

Using Your NI-488.2™ Software for DOS or Windows 3 with Windows 95

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National Instruments Corporate Headquarters

6504 Bridge Point Parkway

Austin, TX 78730-5039

(512) 794-0100

Technical support fax: (800) 328-2203

(512) 794-5678

Branch Offices:

Australia 03 9 879 9422, Austria 0662 45 79 90 0, Belgium 02 757 00 20,

Canada (Ontario) 519 622 9310, Canada (Québec) 514 694 8521,

Denmark 45 76 26 00, Finland 90 527 2321, France 1 48 14 24 24,

Germany 089 741 31 30, Hong Kong 2645 3186, Italy 02 48301892,

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Netherlands 03480 33466, Norway 32 84 84 00, Singapore 2265886,

Spain 91 640 0085, Sweden 08 730 49 70, Switzerland 056 20 51 51,

Taiwan 02 377 1200, U.K. 01635 523545

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Note: (Interim – DOS only) designates the GPIB hardware interfaces for which DOS application support will be added to the native, 32-bit NI-488.2M software for Windows 95 in the near future. The native software will take advantage of the built-in Plug and Play features of Windows 95, thus making these interfaces very easy to install, configure, and use.

National Instruments has already shipped native, 32-bit *GPIB Software for Windows 95* that fully supports Win16 and Win32 applications. The upgrade to this software will include support for DOS applications and will be shipping before the end of the second quarter in 1996.

About This Manual

This manual contains instructions to help you use your current National Instruments GPIB interfaces and your NI-488.2 software for DOS or Windows with Windows 95.

This manual assumes that you are already familiar with DOS or Windows, and with Windows 95.

Conventions Used in This Manual

The following conventions are used in this manual.

bold	Bold text denotes menus, menu items, dialog buttons, or options.
<i>italic</i>	Italic text denotes emphasis, a cross reference, or an introduction to a key concept.
monospace	Text in this font denotes text or characters that are to be literally input from the keyboard, sections of code, programming examples, and syntax examples. This font is also used for the proper names of disk drives, directories, programs, subprograms, subroutines, device names, functions, variables, field names and filenames.
bold monospace	Bold text in this font denotes the messages and responses that the computer automatically prints to the screen.
<i>italic monospace</i>	Italic text in this font denotes that you must supply the appropriate words or values in place of these items.
»	The » symbol leads you through nested menu items and dialog box options to a final action. The sequence File»Page Setup»Options»Substitute Fonts directs you to pull down the File menu, select the Page Setup item, select Options , and finally select the Substitute Fonts option from the last dialog box.

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*
- *Microsoft MS-DOS User's Guide*, Microsoft Corporation
- *Microsoft Windows User's Guide*, Microsoft Corporation
- Your Microsoft Windows 95 documentation

You may also need to refer to the getting started manuals that came with your National Instruments GPIB interfaces.

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 the *Customer Communication* section at the end of this manual.

AT-GPIB/TNT (Interim – DOS Only)

Follow the instructions in this section to use the AT-GPIB/TNT and the NI-488.2 software for DOS with Windows 95.

Note: If you are using Win16 or Win32 applications, a native 32-bit driver for Windows 95 is available. Contact National Instruments for information on ordering the *GPIB Software for Windows 95*.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- NI-488.2 Software for DOS and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB, and AT-GPIB/TNT* disk
- Microsoft Windows 95 installed on your computer
- AT-GPIB/TNT getting started manual for additional information about the hardware installation

Install the Hardware and Software

1. Reserve the resources (I/O, DMA, and IRQ) to be used by the AT-GPIB/TNT hardware.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab.
 - c. Double-click on the **Computer** item to bring up the **Computer Properties** dialog box.
 - d. Select the **View Resources** tab to determine which resources (I/O, IRQ, DMA) are available.
 - e. Switch to the **Reserve Resources** tab and select **Add** to add specific I/O, IRQ, and DMA resources. You must reserve I/O address space for the hardware. Reserving an IRQ level and a DMA channel is optional. However, the software performs better when it is able to use both DMA and interrupts.

- The AT-GPIB/TNT I/O address space must be in the range 0x100 to 0x3E0. 0x20 bytes of contiguous I/O address space are required. For example, if you are selecting a base I/O address of 0x2C0, enter 2C0 for the **Start Value** and enter 2DF for the **End Value**.
 - The options for the DMA channel are 5, 6, 7, or none.
 - The options for the IRQ level are 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, or none.
- f. Click the **OK** button to exit the **Computer Properties** dialog box.
 - g. Click on **No** in the **System Settings Change** dialog box.
 - h. Click the **OK** button to exit the **System Properties** dialog box.
 - i. Close the **Control Panel**.
2. Configure the jumpers and DIP switches on the AT-GPIB/TNT to reflect the reserved I/O, IRQ, and DMA settings. Refer to your getting started manual for information about configuring the hardware.
 3. Complete the following steps to shut down Windows 95 and install the new hardware.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Shut down the computer?** option, then click **Yes**.
 - c. When the screen displays the message **It's now safe to turn off your computer**, power off the computer.
 - d. Insert the AT-GPIB/TNT hardware. Refer to your AT-GPIB/TNT getting started manual for installation instructions.
 4. Power on the computer.
 5. Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Prompt** menu. Many NI-488.2 software utilities are combined DOS/Win16 applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.
 - a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.

- b. Click on **Browse**, find the **Dosprmt** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.
 - e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.
6. Install the DOS NI-488.2 software for the AT-GPIB/TNT from your floppy drive.
 - a. Double-click on the **DOS Only Prompt** icon.
 - b. Insert the *NI-488.2 Software for DOS and the AT-GPIB/TNT+*, *AT-GPIB/TNT (PnP)*, *EISA-GPIB* and *AT-GPIB/TNT* disk into your floppy drive.
 - c. Type `X:\install` (where *X* is the letter of your floppy drive).
 7. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.
 8. Configure the software to use an AT-GPIB/TNT with the appropriate I/O, DMA, and IRQ settings.
 - a. Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - b. Type `ibconf` to run the configuration utility.
 9. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.

AT-GPIB/TNT (Plug and Play) (Interim – DOS Only)

Follow the instructions in this section to use the AT-GPIB/TNT (Plug and Play) and the NI-488.2 software for DOS with Windows 95.

Note: If you are using Win16 or Win32 applications, a native 32-bit driver for Windows 95 is available. Contact National Instruments for information on ordering the *GPIB Software for Windows 95*.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- NI-488.2 Software for DOS and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB, and AT-GPIB/TNT* disk
- Microsoft Windows 95 installed on your computer
- AT-GPIB/TNT (PnP) getting started manual for additional information about the hardware installation

Install the Hardware and Software

1. Complete the following steps to shut down Windows 95 and install the new hardware.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Shut down the computer?** option, then click **Yes**.
 - c. When the screen displays the message **It's now safe to turn off your computer**, power off the computer.
 - d. Insert the AT-GPIB/TNT (PnP) hardware. Refer to your AT-GPIB/TNT (PnP) getting started manual for installation instructions.
2. Power on the computer. When Windows 95 restarts, it automatically detects the new Plug and Play hardware. A **New Hardware Found** dialog box appears with the interface description **National Instruments AT-GPIB/TNT (Plug and Play)**.

AT-GPIB/TNT (PnP)

3. In the **New Hardware Found** dialog box, click on the **Do not install a driver** option then click **OK**.
4. Determine what resources Windows 95 assigned to the AT-GPIB/TNT (PnP) interface.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab and double-click on the **Other Devices** item.
 - c. Double-click on the **National Instruments AT-GPIB/TNT (Plug and Play)** item that appears under the **Other Devices** item.
 - d. Click on the **Resources** tab. If the device is currently disabled because it has no assigned resources, the **Resources** tab contains text describing the problem and a **Set Configuration Manually** button. Click on this button to continue.
 - e. Uncheck the **Use Automatic Settings** item.
 - f. Look at the **Conflicting Device List** to see if there are any conflicts with the automatically chosen configuration settings. If there are conflicts, you can use the **Change Setting...** button to select resources that have no conflicts. You must reserve I/O address space for the hardware. Reserving an IRQ level and a DMA channel is optional. However, the software performs better when it is able to use both DMA and interrupts.
 - The AT-GPIB/TNT (PnP) I/O address space must be in the range 0x100 to 0x3E0. 0x20 bytes of contiguous I/O address space are required. For example, if you are selecting a base I/O address of 0x2C0, enter 2C0-2DF in the **Value** field.
 - The valid options for the DMA channel are 5, 6, 7, or none.
 - The valid options for the IRQ level are 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, or none.
 - g. Note the assigned I/O range, IRQ level and DMA channel.
 - h. Click **OK** to exit. If you had resource conflicts that had to be resolved in step 4f, a **Creating a Forced Configuration** dialog box appears. Click **Yes** in this dialog box to continue.
 - i. Click on **No** in the **System Settings Change** dialog box.
 - j. Click **Close** to exit the **System Properties** dialog box.
 - k. Click on **No** in the **System Settings Change** dialog box.

