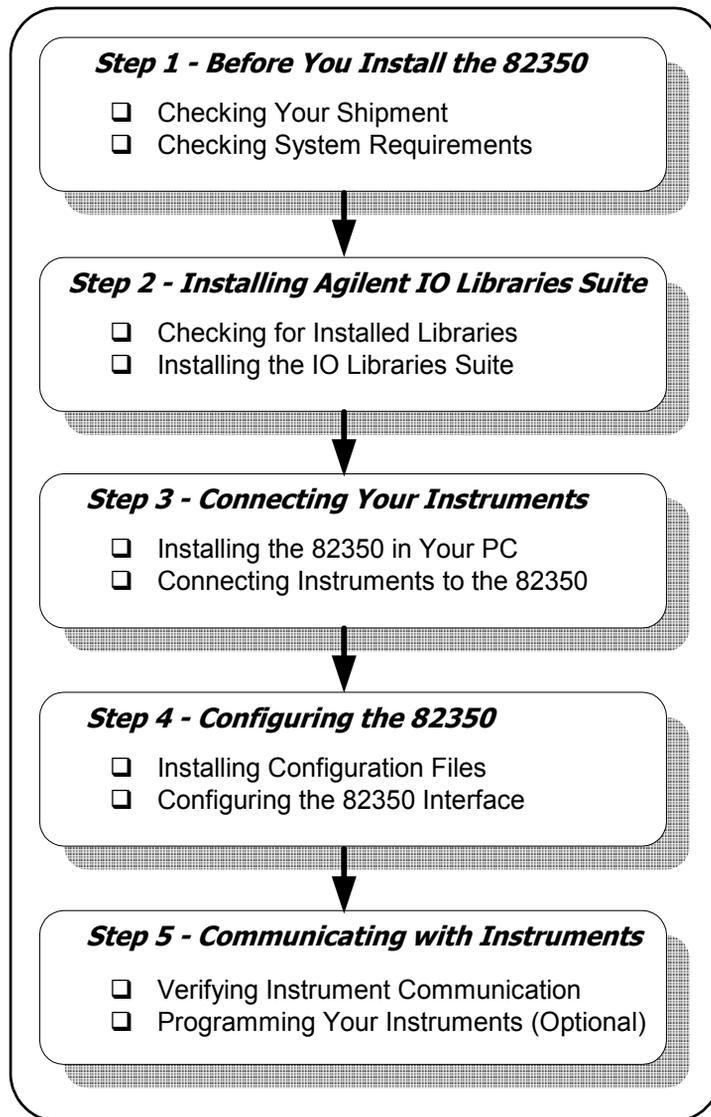
In this guide, an **82350 GPIB Interface System** is defined as a system in which GPIB instruments are connected via GPIB cables to an 82350 PCI GPIB Interface Card (called the 82350 in this guide) that is installed in a Windows PC. This figure shows a typical system.



The figure on the next page shows a suggested sequence of steps to install and configure the 82350 and to communicate between your PC and GPIB instruments via the 82350.

To get started, you may want to copy the figure to use as a guide as you set up your GPIB system. See the associated step if you need more details. See *Chapter 2 - Troubleshooting Guidelines* if you need additional information on setting up the 82350 or GPIB instruments.

Getting Started



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

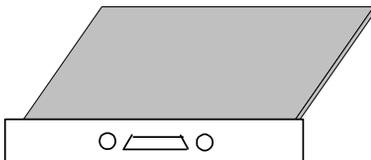
Your 82350 Interface shipment should include the items in the following figure. If any items are missing or damaged, keep the shipping materials and contact Agilent Technologies. See *Chapter 3 - 82350 Guide Information* for addresses/telephone numbers.

CAUTION

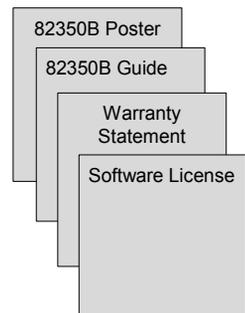
To reduce the risk of damaging the 82350 card, protect the card from static electricity. Leave the card in its anti-static bag until you are ready to install the card. Handle the card ONLY by the sheet metal frame or by the card edges. Never touch any other part of the card.

- Agilent Technologies 82350B PCI GPIB Interface Card
- Agilent Automation-Ready CD
- 82350B Getting Started Poster
- 82350B PCI GPIB Installation and Configuration Guide
- 82350B Warranty Statement
- Software License Agreement

82350B PCI GPIB Interface Card



Agilent Automation-Ready CD



Check System Requirements

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

Item	Minimum Requirements
Hardware Requirements	
PC Operation/Memory	100 MHz Pentium® II (800 MHz recommended) and 64 MBytes RAM (96 MB recommended)
Hard Drive Space	215 MB for installation: 160 MB for Microsoft® .NET Framework, 55 MB for Agilent IO Libraries Suite 125 MB for operation: 70 MB for Microsoft .NET Framework, 55 MB for Agilent IO Libraries Suite
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 98/Me/2000/XP Note: The 82350 interface is supported on Windows NT 4.0, but Agilent IO Libraries Suite 14.0 is not. If you are using Windows NT, go to http://www.agilent.com/find/iolib and download Agilent IO Libraries M.01.01. Refer to the IO Libraries M.01.01 documentation for installation and configuration instructions.

Create an Emergency Repair Disk

The Agilent IO Libraries Suite includes 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 Suite

This step shows how to install the Agilent IO Libraries Suite software, using default settings, including:

- Checking for Installed Agilent IO Libraries or Agilent IO Libraries Suite
- Installing Agilent IO Libraries Suite

NOTE

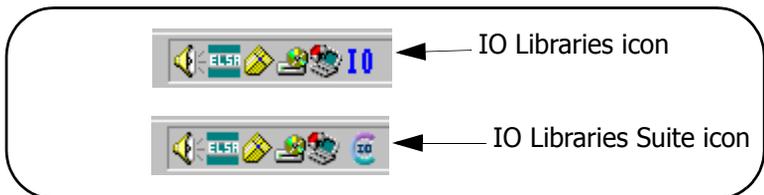
See the Agilent IO Libraries Getting Started Guide on your Automation-Ready CD for a full description of installation options and installation troubleshooting information.

NOTE

You must have Administrator privileges to install the IO Libraries Suite and to run the Connection Expert utility.

