Getting Started with Your GPIB-SE/30 and the NI-488.2™ Software for Macintosh

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Part Number 320484B-01

WARNING

Installation of the GPIB-SE/30 board must be done by an authorized Apple dealer. National Instruments accepts no responsibility for efforts to install the GPIB-SE/30 by unauthorized persons and/or incorrect procedures.

Limited Warranty

The GPIB-SE/30 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.

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FCC/DOC Radio Frequency Interference 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. This equipment has been tested and found to comply with the following two regulatory agencies:

Federal Communications Commission

This device complies with Part 15 of the Federal Communications Commission (FCC) Rules for a Class B digital device. A Class B device is distinguishable from a Class A device by the appearance of an FCC ID number located on the Class B device.

Canadian Department of Communications

This device complies with the limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications (DOC).

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des communications du Canada.

Instructions to Users

These regulations are designed to provide reasonable protection against interference from the equipment to radio and television reception in residential areas.

There is no guarantee that interference will not occur in a particular installation. However, the chances of interference are much less if the equipment is installed and used according to this instruction manual.

If the equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, one or more of the following suggestions may reduce or eliminate the problem.

• Operate the equipment and the receiver on different branches of your AC electrical system.

• Move the equipment away from the receiver with which it is interfering.

• Reorient or relocate the receiver's antenna.

• Be sure that the equipment is plugged into a grounded outlet and that the grounding has not been defeated with a cheater plug.

Notice 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.

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: *How to Identify and Resolve Radio-TV Interference Problems.* This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock Number 004-000-00345-4.

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About This Manual

This manual contains instructions for installing and configuring the National Instruments GPIB-SE/30 and NI-488.2 software for Macintosh. This manual is meant to be used with the *NI-488.2 User Manual for Macintosh* and the *NI-488.2 Function Reference Manual for Macintosh*.

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

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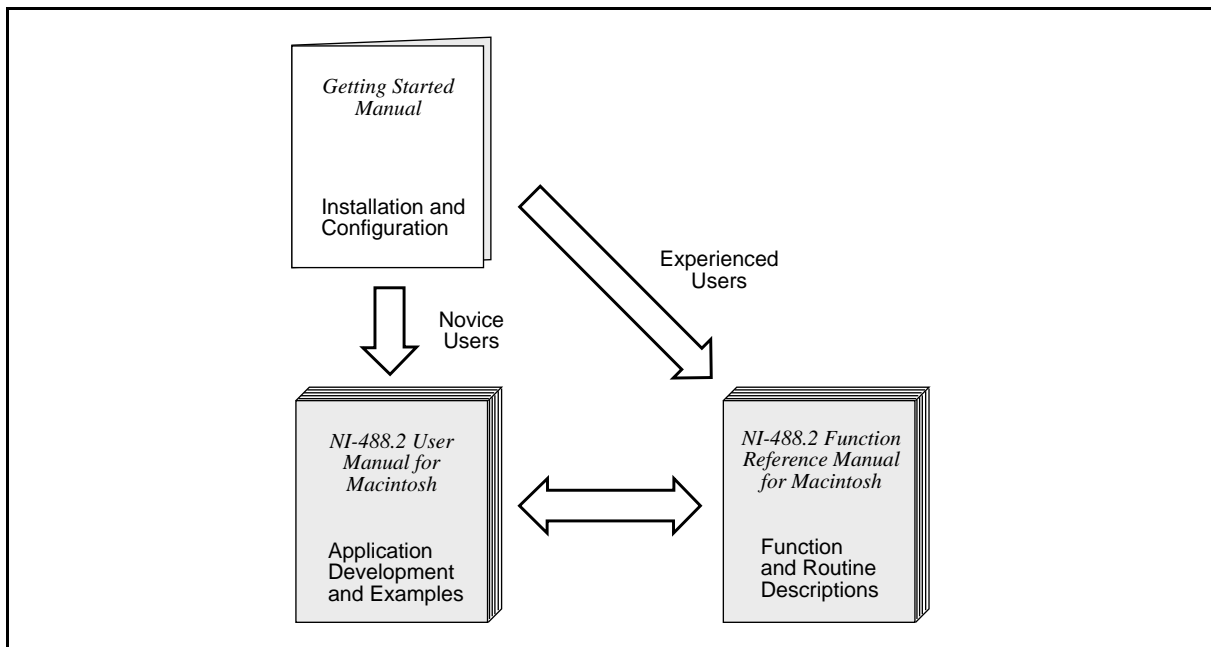
Use this getting started manual to install and configure your GPIB hardware and NI-488.2 software.

Use the *NI-488.2 User Manual for Macintosh* 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 Macintosh* 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*, lists what you need to get started and optional cables you can order, and briefly describes the GPIB-SE/30 hardware and the NI-488.2 software.

- Chapter 2, *Installation*, contains information on preparing the GPIB-SE/30 interface board for dealer installation, instructions for installing a GPIB cable, and instructions for installing and verifying the installation of the NI-488.2 software.