- l. Close the **Control Panel**.
5. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Restart the computer?** option, then click **Yes**.
 6. Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Prompt** menu. Many NI-488.2 software utilities are combined DOS/Win16 applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.
 - a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmp** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.
 - e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.
 7. Install the DOS NI-488.2 software for the AT-GPIB/TNT (PnP) from your floppy drive.
 - a. Double-click on the **DOS Only Prompt** icon.
 - b. Insert the *NI-488.2 Software for DOS and the AT-GPIB/TNT+*, *AT-GPIB/TNT (PnP)*, *EISA-GPIB* and *AT-GPIB/TNT* disk into your floppy drive.

AT-GPIB/TNT (PnP)

- c. Type `X:\install` (where *X* is the letter of your floppy drive).
8. Determine whether or not your computer has Plug and Play BIOS.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab.
 - c. Double-click on the **System Devices** item.
 - d. Look at the list that appears to see if you have **Plug and Play BIOS**.
 - e. Click the **OK** button to exit the **System Properties** dialog box.
 - f. Exit the **Control Panel**.
9. If you determined in step 8 that your computer has Plug and Play BIOS, complete the following steps to fix `ni-pnp.ini` so that NI-PnP does not perform the isolation sequence when your system starts. If your computer does not have Plug and Play BIOS, skip to step 10.
 - a. Double-click on the **DOS Only Prompt** icon.
 - b. Switch to the root of your boot drive (usually `c:\`).
 - c. Type `ni-pnp` to run the NI-PnP utility.
 - d. Use a text editor to edit `ni-pnp.ini`, the data file that NI-PnP just created in the root of the boot drive.
 - 1) In the [System Info] section, make the following changes.
 - a) Add the line `IsaPnpSystemOverride = Yes`.
 - b) Replace `IsaPnpIsolationMethod = IsolationSequence` with `IsaPnpIsolationMethod = ReadPortSearch`.
 - 2) Save the changes.
 - e. Type `ni-pnp` to run NI-PnP a second time.
 - f. Configure the NI-488.2 software to use an AT-GPIB/TNT (PnP) with the I/O range, DMA, and IRQ settings determined in step 4f.
 - a) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.

- b) Type `ibconf` to run the configuration utility.
 - g. Restart Windows 95.
 - 1) Select **Shut Down** from the **Start** menu.
 - 2) In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.
 - h. Skip to step 11.
10. If you determined in step 8 that your computer does not have Plug and Play BIOS, complete the following steps.
- a. Restart Windows 95.
 - 1) Select **Shut Down** from the **Start** menu.
 - 2) In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.
 - b. Configure the NI-488.2 software to use an AT-GPIB/TNT (PnP) with the I/O range, DMA, and IRQ settings determined in step 4f.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibconf` to run the configuration utility.
11. Run the diagnostic tests.
- a. Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - b. Type `ibdiag` to run the hardware diagnostic test. If `ibdiag` fails because of a DMA problem, go back into `ibconf`, as described in step 9f or 10b, and disable DMA. If `ibdiag` fails because of an interrupt problem, go back into `ibconf` and disable IRQ.
 - c. After `ibdiag` completes successfully, type `ibtest` to run the software diagnostic test. When `ibtest` completes successfully, the software and hardware are properly installed.
12. (Optional) Run the interactive control utility.
- a. Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - b. Type `ibic` to run the interactive control utility.

AT-GPIB/TNT+ (Interim – DOS Only)

Follow the instructions in this section to use the AT-GPIB/TNT+ and the NI-488.2 software for DOS with Windows 95.

Note: If you are using Win16 or Win32 applications, a native 32-bit driver for Windows 95 is available. Contact National Instruments for information on ordering the *GPIB Software for Windows 95*.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- GPIB Analyzer Software for Windows 3 and the AT-GPIB/TNT+ and PCMCIA-GPIB+* disk
- NI-488.2 Software for DOS and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB, and AT-GPIB/TNT* disk
- Microsoft Windows 95 installed on your computer
- AT-GPIB/TNT+ getting started manual for additional information about the hardware installation

Install the Hardware and Software

1. Complete the following steps to shut down Windows 95 and install the new hardware.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Shut down the computer?** option, then click **Yes**.
 - c. When the screen displays the message **It's now safe to turn off your computer**, power off the computer.
 - d. Insert the AT-GPIB/TNT+ hardware. Refer to your AT-GPIB/TNT+ getting started manual for installation instructions.
2. Power on the computer.

3. When Windows 95 restarts, it automatically detects the new AT-GPIB/TNT+ hardware. Because the AT-GPIB/TNT+ consists of two devices, a GPIB Controller and a GPIB Analyzer, Windows 95 detects two new pieces of hardware for the interface.
 - a. A **New Hardware Found** dialog box appears with the interface description **National Instruments AT-GPIB/TNT+ (Analyzer)**. Click on the **Do not install a driver** option and click **OK**.
 - b. A second **New Hardware Found** dialog box appears with the interface description **National Instruments AT-GPIB/TNT+ (Controller)**. Click on the **Do not install a driver** option and click **OK**.
4. Ensure that resources are properly assigned by Windows 95 for the AT-GPIB/TNT+ (Controller) interface.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start>Settings>Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab and double-click on the **Other Devices** item.
 - c. Double-click on the **National Instruments AT-GPIB/TNT+ (Controller)** item that appears under the **Other Devices** item.
 - d. Click on the **Resources** tab. If the device is currently disabled because it has no assigned resources, the **Resources** tab contains text describing the problem and a **Set Configuration Manually** button. Click on this button to continue.
 - e. Uncheck the **Use Automatic Settings** item.
 - f. Look at the **Conflicting Device List** to see if there are any conflicts with the automatically chosen configuration settings. If there are conflicts, you can use the **Change Setting...** button to select resources that have no conflicts. You must reserve I/O address space for the hardware. Reserving an IRQ level and a DMA channel is optional. However, the software performs better when it is able to use both DMA and interrupts.
 - The I/O address space must be in the range 0x100 to 0x3E0. 0x20 bytes of contiguous I/O address space are required. For example, if you are selecting a base I/O address of 0x100, enter 100-11F in the **Value** field.
 - The valid options for the DMA channel are 5, 6, 7, or none.
 - The valid options for the IRQ level are 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, or none.
 - g. Note the assigned I/O range, IRQ level and DMA channel.

6. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Restart the computer?** option, then click **Yes**.

7. Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Prompt** menu. Many NI-488.2 software utilities are combined DOS/Win16 applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.
 - a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmt** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.
 - e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.

8. Install the DOS NI-488.2 software for the AT-GPIB/TNT+ from your floppy drive.
 - a. Install the software for the Controller.
 - 1) Double-click on the **DOS Only Prompt** icon.
 - 2) Insert the *NI-488.2 Software for DOS and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB and AT-GPIB/TNT* disk into your floppy drive.

AT-GPIB/TNT+

- 3) Type `X:\install` (where *X* is the letter of your floppy drive).
- b. Install the software for the Analyzer.
 - 1) Exit from the **DOS Only Prompt** to return to Windows 95.
 - 2) Insert the *GPIB Analyzer Software for Windows 3 and the AT-GPIB/TNT+ and PCMCIA-GPIB+* disk into your floppy drive.
 - 3) Select **Run...** from the **Start** menu and type `X:\setup` (where *X* is the letter of your floppy drive).
 - 4) In the **Analyzer Interface Type** dialog box, click on **AT-GPIB/TNT+**.
 - 5) Click on **Custom** in the **Installation Method** dialog box.
 - 6) In the **Custom Installation** dialog box, make sure that the **GPIB Analyzer Software** and **LabWindows/CVI Run-time software** boxes are checked. Uncheck the **NI-488.2 Software** box and click **Install**. The software installation continues normally from this point.
9. When the software installation is complete, copy the `nivgnlzd.386` file to the appropriate subdirectory.
 - a. Use a text editor to view the `system.ini` file in your Windows directory (usually `c:\windows`). Go to the section named `[386Enh]`, and look for `device=X:\path\nivgnlzd.386` (where *X* is your disk drive and *path* is the path name). Make a note of the complete path name where the `nivgnlzd.386` file resides.
 - b. Insert the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk that came with this kit into your floppy disk drive.
 - c. Copy the `nivgnlzd.386` file from the floppy disk into the subdirectory that you noted in step 9a.
10. Determine whether or not your computer has Plug and Play BIOS.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab.
 - c. Double-click on the **System devices** item.
 - d. Look at the list that appears to see if you have **Plug and Play BIOS**.

- e. Click the **OK** button to exit the **System Properties** dialog box.
 - f. Exit the **Control Panel**.
11. If you determined in step 10 that your computer has Plug and Play BIOS, complete the following steps to fix `ni-pnp.ini` so that NI-PnP does not perform the ISA PnP isolation sequence when your system starts. If your computer does not have Plug and Play BIOS, skip to step 12.
- a. Double-click on the **DOS Only Prompt** icon.
 - b. Change to the root directory of your boot drive (usually `c:\`).
 - c. Type `ni-pnp` to run the NI-PnP utility.
 - d. Use a text editor to edit `ni-pnp.ini`, the data file that NI-PnP just created in the root of the boot drive.
 - 1) In the `[System Info]` section, make the following changes.
 - a) Add the following line:


```
IsaPnpSystemOverride = Yes
```
 - b) Replace `IsaPnpIsolationMethod = IsolationSequence` with the following line:


```
IsaPnpIsolationMethod = ReadPortSearch
```
 - 2) Save the changes.
 - e. Type `ni-pnp` to run NI-PnP a second time.
 - f. Configure the NI-488.2 software to use an AT-GPIB/TNT+ with the I/O range, DMA, and IRQ settings for both the Controller and the Analyzer, as determined in steps 4 and 5.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibconf` to run the configuration utility.
 - g. Restart Windows 95.
 - 1) Select **Shut Down** from the **Start** menu.
 - 2) In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.