Checking for Installed Agilent IO Libraries

Before you begin installation, check for previously installed Agilent IO Libraries software. If a version of the Agilent IO Libraries or Agilent IO Libraries Suite 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 either IO icon is displayed, click the icon and click **About Agilent IO Control** to display the version. The version must be L.01.00 or greater. Note that Agilent IO Libraries Suite 14.0 was the revision immediately following Agilent IO Libraries M.01.01, so you should consider revision “14.0” to be a greater version number than “L” or “M”.

Step 2 - Installing Agilent IO Libraries Suite

- 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** or **Agilent IO Libraries Suite** program group.
- If this group is displayed, click **Agilent IO Libraries Suite | Utilities | IO Control** to display the IO icon. Then, click the icon and click **About Agilent IO Control** to display the installed version (must be L.01.00 or greater, inclusive of 14.0 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 and in the *Agilent IO Libraries Suite Getting Started Guide* to install the libraries.
- If the version of the Agilent IO Libraries is less than L.01.00, you must install the newer version included on your *Automation-Ready CD* to support the 82350B.
- If your version of the Agilent IO Libraries is at least L.01.00, but less than the version on your *Automation-Ready CD*, you may want to install the newer version to take advantage of new features and greater ease of use of the more recent Agilent IO Libraries Suite. Note that Agilent IO Libraries Suite 14.0 was the revision immediately following Agilent IO Libraries M.01.01, so you should consider revision “14.0” to be a greater version number than “L” or “M”. Configuration instructions in this manual make use of Agilent IO Libraries Suite 14.0.

Installing Agilent IO Libraries Suite

To install the Agilent IO Libraries Suite software,

- 1 First, *disconnect* any USB instruments, USB/GPIB converters, and FireWire-VXI interfaces that are connected to your PC.
- 2 Insert the *Automation-Ready CD* in your CD-ROM drive. Wait a few seconds for the **Agilent IO Libraries Suite 14.0** window to appear.
- 3 If the window does not appear automatically,
 - Click **Start | Run...**
 - Type `<drive>:autorun\auto.exe`, where `<drive>` is your CD drive letter.

When the **Agilent IO Libraries Suite 14.0** window appears, follow the directions in this window to install the Agilent IO Libraries Suite. (See the

Agilent IO Libraries Getting Started Guide on your *Automation-Ready CD* for a full description of installation options and installation troubleshooting information.)

Step 3 - Connecting Your Instruments

This step shows how to install an 82350 in a PCI slot in your PC and how to connect GPIB instruments to the 82350, including:

- Installing the 82350 in Your PC
- Connecting Instruments to the 82350

NOTE

If you have not yet installed the Agilent IO Libraries Suite, go to “Step 2 - Installing the Agilent IO Libraries Suite” and install the software 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.

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.

Installing the 82350 in Your PC

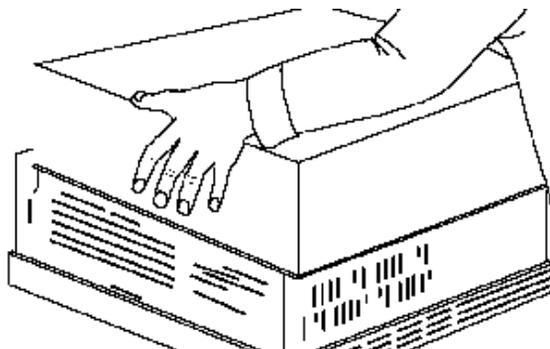
- 1 Record the Card Serial Number.** Remove the card from its anti-static bag and record the Serial Number for future reference. Save the anti-static bag so you can protect the card if you need to remove the card from the PC.

The 82350 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. Thus, 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.

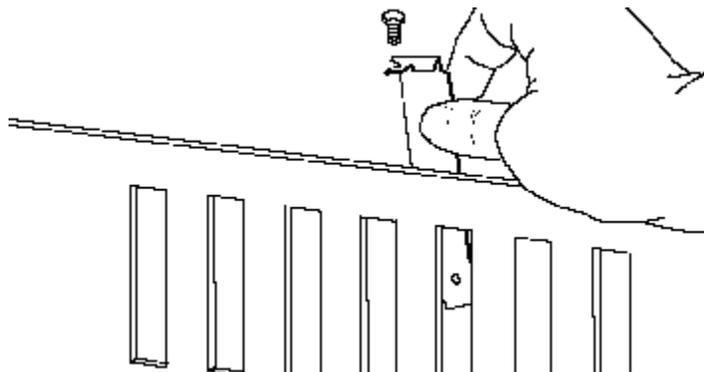
- 2 Remove PC Cover.** Remove power from the PC and from all of its peripherals. Then, remove the power cord from the PC. Unlock and remove the cover from the PC to allow access to the I/O slots. See your PC documentation for instructions.

NOTE

Take precautions against static discharge when handling and installing cards.



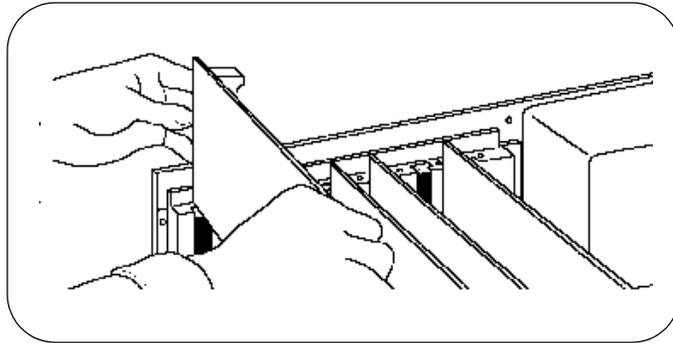
- 3 Remove a Cover Plate.** Remove one of the PC back panel cover plates. The 82350B is a 5V PCI card and will not fit in a 3.3V PCI slot or in an EISA or ISA slot. Choose a 5V PCI slot that will give adequate clearance for the GPIB connector.



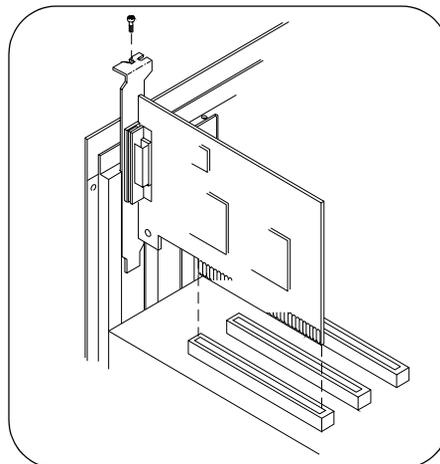
Step 3 - Connecting Your Instruments

- 4 Install the 82350.** Insert the 82350 Interface 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.

If you install more than one 82350, 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.



