GPIB

Getting Started with Your PCMCIA-GPIB and the NI-488.2™ Software for MacOS

July 1997 Edition
Part Number 321040B-01

Internet Support

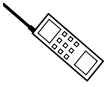
support@natinst.com
E-mail: info@natinst.com
FTP Site: ftp.natinst.com
Web Address: http://www.natinst.com

Bulletin Board Support

BBS United States: (512) 794-5422
BBS United Kingdom: 01635 551422
BBS France: 01 48 65 15 59

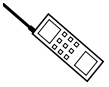
Fax-on-Demand Support

(512) 418-1111



Telephone Support (U.S.)

Tel: (512) 795-8248
Fax: (512) 794-5678



International Offices

Australia 03 9879 5166, Austria 0662 45 79 90 0, Belgium 02 757 00 20,
Canada (Ontario) 905 785 0085, Canada (Québec) 514 694 8521, Denmark 45 76 26 00,
Finland 09 725 725 11, France 01 48 14 24 24, Germany 089 741 31 30,
Hong Kong 2645 3186, Israel 03 5734815, Italy 02 413091, Japan 03 5472 2970,
Korea 02 596 7456, Mexico 5 520 2635, Netherlands 0348 433466, Norway 32 84 84 00,
Singapore 2265886, Spain 91 640 0085, Sweden 08 730 49 70, Switzerland 056 200 51 51,
Taiwan 02 377 1200, United Kingdom 01635 523545

National Instruments Corporate Headquarters

6504 Bridge Point Parkway Austin, TX 78730-5039 Tel: (512) 794-0100

Important Information

Warranty

The PCMCIA-GPIB is warranted against defects in materials and workmanship for a period of two years from the date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace equipment that proves to be defective during the warranty period. This warranty includes parts and labor.

The media on which you receive National Instruments software are warranted not to fail to execute programming instructions, due to defects in materials and workmanship, for a period of 90 days from date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace software media that do not execute programming instructions if National Instruments receives notice of such defects during the warranty period. National Instruments does not warrant that the operation of the software shall be uninterrupted or error free.

A Return Material Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before any equipment will be accepted for warranty work. National Instruments will pay the shipping costs of returning to the owner parts which are covered by warranty.

National Instruments believes that the information in this manual is accurate. The document has been carefully reviewed for technical accuracy. In the event that technical or typographical errors exist, National Instruments reserves the right to make changes to subsequent editions of this document without prior notice to holders of this edition. The reader should consult National Instruments if errors are suspected. In no event shall National Instruments be liable for any damages arising out of or related to this document or the information contained in it.

EXCEPT AS SPECIFIED HEREIN, NATIONAL INSTRUMENTS MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. CUSTOMER'S RIGHT TO RECOVER DAMAGES CAUSED BY FAULT OR NEGLIGENCE ON THE PART OF NATIONAL INSTRUMENTS SHALL BE LIMITED TO THE AMOUNT THERETOFORE PAID BY THE CUSTOMER. NATIONAL INSTRUMENTS WILL NOT BE LIABLE FOR DAMAGES RESULTING FROM LOSS OF DATA, PROFITS, USE OF PRODUCTS, OR INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY THEREOF. This limitation of the liability of National Instruments will apply regardless of the form of action, whether in contract or tort, including negligence. Any action against National Instruments must be brought within one year after the cause of action accrues. National Instruments shall not be liable for any delay in performance due to causes beyond its reasonable control. The warranty provided herein does not cover damages, defects, malfunctions, or service failures caused by owner's failure to follow the National Instruments installation, operation, or maintenance instructions; owner's modification of the product; owner's abuse, misuse, or negligent acts; and power failure or surges, fire, flood, accident, actions of third parties, or other events outside reasonable control.

Copyright

Trademarks

NAT4882®, NI-488®, Turbo488®, NI-488.2™, and TNT4882C™ are trademarks of National Instruments Corporation.

Product and company names listed are trademarks or trade names of their respective companies.

WARNING REGARDING MEDICAL AND CLINICAL USE OF NATIONAL INSTRUMENTS PRODUCTS

National Instruments products are not designed with components and testing intended to ensure a level of reliability suitable for use in treatment and diagnosis of humans. Applications of National Instruments products involving medical or clinical treatment can create a potential for accidental injury caused by product failure, or by errors on the part of the user or application designer. Any use or application of National Instruments products for or involving medical or clinical treatment must be performed by properly trained and qualified medical personnel, and all traditional medical safeguards, equipment, and procedures that are appropriate in the particular situation to prevent serious injury or death should always continue to be used when National Instruments products are being used. National Instruments products are NOT intended to be a substitute for any form of established process, procedure, or equipment used to monitor or safeguard human health and safety in medical or clinical treatment.

FCC/DOC Radio Frequency Interference Class A Compliance

This equipment generates and uses radio frequency energy and, if not installed and used in strict accordance with the instructions in this manual, may cause interference to radio and television reception. Classification requirements are the same for the Federal Communications Commission (FCC) and the Canadian Department of Communications (DOC). This equipment has been tested and found to comply with the following two regulatory agencies:

Federal Communications Commission

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notices to User: ***Changes or modifications not expressly approved by National Instruments could void the user's authority to operate the equipment under the FCC Rules.***

This device complies with the FCC rules only if used with shielded interface cables of suitable quality and construction. National Instruments used such cables to test this device and provides them for sale to the user. The use of inferior or nonshielded interface cables could void the user's authority to operate the equipment under the FCC rules.