- h. Skip to step 13.
12. If you determined in step 10 that your computer does not have Plug and Play BIOS, complete the following steps.
- a. Restart Windows 95.
 - 1) Select **Shut Down** from the **Start** menu.
 - 2) In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.
 - b. Configure the NI-488.2 software to use an AT-GPIB/TNT+ with the I/O range, DMA, and IRQ settings for both the Controller and the Analyzer, as determined in steps 4 and 5.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibconf` to run the configuration utility.
13. Run the diagnostic tests.
- a. Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - b. Type `ibdiag` to run the hardware diagnostic test for DOS. At the end of the test, a warning message appears to tell you that the GPIB Analyzer circuitry of this board has not been tested. If you plan to use the Analyzer, run the **Hardware Diagnostic Test** from Windows 95 by selecting **Start»Programs»GPIB Analyzer Software»Hardware Diagnostic Test**.

If `ibdiag` or the **Hardware Diagnostic Test** fails because of a DMA problem, go back into `ibconf`, as described in step 11f or 12b, and disable DMA. If `ibdiag` or the **Hardware Diagnostic Test** fails because of an interrupt problem, go back into `ibconf` and disable IRQ.
 - c. After the hardware diagnostic tests complete successfully, type `ibtest` to run the software diagnostic test. When `ibtest` completes successfully, the software and hardware are properly installed.
14. (Optional) Run the interactive control utility.
- a. Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - b. Type `ibic` to run the interactive control utility.

PCMCIA-GPIB (Interim – DOS Only)

Follow the instructions in this section to use the PCMCIA-GPIB and the NI-488.2 software for DOS with Windows 95.

Note: If you are using Win16 or Win32 applications, a native 32-bit driver for Windows 95 is available. Contact National Instruments for information on ordering the *GPIB Software for Windows 95*.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- NI-488.2 Software for DOS and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB, and AT-GPIB/TNT* disk
- Microsoft Windows 95 installed on your computer
- PCMCIA-GPIB getting started manual for additional information about the hardware installation

Install the Hardware and Software

Important Note

The PCMCIA-GPIB hardware has two limitations if you use it with the NI-488.2 software for DOS with Windows 95. Both limitations stem from the fact that real-mode socket services are not supported in Windows 95. The limitations are:

- The correct NI-488.2 software to use to interact with the PCMCIA-GPIB hardware is the DOS NI-488.2 software for the AT-GPIB/TNT. The DOS NI-488.2 software for the PCMCIA-GPIB does *not* work in Windows 95, because it relies on the existence of real-mode socket services. However, the PCMCIA-GPIB hardware is similar enough to the AT-GPIB/TNT hardware that it is possible to use the AT-GPIB/TNT software to interact with the PCMCIA-GPIB hardware.
- The PCMCIA-GPIB hardware is not hot-swappable. Do not try to eject and reinsert the PCMCIA-GPIB hardware while using the NI-488.2 software. Doing so may cause Windows 95 to lock up.

For DOS applications, the correct software to install is the *NI-488.2 Software for DOS and the AT-GPIB/TNT+*, *AT-GPIB/TNT (PnP)*, *EISA-GPIB and AT-GPIB/TNT*. The correct software is included in your kit. If you are missing this software, contact National Instruments.

1. Verify that Windows 95 has the 32-bit PCMCIA drivers enabled.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. Verify that **Original Configuration (Current)** is checked.
 - 1) Select the **Device Manager** tab in the **System Properties** dialog box.
 - 2) Double-click on the **PCMCIA socket** item in the list that appears.
 - 3) Double-click on the name of the appropriate manufacturer's PCMCIA controller item.
 - 4) In the manufacturer's **Properties** dialog box, click on the **General** tab.
 - 5) If the **Original Configuration (Current)** item is checked, Windows 95 has the 32-bit PCMCIA drivers enabled. Click **OK** to exit the **System Properties** dialog box and close the **Control Panel**, and skip to step 5.

If the **Original Configuration (Current)** item is not checked, Windows 95 does not have the 32-bit PCMCIA drivers enabled. You must enable the 32-bit PCMCIA drivers in order to use the PCMCIA-GPIB in Windows 95. Proceed to step 1c.

- c. Enable the 32-bit PCMCIA drivers in Windows 95.
 - 1) Check the **Original Configuration (Current)** item in the **Device usage** list by clicking on the box to the left of the **Original Configuration (Current)** line, and then click **OK**.
 - 2) A **Welcome to the PC Card (PCMCIA) Wizard** dialog box appears. Read the information and click **Yes** or **No** depending on your situation. Click **Next** to continue.
 - 3) In the **PC Card (PCMCIA) Wizard** dialog box, click on **No**. Click **Next** to continue.
 - 4) In the dialog box that appears, click **Finish** to enable 32-bit support.
 - 5) In the **System Settings Change** dialog box, click **No**.
 - 6) In the **System Properties** dialog box, click **OK**.
 - 7) In the **System Settings Change** dialog box, click **No**.
2. Restart Windows 95.
 - a. Make sure your PCMCIA-GPIB card is ejected.
 - b. Select **Shut Down** from the **Start** menu.
 - c. In the **Shut Down Windows** dialog box, select the **Restart the computer?** option, then click **Yes**.
3. Verify that Windows 95 restarts correctly.

If Windows 95 restarts correctly, skip the rest of this step and proceed to step 5.

If Windows 95 does not restart correctly and the computer displays the message **Cannot find WIN.COM, unable to continue loading**, you have encountered a problem exhibited by some machines during testing at National Instruments.

In this situation, Windows 95 does not restart properly because `config.sys` has been deleted. Most likely, the PCMCIA Wizard is unable to modify the `config.sys` file correctly. Testers at National Instruments encountered this problem only with `config.sys`, but it is possible that a similar problem might occur with both `autoexec.bat` and `system.ini`.

PCMCIA-GPIB

Follow the steps below to recover `config.sys` so that Windows 95 can restart properly.

- a. Change to the root directory of your boot drive (usually `c:\`).
 - b. Find the correct `config.xxx` file and copy it to `config.sys`.
 - 1) Type `dir config.*` to obtain a listing of the configuration file(s).
 - 2) Locate the file named `config.xxx` (where `xxx` is a number, such as 001 or 002) that has the highest `xxx` value. For example, `config.002` has a higher `xxx` value than `config.001`.
 - 3) Copy this file to `config.sys` by typing `copy config.xxx config.sys` (where `xxx` is the number of the highest numbered `config.xxx` file).
 - c. Make sure that your PCMCIA-GPIB card is ejected.
4. Restart your computer by pressing CTRL + ALT + DEL simultaneously.

After Windows 95 has restarted, some new icons with strange names may appear on your desktop. These are icons for the files that Windows 95 failed to rename correctly when the problem described in step 3 occurred. You can remove these extraneous icons by right-clicking on each icon, clicking **Delete**, then clicking **Yes**.

5. Copy `ni-gpib.inf`, the compatibility hardware information file, into the Windows Inf directory. The Inf directory is hidden, and will not appear in a directory listing, but you can copy the `ni-gpib.inf` file into this directory.
- a. Select **Programs** from the **Start** menu.
 - b. Select **MS-DOS Prompt** from the list that appears.
 - c. Change into the Windows system directory (usually `c:\windows`).
 - d. Insert the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your disk drive.
 - e. Copy the `ni-gpib.inf` file from the floppy disk to the Inf directory by typing:

```
copy X:\ni-gpib.inf inf\ni-gpib.inf
```

where `X` is the letter of your floppy drive.

6. Insert your PCMCIA-GPIB card.

7. After you insert your PCMCIA-GPIB card, Windows 95 automatically detects the new PCMCIA hardware and configures it. The computer may beep a couple of times to indicate that it assigned resources to the new card.
8. Determine what resources Windows 95 assigned to the PCMCIA-GPIB interface.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab and double-click on the **Other Devices** item.
 - c. Double-click on the **National Instruments PCMCIA-GPIB** item that appears under the **Other Devices** item.
 - d. Click on the **Resources** tab. If the device is currently disabled because it has no assigned resources, the **Resources** tab contains text describing the problem and a **Set Configuration Manually** button. Click on this button to continue.
 - e. Uncheck the **Use Automatic Settings** item.
 - f. Look at the **Conflicting Device List** to see if there are any conflicts with the automatically chosen configuration settings. If there are conflicts, you can use the **Change Setting...** button to select resources that have no conflicts. I/O address space must be reserved for the hardware. Reserving an IRQ level is optional.
 - The I/O address space must be in the range 0x100 to 0x3E0. 0x20 bytes of contiguous I/O address space are required. For example, if you are selecting a base I/O address of 0x2C0, enter 2C0-2DF in the **Value** field.
 - The valid options for the IRQ level are 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, or none.
 - g. Note the assigned I/O range and IRQ level.
 - h. Click **OK** to exit. If you had resource conflicts that had to be resolved in step 8f, a **Creating a Forced Configuration** dialog box appears. Click **Yes** to continue.
 - i. Click **No** in the **System Settings Change** dialog box.
 - j. Click **OK** to exit the **System Properties** dialog box.
 - k. Close the **Control Panel**.
9. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.

