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Find the *National Instruments PXI-8211* at our website: *Click HERE*

PCI/PXI™ Ethernet Adapters

National Instruments offers several Ethernet adapters based on the Intel 82559-compatible Ethernet controller.

This document explains how to install and troubleshoot the Ethernet drivers for your PCI/PXI board. Some boards also contain additional functionality, for example, GPIB. Refer to the documentation that came with your kit to install the software for the other functionality.

Installing Your PCI Board

Note If you are replacing an existing Ethernet adapter with the PCI Ethernet adapter in Windows 95, refer to *Removing an Existing Adapter in Windows 95*.

Complete the following instructions to install the Ethernet adapter.

1. Shut down Windows if it is running by clicking **Start»Shut Down**.
2. Turn off the computer and unplug the power cord.
3. Remove the cover to give yourself access to the expansion slots.
4. Choose an empty PCI slot and remove the slot cover by unscrewing the screw that secures it.
5. Insert the adapter into the PCI slot and push until it is firmly seated. Reinstall the screw you removed in step 4.
6. Replace the cover and plug in the power cord.

Installing Your PXI Board

Note If you are replacing an existing Ethernet adapter with the PXI Ethernet adapter in Windows 95, refer to *Removing an Existing Adapter in Windows 95*.

Complete the following instructions to install the Ethernet adapter.

1. Shut down Windows if it is running by clicking **Start»Shut Down**.

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2. Turn off your PXI or CompactPCI chassis. Keep the chassis plugged in so that it remains grounded as you install the adapter.
3. Remove the filler panel from a PXI peripheral bus master slot. The adapter requires a bus master slot to take advantage of the onboard DMA and Ethernet controllers. All PXI chassis and most CompactPCI chassis contain only bus master slots. Refer to your chassis documentation to verify you are using a bus master slot.
4. Touch a metal part on your chassis to discharge any static electricity that might be on your clothes or body.
5. Insert the adapter into the selected bus master slot. Use the injector/ejector handle to fully inject the device into place.
6. Screw the front panel of the adapter to the front panel mounting rail of the PXI or CompactPCI chassis.

Connect the Network Cable

1. Connect a Twisted Pair Ethernet (TPE) network cable to the adapter as shown in Figure 1.

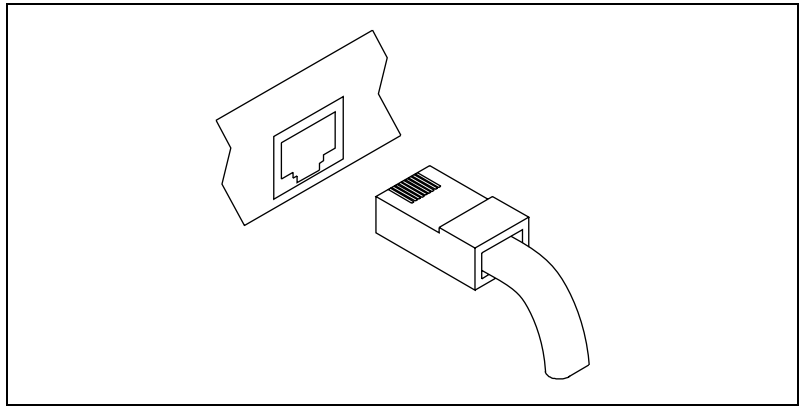


Figure 1. Connecting the Network Cable

   - For 100Base-TX, the network cable must be Category 5, twisted-pair wiring. If you plan to run the adapter at 100 Mb/s, it must be connected to a 100Base-TX hub or switch—not a 100Base-T4 hub.
   - For 10Base-T, use Category 3, 4, or 5 twisted-pair wiring.
2. To configure Ethernet for your adapter, continue with the procedure specific to your operating system outlined later in this guide.

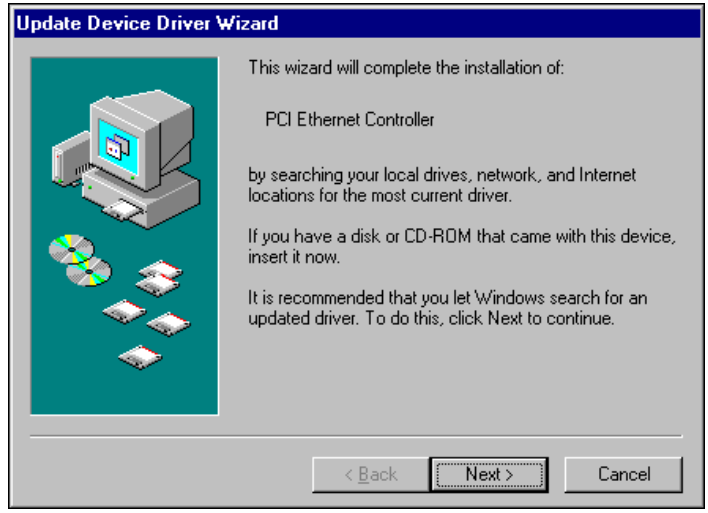
Install the Drivers

Follow the installation instructions for your operating system. The adapter works with the following operating systems:

- Windows 95
- Windows 98
- Windows Me
- Windows 2000
- Windows NT Version 4.0
- Windows NT Version 3.51

Windows 95

1. After you install the Ethernet adapter, power on the computer and start Windows 95. The **Update Device Driver Wizard** appears.



