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Installation Guide

Agilent Technologies
PSG/ESG Download Assistant Software



August 2002

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PSG/ESG Download Assistant Installation Guide

This installation guide covers the following:

- Instrument Requirements
- PC Requirements
- Setting Up the GPIB Interface
- Setting Up the LAN Interface
  (Not Applicable to E4430-37B ESG Models)
- Installing the PSG/ESG Download Assistant Software

Instrument Requirements

- ESG or PSG signal generator
  - — Baseband generator option

NOTE It is recommended that you use the latest firmware revision. (See Downloading the Signal Generator Firmware.)

CAUTION Before upgrading your firmware, click **Enhancements, Improvements, and Fixes** on the firmware release page for information on how the current revision will affect other instrument related software you are using.

Downloading the Signal Generator Firmware

You may need to upgrade the firmware in your signal generator to run the software. To load the latest version of firmware, perform the following steps:

1. Go to **http://www.agilent.com/find/upgradeassistant**.
2. Click **PSG/ESG Upgrade Assistant** to download and install the program.
3. Click on the latest version of firmware for your signal generator model to download the firmware upgrade.
4. Run the PSG/ESG Upgrade Assistant and follow the program prompts.

Click **PSG/ESG Upgrade Assistant Installation Note** if you would like more information.

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PC Requirements

- Windows NT 4.0® (Service Pack 4 or later recommended)
- Windows 2000®
- MATLAB® (6.0 or later)
- Pentium PC, 200 MHz or better
- 64 MB RAM (128 MB for Windows 2000)
- 50 MB free disk space
- Installed Agilent IO Libraries
- Installed GPIB IO interface card or LAN interface card

NOTE For service packs, contact Microsoft directly, or go to: **http://www.microsoft.com**

NOTE To use the Help system you must have Internet Explorer®4.01 service pack 2.0 or later.

GPIB Interface Requirements

A GPIB interface card must be installed in your computer. Follow the installation instructions supplied by the GPIB interface card manufacturer. Once the GPIB interface card is installed, you must install an I/O library on your computer. The I/O library is typically supplied along with the GPIB interface card. The I/O libraries can be obtained from the manufacturer of the interface card.

The GPIB and its associated interface protocols are defined in the ANSI/IEEE standard 488.1-1987 and ANSI/IEEE standard 488.2-1992. For more information on these standards, refer to the IEEE website.

Installation of an Agilent GPIB interface card usually includes installation of the Agilent IO Libraries. If the National Instrument's GPIB interface card is installed, the NI-VISA libraries are usually installed on the PC. The difference between Agilent VISA and NI-VISA are the lower level libraries used; SICL and NI-488.2 respectively. For information on the supported GPIB interface cards refer to Table 1 and Table 2.

Table 1 Agilent-GPIB Interface Card for PC-Based Systems

Interface Card	Operating System	Agilent IO Libraries	Backplane/BUS	Max I/O (kB/sec)	Buffering
82350A for PCI bus computers	Windows 2000/98 NT/Me	Agilent VISA/SICL L.01.00 or higher	PCI 32 bit	750	Built-in

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NOTE The 82350A is the only Agilent GPIB interface card supported.

Table 2 NI-GPIB Interface Card for PC-Based Systems

Interface Card	Operating System	NI IO Libraries	Backplane/BUS	Max I/O (kB/sec)
National Instrument PCI-GPIB	Windows 2000/98 NT/Me	NI-VISA version 1.5 or later	PCI 32 bit	1.5 Mbytes/s
National Instrument PCMCIA-GPIB	Windows 2000/98 NT/Me	NI-VISA version 1.5 or later	PCMCIA	1.5 Mbytes/s

LAN Interface Requirements

- A local area network (LAN) interface card

  Most computers have a LAN interface card as part of the hardware configuration. If your computer does not have a LAN card, you can get one from Agilent Technologies or another manufacturer.

- The Agilent IO libraries

  See Installing Agilent IO Libraries for details.

- A 10Base-T cable (to connect the PC to the LAN)

The LAN and its associated interface protocols are defined in the IEEE standard 802. For information on this standard, refer to the IEEE website.

Installing Agilent IO Libraries

Use the latest version of Agilent IO Libraries with the PSG/ESG Download Assistant software. Agilent IO Libraries are included with most Agilent interface products, or you can download the latest version from the Agilent website free of charge.

NOTE If you are using a National Instruments GPIB interface card and have the NI-VISA libraries installed, you still must install Agilent IO Libraries to use the PSG/ESG Download Assistant software. Both libraries can reside on your computer.

If you use the Agilent IO libraries default values, your GPIB interface card will be configured to work with the PSG/ESG Download Assistant software. The default values will allow you to install and use the Agilent VISA card without affecting the use of your NI-VISA card.

Go to **http://www.agilent.com/find/iolib**. Click **IO Libraries for Windows 98/Me/NT/2000/XP Pro (X.##.##) InstallShield archive** and follow the installation procedure.

If you have problems with the installation, or if you want to customize the installation, go to **http://www.agilent.com/find/iolib**. Click **IO Libraries Installation and Configuration Guide for Windows** for more information and a detailed installation procedure.

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Setting Up the GPIB Interface

The PSG/ESG Download Assistant software can be configured to use the general purpose interface bus (GPIB) connection for instrument control.

If you have a GPIB interface card and have completed the Agilent IO Libraries installation as previously described in this guide, configure the IO Libraries to communicate with the GPIB card.

NOTE PSG/ESG software uses the Agilent IO Libraries. If you have a National Instrument's GPIB interface card and National Instruments libraries on your computer, the Agilent IO library InstallShield Wizard will allow for both National Instruments and Agilent libraries to reside on your PC.

Configuring the Agilent 82350 GPIB Interface

This section will guide you through the configuration for an Agilent 82350 PCI GPIB interface card.