If necessary, consult National Instruments or an experienced radio/television technician for additional suggestions. The following booklet prepared by the FCC may also be helpful: *Interference to Home Electronic Entertainment Equipment Handbook*. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

Canadian Department of Communications

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Table of Contents

About This Manual

Chapter 1
Introduction

Chapter 2
Hardware and Software Installation

Chapter 3
Installation Verification

Chapter 4
Using Your NI-488.2 Software

Appendix A
Specifications

Appendix B
Troubleshooting

Appendix C
Customer Communication

Glossary

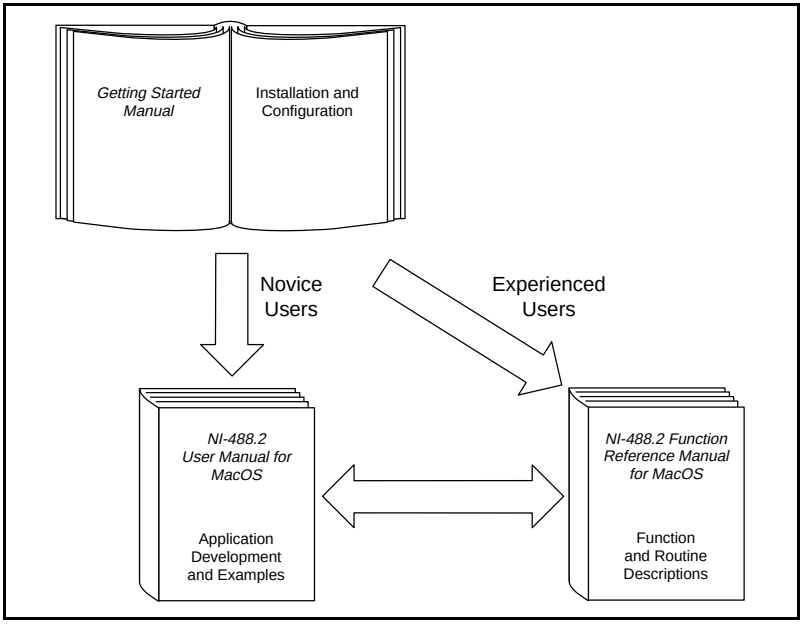
Figures

Tables

This manual contains instructions for installing and configuring the National Instruments PCMCIA-GPIB card and the NI-488.2 software for MacOS. You should use this manual with the *NI-488.2 User Manual for MacOS* and the *NI-488.2 Function Reference Manual for MacOS*.

This manual assumes that you are already familiar with the Macintosh operating system.

How to Use This Manual Set



Use this getting started manual to install your GPIB hardware and to install and configure your NI-488.2 software.

Use the *NI-488.2 User Manual for MacOS* to learn the basics of GPIB and how to develop an application program. The user manual also contains debugging information and detailed examples.

Use the *NI-488.2 Function Reference Manual for MacOS* for specific NI-488 function and NI-488.2 routine information, such as format, parameters, and possible errors.

Organization of This Manual

This manual is organized as follows:

- Chapter 1, *Introduction*, explains how to use this manual, lists what you need to get started, and briefly describes the NI-488.2 software and the PCMCIA-GPIB card.
- Chapter 2, *Hardware and Software Installation*, contains instructions for installing your PCMCIA-GPIB card and the NI-488.2 software for MacOS.
- Chapter 3, *Installation Verification*, contains instructions for verifying the installation and configuring your NI-488.2 software.
- Chapter 4, *Using Your NI-488.2 Software*, describes the `IBIC 488.2` utility and lists some general programming considerations.
- Appendix A, *Specifications*, describes the physical characteristics of the PCMCIA-GPIB hardware and NI-488.2 software, along with the recommended operating conditions.
- Appendix B, *Troubleshooting*, describes how to troubleshoot hardware and software problems and lists some common questions.
- Appendix C, *Customer Communication*, contains forms you can use to request help from National Instruments or to comment on our products and manuals.
- The *Glossary* contains an alphabetical list and description of terms used in this manual, including abbreviations, acronyms, metric prefixes, and mnemonics.

Conventions Used in This Manual

The following conventions are used in this manual.

This icon to the left of bold italicized text denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash.

bold — Bold text denotes the names of menus, menu items, parameters, dialog box, dialog box buttons or options, icons, windows, or LEDs.

bold italic — Bold italic text denotes a note, caution, or warning.

italic — Italic text denotes emphasis, a cross reference, or an introduction to a key concept.

`monospace` — Text in this font denotes text or characters that should literally enter from the keyboard, sections of code, programming examples, and syntax examples. This font is also used for the proper names of disk drives, paths, directories, programs, subprograms, subroutines, device names, functions, operations, variables, filenames and extensions, and for statements and comments taken from programs.

IEEE 488 and IEEE 488.2 — IEEE 488 and IEEE 488.2 refer to the ANSI/IEEE Standard488.1-1987 and ANSI/IEEE Standard 488.2-1992, respectively, which define the GPIB.

The *Glossary* lists abbreviations, acronyms, metric prefixes, mnemonics, symbols, and terms.

Related Documentation

The following documents contain information that you may find helpful as you read this manual:

- ANSI/IEEE Standard 488.1-1987, *IEEE Standard Digital Interface for Programmable Instrumentation*
- ANSI/IEEE Standard 488.2-1992, *IEEE Standard Codes, Formats, Protocols, and Common Commands*
- *Card Services Specification, Release 2.1*, Personal Computer Memory Card International Association (PCMCIA).
- *PC Card Standard, Release 2.1*, Personal Computer Memory Card International Association (PCMCIA).
- *Socket Services Specification, Release 2.1*, Personal Computer Memory Card International Association (PCMCIA).