Note If this dialog box did not appear, you may have to manually install the Ethernet driver. See the `MS.TXT` readme file in the `\MS` directory of the PCI/PXI Ethernet Adapters CD for more information.

2. Insert the PCI/PXI Ethernet Adapters CD and click **Next**.
3. Make sure the Wizard finds **Intel 8255x-based PCI Ethernet Adapter (10/100)**. Click **Finish**.
4. Specify the path to your CD-ROM as the source path and click **OK**.

5. Follow the prompts for any Windows 95 installation disk and restart when prompted.
6. After restarting Windows 95, connect to your network by double-clicking the **Network Neighborhood** icon on the desktop.

Windows 98

After you install the Ethernet adapter, power on the computer and start Windows 98. If you have a newer version of Windows 98, it automatically installs a driver for the adapter from its own library of drivers. If this is the case, you might be prompted only to insert the Windows 98 CD and to restart the computer.

However, older versions of Windows 98 might not include the driver for the adapter. If this is the case, the **Add New Hardware Wizard** dialog box appears.



1. Follow the prompts in the Wizard. Select **Search for the best driver for your device** and click **Next**.
2. When prompted for the driver location, select **CD-ROM drive**, insert the PCI/PXI Ethernet Adapters CD, and click **Next**.
3. After the Wizard finds **Intel 8255x-based PCI Ethernet Adapter**, click **Next**.
4. Click **Finish**.
5. Restart the computer when prompted.

Windows Me

After you install the Ethernet adapter, power on the computer and start Windows Me. Windows Me automatically installs a driver for the adapter from its own library of drivers.

Updating the Windows Me Driver

To update the driver for the adapter, follow these instructions:

1. Double-click the **System** icon from the Control Panel.
2. Select the **Device Manager** tab and double-click **Network Adapters**.
3. Double-click **Intel 8255x-based PCI Ethernet Adapters (10/100)**.
4. Select the **Driver** tab and click **Update Driver**.
5. Select **Specify the location of the driver** and click **Next**.
6. Select **Search for a better driver than the one your device is using now** and check **Removable Media**. Click **Next**.
7. Select **Install one of the other drivers**.
8. Select **Intel 8255x-based PCI Ethernet Adapter (10/100)** on your CD-ROM and click **OK**.
9. Click **Next** at the next two prompts and then click **Finish**.
10. Restart your computer when prompted.

Windows 2000

After you install the Ethernet adapter, power on the computer and start Windows 2000. Windows 2000 automatically installs a driver for the adapter from its own library of drivers.

Updating the Windows 2000 Driver

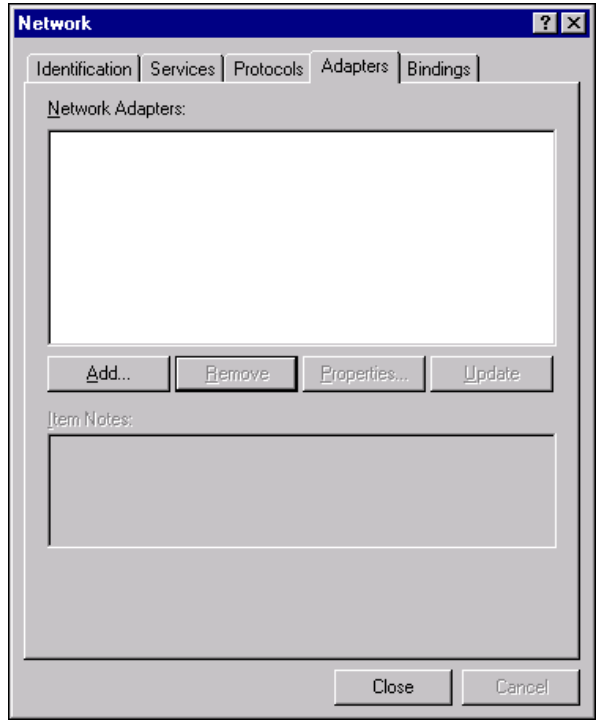
To update the driver for the adapter, follow these instructions:

1. Insert the PCI/PXI Ethernet Adapters CD.
2. Double-click the **System** icon from the Control Panel.
3. Select the **Hardware** tab, and click the **Device Manager** button.
4. Select **Network Adapters** and right-click on the **Intel 8255x-based PCI Ethernet Adapter** listing to display its menu. Then click the **Properties** menu option.
5. Click the **Driver** tab and click **Update Driver**. The **Update Device Driver Wizard** appears. Click **Next**.
6. At the prompt **What do you want the wizard to do?** select the **Search for a suitable driver for my device** radio button, and click **Next**.