- b. In the **Shut Down Windows** dialog box, select the **Restart the computer?** option, then click **Yes**.
10. Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Prompt** menu. Many NI-488.2 software utilities are combined DOS/Win16 applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.
 - a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmt** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.
 - e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.
11. Install the DOS NI-488.2 software for the AT-GPIB/TNT from your floppy drive.
 - a. Double-click on the **DOS Only Prompt** icon.
 - b. Insert the *NI-488.2 Software for DOS and the AT-GPIB/TNT+*, *AT-GPIB/TNT (PnP)*, *EISA-GPIB and AT-GPIB/TNT* disk into your floppy drive.
 - c. Type `X:\install` (where *X* is the letter of your floppy drive).
12. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.

- b. In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.
13. Configure the software to use an AT-GPIB/TNT board type with the I/O range and IRQ settings noted in step 8f. The current National Instruments PCMCIA-GPIB card does not have DMA capability, so you should disable DMA in the configuration utility.
 - a. Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - b. Type `ibconf` to run the configuration utility.
 - c. Be sure to set the DMA option to `None` in `ibconf`.
14. Run the diagnostic tests.
 - a. Run the hardware diagnostic test.
 - 1) Double-click on the **DOS Only Prompt** and switch into the directory where the NI-488.2 software for DOS was installed. Type `ibdiag` to run the hardware diagnostic test.
 - 2) The hardware diagnostic test reports a base I/O address conflict. This conflict occurs because the AT-GPIB/TNT hardware diagnostic test performs one test that a PCMCIA-GPIB card is not designed to pass. Complete the following steps to retest the card and skip this test.
 - a. Type `R` to Run more tests on this board.
 - b. Type `T` to Test a range.
 - c. At the prompt, type `0-555,557-600`. The test should run without any more errors.
 - d. Type `M` to Return to the Main Menu.
 - e. Type `Q` to Quit.
 - 3) If the hardware diagnostic test fails because of an interrupt problem, go back to step 13 and disable IRQ.
 - b. After the hardware diagnostic test completes successfully, type `ibtest` to run the software diagnostic test.

PCMCIA-GPIB

15. (Optional) Run the interactive control utility.
 - a. Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - b. Type `ibic` to run the interactive control utility.

PCMCIA-GPIB+ (Interim – DOS Only)

Follow the instructions in this section to use the PCMCIA-GPIB+ and the NI-488.2 software for DOS with Windows 95.

Note: If you are using Win16 or Win32 applications, a native 32-bit driver for Windows 95 is available. Contact National Instruments for information on ordering the *GPIB Software for Windows 95*.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- GPIB Analyzer Software for Windows 3 and the AT-GPIB/TNT+ and PCMCIA-GPIB+* disk
- NI-488.2 Software for DOS and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB, and AT-GPIB/TNT* disk
- Microsoft Windows 95 installed on your computer
- PCMCIA-GPIB+ getting started manual for additional information about the hardware installation

Install the Hardware and Software

Important Note

The PCMCIA-GPIB+ hardware has two limitations if you use it with the NI-488.2 software for DOS with Windows 95. Both limitations stem from the fact that real-mode socket services are not supported in Windows 95. The limitations are:

- The correct NI-488.2 software to use to interact with the PCMCIA-GPIB+ hardware is the DOS NI-488.2 software for the AT-GPIB/TNT+. The DOS NI-488.2 software for the PCMCIA-GPIB+ does *not* work in Windows 95, because it relies on the existence of real-mode socket services. However, the PCMCIA-GPIB+ hardware is similar enough to the AT-GPIB/TNT+ hardware that it is possible to use the AT-GPIB/TNT+ software to interact with the PCMCIA-GPIB+ hardware.
- The PCMCIA-GPIB+ hardware is not hot-swappable. Do not try to eject and reinsert the PCMCIA-GPIB+ hardware while using the NI-488.2 software. Doing so may cause Windows 95 to lock up.

For DOS applications, the correct software to install is the *NI-488.2 Software for DOS and the AT-GPIB/TNT+*, *AT-GPIB/TNT (PnP)*, *EISA-GPIB* and *AT-GPIB/TNT*. The correct software is included in your kit. If you are missing this software, contact National Instruments.

1. Verify that Windows 95 has the 32-bit PCMCIA drivers enabled.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. Verify that **Original Configuration (Current)** is checked.
 - 1) Select the **Device Manager** tab in the **System Properties** dialog box.
 - 2) Double-click on the **PCMCIA socket** item in the list that appears.
 - 3) Double-click on the name of the appropriate manufacturer's PCMCIA controller item.
 - 4) In the manufacturer's **Properties** dialog box, click on the **General** tab.
 - 5) If the **Original Configuration (Current)** item is checked, Windows 95 has the 32-bit PCMCIA drivers enabled. Click **OK** to exit the **System Properties** dialog box and close the **Control Panel**, and skip to step 5.

If the **Original Configuration (Current)** item is not checked, Windows 95 does not have the 32-bit PCMCIA drivers enabled. You must enable the 32-bit PCMCIA drivers in order to use the PCMCIA-GPIB+ in Windows 95. Proceed to step 1c.

- c. Enable the 32-bit PCMCIA drivers in Windows 95.
 - 1) Check the **Original Configuration (Current)** item in the **Device usage** list by clicking on the box to the left of the **Original Configuration (Current)** line, and then click **OK**.
 - 2) A **Welcome to the PC Card (PCMCIA) Wizard** dialog box appears. Read the information and click **Yes** or **No** depending on your situation. Click **Next** to continue.
 - 3) In the **PC Card (PCMCIA) Wizard** dialog box, click on **No**. Click **Next** to continue.
 - 4) In the dialog box that appears, click **Finish** to enable 32-bit support.
 - 5) In the **System Settings Change** dialog box, click **No**.
 - 6) In the **System Properties** dialog box, click **OK**.
 - 7) In the **System Settings Change** dialog box, click **No**.
2. Restart Windows 95.
 - a. Make sure your PCMCIA-GPIB+ card is ejected.
 - b. Select **Shut Down** from the **Start** menu.
 - c. In the **Shut Down Windows** dialog box, select the **Restart the computer?** option, then click **Yes**.
3. Verify that Windows 95 restarts correctly.

If Windows 95 restarts correctly, skip the rest of this step and proceed to step 5.

If Windows 95 does not restart correctly and the computer displays the message **Cannot find WIN.COM, unable to continue loading**, you have encountered a problem exhibited by some machines during testing at National Instruments.

In this situation, Windows 95 does not restart properly because `config.sys` has been deleted. Most likely, the PCMCIA Wizard is unable to modify the `config.sys` file correctly. Testers at National Instruments encountered this problem only with `config.sys`, but it is possible that a similar problem might occur with both `autoexec.bat` and `system.ini`.

PCMCIA-GPIB+

Follow the steps below to recover `config.sys` so that Windows 95 can restart properly.

- a. Change to the root directory of your boot drive (usually `c:\`).
 - b. Find the correct `config.xxx` file and copy it to `config.sys`.
 - 1) Type `dir config.*` to obtain a listing of the configuration file(s).
 - 2) Locate the file named `config.xxx` (where `xxx` is a number, such as 001 or 002) that has the highest `xxx` value. For example, `config.002` has a higher `xxx` value than `config.001`.
 - 3) Copy this file to `config.sys` by typing `copy config.xxx config.sys` (where `xxx` is the number of the highest numbered `config.xxx` file).
 - c. Make sure that your PCMCIA-GPIB+ card is ejected.
4. Restart your computer by pressing CTRL + ALT + DEL simultaneously.

After Windows 95 has restarted, some new icons with strange names may appear on your desktop. These are icons for the files that Windows 95 failed to rename correctly when the problem described in step 3 occurred. You can remove these extraneous icons by right-clicking on each icon, clicking **Delete**, then clicking **Yes**.

5. Copy `ni-gpib.inf`, the compatibility hardware information file, into the Windows Inf directory. The Inf directory is hidden, and will not appear in a directory listing, but you can copy the `ni-gpib.inf` file into this directory.
- a. Select **Programs** from the **Start** menu.
 - b. Select **MS-DOS Prompt** from the list that appears.
 - c. Change into the Windows system directory (usually `c:\windows`).
 - d. Insert the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your disk drive.
 - e. Copy the `ni-gpib.inf` file from the floppy disk to the Inf subdirectory by typing:

```
copy X:\ni-gpib.inf inf\ni-gpib.inf
```

where `X` is the letter of your floppy drive.
6. Insert your PCMCIA-GPIB+ card.

