

# PXI™-8210

The PXI-8210 is a Fast Ethernet/Ultra Wide SCSI interface for the PXI/CompactPCI bus.

## Contents

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Hardware Overview .....	2
PXI-8210 Features .....	2
SCSI-3 Specification .....	2
Connectivity .....	3
Connector Descriptions .....	3
What You Need to Get Started.....	4
Installing the PXI-8210 .....	4
Installation Steps Specific to Windows 95.....	5
Installation Steps Specific to Windows NT .....	6
Ethernet Adapter .....	6
SCSI Adapter .....	6
Using the Flash Utility to Update the SCSI BIOS .....	7
Troubleshooting and Common Questions.....	8
Windows 95 Does Not Detect the PXI-8210 .....	8
Network Does Not Function Properly on Windows NT with the Service Pack Installed .....	8
Cannot Install Windows NT from CD-ROM.....	9
Troubleshooting Device Manager Problems.....	9
Missing PXI Interface .....	9
Inoperable PXI Interface.....	9
Common Questions .....	10
Additional Information.....	11

# Hardware Overview

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The PXI-8210 provides both Fast Ethernet and Ultra Wide SCSI interfaces in a single add-in card:

- Ethernet 10Base-T and 100Base-TX transfer protocols, with auto-negotiation to connect to your network at the best rate possible
- Ultra Wide SCSI and SCSI-2 interfaces

## PXI-8210 Features

- RJ-45 Ethernet connector
- Auto-negotiation for 10 Mbits/s or 100 Mbits/s transfer rates
- Ultra Wide SCSI operation supporting transfer rates of up to 40 Mbytes/s
- Bus mastering capability supporting transfer rates of up to 133 Mbytes/s across the PXI or CompactPCI local bus
- Maximum cable length of 6 m (19.7 ft)
- Support for operation of 15 separate SCSI devices
- Support for both 8-bit and 16-bit SCSI devices
- Internal 50-contact low-density connector for 8-bit SCSI
- External 68-contact high-density connector for 16/8-bit Ultra Wide SCSI or SCSI-2
- Flash support for SCSI BIOS updates
- BIOS extension socket for boot support
- Active terminators on the SCSI bus for improved noise immunity

## SCSI-3 Specification

The Small Computer System Interface (SCSI) is a bidirectional, intelligent I/O subsystem specification. The SCSI-3 specification (Ultra Wide SCSI) is a superset of the SCSI-1 and SCSI-2 specifications and supports high-performance protocols.

Because it meets the requirements of the SCSI-3 specification, the PXI-8210 can achieve throughputs of up to 40 Mbytes/s.

# Connectivity

The PXI-8210 connects up to seven 8-bit intelligent SCSI, SCSI-2, or SCSI-3 single-ended devices, or up to 15 16-bit single-ended devices (eight of which can be 8-bit devices), including CD-ROM drives, printers, hard disks, and scanners.



**Caution** *Do not connect differential SCSI devices to the PXI-8210. Doing so will damage the devices and the PXI-8210.*

You can connect the PXI-8210 to the SCSI bus through either a shielded, high-density connector or an unshielded, low-density connector. The PXI-8210 supports 8-bit transfers through one internal 8-bit SCSI connector and 16-bit or 8-bit transfers through one external 16/8-bit SCSI connector. Refer to the following section for more information about the connectors.

## Connector Descriptions

Your PXI-8210 kit includes several connectors to interface to external devices. Table 1 contains a brief description of each connector.

**Table 1.** Connector Assignments

Connector	Function
P1	CompactPCI backplane connector.
J2	A low-density, 50-pin male header (0.1-in. pin spacing) for 8-bit SCSI interfaces. When connecting to J2, pay careful attention to the orientation of pin 1.
J3	External, shielded, fine-pitch 68-pin “D” connector for 16-bit or 8-bit SCSI.
J1	External RJ-45 Ethernet connector.

# What You Need to Get Started

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National Instruments recommends you have the following equipment before installing and using the PXI-8210 hardware and software:

- Windows 95 or Windows NT installed on your system
- PXI-8210 interface board
- PXI-8210 driver diskette
- SCSI-3 cable or 50-position ribbon cable
- Ethernet cable
- SCSI device

## Installing the PXI-8210

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This section describes how to install your PXI-8210 SCSI interface board.