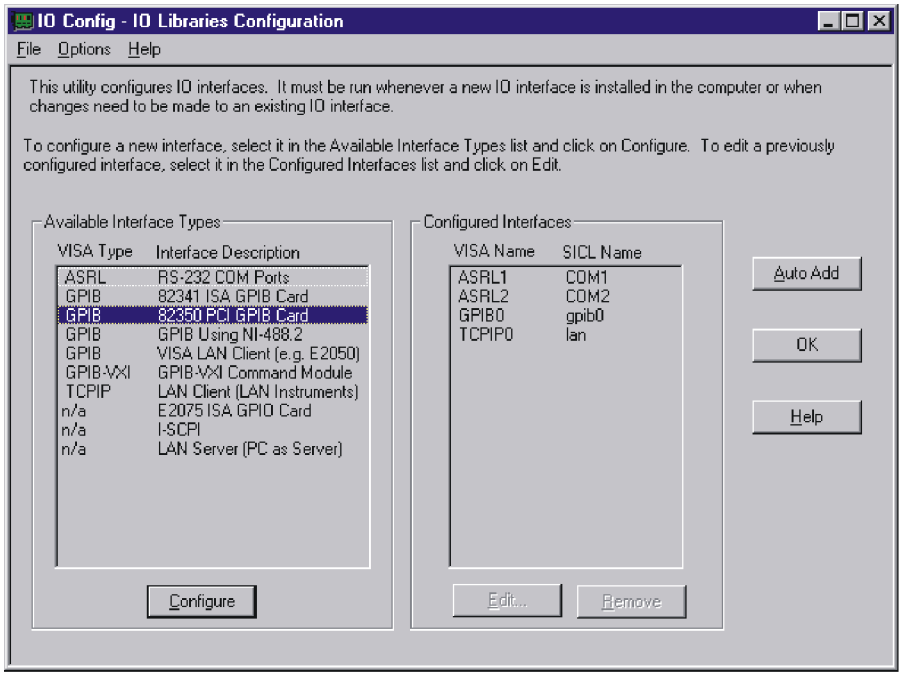
NOTE If you have questions about the configuration, or require a custom installation, go to **http://www.agilent.com/find/iolib** and click **Agilent IO Libraries Installation and Configuration Guide for Windows**.

To configure the GPIB interface:

1. Run the IO Config program. The IO Config program is included with the Agilent IO Libraries download and is located in the **Start > Programs > Agilent IO Libraries > IO Config** directory. The IO Config window will be displayed as shown in Figure 3.

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Figure 3 IO Config



1_io-config

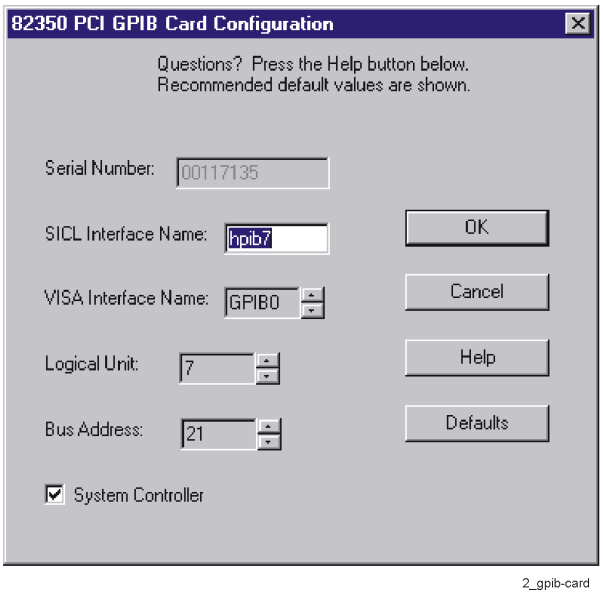
2. Click the **GPIB 82350 PCI GPIB Card** in the **Available Interface Types** list box as shown in Figure 3.

NOTE The list shown in the **Available Interface Types** section of Figure 3 depends on the interfaces present on your computer and may be different from those shown. The selections you are asked to make however, are valid.

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3. Click the **Configure** button. The **82350 PCI GPIB Card Configuration** window will be displayed as shown in Figure 4.

Figure 4 82350 PCI GPIB Card Configuration



4. Click **OK** to accept the default settings. The default name, `hpib7`, is the name used to identify the single 82350A PCI GPIB interface card, but any unique name can be used. The name is used in the parameter list of a SICL function call. An example of a SICL function call using the board identifier `hpib7` might be: `iopen("hpib7, 19")` where **19** is the address of the signal generator.
5. Click **OK** on successive forms to back out of the IO Config program.

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Configuring the National Instruments GPIB Interface

This section will guide you through configuring the Agilent IO Libraries to use a National Instruments GPIB interface card. Refer to the documentation provided with the NI-GPIB interface card for information on the installation if necessary.

To configure the NI-GPIB interface:

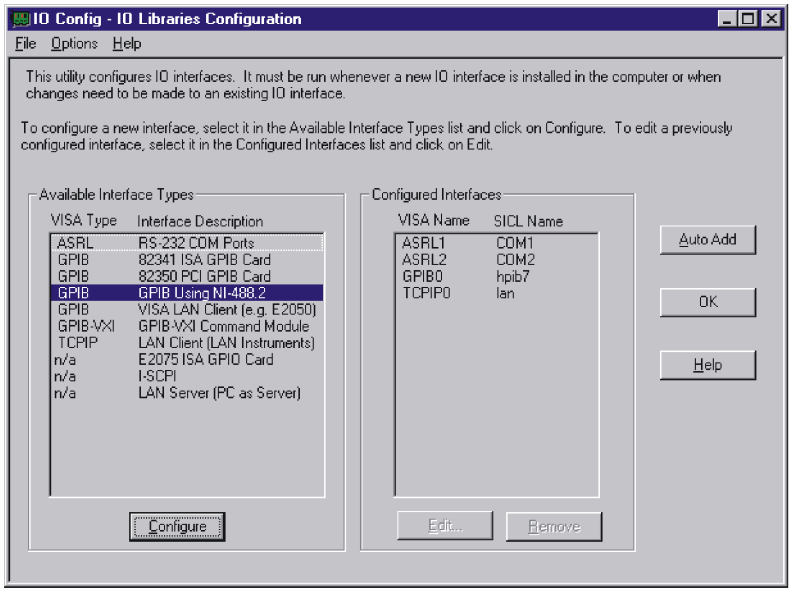
1. Install the NI-GPIB interface card along with the NI-VISA libraries. After installation, run the NI-488.2 Getting Started Wizard to verify the installation. Refer to National Instruments documentation for help with the installation.
2. Install the Agilent IO Libraries as described in the Installing Agilent IO Libraries section of this guide. Make sure that the **2. SICL and side-by-side Agilent VISA Installation** is selected during the Agilent IO Libraries installation.