Customer Communication

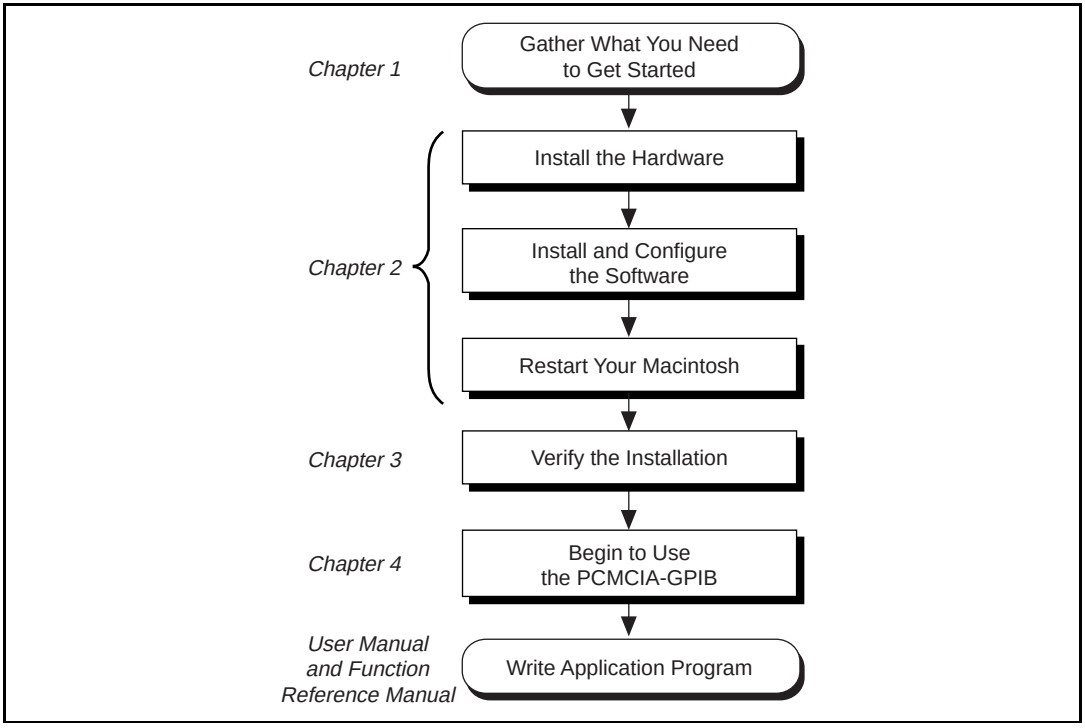
National Instruments wants to receive your comments on our products and manuals. We are interested in the applications you develop with our products, and we want to help if you have problems with them. To make it easy for you to contact us, this manual contains comment and configuration forms for you to complete. These forms are in Appendix C, *Customer Communication*, at the end of this manual.

Chapter 1

Introduction

This chapter explains how to use this manual, lists what you need to get started, and briefly describes the NI-488.2 software and the PCMCIA-GPIB card.

How to Use This Manual



What You Need to Get Started

- ❑ PCMCIA-GPIB
- ❑ 3.5 in. *NI-488.2 Software for MacOS Distribution Disk*
- ❑ PowerBook computer operating Macintosh OS version 7 or later
- ❑ PCMCIA Expansion Module for the PowerBook 500 series

NI-488.2 Software Description

The NI-488.2 software for MacOS is part of your PCMCIA-GPIB kit. It is a comprehensive software package for transforming the Macintosh into a GPIB Controller with complete communication and bus management capability. The NI-488.2 software also comes with an interactive GPIB control utility; FutureBASIC, Macintosh Programmer's Workshop (MPW) C, THINK C, and Metrowerks CodeWarrior C language interfaces; and a shared library for C programmers developing applications for the PowerPC platform. The shared library is installed only on PowerBooks equipped with a PowerPC processor.

Hardware Description

The PCMCIA-GPIB uses the TNT4882C ASIC, which combines the circuitry of the NAT4882 ASIC, the Turbo488 performance-enhancing ASIC, and GPIB transceivers to create a single-chip IEEE 488.2 Talker/Listener/Controller interface. The TNT4882C also implements the HS488 high-speed protocol, which increases the maximum data transfer rate of the PCMCIA-GPIB to 1.5 MB/s. For more information about HS488, refer to Chapter 7, *GPIB Programming Techniques*, in the *NI-488.2 User Manual for MacOS.*

The PCMCIA-GPIB is fully compatible with other IEEE 488 devices. You can connect the PCMCIA-GPIB with up to 14 devices. If you want to use more than 14 devices, you can order a bus extender or expander from National Instruments. Refer to Appendix A, *Specifications*, for more information about the PCMCIA-GPIB specifications and operating conditions.

Optional Programming Tools

Your kit includes the NI-488.2 software for MacOS. In addition, you can order the LabVIEW software from National Instruments. LabVIEW includes instrument driver libraries that make it easier to communicate with your GPIB instruments.

LabVIEW is a complete programming environment that departs from the sequential nature of traditional programming languages and features a graphical programming environment. It includes all the tools needed for instrument control, data acquisition, analysis, and presentation. When you order LabVIEW, you also get hundreds of complete instrument drivers, which are modular, source-code programs that handle the communication with your instrument so that you do not have to learn the programming details.

For more information about LabVIEW, contact National Instruments.

Hardware and Software Installation

Chapter 2

This chapter contains instructions for installing your PCMCIA-GPIB card and the NI-488.2 software for MacOS.

Install the PCMCIA-GPIB Hardware

To install the PCMCIA-GPIB in your computer, insert the PCMCIA-GPIB card into a free PCMCIA socket the same way you insert a disk into a floppy drive. The PCMCIA-GPIB has no jumpers or switches to set, and you do not need to power down the system when you insert it. The NI-488.2 software automatically detects the PCMCIA-GPIB and configures it for use as a GPIB board. Figure 2-1 shows how to insert the PCMCIA-GPIB and how to connect the PCMCIA-GPIB cable.