### Caution

*Electrostatic discharge can damage several components on the PXI-8210. To avoid such damage in handling the board, touch the antistatic plastic package to a metal part of your system chassis before removing the board from the package.*

1. Make sure your system is turned off. Keep the system plugged in so that it remains grounded while you install the PXI-8210.
2. Choose an unused PXI/CompactPCI slot in your system. The PXI-8210 requires a slot that supports bus arbitration or bus master cards.
3. Remove the slot cover for the slot you have chosen.
4. Make sure the injector/ejector handle is in its downward position. Align the PXI-8210 with the card guides on the top and bottom of the slot.

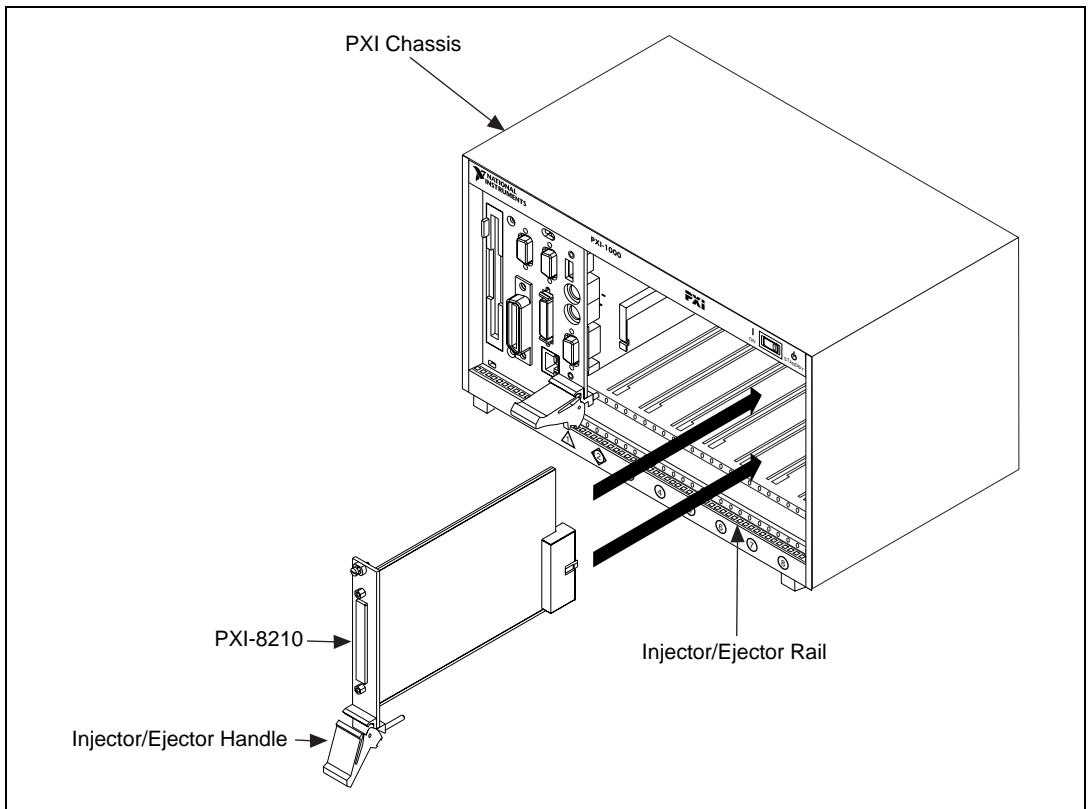


### Caution

*Do not raise the injector/ejector handle as you insert the PXI-8210. The module will not insert properly unless the handle is in its downward position so that it does not interfere with the injector rail on the mainframe.*

5. Hold the handle as you slowly slide the module into the mainframe until the handle catches on the injector/ejector rail.
6. Raise the injector/ejector handle until the module firmly seats into the backplane receptacle connectors. The front panel of the PXI-8210 should be even with the front panel of the mainframe.

Figure 1 shows how to install the PXI-8210 in a PXI/CompactPCI chassis.



**Figure 1.** Installing the PXI-8210 into a PXI/CompactPCI Chassis

7. Screw the front panel of the PXI-8210 to the front panel mounting rail.
8. Turn on your system and start Windows 95/NT.

## Installation Steps Specific to Windows 95

Windows 95 should automatically detect two new devices—a SCSI device and a network adapter—and automatically determine the right driver. A **New Hardware Found** dialog box appears, then goes away on its own. If the **New Hardware Found** dialog box does not appear when you restart Windows 95, refer to [Windows 95 Does Not Detect the PXI-8210](#) in the [Troubleshooting and Common Questions](#) section.