NOTE If you have questions about the configuration, or require a custom installation, go to **http://www.agilent.com/find/iolib** and click **Agilent IO Libraries Installation and Configuration Guide for Windows**.

---

3. Run the IO Config program. The IO Config program is included with the Agilent IO Libraries download and is located in the **Start > Programs > Agilent IO Libraries > IO Config** directory. The IO Config window will be displayed as shown in Figure 5.

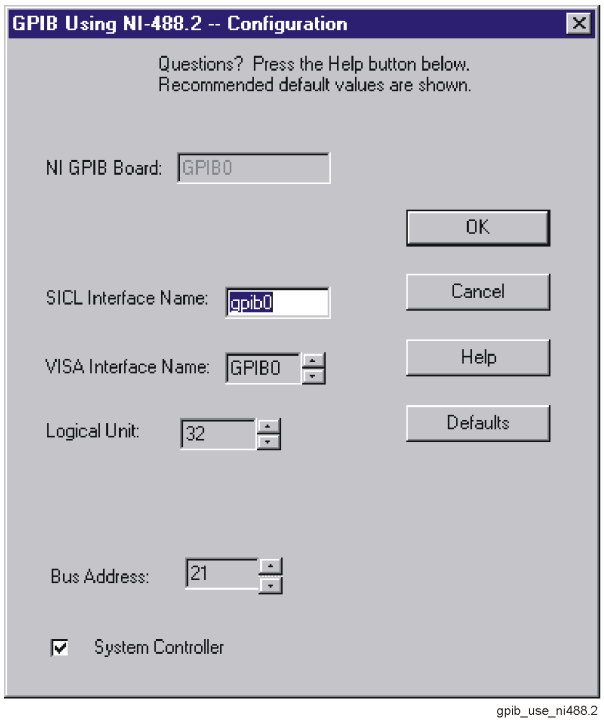
Figure 5 NI-IO Config



4. Click **GPIB Using NI-488.2** in the **Available Interface Types** list box as shown in Figure 5.
   If **GPIB Using NI-488.2** is not listed, you must create and/or edit the `intcfg.ini` file to make it available. Refer to "GPIB Interface Problems" on page 13 for instructions on how to edit this file.
5. Click on the **Configure** button. The **GPIB Using NI-488.2 - Configuration** window will be displayed as shown in Figure 6.

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Figure 6 GPIB Using NI-488.2 - Configuration



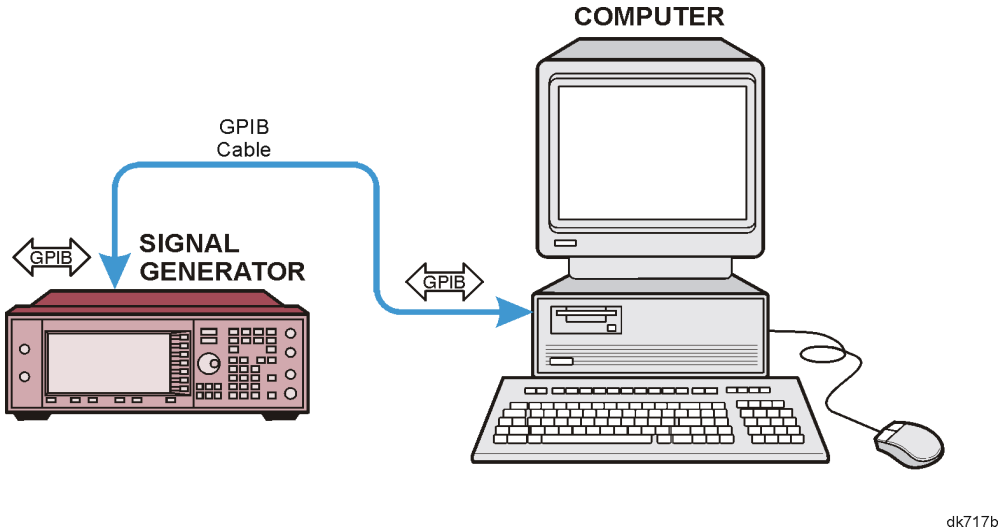
6. Click **OK** to accept the default settings (this assumes no other GPIB interface card is on the computer).
7. Click **OK** on successive forms to back out of the IO Config program.

Connecting the GPIB Interface

Connect your PC to the signal generator using the GPIB interface cable as shown in Figure 7. See the User's Guide for your signal generator for a listing of Agilent GPIB cables.

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Figure 7 Connecting the GPIB Interface



GPIB Verification

Depending on the type of GPIB interface card installed on your computer, you can use either the Agilent VISA Assistant or NI-488.2 Getting Started Wizard to verify the GPIB installation.

- Refer to the "NI-GPIB Interface Verification" on page 11 for information on verifying the NI-GPIB installation.