7. After you insert your PCMCIA-GPIB+ card, one of two things may happen. Depending on what happens in your system, proceed to the appropriate step.
 - Windows 95 automatically detects the new PCMCIA hardware and brings up a **New Hardware Found** dialog box. If this occurs, proceed to step 8.
 - Windows 95 automatically detects the new PCMCIA hardware and configures it. The computer may beep a couple of times to indicate that it assigned resources to the new card. If this occurs, proceed to step 9.
8. If a **New Hardware Found** dialog box appears, complete the following steps.
 - a. Click on the **Select from a list of alternate drivers** option and click **OK**.
 - b. In the **Select Hardware Type** dialog box that appears, scroll through the list and select **Other devices**, then click **OK**.
 - c. In the **Select Device** dialog box that appears, select **National Instruments PCMCIA-GPIB+** from the **Models** list and click **OK**. After Windows 95 has successfully configured the resources for the PCMCIA-GPIB+, your computer may beep a couple of times to indicate that resources have been assigned to the card.
9. Determine what resources Windows 95 assigned to the PCMCIA-GPIB+ interface.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab and double-click on the **Other Devices** item.
 - c. Double-click on the **National Instruments PCMCIA-GPIB+** item that appears under the **Other Devices** item.
 - d. Click on the **Resources** tab. If the device is currently disabled because it has no assigned resources, the **Resources** tab contains text describing the problem and a **Set Configuration Manually** button. Click on this button to continue.
 - e. Uncheck the **Use Automatic Settings** item.
 - f. Look at the **Conflicting Device List** to see if there are any conflicts with the automatically chosen configuration settings. If there are conflicts, you can use the **Setting based on:** list to select I/O resources and the **Change Setting...** button to select IRQ resources. You must reserve I/O address space for the hardware. Reserving an IRQ level is optional only if you do not plan to use the Analyzer software.
 - The **Resource type** list displays two pairs of I/O ranges. The first pair of I/O ranges is for the Controller and the second pair of I/O ranges is for the

Analyzer. Go to the **Setting based on:** list. Continue to select a different I/O range pair from this list until the **Conflicting Device List** shows that there are no I/O conflicts.

- The valid options for the IRQ level are 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, or none.
- g. Note the assigned I/O range pairs and IRQ level.
 - h. Click **OK** to exit. If you had resource conflicts that had to be resolved in step 9f, a **Creating a Forced Configuration** dialog box appears. Click **Yes** in this dialog box to continue.
 - i. Click **No** in the **System Settings Change** dialog box.
 - j. Click **Close** to exit the **System Properties** dialog box. If you had resource conflicts, a **System Settings Change** dialog box appears. Click **No** in this dialog box to continue.
 - k. Close the **Control Panel**.
10. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Restart the computer?** option, then click **Yes**.
 11. Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Prompt** menu. Many NI-488.2 software utilities are combined DOS/Win16 applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.
 - a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmt** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.

- e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.
12. Install the DOS NI-488.2 software for the AT-GPIB/TNT+ from your floppy drive.
- a. Install the software for the Controller.
 - 1) Double-click on the **DOS Only Prompt** icon.
 - 2) Insert the *NI-488.2 Software for DOS and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB and AT-GPIB/TNT* disk into your floppy drive.
 - 3) Type `X:\install` (where *X* is the letter of your floppy drive).
 - b. Install the software for the Analyzer.
 - 1) Exit from the **DOS Only Prompt** to return to Windows 95.
 - 2) Insert the *GPIB Analyzer Software for Windows 3 and the AT-GPIB/TNT+ and PCMCIA-GPIB+* disk into your floppy drive.
 - 3) Select **Run...** from the **Start** menu and type `X:\setup` (where *X* is the letter of your floppy drive).
 - 4) In the **Analyzer Interface Type** dialog box, click on **AT-GPIB/TNT+**.
 - 5) Click on **Custom** in the **Installation Method** dialog box.
 - 6) In the **Custom Installation** dialog box, make sure that the **GPIB Analyzer Software** and **LabWindows/CVI Run-time software** boxes are checked. Uncheck the **NI-488.2 Software** box and click **Install**. The software installation continues normally from this point.
13. Add a patch to the `ni-pnp.ini` file in `autoexec.bat` after it runs NI-PnP.
- a. Insert the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your floppy drive.

PCMCIA-GPIB+

- b. Copy the `ni-patch.ini` file into the root directory of your boot drive (usually `c:\`).
- c. Use a text editor to edit the `ni-patch.ini` file.
 - 1) Locate the section named `[Current NI-488 GPIB0]`. Edit the `IoAddresses` line to reflect the same I/O address range for the Controller that you determined in step 9f. The I/O addresses are in hex notation, and there cannot be any spaces between the address and the hyphen (for instance, `0x0100-0x011f`).
 - 2) Locate the section named `[Current GPIBAnalyzer DEVICE0]`.
 - a) Edit the `IoAddresses` line to reflect the same I/O address range for the Analyzer that you determined in step 9f. The I/O addresses should be in hex notation, and there cannot be any spaces between the address and the hyphen (for instance, `0x02a0-0x02af`).
 - b) Edit the `IRQlevels` line to reflect the same IRQ resource that you determined in step 9f. The `IRQlevels` should be in hex notation (for instance, IRQ 15 would be entered as `0xf`).
- d. Edit `autoexec.bat` to add a line that appends `ni-patch.ini` to `ni-pnp.ini` immediately after `ni-pnp.exe` runs. Add the following line directly underneath the line that runs `c:\ni-pnp.exe`:

```
type ni-patch.ini >> ni-pnp.ini
```

14. Copy the `nivgnlzd.386` file to the appropriate subdirectory.
 - a. Use a text editor to view the `system.ini` file in your Windows directory (usually `c:\windows`). Go to the section named `[386Enh]`, and look for `device=X:\path\nivgnlzd.386` (where `X` is your disk drive and `path` is the path name). Make a note of the complete path name where the `nivgnlzd.386` file resides.
 - b. Insert the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk that came with this kit into your floppy disk drive.
 - c. Copy the `nivgnlzd.386` file from the floppy disk into the subdirectory that you noted in step 14a.
15. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.

16. Run the diagnostic tests.
 - a. To test the Controller only, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibdiag` to run the hardware diagnostic test for DOS.
 - 3) The hardware diagnostic test reports a base I/O address conflict. This conflict occurs because the AT-GPIB/TNT+ hardware diagnostic test performs one test that a PCMCIA-GPIB+ card is not designed to pass. Complete the following steps to retest the card and skip this test.
 - a) Type `R` to Run more tests on this board.
 - b) Type `T` to Test a range.
 - c) At the prompt, type `0-555,557-600`. The test should run without any more errors.
 - d) Type `M` to Return to the Main Menu.
 - e) Type `Q` to Quit.
 - 4) After `ibdiag` completes successfully, type `ibtest` to run the software diagnostic test. When `ibtest` completes successfully, the software and hardware are properly installed.
 - b. To test both the Controller and the Analyzer, complete the following steps.
 - 1) Select **Start»Programs»GPIB Analyzer Software**.
 - 2) From the list that appears, select **Hardware Diagnostic Test**.
 - 3) The hardware diagnostic test reports a base I/O address conflict. This conflict occurs because the AT-GPIB/TNT+ hardware diagnostic test performs one test that a PCMCIA-GPIB+ card is not designed to pass. Complete the following steps to retest the card and skip this test.
 - a) Type `R` to Run more tests on this board.
 - b) Type `T` to Test a range.
 - c) At the prompt, type `0-555,557-600`. The test should run without any more errors.

PCMCIA-GPIB+

d) Type M to Return to the Main Menu.

e) Type Q to Quit.

17. (Optional) Run the interactive control utility.

a. Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.

b. Type `ibic` to run the interactive control utility.

GPIB-ENET

Follow the instructions in this section to use the GPIB-ENET and the NI-488.2 software for Windows 3 with Windows 95.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- NI-488.2 Software for Windows and the GPIB-ENET* disk
- Microsoft Windows 95 installed on your computer
- Getting Started with Your GPIB-ENET and the NI-488.2 Software for Windows* manual for additional information about the hardware installation

Install the Hardware and Software

Important Note

The `Assign IP Address` utility does not work with Windows 95. To use the GPIB-ENET and the NI-488.2 software for Windows 3 with Windows 95, you must do one of the following:

- Have your network automatically assign the IP address for your GPIB-ENET.
- Go back to Windows for Workgroups 3.1.1 and run the `Assign IP Address` utility. For more information on this utility, refer to the *Getting Started with Your GPIB-ENET and the NI-488.2 Software for Windows* manual.

1. Install the NI-488.2 software for Windows and the GPIB-ENET from your floppy drive.
 - a. Select **Run...** from the **Start** menu.
 - b. Insert the *NI-488.2 Software for Windows and the GPIB-ENET* disk into your floppy drive.
 - c. Type `X:\setup` (where *X* is the letter of your floppy drive).