1. Insert the PXI-8210 driver diskette when prompted.

2. Locate the desired drivers:
  - Ethernet drivers—A:\Enet\Win95A or A:\Enet\Win95B
  - SCSI drivers—A:\SCSI\Win95
3. Follow the instructions on the screen.

Your PXI-8210 installation for Windows 95 is now complete.

## Installation Steps Specific to Windows NT

This section describes how to install Ethernet and SCSI adapters under Windows NT.

### Ethernet Adapter

1. Select **Start»Settings»Control Panel**.
2. Double-click on the **Network** icon.
3. Click on the **Adapters** tab and select **Add**.
4. Click the **Have Disk** button.
5. Type A:\Enet\WinNT and press <enter>.
6. Select the appropriate driver from the list and click **Okay**.
7. Restart the computer when prompted.

### SCSI Adapter

1. Select **Start»Settings»Control Panel**.
2. Double-click on the **SCSI Adapters** icon.
3. Click on the **Drivers** tab and select **Add**.
4. Click the **Have Disk** button.
5. Type A:\SCSI\WinNT and press <enter>.
6. Select the appropriate driver from the list and click **Okay**.
7. When prompted for the complete path to the SCSI drivers, type A:\SCSI\WinNT and press <enter>.
8. Restart the computer when prompted.

Your PXI-8210 installation for Windows NT is now complete.

# Using the Flash Utility to Update the SCSI BIOS

In addition to the Windows 95/NT installable device driver, the PXI-8210 driver diskette contains a flash utility you can use to easily update the SCSI BIOS on the PXI-8210.

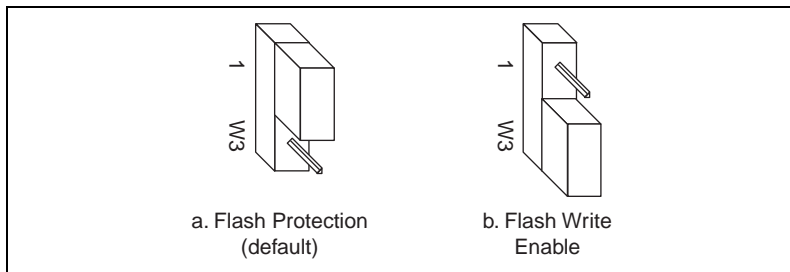


## Note

***Do not run the flash utility from a hard drive controlled by the PXI-8210.***

If you need to update the SCSI BIOS or wish to make a backup copy of the BIOS, use the following procedure:

1. Move jumper W3 to the position shown in Figure 2b. This setting enables writes to the flash utility.
2. Boot to a DOS safe mode prompt.
3. Insert the PXI-8210 driver diskette.
4. Type `A:` and press <enter>.
5. Type `cd flash` and press <enter>.
6. Type `flash8x5` and press <enter>.
7. When the program loads, select the desired action from the menu.
8. At the prompt, type the filename of the BIOS image.
9. When the utility completes the task, move jumper W3 back to its default position as shown in Figure 2a.
10. Reboot the system.



**Figure 2.** Flash Enable/Disable Jumper Settings

# Troubleshooting and Common Questions

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This section describes how to troubleshoot problems and answers some common questions.

## Windows 95 Does Not Detect the PXI-8210

If Windows 95 does not detect the PXI-8210, it may not display the **New Hardware Found** dialog boxes when expected, or the driver may return an error when you try to access the interface. This problem occurs if Windows 95 has already configured the interface as an “other device.” To fix the problem, complete the following steps:

1. Select **Start»Settings»Control Panel**.
2. Double-click on the **System** icon to display the **System Properties** dialog box for the system.
3. Click on the **Device Manager** tab at the top of the **System Properties** sheet to bring up the **Device Manager** property page. Make sure the **View devices by type** button at the top of the **Device Manager** page is selected.
4. Click on the + sign next to **Other Devices** to display a list of all the hardware devices that Windows 95 has detected and configured as **Other Devices**.
5. For each SCSI network interface listed, select the interface by clicking on it, and then click on the **Remove** button to remove the interface from the list of **Other Devices**.
6. After you have removed all of the SCSI network interfaces from the list of **Other Devices**, click on the **Refresh** button to force Windows 95 to detect each PXI interface and to display a **New Hardware Found** dialog box for each one.
7. Proceed with the hardware installation, as described in the section [Installing the PXI-8210](#).