Agilent 82350 GPIB Interface Verification

With the equipment connected as shown above in Figures 7 or 8, perform the following steps:

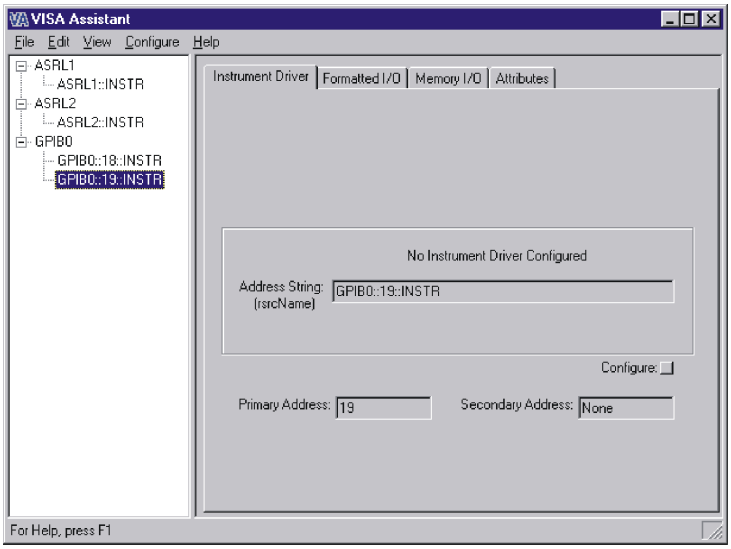
1. Click on the blue IO icon in the task bar. The icon is located at the lower right of the PC display.
2. Click **Run VISA Assistant**.

NOTE If a **Progress** window appears with a **Searching for knowledge base** title and a long time delay occurs (a minute or more), refer to "Communication Time Problems" on page 20.

3. Click on the GPIB address for the signal generator. Refer to Figure 8.

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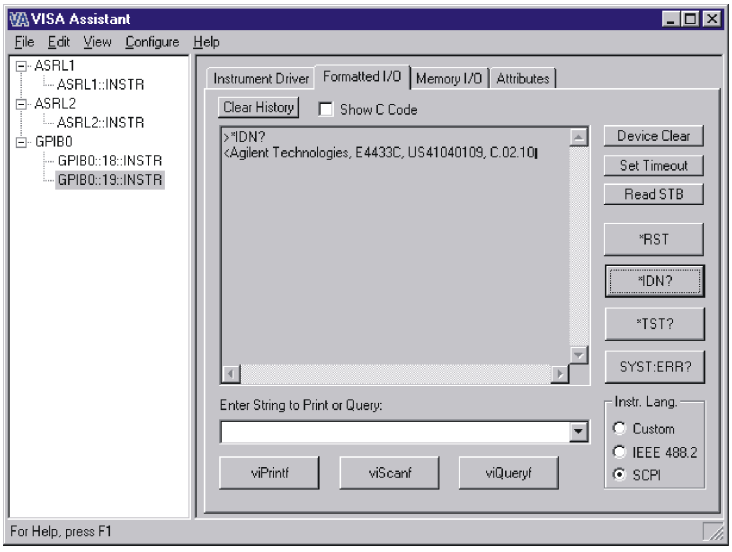
Figure 8 Visa Assistant



visa_assist

4. Click on the **Formatted I/O** tab on the **VISA Assistant** window.
5. Click the **SCPI** button in the **Instr.Lang** area at the lower right corner of the **VISA Assistant** window. Refer to Figure 9.
6. Click the ***IDN?** button in the **VISA Assistant** window. The response should be similar to that shown in Figure 9.

Figure 9 Remote IO Query



visa_assist-cmd

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NI-GPIB Interface Verification

1. Connect the equipment as shown in Figure 7 on page 9.
2. Click **Start > Programs > National Instruments NI-488.2 > Getting Started Wizard**. A window will appear as shown in Figure 10.

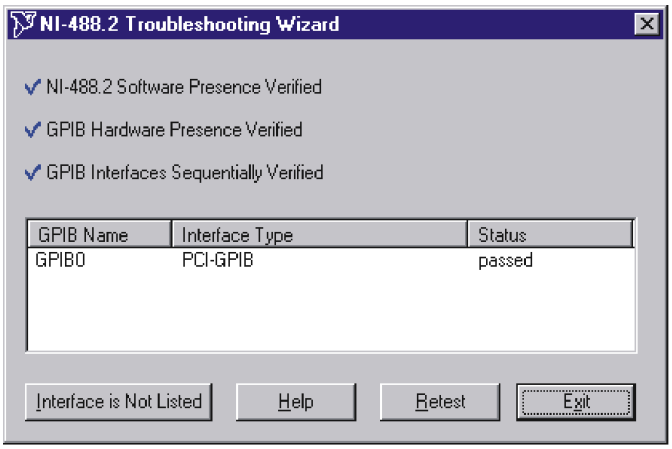
Figure 10 NI-488.2 Getting Started Wizard



wzrd_verify-hw

3. Click **Verify your hardware and software installation** in the **NI-488.2 Getting Started Wizard** window. A new window will appear as shown in Figure 11.

Figure 11 NI-488.2 Verify



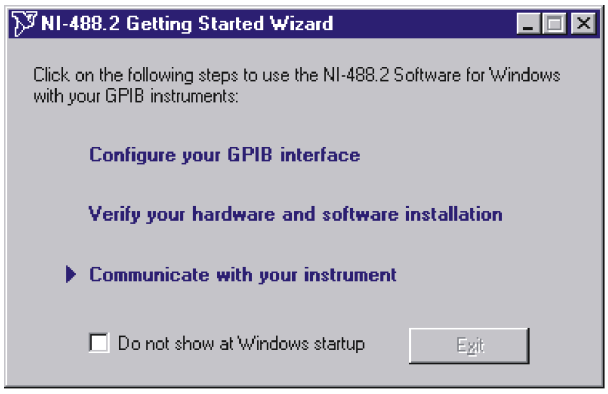
wzrd_trubl-sht

4. Click **Exit** to close the window after the NI-GPIB interface has been verified.

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5. Click on **Communicate with your instrument** in the **NI-488.2 Getting Started Wizard** window as shown in Figure 12. This will check for instruments connected to the GPIB interface. Follow the instructions presented in each of the windows.