- 5 Replace the Cover Plate Screw.** This will 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 Instruments to the 82350

After the 82350 is installed in your PC, the next step is to connect your GPIB instruments to the installed 82350. Suggested steps follow. When you have made the connections, go to “Step 4 - Configuring the 82350”.

- 1 Review Connection Guidelines.** The recommended method for connecting a GPIB system is a linear arrangement 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 connector 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.

Installing and Configuring the 82350
Step 3 - Connecting Your Instruments

- 2 Connect GPIB Cables to the 82350.** Connect a separate GPIB cable to each installed 82350. Tighten the GPIB connector screws finger-tight only. (The screwdriver slots are for removal purposes only.) Two example connections follow connect a single GPIB instrument or to connect multiple GPIB instruments.

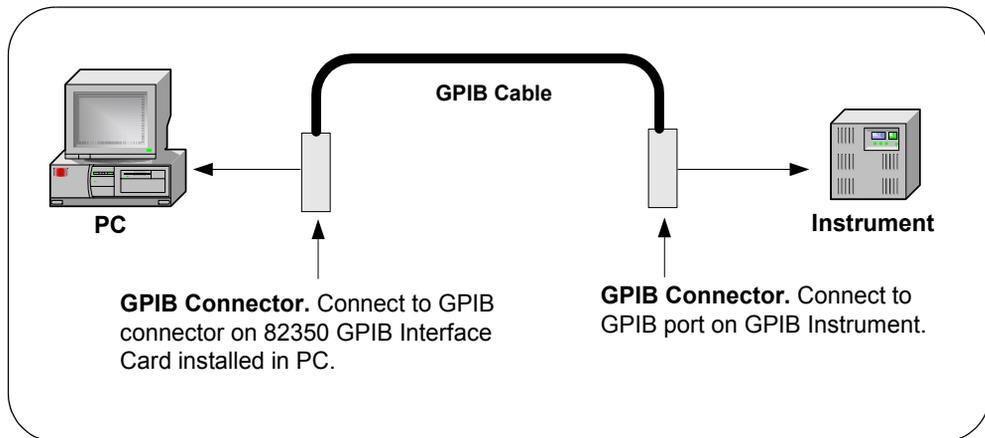
For information or to purchase Agilent GPIB cables, see
www.agilent.com/find/io

Example:
Connecting a Single
GPIB Instrument

This figure shows connections 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. After making the connections, reconnect the PC power cord and apply power to the PC and to attached peripherals/instruments.

CAUTION

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



Example:
Connecting Multiple
GPIB Instruments

This figure shows one way to connect three GPIB instruments to an Agilent 82350 GPIB Interface Card. You may want to record the primary GPIB address of each attached instrument for future programming use. After

Installing and Configuring the 82350
Step 3 - Connecting Your Instruments

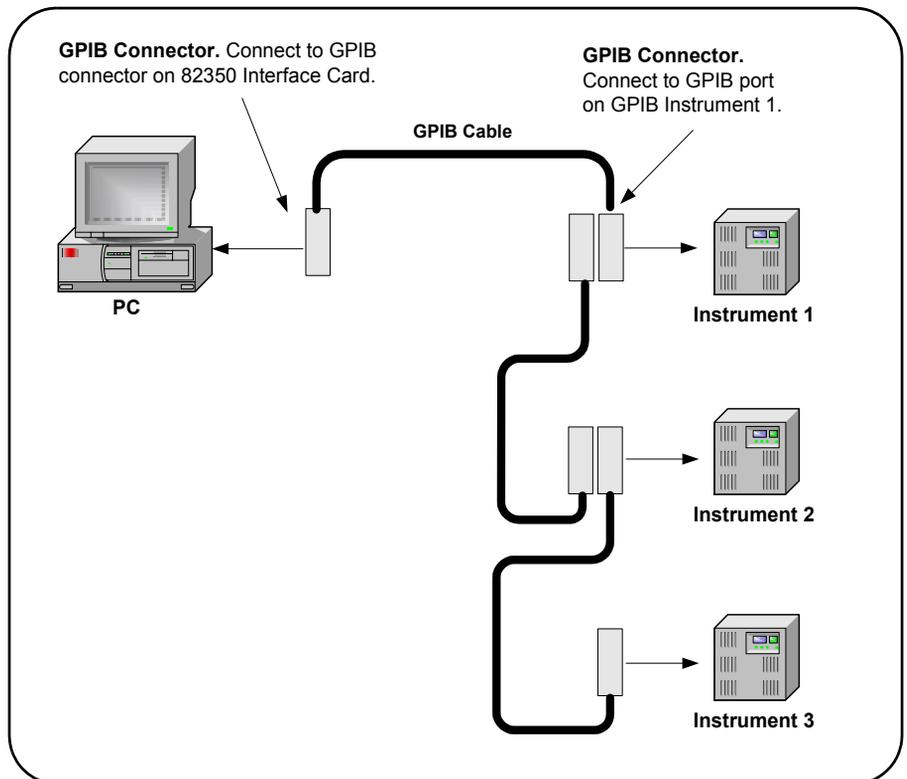
making the connections, reconnect the PC power cord and apply power to the PC and attached peripherals/instruments.

CAUTION

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

NOTE

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



Step 4 - Configuring the 82350

Step 4 - Configuring the 82350

This step shows how to configure a Windows 98/Me/2000/XP operating system for a PC that has an 82350 installed, including:

- Installing Configuration Files
- Configuring the 82350 Interface

Installing Configuration Files

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

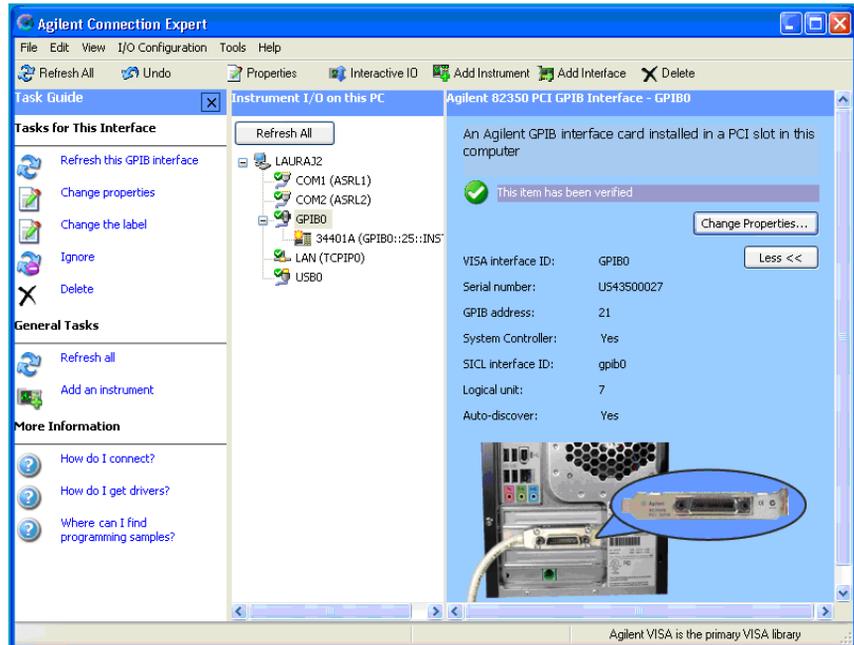


- 2 **Install Configuration Files.** Use the following table for the actions to take for your operating system. Then, go to “Configuring the 82350 Interface”.