## Network Does Not Function Properly on Windows NT with the Service Pack Installed

The Service Pack `update.exe` updates only those components that are installed on the Windows NT system. When Windows NT starts up after the network adapter is installed, an older version of `SRV.sys` is being used.

To correct the problem, reinstall the Service Pack after installing the PXI-8210 on the system.



## Cannot Install Windows NT from CD-ROM

If you are trying to install Windows NT from a SCSI CD-ROM to a SCSI hard disk with the internal IDE drive disabled, you must use the three Windows NT boot floppy diskettes. The boot floppy diskettes do not contain the Symbios SCSI drivers. Get these drivers from the Symbios FTP site at <ftp.symbios.com> in the following directory:

```
/pub/symchips/scsi/drivers/Windows_Drivers/WindowsNT/  
I386/Driver/SYM8XX
```

The file name is `winnt.zip` or `winnt.exe`. Unzip the files with the `-d` option to a blank floppy disk.

Start Windows NT installation by inserting the first NT boot floppy into the disk drive and powering on the system. Follow the prompts; at one point you are prompted to select **S** for boot device drivers. The program then prompts you for a floppy diskette. Insert the floppy disk that has the file from the Symbios FTP site. Select **SYM8XX** from the window when prompted and continue with the installation.

## Troubleshooting Device Manager Problems

The Windows 95 Device Manager contains configuration information for all of the PXI hardware it is aware of that is installed in your system. To start the Windows 95 Device Manager, double-click on the **System** icon under **Start»Settings»Control Panel**. In the **System Properties** box that appears, select the **Device Manager** tab and click the **View devices by type** radio button at the top of the tab.

### Missing PXI Interface

If a **SCSI Device or Network Adapter** exists, but the Device Manager does not list the interface you are looking for, the interface is not installed correctly. Make sure the PXI-8210 is properly installed in the chassis.

### Inoperable PXI Interface

If your PXI interface does not work properly, the Device Manager may not show a **SCSI Device or Network Adapter** item, or it may display a circled X or circled exclamation mark (!) overlaid on the **SCSI Device or Network Adapter** icon.

This problem can occur for several reasons. If you encounter this problem, the Device Manager should list an error code that indicates why the problem occurred. To see the error code for a particular interface, select the name of the interface and click on the **Properties** button to go to the

**General** tab for that interface. The **Device Status** section of the **General** tab shows the error code. Locate the error code in the following list to find out why your interface is not working properly.

- Code 22: The interface is disabled. To enable the PXI interface, check the appropriate configuration checkbox in the **Device Usage** section of the **General** tab.
- Code 24: The interface is not present, or the Device Manager is unaware that the interface is present. To solve this problem, select the interface in the Device Manager, and click on the **Remove** button. Next, click the **Refresh** button. At this point, the system rescans the installed hardware, and the interface should show up without any problems. If the problem persists, contact National Instruments.
- Code 27: Windows 95 was unable to assign the interface any resources. To solve this problem, free some system resources by disabling other unnecessary hardware so that enough resources are available for the interface.

## Common Questions

### **Can I use the PXI-8210 in a slot not configured for bus arbitration?**

No. The PXI-8210 requires a slot that supports bus arbitration or bus master cards.

### **What do I do if my PXI hardware is listed in the Windows 95 Device Manager with a circled X or exclamation point (!) overlaid on it?**

Refer to the [Inoperable PXI Interface](#) section. If you have already completed the troubleshooting steps in that section with unsatisfactory results, contact National Instruments.

### **Why does the SCSI BIOS load twice during bootup?**

The PXI-8210 is a dual controller. The PCI BIOS detects both functions of the PXI-8210 and tries to load a ROM extension for each. This usually occurs only when there are no SCSI devices attached to the PXI-8210.

### **Can I boot from the Ethernet with the PXI-8210?**

Yes. If you install a BIOS extension in the PROM socket on the PXI-8210, you can boot from a SCSI drive or from the Ethernet.



#### **Note**

*You must provide your own Ethernet BIOS source to boot from the Ethernet.*

# Additional Information

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For the latest versions of drivers or SCSI BIOS, contact National Instruments, or go to the Symbios website at [www.symbios.com](http://www.symbios.com) or FTP site at [ftp.symbios.com/pwb/symchips/scsi/drivers/BIOS](ftp://ftp.symbios.com/pwb/symchips/scsi/drivers/BIOS).



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