Figure 12 Communicate Using GPIB



6. Click **Exit** when finished.

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GPIB Interface Problems

If you experience problems communicating with or controlling instruments over the GPIB, perform the following steps:

1. Check to see that the instrument you are trying to communicate with is turned on.
2. Check to see that the GPIB cable connections are securely attached to the instrument and PC.
3. Verify that the GPIB address of the instrument is the same as that set in the **Visa Assistant** window as shown in Figure 8 on page 10.
4. Restart the computer. You must restart the PC to initialize the GPIB configuration.
5. Verify that the instrument you are trying to communicate with is using the SCPI (Standard Commands for Programming Instruments) language. For example, the signal generator supports 8656B, 8657A/B languages as well as SCPI. Refer to the instrument's manual for information on available languages and how to select the SCPI language.

Creating and Editing the intfcfg.ini File

If the Agilent IO Config utility did not detect the presence of a configured NI-488.2 GPIB interface, you can override the default search algorithm and directly specify this interface by creating and editing the `intfcfg.ini` file.

You must create the `intfcfg.ini` file. It is not installed during the Agilent IO Libraries configuration. If you have not previously created the `intfcfg.ini` file, you can create it by copying the sample `intfcfg.txt` file to `intfcfg.ini`. The file is located in the `intfcfg` subdirectory under the Agilent IO Libraries installation directory:

`C:\Program Files\Agilent\IO Libraries\intfcfg\intfcfg.txt` (if you used the default location).

NOTE If you are using Windows explorer to create `intfcfg.ini`, make sure the **Hide File Extensions** is not set. If it is set, you will create the file `intfcfg.ini.txt`, which will not work.

To edit the `intfcfg.ini` file, perform the following steps:

1. Make a backup copy of the `intfdfg.ini` file.
2. Locate the [`CfgNi488`] section in the `intfcfg.ini` file.
3. Remove the leading semicolon from the appropriate `GPIBn=yes` line to force IO Config to recognize the NI-488.2 GPIB interface. Uncomment only the lines for which you have a configured NI-488.2 GPIB interface.
4. Save the modified `intfcfg.ini` file.
5. Run the Agilent IO Config utility. The GPIB NI-488.2 interface should now appear in the **Available Interface Types** area of the **IO Config-IO Libraries Configuration** window as shown in Figure 5 on page 7.

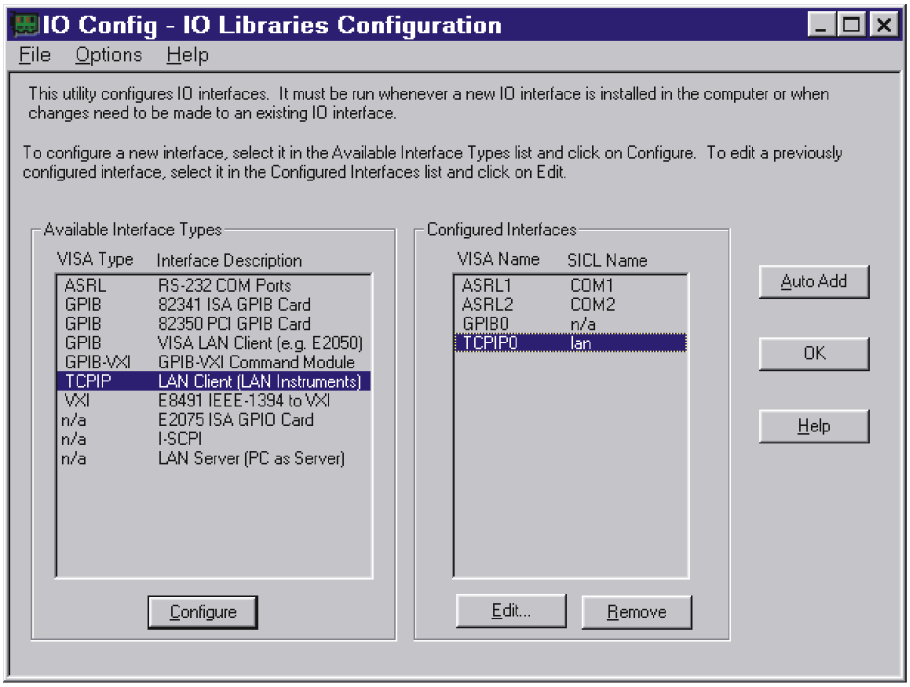
Communication Time Problems

If you experience a long delay (a minute or more) when trying to run the software, there might be an unresolved instrument IP address configured in the *IO Config* program. An unresolved IP address can affect GPIB communication. To check for this, perform the following steps:

1. Go to "Configuring the LAN Interface" on page 17 and do steps 1-5. Leave the **IO Config-IO Libraries Configuration** window open.
2. Click on **TCPIP0 lan** in the **IO Config-IO Libraries Configuration** window as shown in Figure 13.