- d. During the installation process, a dialog box called **GPIB Setup** might appear. This dialog box contains a **System Error:**, which states **Could not find the protocol.ini file in your Windows directory. The Assign IP Address Utility will not work properly without this file.** The Assign IP Address utility does not work in Windows 95, so ignore this message and click **OK** to continue the installation.
 - e. To run Win32 GPIB applications in Windows 95, copy the `gpib-32.dll` and `gpib-16.dll` files from the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your Windows system directory (usually `c:\windows\system`).
2. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.
 3. Configure the software to use a GPIB-ENET with the appropriate `Hostname` or `IP Address` setting. To open the configuration utility, double-click on the **GPIB** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start>Settings>Control Panel**.
 4. Run the diagnostic test.
 - a. Select **Start>Programs>NI-488.2 GPIB Software**.
 - b. From the list that appears, select **Software Diagnostic Test**. When this test completes successfully, proceed to step 5. If you encounter problems with the **Software Diagnostic Test**, refer to the *Verification and Troubleshooting* chapter of the *Getting Started with Your GPIB-ENET and the NI-488.2 Software for Windows* manual.
 5. (Optional) Run the interactive control utility.
 - a. Select **Start>Programs>NI-488.2 GPIB Software**.
 - b. From the list that appears, select **Win16 Interactive Control** to run the Win16 version of the utility, or select **Win32s Interactive Control** to run the Win32 version of the utility.

EISA-GPIB

Follow the instructions in this section to use the EISA-GPIB and the NI-488.2 software for DOS or Windows 3 with Windows 95.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- One of the following disks:
 - NI-488.2 Software for Windows and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB, and AT-GPIB/TNT* disk
 - or
 - NI-488.2 Software for DOS and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB, and AT-GPIB/TNT* disk
- Microsoft Windows 95 installed on your computer
- EISA-GPIB getting started manual for additional information about the hardware installation

Install the Hardware and Software

1. Complete the following steps to shut down Windows 95 and install the new hardware.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Shut down the computer?** option, then click **Yes**.
 - c. When the screen displays the message **It's now safe to turn off your computer**, power off the computer.
 - d. Insert the EISA-GPIB hardware. Refer to your EISA-GPIB getting started manual for installation instructions.
2. Power on the computer.
3. DOS only: Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Prompt** menu. Many NI-488.2 software utilities are combined DOS/Win16

applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.

- a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmp** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.
 - e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.
4. Install the appropriate DOS or Windows NI-488.2 software for the EISA-GPIB from your floppy drive.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon.
 - 2) Insert the *NI-488.2 Software for DOS and the AT-GPIB/TNT+*, *AT-GPIB/TNT (PnP)*, *EISA-GPIB* and *AT-GPIB/TNT* disk into your floppy drive.
 - 3) Type `X:\install` (where *X* is the letter of your floppy drive).
 - b. For Windows, complete the following steps.
 - 1) Select **Run...** from the **Start** menu.

- 2) Insert the *NI-488.2 Software for Windows and the AT-GPIB/TNT+, AT-GPIB/TNT (PnP), EISA-GPIB and AT-GPIB/TNT* disk into your floppy drive.
- 3) Type `X:\setup` (where *X* is the letter of your floppy drive).
- c. To run Win32 GPIB applications in Windows 95, copy the `gpib-32.dll` and `gpib-16.dll` files from the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your Windows system directory (usually `c:\windows`).
5. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Restart the Computer?** option, then click **Yes**.
6. Run the diagnostic tests.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibdiag` to run the hardware diagnostic test. If `ibdiag` fails, refer to the *Installation Verification and Troubleshooting* chapter of the *Getting Started with Your EISA-GPIB and the NI-488.2 Software for DOS* manual for troubleshooting instructions.
 - 3) After `ibdiag` completes successfully, type `ibtest` to run the software diagnostic test. When `ibtest` completes successfully, the software and hardware are properly installed.
 - b. For Windows, complete the following steps.
 - 1) Select **Start»Programs»NI-488.2 GPIB Software**.
 - 2) From the list that appears, select **Hardware Diagnostic Test**. If the test fails, refer to the *Installation Verification and Troubleshooting* chapter of the *Getting Started with Your EISA-GPIB and the NI-488.2 Software for Windows* manual for troubleshooting instructions.
 - 3) After the **Hardware Diagnostic Test** completes successfully, bring up the list again and select **Software Diagnostic Test**. When this test completes successfully, the software and hardware are properly installed.

7. (Optional) Run the interactive control utility.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibic` to run the interactive control utility.
 - b. For Windows, complete the following steps.
 - 1) Select **Start»Programs»NI-488.2 GPIB Software**.
 - 2) From the list that appears, select **Win16 Interactive Control** to run the Win16 version of the utility, or select **Win32s Interactive Control** to run the Win32 version of the utility.

GPIB-PCII

Follow the instructions in this section to use the GPIB-PCII and the NI-488.2 software for DOS or Windows 3 with Windows 95.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- One of the following disks:
 - NI-488.2 Software for Windows and the GPIB-PCII/IIA (PCII mode)* disk
 - or
 - NI-488.2 Software for DOS and the GPIB-PCII/IIA (PCII mode)* disk
- Microsoft Windows 95 installed on your computer
- GPIB-PCII/IIA getting started manual for additional information about the hardware installation

Install the Hardware and Software

1. Reserve the resources (I/O, DMA, and IRQ) to be used by the GPIB-PCII hardware.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab.
 - c. Double-click on the **Computer** item to bring up the **Computer Properties** dialog box.
 - d. Select the **View Resources** tab to determine which resources (I/O, IRQ, DMA) are available.
 - e. Switch to the **Reserve Resources** tab and select **Add** to add specific I/O, DMA, and IRQ resources. You must reserve I/O address space for the hardware. Reserving an IRQ level and a DMA channel is optional.
 - The GPIB-PCII I/O address space must be in the range 0x100 to 0x3F8. 0x8 bytes of contiguous I/O address space are required. For example, if you are selecting a base I/O address of 0x2B8, enter 2B8 for the **Start Value** and enter 2BF for the **End Value**.

GPIB-PCII

- The options for the DMA channel are 1, 2, 3, or none.
 - The options for the IRQ level are 2, 3, 4, 5, 6, 7, or none.
- f. Click the **OK** button to exit the **Computer Properties** dialog box.
 - g. Click on **No** in the **System Settings Change** dialog box.
 - h. Click the **OK** button to exit the **System Properties** dialog box.
 - i. Close the **Control Panel**.
2. Configure the jumpers and DIP switches on the GPIB-PCII to reflect the reserved I/O, DMA, and IRQ settings. Refer to your GPIB-PCII/IIA getting started manual for more information on configuring the hardware.
 3. Complete the following steps to shut down Windows 95 and install the new hardware.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Shut down the computer?** option, then click **Yes**.
 - c. When the screen displays the message **It's now safe to turn off your computer**, power off the computer.
 - d. Insert the GPIB-PCII hardware. Refer to your GPIB-PCII/IIA getting started manual for installation instructions.
 4. Power on the computer.
 5. DOS only: Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Prompt** menu. Many NI-488.2 software utilities are combined DOS/Win16 applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.
 - a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmpmt** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.

- d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.
 - e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.
6. Install the appropriate DOS or Windows NI-488.2 software for the GPIB-PCII from your floppy drive.
- a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon.
 - 2) Insert the *NI-488.2 Software for DOS and the GPIB-PCII/IIA* (PCII mode) into your floppy drive.
 - 3) Type `X:\install` (where *X* is the letter of your floppy drive).
 - b. For Windows, complete the following steps.
 - 1) Select **Run...** from the **Start** menu.
 - 2) Insert the *NI-488.2 Software for Windows and the GPIB-PCII/IIA* (PCII mode) into your floppy drive.
 - 3) Type `X:\setup` (where *X* is the letter of your floppy drive).
 - c. To run Win32 GPIB applications in Windows 95, copy the `gpib-32.dll` and `gpib-16.dll` files from the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your Windows system directory (usually `c:\windows\system`).
7. Configure the software to use a GPIB-PCII with the proper I/O, DMA, and IRQ settings.
- a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.

- 2) Type `ibconf` to run the configuration utility.
- b. For Windows, double-click on the **GPiB** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
8. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the dialog box called **Shut Down Windows**, click on **Restart the Computer?** option, then click **Yes**.
9. Run the diagnostic tests.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibdiag` to run the hardware diagnostic test. If `ibdiag` fails because of a DMA problem, go back to step 7 and disable DMA. If `ibdiag` fails because of an interrupt problem, go back to step 7 and disable IRQ.
 - 3) After `ibdiag` completes successfully, type `ibtest` to run the software diagnostic test. When `ibtest` completes successfully, the software and hardware are properly installed.
 - b. For Windows, complete the following steps.
 - 1) Choose **Start»Programs»NI-488.2 GPiB Software**.
 - 2) From the list that appears, select **Hardware Diagnostic Test**. If the test fails because of a DMA problem, go back to step 7 and disable DMA. If the test fails because of an interrupt problem, go back to step 7 and disable IRQ.
 - 3) After the **Hardware Diagnostic Test** completes successfully, bring up the list again and select **Software Diagnostic Test**. When this test completes successfully, the software and hardware are properly installed.
10. (Optional) Run the interactive control utility.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibic` to run the interactive control utility.

- b. For Windows, complete the following steps.
 - 1) Choose **Start»Programs»NI-488.2 GPIB Software**.
 - 2) From the list that appears, select **Win16 Interactive Control** to run the Win16 version of the utility, or select **Win32s Interactive Control** to run the Win32 version of the utility.