- Appendix A, *Hardware Verification (Optional)*, contains instructions for running the hardware verification program.

- Appendix B, *Hardware Specifications*, specifies the electrical, environmental, and physical characteristics of the GPIB-SE/30.

- Appendix C, *Troubleshooting*, suggests some areas to check if you have problems with the GPIB-SE/30 or the NI-488.2 software after going through the procedures described in Chapter 2, *Installation*, and Appendix A, *Hardware Verification (Optional).*

- Appendix D, *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, mnemonics, and symbols.

Conventions Used in This Manual

The following conventions are used in this manual:

bold	Bold text denotes menus, menu items, or dialog box buttons or options.
bold italic	Bold italic text is used to denote an important 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 the names of commands, files, icons, and utilities.
IEEE 488 and IEEE 488.2	IEEE 488 and IEEE 488.2 refer to the ANSI/IEEE Standard 488.1-1987 and the ANSI/IEEE Standard 488.2-1987, respectively, which define the GPIB.

Abbreviations, acronyms, metric prefixes, mnemonics, symbols, and terms are listed in the *Glossary*.

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 488.2-1987, *IEEE Standard Codes, Formats, Protocols, and Common Commands*

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 D, *Customer Communication*, at the end of this manual.

Chapter 1
Introduction

This chapter lists what you need to get started and optional cables you can order, and briefly describes the GPIB-SE/30 hardware and the NI-488.2 software.

What You Need to Get Started

❑   GPIB-SE/30 Interface Board

❑   GPIB Ribbon Cable with Bracket

❑   3.5 in. *Macintosh GPIB Hardware Verification Disk*

❑   3.5 in *NI-488.2 Software for Macintosh Distribution Disk*

Optional Cables

To meet FCC emission limits for this Class B device, you must use a double-shielded (Type X2 or X5) GPIB cable. Operating this equipment with a single-shielded (Type X1) cable may cause interference to radio and television reception in residential areas.

You can contact National Instruments to order any of the following cables.

*   Double-Shielded Cables
        Type X2 cables – 1 m, 2 m, 4 m, or 8 m

*   Double-Shielded Standard GPIB to Single-End Male GPIB Cables
        Type X5 cables – 1 m, 2 m, 4 m, or 8 m

Hardware Description

The GPIB-SE/30 is a high-performance IEEE 488 plug-in board for the Apple Macintosh SE/30 computer. The National Instruments NAT4882 and Turbo488 ASICs, transform the GPIB-SE/30 into a high-speed IEEE 488.2 Controller. The NAT4882 chip performs the basic IEEE 488 Talker, Listener, and Controller functions, as well as all of the remaining Controller functions required by the most recent GPIB standard, IEEE 488.2. The Turbo488 increases the performance of the GPIB-SE/30 by combining two 16-byte FIFOs with circuitry to pack and unpack 16-bit accesses from the SE/30 to 8-bit transfers across the GPIB. Data transfer rates can surpass the maximum specified rate of 1 Mbytes/s for read and write operations, with the actual rate dependent upon instrumentation capabilities.

Standard IEEE 488 cables connect the GPIB-SE/30 with up to 14 instruments. If more than 14 instruments are required, you can use the National Instruments IEEE 488 extenders or expanders to add additional instruments to the system.

Software Description

NI-488.2 software is part of your GPIB-SE/30 kit. It is a comprehensive set of programs and drivers for transforming the Macintosh into a GPIB Controller with complete communications and bus management capability. The NI-488.2 software package also comes with an interactive debugger and the Microsoft QuickBASIC, Macintosh Programmer's Workshop (MPW) C, THINK C, and Metrowerks CodeWarrior C language interfaces.

Optional Programming Tools

Your kit includes the NI-488.2 software for Macintosh. 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 more than 300 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.

Chapter 2
Installation

This chapter contains information on preparing the GPIB-SE/30 interface board for dealer installation, instructions for installing a GPIB cable, and instructions for installing and verifying the installation of the NI-488.2 software.

If your GPIB-SE/30 does not function properly after you perform steps in this chapter, follow the instructions in Appendix A, *Hardware Verification (Optional),* to test your hardware.

Preparing for Dealer Installation of the GPIB-SE/30

The GPIB-SE/30 interface board is *not* user-installable. It *must* be installed by an authorized Apple dealer. The dealer needs the following items to complete the installation:

*   Your Macintosh SE/30 computer

*   The GPIB-SE/30 interface board

*   The GPIB ribbon cable that connects the GPIB-SE/30 interface board to the back of the Macintosh SE/30.

*   The disk containing hardware verification software

    Note: The hardware verification software is on the disk included with your GPIB-SE/30 kit. Make a backup copy of this software on a separate disk to give to your dealer.

Installing a GPIB Cable

After your GPIB-SE/30 interface board is installed into your Macintosh SE/30 by an authorized Apple dealer, you are ready to attach your GPIB cable.