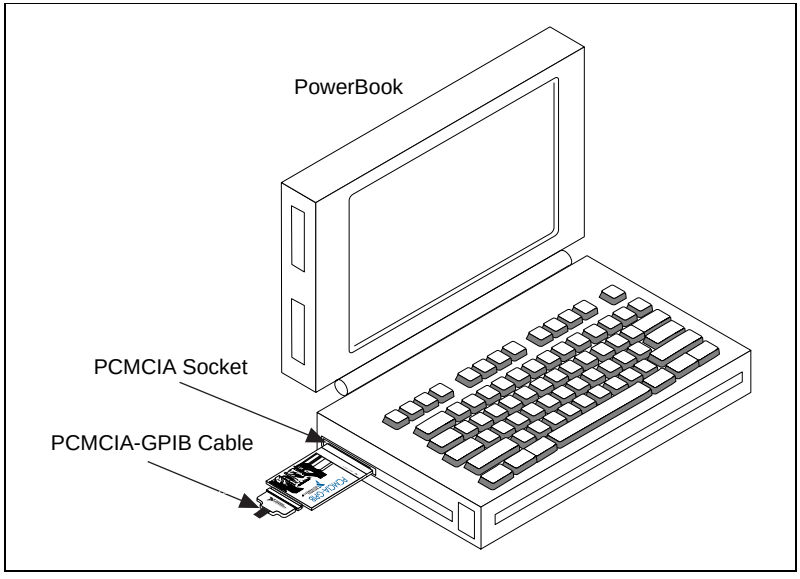


Figure 2-1. Inserting the PCMCIA-GPIB

After you have installed your PCMCIA-GPIB card, follow the instructions in the next section to install the software.

Install the Software

The NI-488.2 software is in compressed form on one disk. Installing all of the software requires about 1.5 MB of space on your hard disk and takes about five minutes.

NI-488.2 Software Components

The NI-488.2 software includes the following components:

- `NI-488.2 Installer` is the software installation program.
- `NI-488 INIT` is an INIT file that loads the device drivers for installed National Instruments GPIB interfaces when you power on or restart your Macintosh.
- `NI-488 Config` is a control panel configuration utility that you can use to examine or change the software settings.
- The `C LI` and `BASIC LI` folders contain language interfaces for Macintosh Programmer's Workshop (MPW) C, THINK C, Metrowerks CodeWarrior C, and FutureBASIC.
- `MacGPIB.shlb` is a shared library for C programmers developing applications for the PowerPC platform.
- `IBIC 488.2` is an interactive GPIB control utility.
- `NI-488.2 Test` is a software diagnostic utility.
- `IBDIAG NUBUS`, `IBDIAG PCI`, and `IBDIAG PCMCIA` are hardware diagnostic utilities.
- The `Ethernet` folder contains utilities that are applicable only if you have a National Instruments GPIB-ENET.
- The `Read Me` file contains the latest updates and corrections to the manual when appropriate.
- PCCARD-GPIB is a native Power Mac device driver for Power Books that adhere to PC Card 3.0.

Step 1. Install the NI-488.2 Files and Folders

Caution: ***Virus detection software might prevent the installer from copying important files to the*** `System Folder`***. You must disable or bypass any virus prevention software before attempting the installation procedure.***

To install the NI-488.2 files and folders, complete the following steps:

1. Insert the NI-488.2 software distribution disk and double-click on the `NI-488.2 Installer` icon.
2. Click on the icon on the left side of the **Installer** window, shown in Figure 2-2, and drag it to any available disk on the right side of the window.

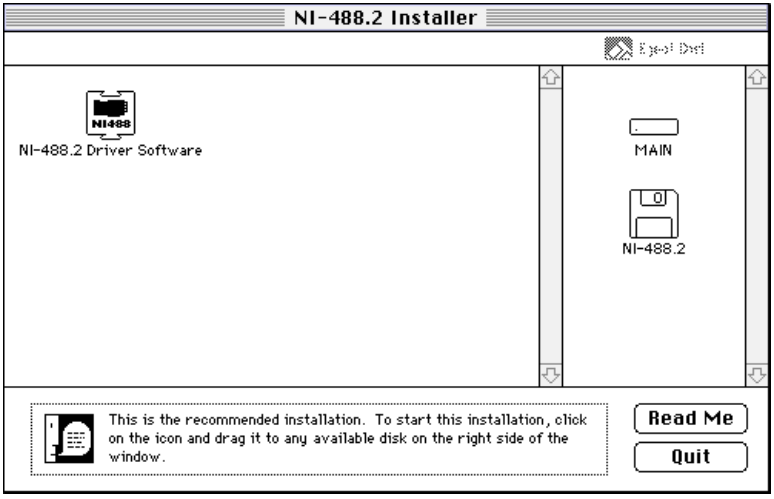


Figure 2-2. Installer Window

After installation of all of the software, the NI-488.2 folder should contain the items shown in Figure 2-3. The installer places the NI-488 Config file in the Control Panels folder and the NI-488 INIT, PCCARD_GPIB, MacGPIB.shlb, and NI-DMA/DSP files in the Extensions folder.

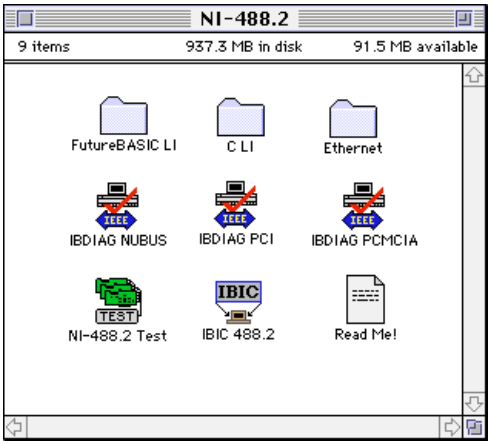


Figure 2-3. File and Folder Organization after Installation

Step 2. Examine or Change the Software Settings

You might want to configure the NI-488.2 software using the configuration utility. The default settings for the software work for most applications and devices. However, you might want to change a device name or primary address.