GPIB-PCIIA

Follow the instructions in this section to use the GPIB-PCIIA and the NI-488.2 software for DOS or Windows 3 with Windows 95.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- One of the following disks:
 - NI-488.2 Software for Windows and the GPIB-PCII/IIA (PCIIA mode)* disk
 - or
 - NI-488.2 Software for DOS and the GPIB-PCII/IIA (PCIIA mode)* disk
- Microsoft Windows 95 installed on your computer
- GPIB-PCII/IIA getting started manual for additional information about the hardware installation

Install the Hardware and Software

1. Reserve the resources (I/O, DMA, and IRQ) to be used by the GPIB-PCIIA hardware.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab.
 - c. Double-click on the **Computer** item to bring up the **Computer Properties** dialog box.
 - d. Select the **View Resources** tab to determine which resources (I/O, IRQ, DMA) are available.
 - e. Switch to the **Reserve Resources** tab and select **Add** to add specific I/O, DMA, and IRQ resources. You must reserve I/O address space for the hardware. Reserving an IRQ level and a DMA channel is optional.
 - The GPIB-PCIIA I/O base address must be one of four addresses: 0x02E1, 0x22E1, 0x42E1, or 0x62E1. Instead of using contiguous I/O address space like most ISA cards, the GPIB-PCIIA I/O addresses are at offsets of

0x0400. Therefore, you must reserve eight 1-byte I/O addresses in order to use the GPIB-PCIIA.

The following table defines which I/O addresses should be reserved for each of the four possible base I/O addresses for the GPIB-PCIIA.

Base I/O Addresses	Start and End Values to Reserve for Eight 1-byte I/O Addresses	
0x02E1	2E1-2E1 6E1-6E1 AE1-AE1 EE1-EE1	12E1-12E1 16E1-16E1 1AE1-1AE1 1EE1-1EE1
0x22E1	22E1-22E1 26E1-26E1 2AE1-2AE1 2EE1-2EE1	32E1-32E1 36E1-36E1 3AE1-3AE1 3EE1-3EE1
0x42E1	42E1-42E1 46E1-46E1 4AE1-4AE1 4EE1-4EE1	52E1-52E1 56E1-56E1 5AE1-5AE1 5EE1-5EE1
0x62E1	62E1-62E1 66E1-66E1 6AE1-6AE1 6EE1-6EE1	72E1-72E1 76E1-76E1 7AE1-7AE1 7EE1-7EE1

- The options for the DMA channel are 1, 2, 3, or none.
 - The options for the IRQ level are 2, 3, 4, 5, 6, 7, or none. If you choose to use interrupts, you must reserve a special 1-byte I/O address for the particular IRQ that you have reserved. This special I/O address is located at 0x02F x , where x is the IRQ level. For example, if the IRQ level is set to 7, you should enter 2F7 for the **Start Value** and 2F7 for the **End Value**.
- f. Click the **OK** button to exit the **Computer Properties** dialog box.
 - g. Click on **No** in the **System Settings Change** dialog box.
 - h. Click the **OK** button to exit the **System Properties** dialog box.
 - i. Close the **Control Panel**.
2. Configure the jumpers and DIP switches on the GPIB-PCIIA to reflect the reserved I/O, DMA, and IRQ settings. Refer to your GPIB-PCIIA getting started manual for more information on configuring the hardware.

3. Complete the following steps to shut down Windows 95 and install the new hardware.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the **Shut Down Windows** dialog box, select the **Shut down the computer?** option, then click **Yes**.
 - c. When the screen displays the message **It's now safe to turn off your computer**, power off the computer.
 - d. Insert the GPIB-PCIIA hardware. Refer to your GPIB-PCIIA getting started manual for installation instructions.
4. Power on the computer.
5. DOS only: Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Promp** menu. Many NI-488.2 software utilities are combined DOS/Win16 applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.
 - a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmt** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.
 - e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.

6. Install the appropriate DOS or Windows NI-488.2 software for the GPIB-PCIIA from your floppy drive.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon.
 - 2) Insert the *NI-488.2 Software for DOS and the GPIB-PCII/IA* (PCIIA mode) into your floppy drive.
 - 3) Type `X:\install` (where *X* is the letter of your floppy drive).
 - b. For Windows, complete the following steps.
 - 1) Select **Run...** from the **Start** menu.
 - 2) Insert the *NI-488.2 Software for Windows and the GPIB-PCII/IA* (PCIIA mode) into your floppy drive.
 - 3) Type `X:\setup` (where *X* is the letter of your floppy drive).
 - c. To run Win32 GPIB applications in Windows 95, copy the `gpib-32.dll` and `gpib-16.dll` files from the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your Windows system directory (usually `c:\windows\system`).
7. Configure the software to use a GPIB-PCIIA with the proper I/O, DMA, and IRQ settings.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibconf` to run the configuration utility.
 - b. For Windows, double-click on the **GPIB** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
8. Restart Windows 95.
 - a. Select **Shut Down** from the **Start** menu.
 - b. In the dialog box called **Shut Down Windows**, click on **Restart the Computer?** option, then click **Yes**.

9. Run the diagnostic tests.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibdiag` to run the hardware diagnostic test. If `ibdiag` fails because of a DMA problem, go back to step 7 and disable DMA. If `ibdiag` fails because of an interrupt problem, go back to step 7 and disable IRQ.
 - 3) After `ibdiag` completes successfully, type `ibtest` to run the software diagnostic test. When `ibtest` completes successfully, the software and hardware are properly installed.
 - b. For Windows, complete the following steps.
 - 1) Choose **Start»Programs»NI-488.2 GPiB Software**.
 - 2) From the list that appears, select **Hardware Diagnostic Test**. If the test fails because of a DMA problem, go back to step 7 and disable DMA. If the test fails because of an interrupt problem, go back to step 7 and disable IRQ.
 - 3) After the **Hardware Diagnostic Test** completes successfully, bring up the list again and select **Software Diagnostic Test**. When this test completes successfully, the software and hardware are properly installed.
10. (Optional) Run the interactive control utility.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibic` to run the interactive control utility.
 - b. For Windows, complete the following steps.
 - 1) Choose **Start»Programs»NI-488.2 GPiB Software**.
 - 2) From the list that appears, select **Win16 Interactive Control** to run the Win16 version of the utility, or select **Win32s Interactive Control** to run the Win32 version of the utility.

GPIB-232/485CT-A

Follow the instructions in this section to use the GPIB-232CT-A or GPIB-485CT-A and the NI-488.2 software for DOS or Windows 3 with Windows 95.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- One of the following disks:
 - NI-488.2 Software for Windows and the GPIB-232/485CT-A* disk
 - or
 - NI-488.2 Software for DOS and the GPIB-232/485CT-A* disk
- Microsoft Windows 95 installed on your computer
- GPIB-232/485CT-A getting started manual for additional information about the hardware installation

Install the Hardware and Software

1. Select an available COM resource for the GPIB-232/485CT-A hardware. The GPIB-232/485CT-A driver does not configure, acquire, or use hardware resources other than COM port designations. COM1 through COM4 have standard base addresses and IRQ configurations. Other COM ports, if available, are configured either through Windows 95 or through third party serial driver vendor utilities.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start>Settings>Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab.
 - c. Double-click on the **Ports (COM & LPT)** item. The screen displays a list of COM ports that are set up in Windows 95.
 - d. Choose an unused COM port from those that are set up and connect that COM port to the GPIB-232/485CT-A hardware with your serial cable.
 - e. Click the **OK** button to exit the **System Properties** dialog box.
 - f. Close the **Control Panel**.

2. DOS only: Create a **Strictly DOS** shortcut. The **Strictly DOS** shortcut shuts down Windows 95 and gives you a DOS prompt. You must use this shortcut to run the NI-488.2 software for DOS and the GPIB-232/485CT-A. When you are finished using the software and hardware, you can simply type `exit` to restart Windows 95. The NI-488.2 software for DOS and the GPIB-232/485CT-A cannot be used in a standard DOS shell in Windows 95 because Windows 95 virtualizes the COM hardware. Complete the following steps to create the **Strictly DOS** shortcut.
 - a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmt** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **Strictly DOS**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **Strictly DOS** icon should appear on the desktop.
 - e. Right-click on the **Strictly DOS** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select **MS-DOS mode**. The **Use current MS-DOS configuration** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **Strictly DOS Properties** dialog box.
3. Install the appropriate DOS or Windows NI-488.2 software for the GPIB-232/485CT-A from your floppy drive.
 - a. For DOS, complete the following steps.
 - 1) Close all open applications.
 - 2) Double-click on the **Strictly DOS** icon. Windows 95 shuts down and gives you a DOS prompt.
 - 3) Insert the *NI-488.2 Software for DOS and the GPIB-232/485CT-A* into your floppy drive.
 - 4) At the DOS prompt, type `X:\install` (where *X* is the letter of your floppy drive).
 - b. For Windows, complete the following steps.
 - 1) Select **Run...** from the **Start** menu.