Note: The hardware verification diagnostics were run by the Apple Dealer when the GPIB-SE/30 was installed. However, if you would like to run these diagnostics again, refer to Appendix A, Hardware Verification (Optional). Do not connect the GPIB cables to the GPIB-SE/30 interface board or your device before running the hardware verification program. If you do not want to verify the installation, continue with the instructions for installing a GPIB cable.

Figure 2-1 shows you how to install a GPIB cable to the back of your Macintosh SE/30.
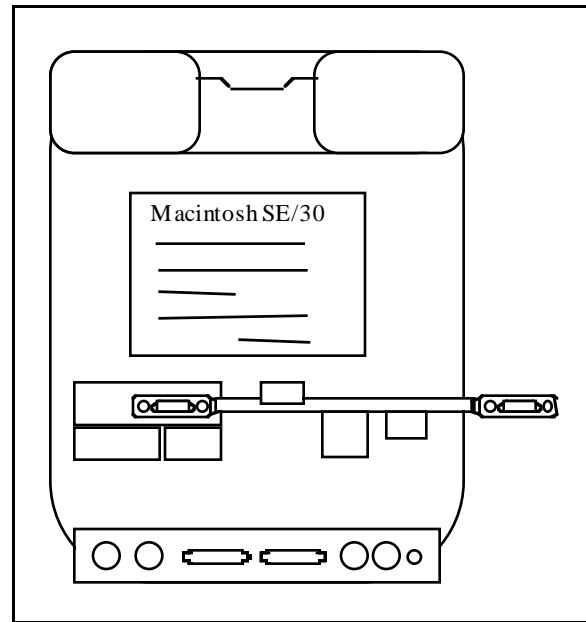
Figure 2-1. Installing a GPIB Cable to the Back of a Macintosh SE/30

1. Turn off your Macintosh SE/30.

2. Unplug the power cord.

3. Align the GPIB cable with the receptacle located on the back of the Macintosh SE/30.

4. Push the connector in until it is securely attached.

5. Tighten the thumb screws on each side of the connector.

6. Install the power cord.

7. Turn on the power to your computer.

If you have problems connecting your GPIB cable, contact the authorized Apple dealer who installed your GPIB-SE/30 interface board.

The GPIB-SE/30 installation is complete. The GPIB cable is ready to attach to a GPIB device.

The GPIB-SE/30 is configured permanently to operate in pseudo-NuBus slot A of the Macintosh SE/30 address space. Accordingly, the base address of the GPIB-SE/30 is either A00000 hex if the Macintosh SE/30 is operating in the 24-bit address mode or FA000000 hex if the Macintosh SE/30 is operating in the 32-bit addressing mode.

Installing the Software

The NI-488.2 software is distributed in compressed form on one disk. Installing all of the software requires about 1 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 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.

*   `NB-Boards` is a control panel utility that displays information about the boards currently installed in your computer if it contains plug-in slots.

*   `NI-DMA/DSP` is a system extension that provides DMA functionality through an RTSI connection to an NB-DMA2800 or NB-DMA-8.

*   The `C LI` and `BASIC LI` folders contain language interfaces for Macintosh Programmer's Workshop (MPW) C, THINK C, Metrowerks CodeWarrior C, and Microsoft QuickBASIC.

*   The `Device Manager Calls` folder contains sample programs that make high-level and low-level Device Manager calls.

*   `IBIC 488.2` is an interactive GPIB control utility.

*   `NI-488.2 Test` is a software diagnostic utility.

*   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.

If an `NI-488 INIT` file is already installed in your system, the `NI-488.2 Installer` program removes it and replaces it with the current `NI-488 INIT`. If the `NI-488 Config` or `NI-DMA/DSP` files are already installed in your system, they are also replaced.

Install the NI-488.2 software by completing the following steps.

Step 1. Install the NI-488.2 Files and Folders

Caution: ***Virus detection software may 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.***

1. Insert the NI-488.2 software distribution disk and double-click on the `NI-488.2 Installer` icon.

2. If you have a National Instruments software driver already installed, the dialog box shown in Figure 2-2 appears. If the dialog box does not appear, skip to Step 3.