You can activate the configuration utility by selecting **Control Panels** from the **Apple Icon** menu and selecting **NI-488 Config**. Use NI-488 Config to configure a card as a specific GPIB board, such as gpib0, and place the card in the system at a certain place.

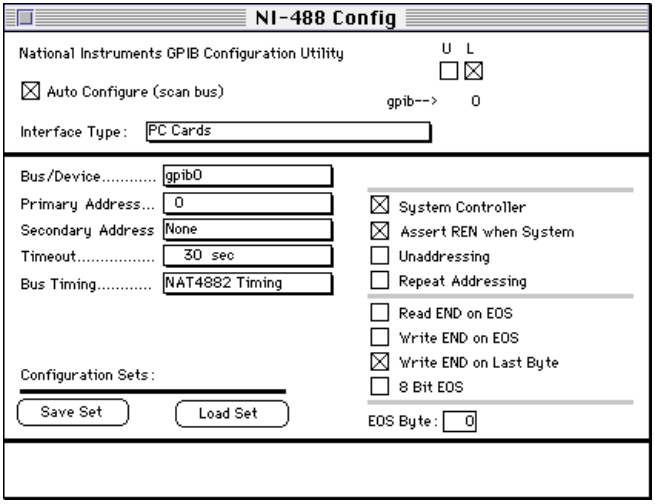


Figure 2-4. Sample Configuration for the PCMCIA-GPIB Card

Figure 2-4 shows a possible configuration for the PCMCIA-GPIB card. The **Auto Configure** box is selected by default and assigns `gpib0` (bus number 0) to the appropriate socket. The *socket boxes*, located in the upper right corner of the **NI-488 Config** dialog box, are labeled **L** and **U** for the lower and upper slots. If an **X** does not appear in a socket box, follow the instructions in the section *Verify the Hardware Installation*, in Chapter 3, *Installation Verification*, to verify that the card is operating correctly.

Step 3. Restart Your Macintosh

The NI-488.2 driver is installed every time you start or restart your Macintosh. The NI-488.2 software displays the **National Instruments** icon momentarily in the lower left corner of the screen to indicate that the driver is being installed. If the **National Instruments** icon does not appear on your screen, repeat the installation procedure before you proceed to the next chapter, *Installation Verification.*

Chapter 3

Installation Verification

This chapter contains instructions for verifying the installation and configuring your NI-488.2 software.

Verify the Hardware Installation

To verify and test the hardware installation, run the `IBDIAG PCMCIA` hardware diagnostic program that came with your NI-488.2 software. `IBDIAG PCMCIA` verifies that your hardware is functioning properly and that the configuration of your card does not conflict with anything else in the system.

Complete the following steps to verify the hardware installation.

1. Disconnect all PCMCIA-GPIB cables from your computer before running the hardware verification program.
2. Power on your computer.
3. Insert the PCMCIA-GPIB card that you want to test.
4. Open the `NI-488.2` folder and double-click on `IBDIAG PCMCIA`. A test window appears on the screen, as shown in Figure 3-1.

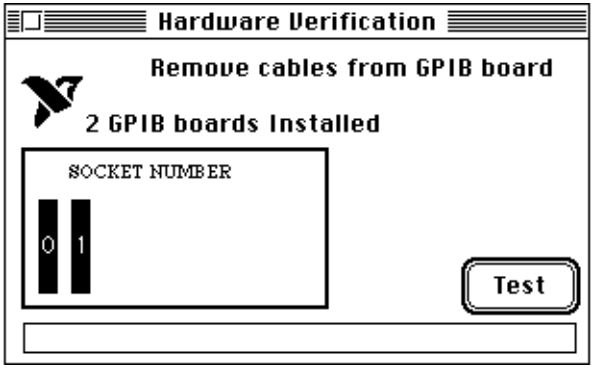


Figure 3-1. Test Window

The socket indicators show the PCMCIA sockets that have cards installed. A socket indicator highlighted in black shows the socket number of a PCMCIA-GPIB card that you can test. You can exit the `IBDIAG PCMCIA` program without running it by choosing **Quit** from the **File** menu.

5. Click on the **Test** button to run a series of tests that verify the PCMCIA-GPIB hardware installation. A bar graph indicates the progress of the tests, and a message appears above the socket indicators at the completion of all tests.
6. View the test results. Figure 3-2 shows the test window that appears if no error was detected. You can exit the `IBDIAG PCMCIA` program if your hardware verification was successful by choosing **Quit** from the **File** menu.

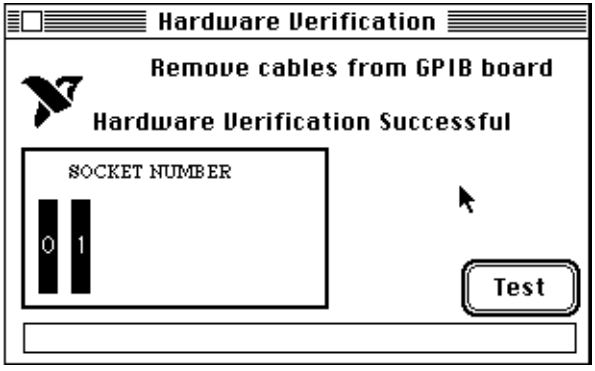


Figure 3-2. Hardware Verification Window after Successful Completion of Tests

Figure 3-3 shows an example alert box screen that appears if an error was detected. The alert box screen has error information and the option to continue or stop.