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.

Configuring the 82350 Interface

- 1 Open Connection Expert.** Click the **Agilent IO Control** icon (blue circled **IO** icon on the Windows taskbar) and then click **Agilent Connection Expert**. When the Connection Expert window appears, highlight the GPIB interface in the explorer view (tree view at the center of the window) and then click **Change Properties...** to display the **Agilent 82350 PCI GPIB Interface** dialog box.



NOTE

For a description of Connection Expert and the Agilent IO Libraries Suite, see the Agilent IO Libraries Suite Online Help. To access this Help file, click the IO Control and select Documentation > IO Libraries Suite Help.

- 2 Configure GPIB Card Parameters.** When the **Agilent 82350 PCI GPIB Interface** dialog box appears, set the **VISA interface ID**, **SICL interface ID**, **Logical unit** and **GPIB address** values as required.

Step 4 - Configuring the 82350

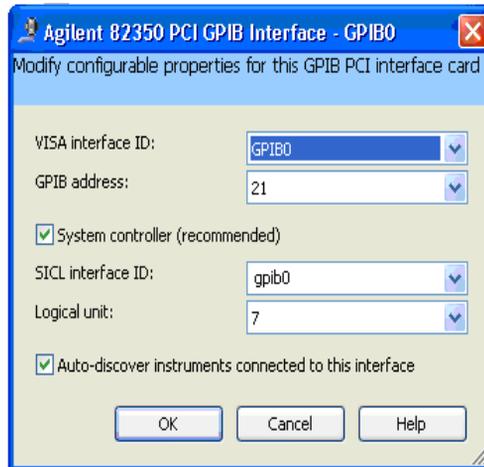
Also, verify that this is the **System controller** for the GPIB to which it is attached (this is the typical operating mode). (See the System Controller discussion below.) Then, click the **OK** button. Some guidelines to set these values follow.

NOTE

Changes to certain properties of the 82350, including:

- *GPIB address*
- *System controller flag*
- *SICL interface ID*
- *Logical unit*

will not take effect until you reboot your PC. If you choose not to reboot immediately, Connection Expert will display a warning icon ⚠ until you reboot.



82350 GPIB Interface Card Configuration Parameters	
VISA Interface ID	Symbolic name that VISA uses to uniquely identify this GPIB interface. The default VISA interface ID is GPIB0. The 82350 interface ID 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.

Step 4 - Configuring the 82350

GPIB 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, following). 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. 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.
SICL Interface ID	Symbolic name that SICL uses to uniquely identify this GPIB interface. The default Interface ID is gpib0. The SICL interface ID 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.
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 ID to properly address the GPIB interface in your SICL applications.

- 3 Repeat Steps for Other Cards.** If you have installed more than one 82350 in your PC, repeat these steps for the remaining cards. Then, go to “Step 5 - Communicating with Instruments”.

Step 5 - Communicating with Instruments

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 the Interactive IO utility. After communication has been established, you can begin programming the instruments using VISA, VISA COM, SICL, or SCPI commands. This section includes:

- Verifying Instrument Communication
- Programming Your Instruments (Optional)

Verifying Instrument Communication

When the Agilent IO Libraries Suite was installed on your PC, an I/O utility called **Interactive IO** was also installed. You can use Interactive IO to verify communication between your PC and connected GPIB instruments. This section shows one way to use Interactive IO to verify instrument communication.

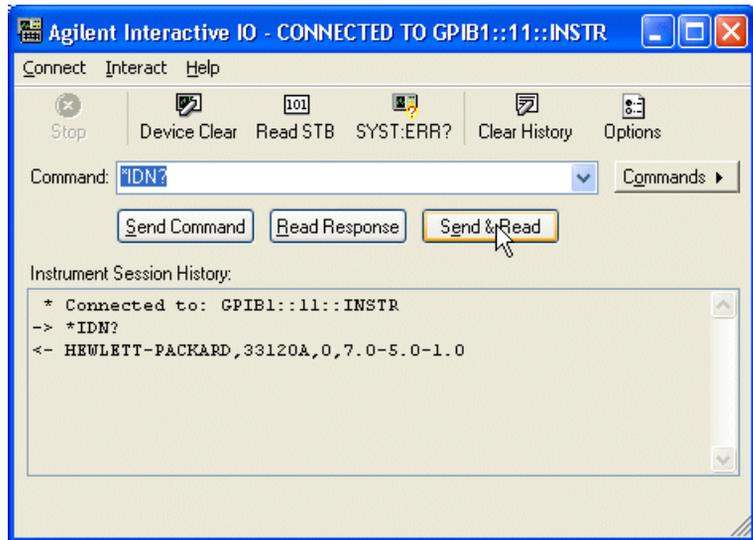
NOTE

Once your GPIB interface has been configured in Connection Expert, if you can see the attached GPIB instrument(s) in the Connection Expert explorer and see their IDN string information in the detail pane then communication has been verified. Interactive IO allows you to manually verify communication and send specific commands to your instruments.

To use Interactive IO to send a ***IDN?** (identification) query to an instrument:

- 1** Select the instrument by clicking its icon in the Connection Expert explorer view.
- 2** Right-click the instrument and click **Send Commands To This Instrument** to display the Interactive IO window. For information on Interactive IO, including a list of common commands and their meanings, click **Help | Help Topics**.
- 3** ***IDN?** is the default command. Click **Send & Read** to send the identification query to the instrument and display its reply in the Interactive IO window.

- To send other commands, click **Commands>** to select from a list of common commands, or type a command into the **Command:** field. If you experience timeout errors for some commands, click **Options** to change the timeout value.