    If you want to copy the bus and device settings from your original driver to the new `NI-488 INIT`, click on the **Retain** button. Otherwise, reset all settings to the defaults by clicking on the **Clear** button. To exit from the installation procedure, click on the **Cancel** button.
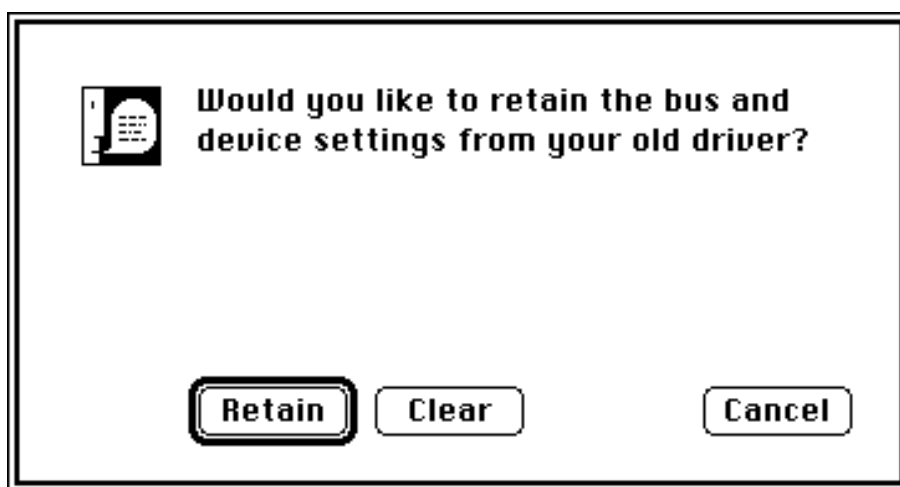
Figure 2-2. Settings Dialog Box

3. The installer creates a folder named `NI-488.2` to contain NI-488.2 files and folders. If you want to rename the folder, click on the **Change Folder** button in the installation dialog box, shown in Figure 2-3, and enter a new folder name.
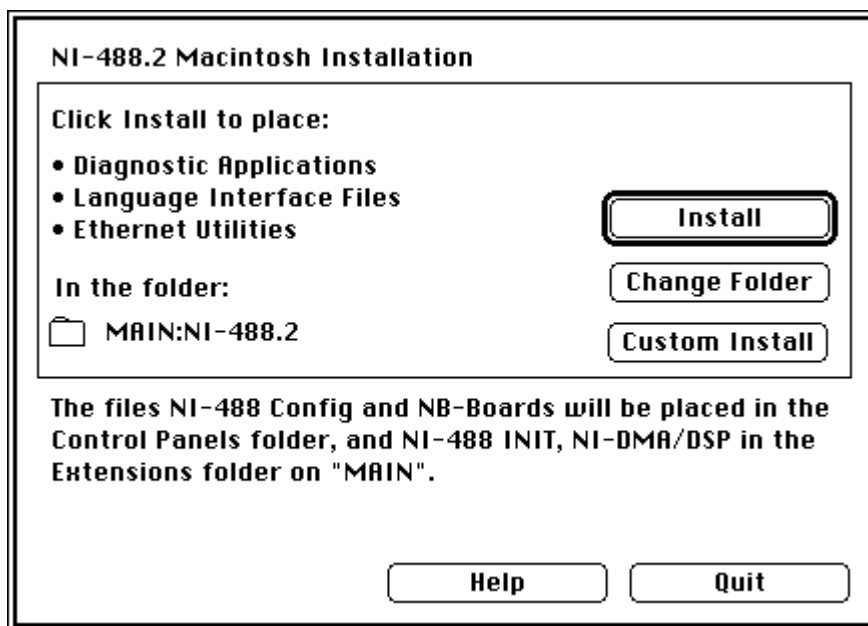
Figure 2-3. Installation Dialog Box

4. Click on the **Install** button to install all of the NI-488.2 software. If you want to install only some of the files, click on the **Custom Install** button and select the items to install.

After installation of all of the software, the `NI-488.2` folder should contain the items shown in Figure 2-4. If you are running System 7.0 or later, the `NI-488 Config` file is placed in the `Control Panels` folder, and the `NI-488 INIT` and `NI-DMA/DSP` files are placed in the `Extensions` folder. If you are running System 6 or earlier, the `NI-488 Config`, `NI-488 INIT`, and `NI-DMA/DSP` files are installed in the `System Folder`. `NB-Boards`, a control panel utility, appears with the files.
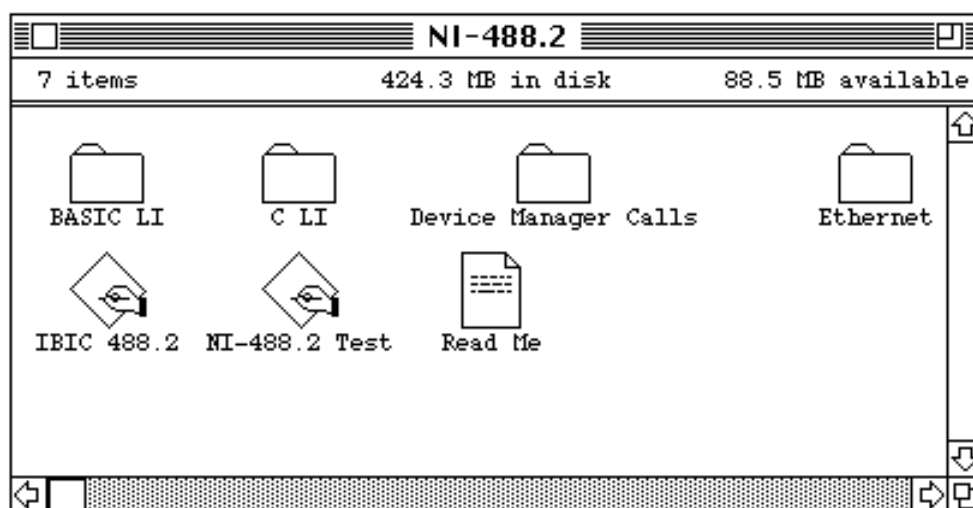
Figure 2-4. File and Folder Organization after Installation

NI-488 Config is a configuration utility that you can use to examine and change the software settings for your board. You can activate the configuration utility by selecting **Control Panels** from the **Apple** menu and double-clicking on the NI-488 Config icon. After activating the utility, make sure that the **Interface Type** menu selection is set to **Nubus boards**.