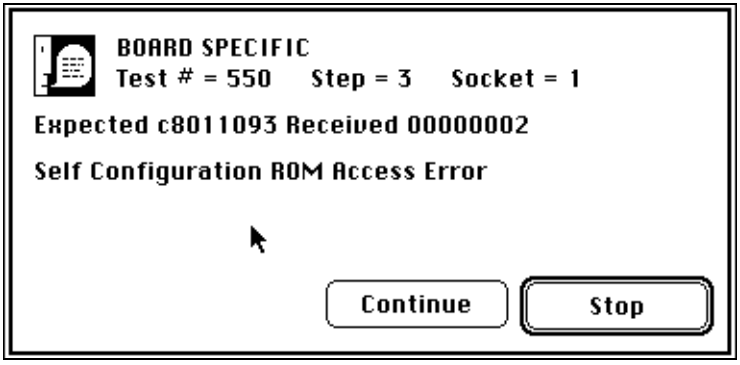


Figure 3-3. Alert Box with Error Information

7. Record the error information. Whenever an Alert Box screen appears, record the information before clicking on either **Continue** or **Stop**. At the end of the program, if the hardware verification did not complete successfully, the screen displays as shown in Figure 3-4.

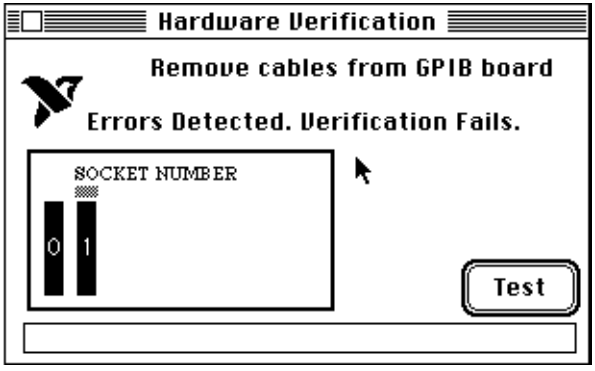


Figure 3-4. Hardware Verification Window after Unsuccessful Completion of Tests

8. If `IBDIAG PCMCIA` fails, make sure that the PCMCIA-GPIB card is positioned securely in its socket and that no PCMCIA-GPIB cables are connected. Run the `IBDIAG PCMCIA` program again. If the program still detects errors, refer to Appendix B, *Troubleshooting*, for possible solutions.
9. Exit the `IBDIAG PCMCIA` program by selecting **Quit** from the **File** menu.

Verify the Software Installation

This step verifies that the software is installed and functioning with the PCMCIA-GPIB. First disconnect all PCMCIA-GPIB cables from the PCMCIA-GPIB card, then double-click on the **NI-488.2 Test** icon in the `NI-488.2` folder.

If no error messages appear on the screen, the installation is complete. If error messages do appear on the screen, select **Restart** from the **Special** menu, and double-click on the **NI-488.2 Test** icon again. If the test fails again, reinstall the NI-488.2 software from the distribution disk, restart your Macintosh, and double-click on the **NI-488.2 Test** icon.

If any one of the software installation steps fails, review the material in Appendix B, *Troubleshooting*, which describes how to troubleshoot problems and lists some common questions. If you need to change a software setting, refer to Chapter 6, *GPIB Configuration Utility*, in the *NI-488.2 User Manual for MacOS*. If the software settings are correct and the verification still fails, carefully note all error information on the forms in Appendix C, *Customer Communication*, and contact National Instruments.

If the verification test is successful, you are ready to write your own application program. Refer to the *NI-488.2 Function Reference Manual for MacOS* for sample programs.

Using Your NI-488.2 Software

Chapter 4

This chapter describes the `IBIC 488.2` utility and lists some general programming considerations.

Introduction to IBIC 488.2

The NI-488.2 software includes the Interface Bus Interactive Control utility, `IBIC 488.2`. You can use `IBIC 488.2` to enter NI-488 functions and NI-488.2 routines interactively and display the results of the function calls automatically. Without writing an application, you can use `IBIC 488.2` to do the following:

- Verify GPIB communication with your device quickly and easily
- Become familiar with the commands of your device
- Receive data from your GPIB device
- Learn new functions and routines before integrating them into your application
- Troubleshoot problems with your application

For more information about `IBIC 488.2`, refer to the *NI-488.2 User Manual for MacOS.*

General Programming Considerations

Depending on the programming language you use to develop your application, you must include certain files, statements, or global variables at the beginning of your application. For specific instructions, refer to the *NI-488.2 User Manual for MacOS.*

For information about choosing a programming method, developing your application, or compiling and linking, refer to the *NI-488.2 User Manual for MacOS*. For detailed information about each NI-488 function and NI-488.2 routine, refer to the *NI-488.2 Function Reference Manual for MacOS*.

Specifications

Appendix
A

This appendix specifies the physical characteristics of the PCMCIA-GPIB hardware and NI-488.2 software, along with the recommended operating conditions.

Hardware

Table A-1. PCMCIA-GPIB Electrical Characteristics

Characteristic	Specification
Dimensions	85.6 by 54.0 by 5.0 mm (3.370 by 2.12 by 0.197 in.)
Power Requirement (from PCMCIA expansion slot)	+5 VDC 65 mA Typical 85 mA Maximum
I/O Interface	Special IEEE 488 Cable with 24-Pin Converter for PC Card
Operating Environment Component Temperature Relative Humidity	 0° to 40° C 10% to 90%, noncondensing
Storage Environment Temperature Relative Humidity	 –20° to 70° C 5% to 90%, noncondensing
EMI	FCC Class A Verified

Software

Table A-2. NI-488.2 Software Characteristics for the PCMCIA-GPIB

Characteristic	Specification
GPIB Transfer Rates	
3-Wire (IEEE 488.1)	
Reads	700 KB/s*
Writes	800 KB/s*
HS488	
Reads	1.4 MB/s*
Writes	1.5 MB/s*
* Actual speed may vary considerably from speed shown due to system and instrumentation capabilities.	