- 2) Insert the *NI-488.2 Software for Windows and the GPIB-232/485CT-A* into your floppy drive.
 - 3) Type `X:\setup` (where *X* is the letter of your floppy drive).
 - c. To run Win32 GPIB applications in Windows 95, copy the `gpib-32.dll` and `gpib-16.dll` files from the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your Windows system directory (usually `c:\windows\system`).
4. Configure the GPIB-232/485CT-A for the selected COM port.
 - a. For DOS, complete the following steps.
 - 1) Switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibconf` to run the configuration utility.
 - b. For Windows, double-click on the **GPIB** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**. Skip to step 6 after the configuration utility runs.
 5. DOS only: Reboot your computer in order for `gpib.com` to load and for any changes to take effect.
 - a. Type `exit` to return to Windows 95.
 - b. Restart Windows 95.
 - 1) Select **Shut Down** from the **Start** menu.
 - 2) In the dialog box called **Shut Down Windows**, click on **Restart the Computer?** option, then click **Yes**.
 6. Run the software diagnostic test.
 - a. For DOS, complete the following steps.
 - 1) Close all open applications.
 - 2) Double-click on the **Strictly DOS** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 3) Type `ibtest` to run the software diagnostic test. If `ibtest` fails, refer to the *Installation Verification and Troubleshooting* chapter of the *Getting Started with Your GPIB-232/485CT-A and the NI-488.2 Software for DOS* manual. If you are using third party COM ports, you may need to refer to the manual that came with your COM port hardware.

- b. For Windows, complete the following steps.
 - 1) Choose **Start»Programs»NI-488.2 GPIB Software**.
 - 2) From the list that appears, select **Software Diagnostic Test**. If the test fails, refer to the *Installation Verification and Troubleshooting* chapter of the *Getting Started with Your GPB-232/485CT-A and the NI-488.2 Software for Windows* manual. If you are using third party COM ports, you may need to refer to the manual that came with your COM port hardware.
7. (Optional) Run the interactive control utility.
 - a. For DOS, complete the following steps.
 - 1) If you are not already at the **Strictly DOS** DOS prompt, close all open applications, double-click on the **Strictly DOS** icon, and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibic` to run the interactive control utility.
 - b. For Windows, complete the following steps.
 - 1) Choose **Start»Programs»NI-488.2 GPIB Software**.
 - 2) From the list that appears, select **Win16 Interactive Control** to run the Win16 version of the utility, or select **Win32s Interactive Control** to run the Win32 version of the utility.

GPIB-1284CT

Follow the instructions in this section to use the GPIB-1284CT and the NI-488.2 software for Windows 3 with Windows 95.

What You Need to Get Started

- Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk
- One of the following disks:
 - NI-488.2 for Windows Distribution Disk for the GPIB-1284CT*
 - or
 - NI-488.2 for DOS Distribution Disk for the GPIB-1284CT*
- Microsoft Windows 95 installed on your computer
- GPIB-1284CT getting started manual for additional information about the hardware installation

Install the Hardware and Software

Important Note

For the *Compatibility Release for the NI-488.2 Software in Windows 95*, you cannot use the GPIB-1284CT and pass-through printing at the same time. This is because Windows 95 virtualizes the LPT ports, thereby preventing simultaneous use of the LPT port by the printer and the GPIB-1284CT driver. If you alternate between using the GPIB-1284CT for pass-through printing and using it for GPIB access, you should not have any problems.

1. Select an available LPT resource for the GPIB-1284CT hardware. The GPIB-1284CT driver does not configure, acquire, or use hardware resources other than LPT port designations. LPTs have standard base addresses.
 - a. Double-click on the **System** icon in the **Control Panel**. You can open the **Control Panel** by choosing **Start»Settings»Control Panel**.
 - b. In the **System Properties** dialog box that appears, click on the **Device Manager** tab.

- c. Double-click on the **Ports (COM & LPT)** item. The screen displays a list of printer ports that are set up in Windows 95.
 - d. Choose an unused LPT port from those that are set up, and connect that port to the GPIB-1284CT hardware with your parallel cable.
 - e. Click the **OK** button to exit the **System Properties** dialog box.
 - f. Close the **Control Panel**.
2. DOS only: Create a **DOS Only Prompt** shortcut to run the NI-488.2 for DOS utilities rather than using the DOS shell from the **Start»Programs»MS-DOS Prompt** menu. Many NI-488.2 software utilities are combined DOS/Win16 applications. By default, Windows 95 runs such combined applications in Win16 mode when executing them in a standard MS-DOS shell. For NI-488.2 for DOS, these combined applications must be run in DOS mode. Therefore, you must create a special **DOS Only Prompt** in which to run the NI-488.2 for DOS utilities. Complete the following steps to create the **DOS Only Prompt** shortcut.
- a. Right-click the mouse button on the desktop and select **Shortcut** from the **New** menu list. The **Create Shortcut** dialog box appears.
 - b. Click on **Browse**, find the **Dosprmt** item in the Windows directory (usually `c:\windows`) and double-click on it. This initializes **Command Line** correctly and returns you to the **Create Shortcut** dialog box.
 - c. Click on the **Next** button and rename the shortcut icon to **DOS Only Prompt**.
 - d. Click on the **Finish** button to close the **Create Shortcut** dialog box. The **DOS Only Prompt** icon should appear on the desktop.
 - e. Right-click on the **DOS Only Prompt** icon and select the **Properties** menu item.
 - f. Select the **Program** tab and click on the **Advanced...** button. The **Advanced Program Settings** dialog box appears.
 - g. Select the first item, **Prevent MS-DOS-based programs from detecting Windows**. The **Suggest MS-DOS mode as necessary** item should also be selected. Click **OK** to exit the dialog box.
 - h. Click on **OK** to exit the **DOS Only Prompt Properties** dialog box.
3. Install the appropriate DOS or Windows NI-488.2 software for the GPIB-1284CT from your floppy drive.
- a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon.

- 2) Insert the *NI-488.2 for DOS Distribution Disk for the GPIB-1284CT* into your floppy drive.
 - 3) Type `X:\install` (where *X* is the letter of your floppy drive).
- b. For Windows, complete the following steps.
- 1) Select **Run...** from the **Start** menu.
 - 2) Insert the *NI-488.2 for Windows Distribution Disk for the GPIB-1284CT* disk into your floppy drive.
 - 3) Type `X:\setup` (where *X* is the letter of your floppy drive).
- c. To run Win32 GPIB applications in Windows 95, copy the `gpib-32.dll` and `gpib-16.dll` files from the *Compatibility Release for the NI-488.2 Software for DOS and Windows 3 with Windows 95* disk into your Windows system directory (usually `c:\windows\system`).
4. Configure the software to use a GPIB-1284CT with the proper Parallel port number, Type of parallel port, and Interrupt Level settings.
- a. For DOS, complete the following steps.
- 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibconf` to run the configuration utility.
- b. For Windows, complete the following steps.
- 1) Choose **Programs** from the **Start** menu and select **MS-DOS Prompt**.
 - 2) Switch into the directory where the NI-488.2 software for Windows was installed.
 - 3) To run the configuration utility, type:


```
wibconf X:\path\gpib.ini
```

where *X* is the drive and *path* is the path of the Windows directory (usually `c:\windows`).
5. Restart Windows 95.
- a. Select **Shut Down** from the **Start** menu.
- b. In the dialog box called **Shut Down Windows**, click on **Restart the Computer?** option, then click **Yes**.

6. Run the diagnostic tests.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibdiag` to run the hardware diagnostic test. If `ibdiag` fails because of an interrupt problem, go back to step 4 and disable the interrupt level.
 - 3) After `ibdiag` completes successfully, type `ibtest` to run the software diagnostic test. When `ibtest` completes successfully, the software and hardware are properly installed.
 - b. For Windows, complete the following steps.
 - 1) Choose **Start»Programs»Gpib**.
 - 2) From the list that appears, select **ibdiag**. If the test fails because of an interrupt problem, go back to step 4 and disable the interrupt level.
 - 3) After **ibdiag** completes successfully, bring up the list again and select **wibtest**. When this test completes successfully, the software and hardware are properly installed.
10. (Optional) Run the interactive control utility.
 - a. For DOS, complete the following steps.
 - 1) Double-click on the **DOS Only Prompt** icon and switch into the directory where the NI-488.2 software for DOS was installed.
 - 2) Type `ibic` to run the interactive control utility.
 - b. For Windows, complete the following steps.
 - 1) Choose **Start»Programs»Gpib**.
 - 2) From the list that appears, select **wibic** to run the interactive control utility.

Customer Communication

For your convenience, this section 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 9 879 9422	03 9 879 9179
Austria	0662 45 79 90 0	0662 45 79 90 19
Belgium	02 757 00 20	02 757 03 11
Canada (Ontario)	519 622 9310	519 622 9311
Canada (Quebec)	514 694 8521	514 694 4399
Denmark	45 76 26 00	45 76 71 11
Finland	90 527 2321	90 502 2930
France	1 48 14 24 24	1 48 14 24 14
Germany	089 741 31 30	089 714 60 35
Hong Kong	2645 3186	2686 8505
Italy	02 48301892	02 48301915
Japan	03 5472 2970	03 5472 2977
Korea	02 596 7456	02 596 7455
Mexico	95 800 010 0793	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
U.K.	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 or getting started manuals. Use additional pages if necessary.

Name _____

Company _____

Address _____

Fax (____) _____ Phone (____) _____

Computer brand _____

Model _____ RAM _____ MB

Processor _____ Speed _____ MHz

Operating system _____

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 _____

(continues)

The problem is _____

List any error messages _____

The following steps will reproduce the problem _____