Figure 2-5 shows a possible configuration for the GPIB-SE/30. The **Auto Configure** box is selected by default and assigns gpib0 (bus number 0) to the appropriate slot. If an **X** does not appear in a system slot box, follow the instructions in Appendix A, *Hardware Verification (Optional)*, to verify that the board is operating correctly.
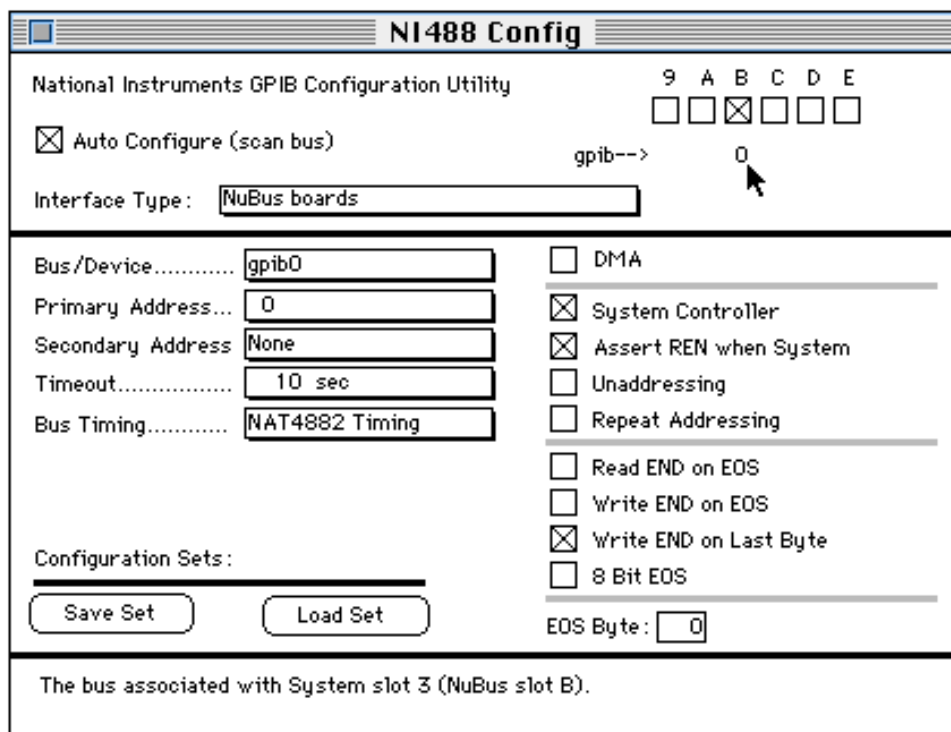
Figure 2-5. NI-488 Config Control Panel

Step 2. Restart Your Macintosh

The NI-488.2 software 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 software is being installed. If the National Instruments icon does not appear on your screen, repeat the installation procedure before continuing to the next section, *Verify the Software Installation.*

Verify the Software Installation

This step verifies that the driver is installed and functioning with the GPIB-SE/30.

1. Disconnect all GPIB cables from the GPIB-SE/30 interface board.

2. 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.

3. If error messages do appear on the screen, select **Restart** from the **Special** menu, and double-click on the `NI-488.2 Test` icon. 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 C, *Troubleshooting*, which describes how to troubleshoot problems and lists some common questions. If you need to change a software setting, refer to the *Configure the Software* section of this chapter. If the software settings are correct and the verification still fails, carefully note all error information on the *GPIB-SE/30 Hardware and Software Configuration Form* in Appendix D, 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 Macintosh* for sample programs.

Configure the Software (Optional)

The default settings of the NI-488.2 software work for most applications and devices. However, you might want to change a device name or primary address. If more than one GPIB interface or external box is installed, you might want to associate a device with a particular interface.

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

Appendix A
Hardware Verification (Optional)

This appendix contains instructions for running the hardware verification program. Because the Apple dealer that installed your GPIB-SE/30 has already verified the hardware installation, this appendix is optional.

Included in your GPIB-SE/30 kit is a disk containing a hardware verification program. This program verifies that the hardware is installed correctly and that it is in good working condition. Use the following steps to run the program.