Programming Your Instruments

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

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 various IO Libraries and instrument drivers in the instrument *User's Guide*. After the 82350 is successfully installed and configured, it should act as a transparent interface for programming GPIB instruments.

For information on programming using Agilent VISA, see the *Agilent VISA User's Guide*. For information on VISA COM and for function references for VISA, VISA COM, and SIDL, see the *IO Libraries Suite Online Help*.

Accessing
Programming
Manuals and Help

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

Step 5 - Communicating with Instruments

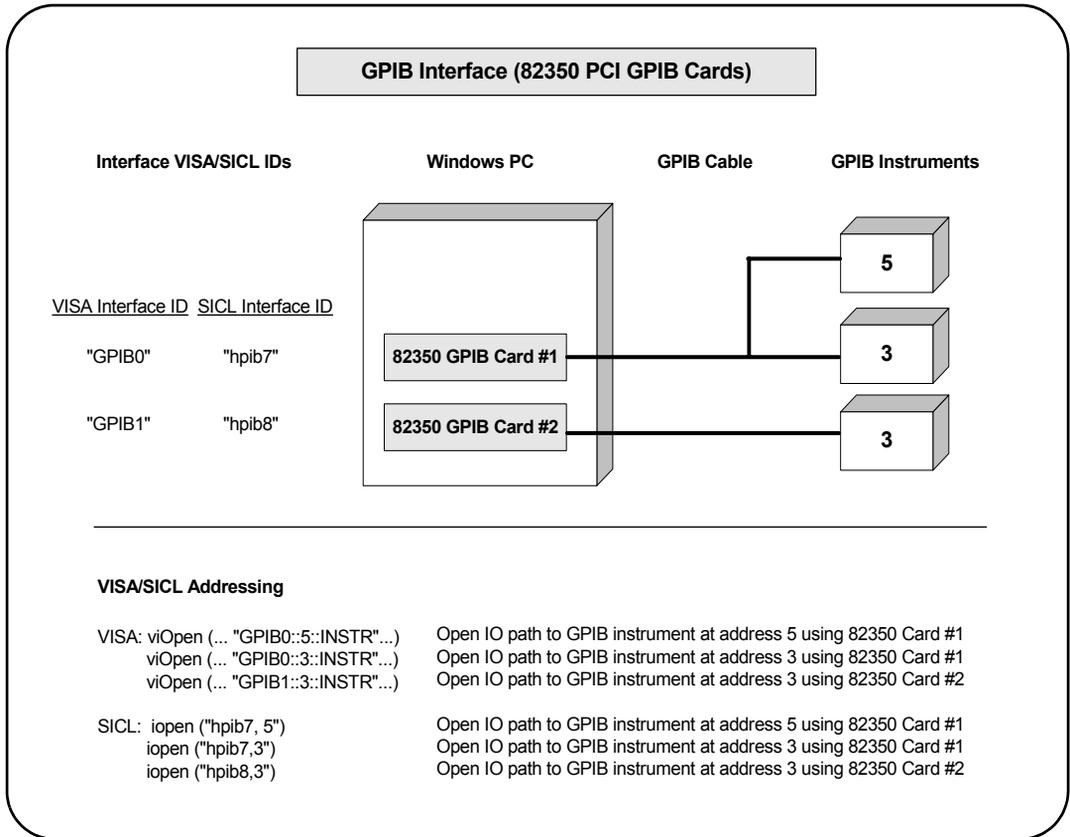
To access the *Agilent VISA User's Guide*, click the IO icon and then click **Documentation | VISA Users Guide**. To access the *Agilent SICL User's Guide for Windows*, click the IO icon and then click **Documentation | SICL Users Guide**. To access VISA COM information, and function references for VISA, VISA COM, and SICL, click the IO icon and then click **Documentation | IO Libraries Suite Help**.

Example: GPIB Interface Configuration

An **I/O interface** consists of a hardware interface and a software interface. One purpose of the Connection Expert utility is to associate a unique software interface ID with a hardware interface. The Agilent IO Libraries Suite uses an **Interface ID** 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 Connection Expert utility has been used to assign GPIB card #1 a VISA interface ID of "GPIB0" and a SICL interface ID of "gpib0".

Connection Expert has also been used to assign GPIB card #2 a VISA interface ID of "GPIB1" and a SICL interface ID 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 Connection Expert, 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 Guidelines

Troubleshooting Guidelines

This chapter shows suggested troubleshooting steps for an Agilent 82350 GPIB interface, including:

- Troubleshooting Overview
- 82350 Hardware Checks
- 82350 Software Checks
- Agilent IO Libraries Suite Checks