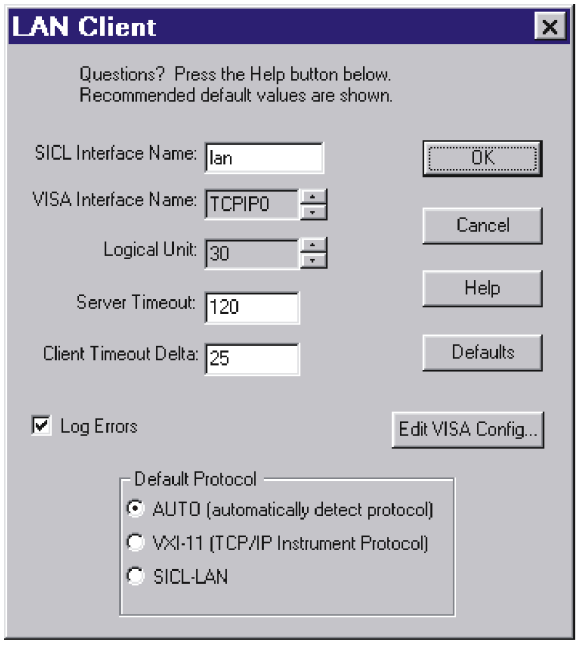
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Figure 13 IO Config-IO Libraries Configuration



3. Click the **Edit** button on the **IO Config-IO Libraries Configuration** window shown in Figure 13.
4. Click the **Edit Visa Config.** button in the **LAN Client** window as shown in Figure 14.

Figure 14 LAN Client Edit



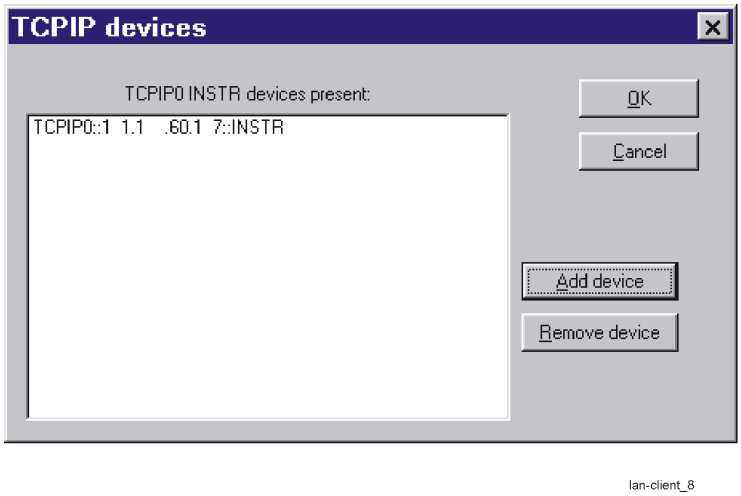
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5. Verify that any device listed in the **TCPIP devices** window, shown in Figure 15, is turned on and that the IP address listed is correct. If any device address is incorrect or the instrument is off or no longer present on the interface:

   a. Click on the device address listed in the TCPIP0 INSTR devices present section of the **TCPIP devices** window.

   b. Click the **Remove device** button.

Figure 15 TCPIP devices



6. Click the **OK** button on successive forms to back out of the IO Config program.

If communication problems persist, you can edit the Hosts file using the following procedure:

1. Open the Hosts file using a text editor, such as Notepad.
2. Write the IP address for the signal generator and spectrum analyzer at the bottom of the file.

   (Refer to the example of a hosts file below)
3. Save the file to `C:\WINNT\System32\drivers\etc`, and close the text editor.

NOTE For Windows 98 and Windows Me you must create the Hosts file. Copy the following example of a hosts file and save it in the `C:\Windows` directory.

WARNING Do not use **Save As** when saving the Hosts file. The Hosts file does not have a file extension!

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The following is an example of a hosts file (for Windows 98) with references to the signal generator and spectrum analyzer IP addresses.

```
# Copyright (c) 1998 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP stack for Windows98
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97     rhino.acme.com          # source server
#       38.25.63.10     x.acme.com              # x client host
127.xxx.0.0.xxx       localhost
141.xxx.60.xxx        signal generator hostname
141.xxx.40.xxx        spectrum analyzer hostname
```


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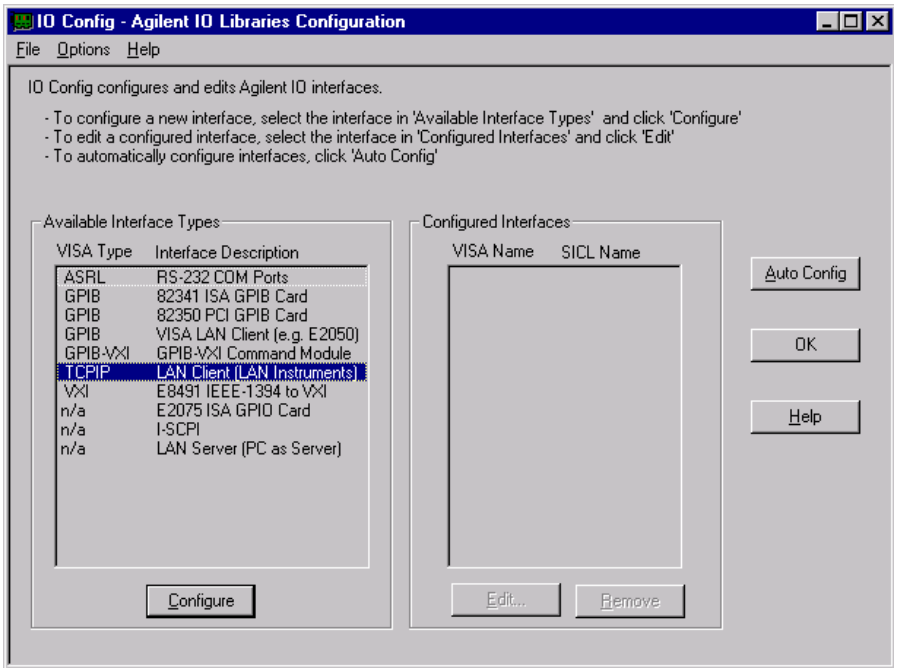
Setting Up the LAN Interface
(Not Applicable to E4430-37B ESG Models)

Configuring the LAN Interface

1. Run the IO Config program, located on the computer in the **Start** > **Programs** > **Agilent IO Libraries** directory. The IO Config - Agilent IO Libraries Configuration window (Figure 16) opens.
2. In the **Available Interface Types** list box, click **TCPIP LAN Client (LAN Instruments)**.