Preparation

*Caution: **Disconnect all GPIB cables from your Macintosh SE/30 computer before running the hardware verification program.***

1. Turn on your Macintosh SE/30 computer.

2. Insert the hardware verification disk. When startup complete, the disk icon called `Hardware Verification`, as shown in Figure A-1, appears on the screen.

Figure A-1. Hardware Verification Icon

3. Double-click on the `Hardware Verification` icon.

Run the IBDIAG Program

1. Double-click on the `IBDIAG` icon, which is shown in Figure A-2.
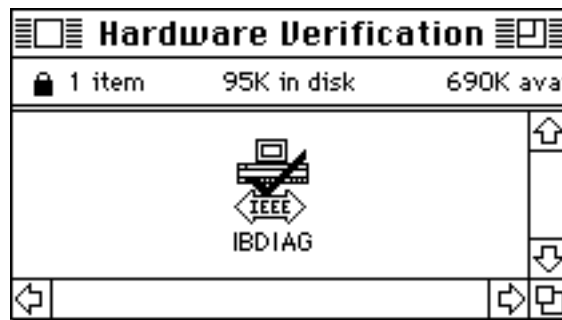
Figure A-2. IBDIAG Icon

A test window appears on the screen, as shown in Figure A-3.
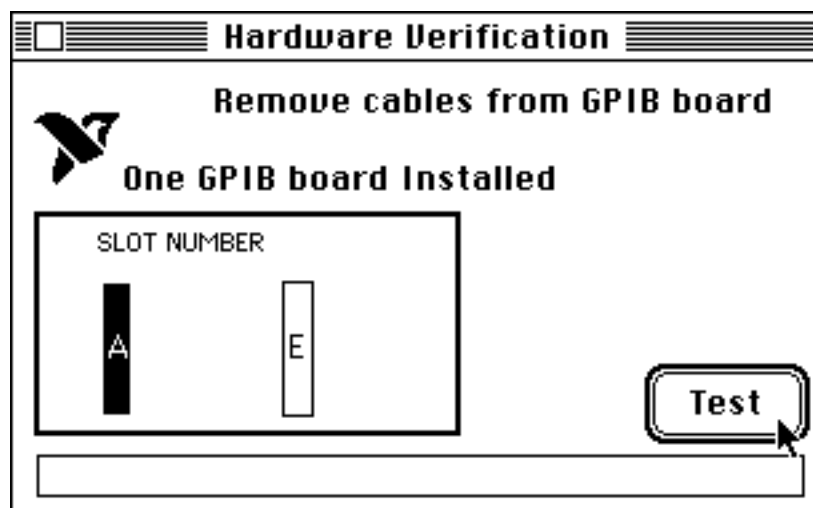
Figure A-3. Test Window

The slot indicator shows the Macintosh slot that has the board installed. Upon entering the program, slot A should be highlighted in black. This indicates that a board was found in the direct slot and can be tested. If slot A is not highlighted, check to see that all the cables are disconnected from the GPIB-SE/30 board. If the problem persists, contact the Apple dealer who installed your board.

2. Click on the **Test** button to run a series of tests that verify the GPIB-SE/30 hardware installation. A bar graph indicates the progress of the tests, and a message appears above the slot indicators at the completion of all tests.

3. View the test results. Figure A-4 shows the test window that appears if no error was detected. Skip to *Exit from the IBDIAG Program* if no error was detected.
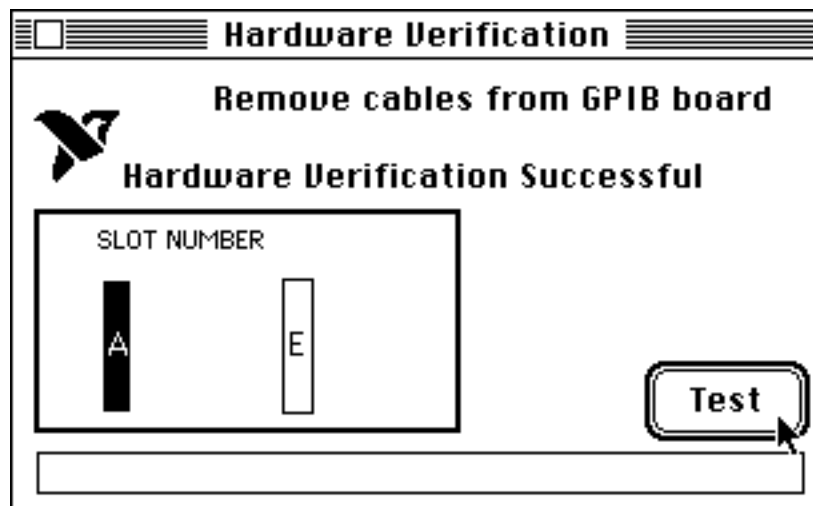
Figure A-4. Hardware Verification Window after Successful Completion of Tests