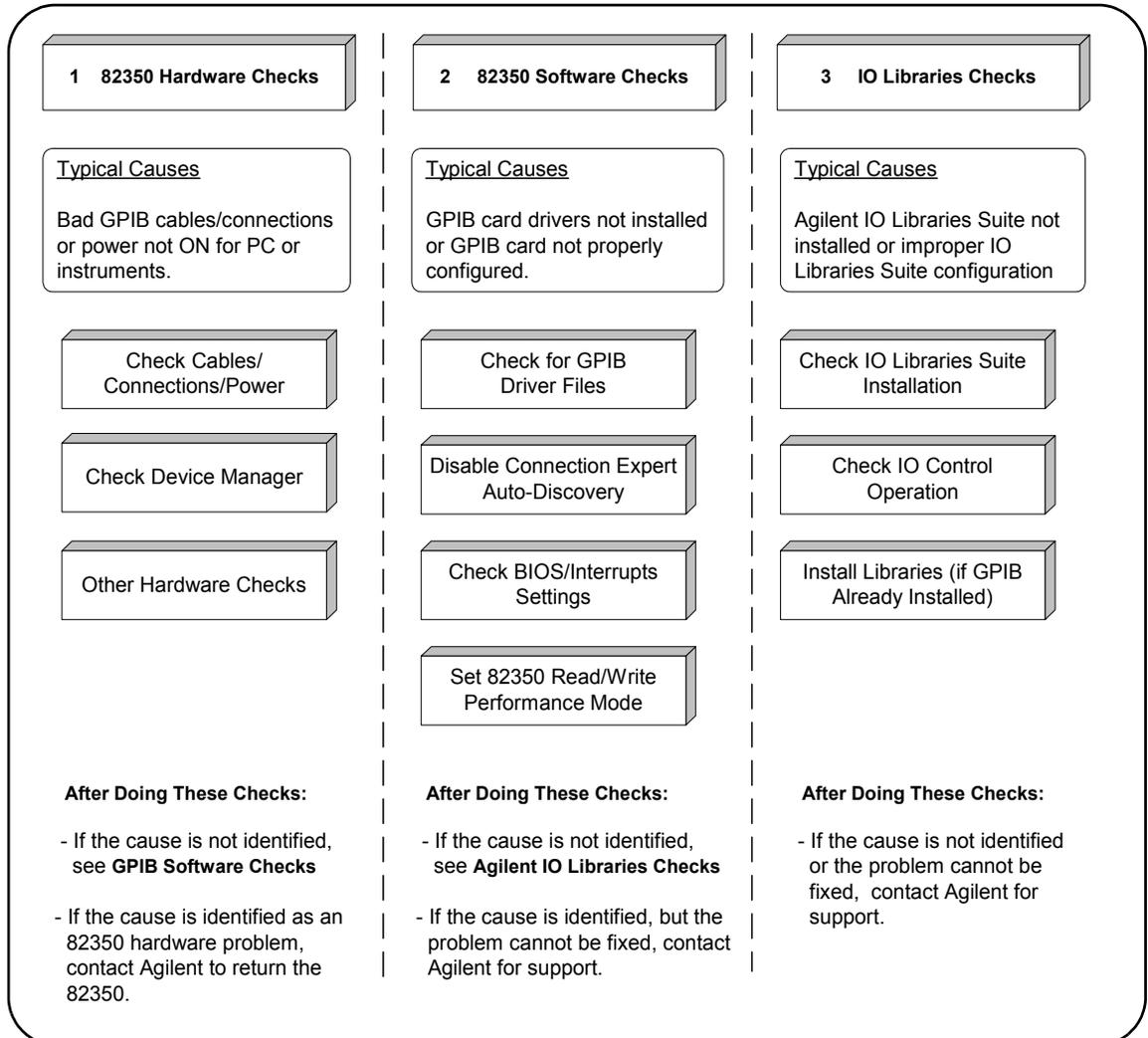
NOTE

Additional troubleshooting information appears in the Agilent IO Libraries Suite Online Help and on the Web at

<http://www.agilent.com/find/iolib>

Troubleshooting Overview

A suggested troubleshooting flowchart for the 82350, installed instruments, and the Agilent IO Libraries Suite 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
- If Sound Card Does Not Work
- If Data Transfers to Devices Fail
- If Connection Expert Finds 82350 Card with Serial Number fffffff

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-serviceable parts for the 82350. If you suspect a hardware failure for the 82350, contact Agilent for instructions to return the unit.

- 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 or equivalent, 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”.

If Sound Card Does
Not Work

If your sound card stops working after configuring interfaces, disable the auto-discovery process in Connection Expert. The auto-discovery process can cause sound and other cards to stop responding. To disable the auto-discovery process, run Connection Expert, select **Tools | Options**, and clear the check boxes labeled **Automatic discovery or refresh of I/O resources** and **Automatic configuration of unconfigured interfaces**. Close Connection Expert and restart your PC.

If Data Transfers to
Devices Fail

If devices attached to your ISA (82341) GPIB card are detected, but data transfers to those devices fail, this is usually caused either by an IRQ conflict with another card or by your system having no IRQs available for this card. If no IRQs are available, the IRQ value shown in Connection Expert will be -1.

For Windows NT/2000/XP: Try changing the IRQ setting to other values. You must reboot after changing the value to test it. If none work, you will have to free up other IRQs by disabling devices such as serial ports or sound cards.

For Windows 98/Me: You will have to free up other IRQs by disabling devices such as serial ports or sound cards. This is usually done in the BIOS setup for your computer.

If Connection Expert Finds 82350 Card with Serial Number fffffff

If Connection Expert reports finding an 82350 card with serial number fffffff, this is typically caused by getting into a situation where PCI cards are not properly configuring. Try the following:

- 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.** Note that even new computers often have new BIOSs available.
- 3 If your computer locks up or freezes after installing.** Typically, this is caused by interrupt conflicts with other drivers in the system. PCI allows sharing of IRQs, but this also means that the drivers for cards with which the 82350 shares an IRQ must handle interrupt chaining properly.

Both NT and Windows 98 allow multiple drivers to install interrupt service routines (ISRs) for a single IRQ. The operating system will keep a list of all the ISRs installed for each IRQ. When the IRQ is asserted, the operating system will call 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.

- 4 Perform Driver Workarounds.** Here are some ways to work around drivers that are not behaving properly:
 - Upgrade the drivers for devices sharing an IRQ with the 82350, including but not limited to, your video drivers, your LAN drivers, Agilent IDE and/or SCSI drivers, and your sound drivers.
 - Try to force the Agilent driver to be installed earlier in the ISR chain.
 - For Windows 98 SE, change your BIOS **Installed OS** setting. Try all the different values and use the one that works.
 - For Windows 98 SE, 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.

- 5 Reconfigure 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 your PC; many PCs can be configured using the setup option when the PC is first booting.
- 6 Upgrade your system BIOS.** Note that even new computers may have a newer BIOS available.
 - Make sure the BIOS **Installed O/S** setting is set correctly. This determines what software will configure all the Plug and Play cards in your system. Either the BIOS or the operating system 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.
 - 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 operating system. If the **Installed O/S** is set to **Windows NT, NOT PnP O/S**, or **Other**, the BIOS will perform this task.
 - For NT version 4.0 or earlier, the BIOS must perform this task as the operating system does not know how to do this. For Windows 98, either the BIOS or the operating system can do this task, so try both. If you are running Windows NT, set to **Running Windows NT, Not VxIplug&play OS** or **Other**.

82350 Software Checks

This section provides guidelines for 82350 software checks, including:

- Check for 82350 Driver Files
- Disable Connection Expert Auto-Discovery
- Check BIOS/Interrupts Settings
- Set 82350 Read/Write Performance Mode

Check for 82350 Driver Files

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

- 1 Check for 82350 Driver Files.** Files are listed in their default directories.

Windows 2000	
Program Files	C:\Program Files\Agilent\IO Libraries Suite\drivers\ag350i32.dll
Driver Files	C:\Winnt\system32\drivers\agt82350.sys
.inf Files	C:\Winnt\inf\agtgpib.inf
Windows 98 (SE)/Me/XP	
Program Files	C:\Program Files\Agilent\IO Libraries Suite\drivers\ag350i31.dll
Driver Files	C:\Windows\system32\drivers\agt82350.sys
.inf Files	C:\Windows\inf\agtgpib.inf

- 2 Uninstall/Reinstall the Agilent IO Libraries Suite.** If the driver files are not found, uninstall the Agilent IO Libraries Suite by going to **Control Panel | Add or Remove Programs** and following the instructions to remove the libraries. Then, insert your *Automation-Ready CD* and follow the instructions to re-install the libraries. If you do not have the *Automation-Ready CD*, you can download the Agilent IO Libraries Suite from www.agilent.com/find/iolib.