Troubleshooting

Appendix
B

This appendix describes how to troubleshoot hardware and software problems and lists some common questions.

If hardware or software problems persist after you try the solutions recommended in this chapter, note all error information on the forms in Appendix C, *Customer Communication*, and contact National Instruments.

Troubleshooting Hardware Problems

Check the following if you encounter any hardware problems:

- Make sure that the PCMCIA-GPIB card is positioned securely in its socket.
- If the hardware verification test fails, make sure that no GPIB cables are connected to the PCMCIA-GPIB card.

Troubleshooting Software Problems

Check the following if you encounter any software problems:

- Make sure that all GPIB cables are connected properly, unless you are running the hardware or software verification tests.
- The `NI-488 Config` control panel (GPIB configuration utility) should show the following software configuration:
  - The **Interface Type** menu selection should be set to **PC Cards**.
  - An `X` should appear in the socket box that corresponds to the socket of your PCMCIA-GPIB card. The socket boxes are in the upper right corner of the **NI-488 Config** dialog box, and are labeled **L** for lower and **U** for upper.

You can use the NI-488 Config control panel utility to examine and adjust the configuration of the software. Refer to Chapter 6, *GPIB Configuration Utility*, in the *NI-488.2 User Manual for MacOS* for more information on running the utility and for information about the configurable software parameters.

- If the software verification test fails, make sure that no GPIB cables are connected to the PCMCIA-GPIB card.

Common Questions

What do I do if my card does not show up in the NI-488 Config utility?

In NI-488 Config, an **X** should appear in a socket box that corresponds to the location of your PCMCIA-GPIB card. If an **X** does not appear in any box, make sure the PCMCIA-GPIB is seated firmly in the socket.

What do I do if the hardware or software verification test fails with an error?

Refer to the troubleshooting sections of this appendix for information about what might cause these tests to fail.

What do I do if I have installed the NI-488.2 software and now my Macintosh crashes upon startup?

Try changing the name of the NI-488 INIT to ZNI-488 INIT. Because INIT files load in alphabetical order, the ZNI-488 INIT will load last, preventing possible corruption from INIT files that load after it. If changing the name of the NI-488 INIT does not solve the problem, another INIT file might have a conflict with the NI-488 INIT. Try removing some of your other INIT files. You can store them in a temporary folder, in case you need to reload them later. If you are using System 7.5 or later, you can use the Extensions Manager control panel to disable certain extensions and control panels.

What happens if I remove a PCMCIA-GPIB card while my computer is powered on?

If you remove a PCMCIA-GPIB card while your computer is powered on, you can no longer use the GPIB board to which it was assigned. If you attempt to access a GPIB board whose PCMCIA-GPIB card has

been removed, the NI-488.2 software indicates a Non-Existent Board Error (ENEB). For information about GPIB error codes, refer to the *NI-488.2 User Manual for MacOS.*

If you remove a PCMCIA-GPIB card and then reinsert it while an application is using its GPIB board, the GPIB board loses its state information and the ENEB error is reported. To use the GPIB board again, you must place the GPIB board back online by using `ibfind` or `ibonl` with a parameter of 1. As a general rule, you must place the GPIB board offline before removing its PCMCIA-GPIB card by calling `ibonl` with a parameter of 0.

How can I configure more than two PCMCIA-GPIB cards?

If you want to use more than two PC Card Sockets by adding a PC Card expansion module, you can configure the additional socket by selecting the **PC Cards** expansion sockets interface menu.

What do I do if I try to eject the PCMCIA-GPIB, but it won't eject?

Make sure the card is offline by issuing an `ibonl(0)` call to the card. The card will not eject while online. Also, make sure the card is not stuck in the socket. Sometimes an improperly seated PC Card will fail to eject.

What do I do if my card does not work correctly with a scanner or film recorder?

Try checking the **Unaddressing** option in the `NI-488 Config` control panel.

When should I use `IBIC 488.2`?

You can use `IBIC 488.2` to test and verify instrument communication, troubleshoot problems, and develop your application program. For more information about `IBIC 488.2`, refer to Chapter 4, *Interface Bus Interactive Control Utility*, in the *NI-488.2 User Manual for MacOS.*

How do I use an NI-488.2 language interface?

For information about using NI-488.2 language interfaces, refer to the *NI-488.2 User Manual for MacOS.*

How can I use the files located in the `Ethernet` folder?

You do not need to use the files in the `Ethernet` folder unless you have a National Instruments GPIB-ENET.

What information should I have before I call National Instruments?

When you call National Instruments, you should have the results of the hardware and software verification tests. In addition, make sure you have filled out the forms in Appendix C, *Customer Communication*.

Can I use PCMCIA-GPIB+ with a Mac Power Book?

No, PCMCIA-GPIB+ is not supported on the Macintosh.

Customer Communication

Appendix
C

For your convenience, this appendix contains forms to help you gather the information necessary to help us solve your technical problems and a form you can use to comment on the product documentation. When you contact us, we need the information on the Technical Support Form and the configuration form, if your manual contains one, about your system configuration to answer your questions as quickly as possible.

National Instruments has technical assistance through electronic, fax, and telephone systems to quickly provide the information you need. Our electronic services include a bulletin board service, an FTP site, a fax-on-demand system, and e-mail support. If you have a hardware or software problem, first try the electronic support systems. If the information available on these systems does not answer your questions, we offer fax and telephone support through our technical support centers, which are staffed by applications engineers.