NOTE Because the list of interface types depends on the interfaces installed on your PC, the list you see may differ from the list in Figure 16. Simply make the selections described in this procedure.

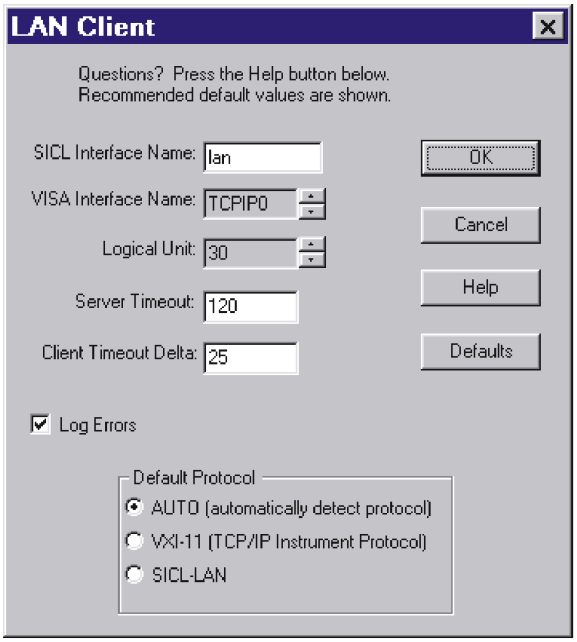
Figure 16 LAN IO Config



3. Click **Configure**. The LAN Client window appears, as shown in Figure 17.
4. In the **Default Protocol** area, select **AUTO (automatically detect protocol)**.
5. In the **LAN Client** window, click **OK**.
6. To finish the LAN interface configuration, click **OK** in the **IO Config - Agilent IO Libraries Configuration** window.

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Figure 17 LAN Client

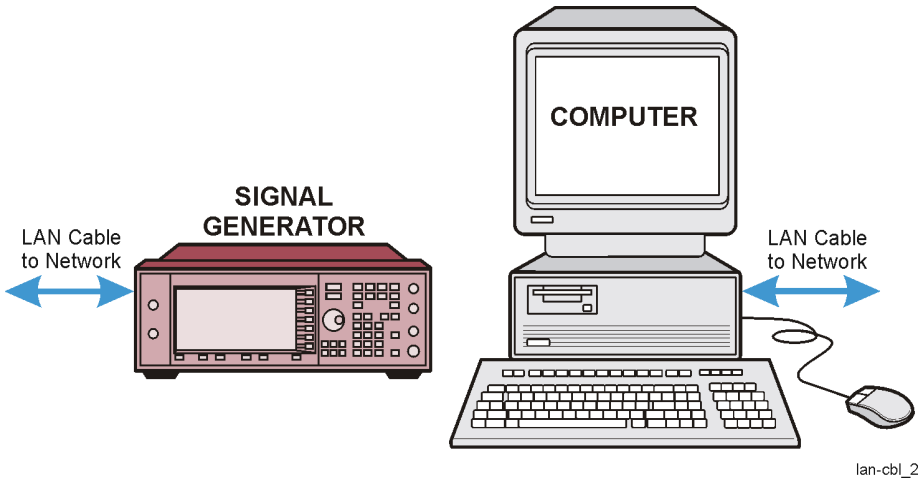


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Connecting the LAN Interface

- Connect the PC to the LAN and the signal generator to the LAN using 10Base-T cables, as shown in Figure 18.

Figure 18 Connecting the LAN Interface to an Existing Network



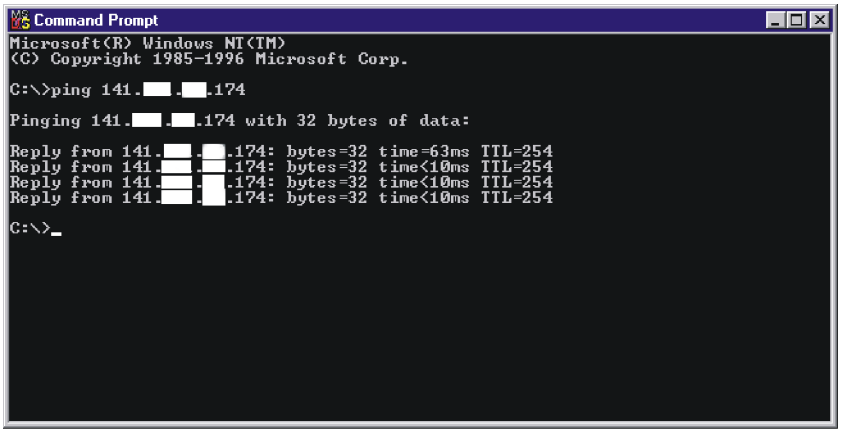
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Verifying LAN Communication

To verify LAN communication, use the ping program available on your computer from **Start** > **Programs** > **MSDOS Command Prompt**.

At the `C:\>` prompt, enter `ping <IP address>` (where <IP address> is the IP address of the signal generator). If the ping program response is a "Reply" as shown in Figure 19, the IP address is correct, and communication can be established between the PC and the signal generator. If not, refer to "Troubleshooting LAN Interface Problems."

Figure 19 Ping Program



Troubleshooting LAN Interface Problems

1. Ensure that the IP address of the signal generator is the same as that used in the ping program.
2. Ensure that the 10Base-T cable used is not a crossover cable.
3. If the ping program responds with a `Request timed out` message, the IP address might not be correct. Contact your IT department for further help.