Disable Connection Expert Auto-Discovery

If your PC sound card stops working after configuring interfaces, disable the auto-discovery process in Connection Expert, as the auto-discovery process can cause sound and other cards to stop responding. To disable the auto-discovery process, run Connection Expert, select **Tools | Options**, and clear the check boxes labeled **Automatic discovery or refresh of I/O resources** and **Automatic configuration of unconfigured interfaces**. Close Connection Expert and restart your PC.

Check BIOS/ Interrupts Settings

If Connection Expert reports finding an 82350 card with Serial Number fffffff, 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 handle interrupt chaining properly. Both Windows NT and Windows 98 allow multiple drivers to install interrupt service routines (ISRs) for a single IRQ. The operating system (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:

- 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.
- For Windows 98SE, change your BIOS **Installed OS** setting. Try all the different values and use the one that works. Make sure all devices sharing an IRQ with your 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.

82350 Software Checks

- 4 **Reconfigure 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 booting.
- 5 **Upgrade your system BIOS.** New computers may have a newer BIOS available. When installing a new system BIOS:
 - ❑ Make sure the BIOS **Installed O/S** setting is set correctly. This determines what software will configure all the Plug and Play cards in your system. Either the BIOS or the operating system (OS) 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.
 - ❑ 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 OS 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.
 - ❑ For NT 4.0, the BIOS must perform this task as the OS does not know how to do this. For Windows 98, either the BIOS or the O/S can do this task, so try both. If you are running Windows NT, set to **Running Windows NT, Not Plug and 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`

82350 Software Checks

in a VISA `viRead()` function call) will determine the mode used even if the number of bytes actually read is less.

- 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 Suite Checks

This section gives guidelines to troubleshoot problems involving the Agilent IO Libraries Suite, including:

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

Check IO Libraries Suite Installation

Start your Agilent IO Libraries Suite troubleshooting sequence by verifying IO Libraries Suite installation. If the IO Libraries Suite is 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).



- If the **IO** icon is displayed, click the icon and click **A**bout **Agilent IO Control** to display the version. The version must be L.01.00 or greater. Note that Agilent IO Libraries Suite 14.0 was the revision immediately following Agilent IO Libraries M.01.01, so you should consider revision “14.0” to be a greater version number than “L” or “M”.
- If the **IO** icon is not displayed, a version may still be installed. To check this, click **S**tart | **P**rograms and look for the *Agilent IO Libraries* or *Agilent IO Libraries Suite* program group.
- If this group is displayed, click **Agilent IO Libraries Suite** | **U**tilities | **IO Control** to display the **IO** icon. Then, click the icon and click **A**bout **Agilent IO Control** to display the installed version (must be L.01.00 or greater, inclusive of 14.0 or greater).

Agilent IO Libraries Suite Checks

- ❑ 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.01.00 or greater, you must install the newer version (see Step 2, following).

- 2 Install Agilent IO Libraries Suite (as Required).** If Version L.01.00 or greater of the Agilent IO Libraries is not installed on your PC, install the IO Libraries Suite. Otherwise, go to “Check IO Control Operation”.

Check IO Control Operation

When the Agilent IO Libraries Suite was installed, an IO Control was created. When the IO Control is active, it is displayed as a blue circled **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 Suite is 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:

- ❑ **Hiding Agilent IO Control.** Clicking the blue **IO** icon and then clicking **Hide Agilent IO Control**, or unchecking **View | Agilent IO Control** in Connection Expert, hides the **IO** icon, but does **not** deactivate the IO Control.
- ❑ **Clicking 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 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 Suite | Utilities | IO Control** to re-start the IO Control and to display the blue circled **IO** icon.

Install IO Libraries Suite (if 82350 was Installed First)

If you installed the 82350 before installing the Agilent IO Libraries Suite software, follow these steps to install and configure the IO Libraries Suite and the necessary drivers for your card.

- 1** Install the Agilent IO Libraries Suite as described in “Step 2 - Installing Agilent IO Libraries Suite” on page 11 of this manual.
- 2** If the Connection Expert utility does not recognize your 82350 and display it as a PCI GPIB Interface, you may need to use Windows

Device Manager to associate the correct drivers with your card.
Follow the steps for your operating system:

Windows 2000 or XP:

Start the Windows Device Manager as follows: Right-click on **My Computer**, select **Properties**, then the **Hardware** tab, then **Device Manager**.

Find the **PCI Simple Communications Controller** in the Device Manager, and select **Update Driver...**

Allow Windows to find and install the driver automatically. You should not need to insert a CD.

Windows 98 or Me:

Start the Windows Device Manager as follows: Right-click on **My Computer**, select **Properties**, then **Device Manager**.

Find the **PCI Communication Device** in the Device Manager, and select **Install Drivers**.

Specify the driver file

`C:\windows\system\hpioclas.dll`.

NOTE

On older operating systems, you may be asked to insert the 'HP I/O Libraries' CD. Depending on the file you are prompted for and on the operating system, you should be able to find the needed file in one of the following directories:

- `C:\windows\inf`
- `C:\windows\system`
- `C:\windows\system32`
- `C:\windows\system32\drivers`

The card may be identified as a Hewlett-Packard card. This is necessary for backward compatibility.

Notes:

82350 Guide Information

82350 Guide Information

This chapter provides general information for the *82350B Installation and Configuration Guide*, including:

- Guide Contents
- Guide General Information
- Contacting Agilent

Guide Contents

What's in This
Guide?

The following table shows the contents of this guide.

Chapter	Description
<i>Chapter 1 - Installing and Configuring the 82350</i>	Shows how to install the 82350 and the Agilent IO Libraries Suite on your Windows PC.
<i>Chapter 2 - Troubleshooting Guidelines</i>	Gives guidelines to troubleshoot the 82350 and the Agilent IO Libraries Suite.
<i>Chapter 3 - 82350 Guide Information</i>	Shows the contents of this guide and provides general information for the guide.

Accessing an
Electronic Copy of
This Guide

There are two 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 Suite is installed, a blue circled 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 **Documentation** and then click **82350 PCI GPIB Users Guide**.
- **Access from the Web.** On your Web browser address line, type **www.agilent.com/find/manuals** and navigate to the 82350 manual. The Web version of the manual will always be the latest revision.