Electronic Services

Bulletin Board Support

National Instruments has BBS and FTP sites dedicated for 24-hour support with a collection of files and documents to answer most common customer questions. From these sites, you can also download the latest instrument drivers, updates, and example programs. For recorded instructions on how to use the bulletin board and FTP services and for BBS automated information, call (512) 795-6990. You can access these services at:

United States: (512) 794-5422
Up to 14,400 baud, 8 data bits, 1 stop bit, no parity

United Kingdom: 01635 551422
Up to 9,600 baud, 8 data bits, 1 stop bit, no parity

France: 01 48 65 15 59
Up to 9,600 baud, 8 data bits, 1 stop bit, no parity

FTP Support

To access our FTP site, log on to our Internet host, `ftp.natinst.com`, as `anonymous` and use your Internet address, such as `joesmith@anywhere.com`, as your password. The support files and documents are located in the `/support` directories.

Fax-on-Demand Support

Fax-on-Demand is a 24-hour information retrieval system containing a library of documents on a wide range of technical information. You can access Fax-on-Demand from a touch-tone telephone at (512) 418-1111.

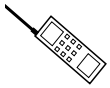
E-Mail Support (currently U.S. only)

You can submit technical support questions to the applications engineering team through e-mail at the Internet address listed below. Remember to include your name, address, and phone number so we can contact you with solutions and suggestions.

`support@natinst.com`

Telephone and Fax Support

National Instruments has branch offices all over the world. Use the list below to find the technical support number for your country. If there is no National Instruments office in your country, contact the source from which you purchased your software to obtain support.



	Telephone	Fax
Australia	03 9879 5166	03 9879 6277
Austria	0662 45 79 90 0	0662 45 79 90 19
Belgium	02 757 00 20	02 757 03 11
Canada (Ontario)	905 785 0085	905 785 0086
Canada (Quebec)	514 694 8521	514 694 4399
Denmark	45 76 26 00	45 76 26 02
Finland	09 725 725 11	09 725 725 55
France	01 48 14 24 24	01 48 14 24 14
Germany	089 741 31 30	089 714 60 35
Hong Kong	2645 3186	2686 8505
Israel	03 5734815	03 5734816
Italy	02 413091	02 41309215
Japan	03 5472 2970	03 5472 2977
Korea	02 596 7456	02 596 7455
Mexico	5 520 2635	5 520 3282
Netherlands	0348 433466	0348 430673
Norway	32 84 84 00	32 84 86 00
Singapore	2265886	2265887
Spain	91 640 0085	91 640 0533
Sweden	08 730 49 70	08 730 43 70
Switzerland	056 200 51 51	056 200 51 55
Taiwan	02 377 1200	02 737 4644
United States	512 795 8248	512 794 5678
United Kingdom	01635 523545	01635 523154

Technical Support Form

Photocopy this form and update it each time you make changes to your software or hardware, and use the completed copy of this form as a reference for your current configuration. Completing this form accurately before contacting National Instruments for technical support helps our applications engineers answer your questions more efficiently.

If you are using any National Instruments hardware or software products related to this problem, include the configuration forms from their user manuals. Include additional pages if necessary.

Name _____

Company _____

Address _____

_____

Fax (___)_____ Phone (___) _____

Computer brand _____ Model _____ Processor_____

Operating system (include version number) _____

Clock speed _____MHz RAM _____MB Display adapter _____

Mouse ___yes ___no Other adapters installed _____

Hard disk capacity _____MB Brand _____

Instruments used _____

_____

National Instruments hardware product model _____ Revision _____

Configuration _____

National Instruments software product _____ Version _____

Configuration _____

The problem is: _____

_____

_____

_____

_____

List any error messages: _____

_____

_____

The following steps reproduce the problem:_____

_____

_____

_____

_____

_____

PCMCIA-GPIB Hardware and Software Configuration Form

Record the settings and revisions of your hardware and software on the line to the right of each item. Complete a new copy of this form each time you revise your software or hardware configuration, and use this form as a reference for your current configuration. Completing this form accurately before contacting National Instruments for technical support helps our applications engineers answer your questions more efficiently.

National Instruments Products

PCMCIA-GPIB revision number _____

NI-488.2 software version number of distribution medium _____

Other Products

Programming language and version number _____

Computer make and model _____

Memory capacity on computer _____

Clock frequency or speed _____

Operating system version _____

Number of GPIB devices on bus _____

Other hardware devices in system _____

Type of monitor _____

Documentation Comment Form

National Instruments encourages you to comment on the documentation supplied with our products. This information helps us provide quality products to meet your needs.

Title: *Getting Started with Your PCMCIA-GPIB and the NI-488.2™ Software for MacOS*

Edition Date: July 1997

Part Number: 321040B-01

Please comment on the completeness, clarity, and organization of the manual.

_____

_____

_____

_____

_____

_____

_____

If you find errors in the manual, please record the page numbers and describe the errors.

_____

_____

_____

_____

_____

_____

_____

Thank you for your help.

Name _____

Title _____

Company _____

Address _____

_____

Phone (___)_____ Fax (___) _____

Mail to: Technical Publications
National Instruments Corporation
6504 Bridge Point Parkway
Austin, TX 78730-5039

Fax to: Technical Publications
National Instruments Corporation
(512) 794-5678

Glossary

Prefix	Meanings	Value
m-	milli-	10^{-3}
k-	kilo-	10^{3}
M-	mega-	10^{6}

°	degrees
%	percent
A	amperes
AC	alternating current
ANSI	American National Standards Institute
ASIC	application-specific integrated circuit
BIOS	Basic Input/Output System
C	Celsius
EMI	electromagnetic interference
FCC	Federal Communications Commission
GPIB	General Purpose Interface Bus
hex	hexadecimal
Hz	hertz
I/O	input/output
IEEE	Institute of Electrical and Electronic Engineers
in.	inches
KB	kilobytes of memory
m	meters
MB	megabytes of memory
PC	personal computer
PCMCIA	Personal Computer Memory Card International Association
RAM	random-access memory
s	seconds
VDC	volts direct current