Communication Time Problems

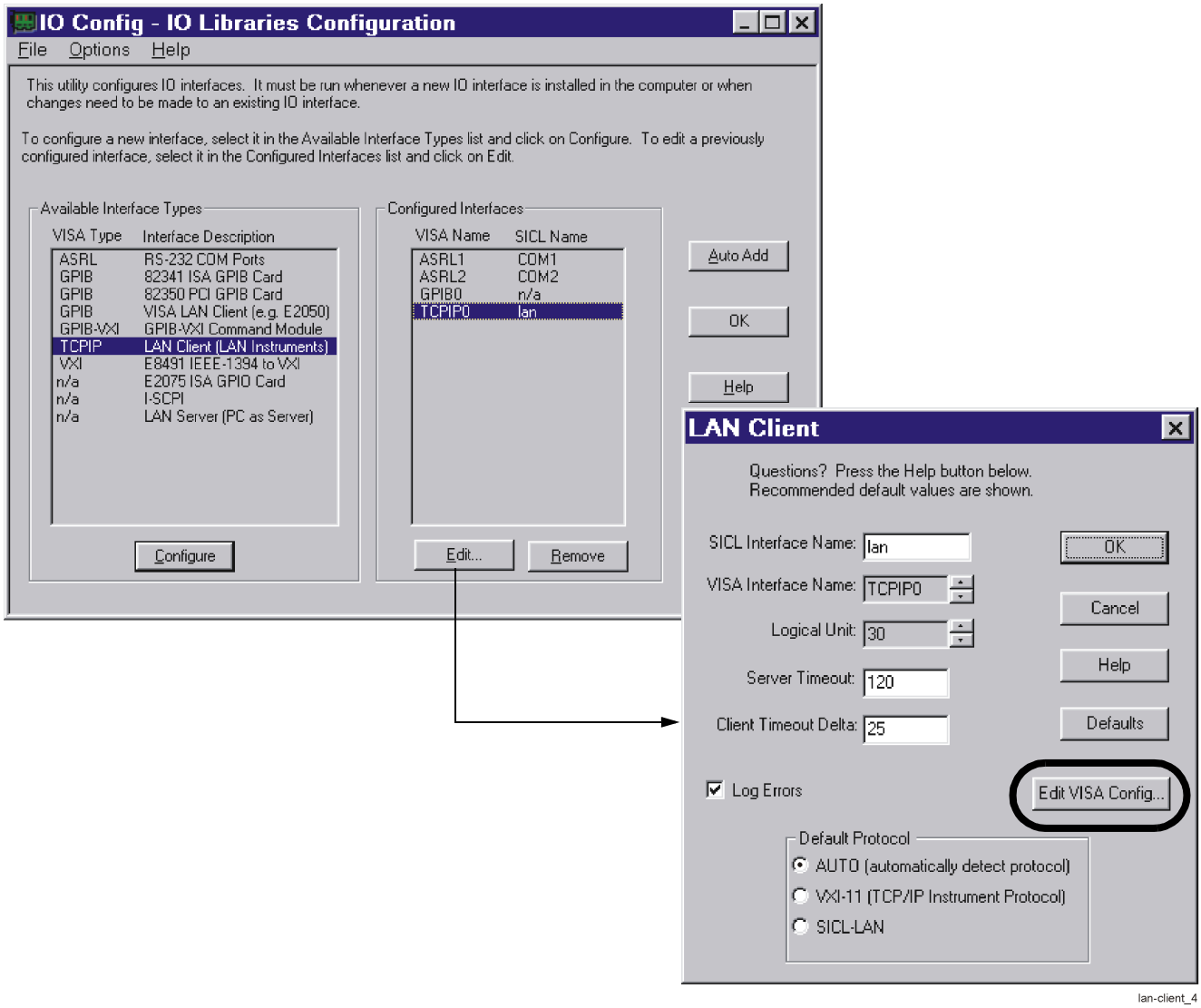
If you experience a long delay (a minute or more) when trying to run the software, there might be an unresolved instrument IP address configured in the IO Config program. An unresolved IP address can affect communication. To check for this, perform the following steps:

1. Go to "Configuring the LAN Interface" on page 17 and perform steps 1 through 5.

   Leave the **IO Config-IO Libraries Configuration** window (shown in Figure 20) open.
2. Click **TCPIP0 lan** > **Edit** > **Edit Visa Config.**

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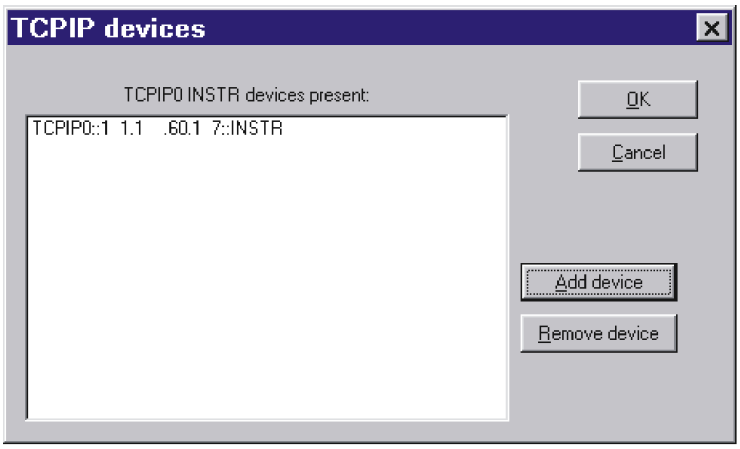
Figure 20 Editing the Visa Configuration



3. Select any devices present in the **TCPIP devices** window, shown in Figure 21, and click **Remove device**.
4. To back out of the IO Config program, click **OK** on successive forms.

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Figure 21 TCPIP devices



Installing the PSG/ESG Download Assistant Software

1. Go to **http://www.agilent.com/find/esg** and select the link to your signal generator.
2. Click **Software, Firmware & Drivers**.
3. Click the **PSG/ESG Download Assistant Software** link and follow the download instructions.
4. If you accept the default, a shortcut to Help for the PSG/ESG Download Assistant software has been placed in **Start > Programs > Agilent Signal Generators > PSG/ESG Download Assistant**.

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