Guide Contents**Related
Documentation**

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

Product	Related Documentation
Agilent IO Libraries Suite	For additional information on the Agilent IO Libraries Suite, see the <i>Agilent IO Libraries Suite Getting Started Guide</i> and the <i>Agilent IO Libraries Suite Online Help</i> .
VISA	To develop and use VISA applications, see the <i>Agilent VISA User's Guide</i> and the <i>VISA Online Help</i> .
VISA COM	To develop and use VISA COM applications, see the <i>VISA COM Online Help</i> .
SICL	For SICL I/O applications, see the <i>Agilent SICL User's Guide for Windows</i> and the <i>SICL Online Help</i> .
Agilent T&M Toolkit	To develop test and measurement programs in Visual Studio .NET quickly and easily, use the <i>Agilent T&M Toolkit</i> product (Web site at www.agilent.com/find/toolkit).

Guide General Information

General Information for this guide follows, including:

- Notice
- U.S. Government Restricted Rights
- Warranty Information
- Trademark Information
- Printing History
- Copyright Information
- Declaration of Conformity
- Radio and Television Interference
- Contacting Agilent

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.

U.S. Government Restricted Rights

The Software and Documentation have been developed entirely at private expense. They are delivered and licensed as "commercial computer software" as defined in DFARS 252.227- 7013 (Oct 1988), DFARS 252.211-7015 (May 1991) or DFARS 252.227-7014 (Jun 1995), as a "commercial item" as defined in FAR 2.101(a), or as "Restricted computer software" as defined in FAR 52.227-19 (Jun 1987) (or any equivalent agency regulation or contract clause), whichever is applicable. You have only those rights provided for such Software and Documentation by the applicable FAR or DFARS clause or the Agilent standard software agreement for the product involved.

Warranty Information

A copy of the specific warranty terms applicable to your Agilent Technologies product and replacement parts can be obtained from Agilent Technologies, Inc.

Trademark Information

Microsoft, Windows, and Windows NT are U.S. registered trademarks of Microsoft Corporation.

Pentium is a U.S. registered trademark of Intel Corporation.

Printing History

Edition 1 - July 2002
Edition 2 - March 2003
Edition 3 - March 2004
Edition 4 - May 2004
Edition 5 - January 2005
Manual Part Number: 82350-90004

Copyright Information

*Agilent Technologies 82350B PCI GPIB Interface
Installation and Configuration Guide*
Copyright © 2002-2005 Agilent Technologies, Inc.

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, CO 80537
 USA

Declares under sole responsibility that the product as originally delivered

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

complies with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:

EMC Directive (89/336/EEC, amended by 93/68/EEC)
 Low Voltage Directive (73/23/EEC, amended by 93/68/EEC)

and conforms with the following product standards:

EMC	Standard	Limit
	IEC 61326-1:1997+A1:1998 / EN 61326-1:1997+A1:1998	
	CISPR 11:1990 / EN 55011:1991	Group 1 Class A
	IEC 61000-4-2:1995+A1:1998 / EN 61000-4-2:1995	4 kV CD, 8 kV AD
	IEC 61000-4-3:1995 / EN 61000-4-3:1995	3 V/m, 80-1000 MHz
	IEC 61000-4-4:1995 / EN 61000-4-4:1995	0.5 kV signal lines, 1 kV power lines
	IEC 61000-4-6:1996 / EN 61000-4-6:1996	3 V, 0.15-80 MHz 1 cycle, 100%
	Canada: ICES-001:1998	
	Australia/New Zealand: AS/NZS 2064.1	

The product was tested in a typical configuration with Agilent Technologies test systems.

Safety	IEC 61010-1:2001 / EN 61010-1:2001
	Canada: CSA C22.2 No. 1010.1:1992
	UL 61010B-1: 2003

Supplementary Information:

This DoC applies to above-listed products placed on the EU market after:

20 April 2004

Date



Ray Corson

Product Regulations Program Manager

For further information, please contact your local Agilent Technologies sales office, agent or distributor, or Agilent Technologies Deutschland GmbH, Herrenberger Straße 130, D 71034 Böblingen, Germany.

Contacting Agilent

You can reach Agilent Technologies at this telephone number in the Americas:

Americas Call Center: 1-800-452-4844

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

www.agilent.com/find/assist

A list of other Agilent Web sites follows.

URL	Description
www.agilent.com/find/assist	Agilent Technologies "Contact Us" page
www.agilent.com/find/iolib	Update the Agilent IO Libraries Suite software
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.

Notes:

Contacting Agilent

A

Agilent IO Control icon, 21
Agilent VEE, 25
Agilent Web sites, 53
Agilent, contacting, 53

C

checking shipment, 9
configuration files, installing, 20
Connection Expert
 Administrator privileges required, 11
contacting Agilent, 53
copyright information, 50
crossover point, 40

D

Declaration of Conformity, 50

E

emergency repair disk, 10
examples
 Connecting a Single GPIB Instrument,
 18
 Connecting Multiple GPIB Instruments,
 18
 GPIB Interface Configuration, 26

G

GPIB
 cable connection guidelines, 17
 check for driver files, 36
 crossover point, 40
 interrupt mode, 39
 Logical Unit, 23
 polling mode, 39
 SICL interface ID, 23
 System Controller, 23
 VISA Interface ID, 22

I

I/O interface, 26
ihint, 39
installing the 82350
 before you install the 82350, 9
 configuring the 82350, 20
 connecting the 82350, 14
 connecting to instruments, 17
 installing Agilent IO Libraries Suite, 11
 installing configuration files, 20
 programming GPIB instruments, 25
 programming via the 82350, 24
Interactive IO, 24
interface ID, 26
IO Libraries Suite, checking for installation,
 11
iopen, 26

L

logical unit number, 26

P

printing history, 50
programming GPIB instruments, 25

R

radio and television interference, 52
restricted rights, 49

S

static electricity, avoiding, 9
system requirements, checking, 10

T

trademark information, 50
troubleshooting
 check GPIB driver files, 36

[GPIB crossover point](#), 40
[GPIB interrupt mode](#), 39
[GPIB polling mode](#), 39

U

[user guide](#)
 [electronic copies, accessing](#), 47
 [related documentation](#), 48

V

[viOpen](#), 26
[viSetAttribute](#), 39

W

[warranty](#), 49–50
[Web sites, Agilent](#), 53



Agilent Technologies

Agilent Technologies, Inc.
Printed in Malaysia
January 2005 E0105



Installation and Configuration Guide 82350-90004