Figure A-5 shows the Alert Box screen that appears if an error was detected. The Alert Box screen has error information and the option to continue or stop, as shown in Figure A-5.
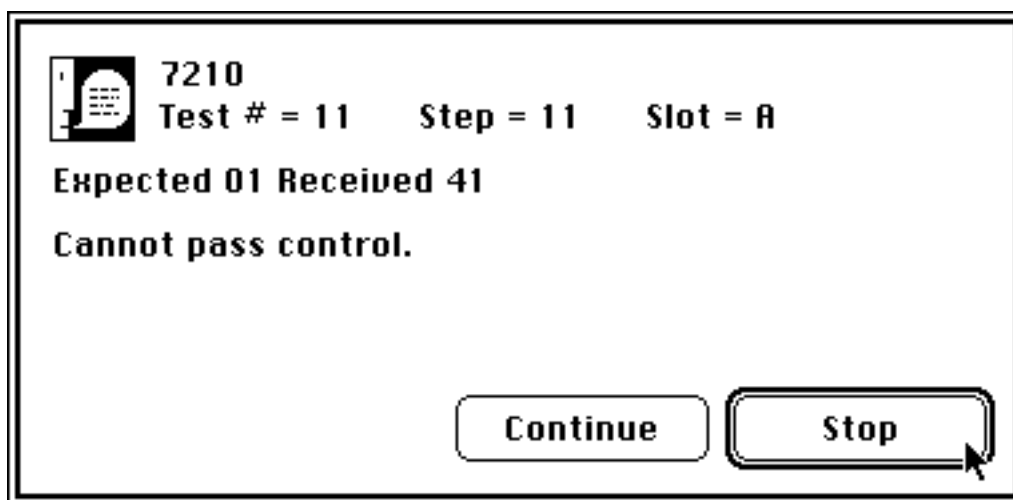
Figure A-5. Alert Box with Error Information

4. 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, a screen displays as shown in Figure A-6.
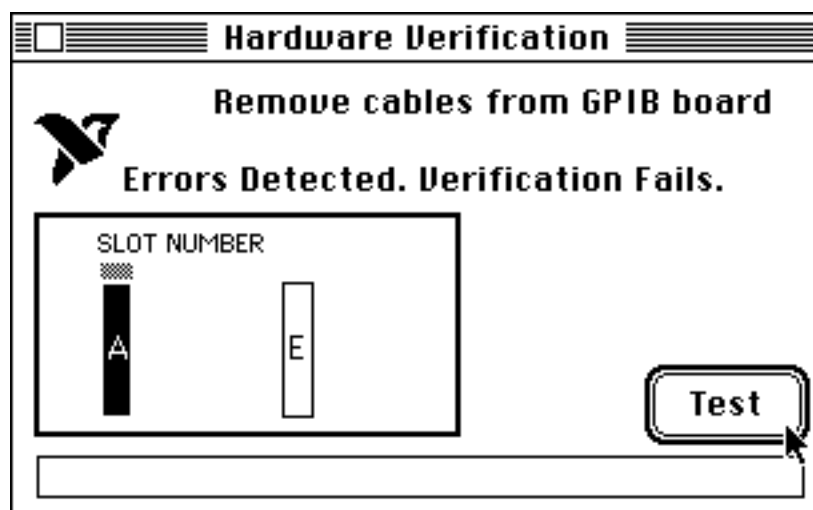
Figure A-6. Hardware Verification Window after Unsuccessful Completion of Tests

5. Run the `IBDIAG` program again. If the program still detects errors, record the errors until all tests have been completed. If your GPIB-SE/30 interface board has been installed recently, contact the Apple dealer who installed your board. If your board has functioned properly for some time, fill out the forms in Appendix D, *Customer Communication*, with the appropriate information, and then contact National Instruments.

Exit from the IBDIAG Program

To exit from the `IBDIAG` program, select **Quit** from the **File** menu.

If the hardware verification program completed without detecting an error, you can finish installing the GPIB-SE/30 hardware. The instructions are located in the *Installing a GPIB Cable* section of Chapter 2, *Installation*.

Appendix B
Hardware Specifications

This appendix specifies the electrical, environmental, and physical characteristics of the GPIB-SE/30.

Table B-1. Electrical Characteristics

Characteristic	Specification
Number of GPIB Loads	1
GPIB Transceivers	DS75160AN/DS75162AN

Transfer Rate
    GPIB Reads
    GPIB Writes
	
	Over 950 kbytes/s*
	Over 1 Mbytes/s*

Power Requirement	+5 VDC
	    0.33 A typical
	    0.8 A maximum

* Actual rate depends on instrumentation capabilities.	

Table B-2. Environmental Characteristics

Characteristic	Specification
Operating Temperature	0° to 70° C
Storage Temperature	-55° to 150° C
Relative Humidity	5% to 90% noncondensing conditions
EMI	FCC Class B Certified

Table B-3. Physical Characteristics

Characteristic	Specification
Dimensions	11.9 cm by 11.7 cm (4.7 in. by 4.6 in.)
I/O Connector	IEEE 488 standard 24-pin

Appendix C
Troubleshooting

This appendix suggests some areas to check if you have problems with the GPIB-SE/30 board or the NI-488.2 software after going through the procedures described in Chapter 2, *Installation*, and Appendix A, *Hardware Verification (Optional).*

If you still have problems after completing the steps in this appendix, complete the appropriate forms in Appendix D, *Customer Communication*, and then contact National Instruments for technical support.

Troubleshooting Hardware Problems

*   Verify that all GPIB cables are connected properly.

*   If `IBDIAG` fails, make sure all GPIB cables are removed from the GPIB-SE/30.

Troubleshooting Software Problems

The `NI-488 Config` control panel (GPIB configuration utility) should show the following software configuration:

*   The **Interface Type** menu selection should be set to **Nubus boards**.

*   An **X** should appear in the slot checkbox that corresponds to the location of your GPIB-SE/30 board.

Common Questions

How can I determine which type of GPIB board I have installed?

Run the `NB-Boards` control panel utility for information about the GPIB boards installed in your computer.

What do I do if my board does not show up in the `NI-488 Config` control panel?

In `NI-488 Config`, an **X** should appear in the slot checkbox that corresponds to the location of your GPIB-SE/30 board. If an **X** does not appear, fill out the forms in Appendix D, *Customer Communication*, and contact National Instruments.

What do I do if my GPIB extension connector does not fit?

You may need to order a Type X5 single-ended GPIB cable, available from National Instruments.

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

Refer to the troubleshooting sections of this chapter 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 INITs load in alphabetical order, the `ZNI-488 INIT` will load last, preventing possible corruption from INITs 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 do I do if my board does not work correctly with a scanner or film recorder?

Try changing the **Unaddressing** option in the `NI-488 Config` utility.

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 Macintosh*.

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 Macintosh.*

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 configuration form in Appendix D, *Customer Communication*.

Appendix D
Customer Communication

For your convenience, this appendix contains forms to help you gather the information necessary to help us solve technical problems you might have as well as a form you can use to comment on the product documentation. Filling out a copy of the *Technical Support Form* before contacting National Instruments helps us help you better and faster.

National Instruments provides comprehensive technical assistance around the world. In the U.S. and Canada, applications engineers are available Monday through Friday from 8:00 a.m. to 6:00 p.m. (central time). In other countries, contact the nearest branch office. You may fax questions to us at any time.

Corporate Headquarters
(512) 795-8248
Technical support fax: (800) 328-2203
                         (512) 794-5678

Branch Offices	Phone Number	Fax Number
Australia	(03) 879 9422	(03) 879 9179
Austria	(0662) 435986	(0662) 437010-19
Belgium	02/757.00.20	02/757.03.11
Denmark	45 76 26 00	45 76 71 11
Finland	(90) 527 2321	(90) 502 2930
France	(1) 48 14 24 00	(1) 48 14 24 14
Germany	089/741 31 30	089/714 60 35
Italy	02/48301892	02/48301915
Japan	(03) 3788-1921	(03) 3788-1923
Mexico	95 800 010 0793	95 800 010 0793
Netherlands	03480-33466	03480-30673
Norway	32-848400	32-848600
Singapore	2265886	2265887
Spain	(91) 640 0085	(91) 640 0533
Sweden	08-730 49 70	08-730 43 70
Switzerland	056/20 51 51	056/20 51 55
Taiwan	02 377 1200	02 737 4644
U.K.	0635 523545	0635 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 _____

    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 will reproduce the problem _____

_____

_____

GPIB-SE/30 Hardware and Software Configuration Form

Record the settings and revisions of your hardware and software on the line to the right of each item. Update this form each time you revise your software or hardware configuration, and use this form as a reference for your current configuration.

National Instruments Products

- GPIB-SE/30 Model and Revision   _____

- NI-488.2 Software Revision Number on Disk _____

- NI-488 Config Control Panel Settings   _____

Other Products

- Computer Make and Model   _____

- Memory Capacity on Computer   _____

- Clock Frequency   _____

- 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 GPIB-SE/30 and the NI-488.2™ Software for Macintosh**

Edition Date: **January 1995**

Part Number: **320484B-01**

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

_____

_____

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_____

_____

_____

_____

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   (_____)_____

Mail to: Technical Publications   Fax to: Technical Publications
             National Instruments Corporation   National Instruments Corporation
             6504 Bridge Point Parkway, MS 53-02   MS 53-02
             Austin, TX 78730-5039   (512) 794-5678

Glossary

Prefix	Meaning	Value
c-	centi-	10^{-2}
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
C	Celsius
DMA	direct memory access
EMI	electromagnetic interference
FCC	Federal Communications Commission
FIFO	first-in-first-out
GPIB	General Purpose Interface Bus
hex	hexadecimal
Hz	hertz
IEEE	Institute for Electrical and Electronic Engineers
in.	inches
I/O	input/output
m	meters
MB	megabytes of memory
RAM	random-access memory
s	seconds
VDC	volts direct current