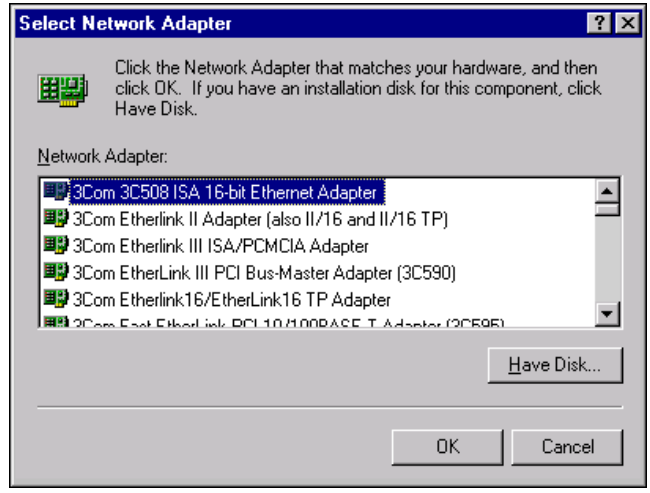
7. Select **CD-ROM drives** and click **Next**.
8. Select the driver on the PCI/PXI Ethernet Adapters CD and click **Next**.
9. Restart your computer when prompted.

Windows NT Version 4.0

1. After you install the Ethernet adapter, power on the computer and start Windows NT.
2. Double-click the **Network** icon in the Control Panel.
3. Click the **Adapters** tab.



4. Click **Add**. You will see a list of adapters.
5. Do not select an adapter from this list. Instead, insert the PCI/PXI Ethernet Adapters CD into the appropriate drive and click **Have disk**.



6. Specify the appropriate drive in the dialog box and click **OK**. Follow the prompts to complete the installation.
7. Click **Close** to finish.
8. Restart Windows NT.

Windows NT Version 3.51

1. After you install the Ethernet adapter, power on the computer and start Windows NT.
2. Double-click the **Network** icon in the Control Panel.
3. Click **Add Adapter**.
4. When the list of adapters appears, scroll to the end of the list and select **<Other> Requires disk from manufacturer** and then click **Continue**.
5. Insert the PCI/PXI Ethernet Adapters CD in the appropriate drive, specify that drive, and click **OK**.
6. Select the **Intel PRO Adapter** and click **OK**.
7. The **TCP/IP Configuration** dialog box appears. Enter the appropriate information and click **OK**.
8. When prompted, restart Windows NT.

Troubleshooting

Windows NT Troubleshooting

If Windows NT reports an error or you cannot connect to the network, try the following suggestions first. If you are still having trouble, refer to the additional topics in this section.

- Make sure you are using the drivers provided on the PCI/PXI Ethernet Adapters CD.
- Make sure the drivers are loaded and the protocols are bound. Check the settings in the **Network/Bindings** dialog box in the Control Panel.
- Check the Windows NT Event Viewer for error messages.
- Test the adapter with the PROSet advanced configuration utility that was installed on your system when you installed the drivers. To start PROSet, double-click the **PROSet** icon in the Windows Control Panel. To run diagnostics, select the adapter and click the **Diagnostics** tab, then click **Run Tests**.

Testing the Adapter

Test the adapter by running diagnostics. To test the Ethernet functionality, run PROSet by double-clicking the **PROSet** icon in the Control Panel. Select the adapter and click the **Diagnostics** tab, then click **Run Tests**.

If your board has GPIB functionality, run the NI-488.2 Getting Started Wizard to verify your hardware and software installation.

WOL558.VXD Missing or Not Found (Windows 98 Only)

This error can occur in Windows 98 if a `.inf` file already installed on the system interferes with the driver installation. Perform the following steps to manually install the Ethernet adapter.

1. Open Windows Explorer.
2. Select **Views»Folder Options**.
3. Select the **View** tab.
4. Select **Show all files** and click **OK**.
5. Delete `net557.inf` and `net557.pnf` in the `Windows/inf` folder.
6. Double-click the **System** icon from the Control Panel.
7. Select the **Device Manager** tab and double-click **Network Adapters**.
8. Select the **Intel 8255x-based PCI Ethernet Adapters (10/100)** and click **Remove**.

9. Restart your computer.
10. Follow the instructions given previously in the *Windows 98* section to install the Windows 98 drivers.

Adapter Cannot Connect to the Network

1. Make sure the cable is installed properly.

   The network cable must be installed properly at both the adapter and the hub. The maximum distance for the cable is 100 m. If the cable is connected properly and within the allowed distance, try another cable.

2. Check the LEDs on the adapter.

   The adapter has two LEDs located on the RJ-45 connector. The following table lists the function of each LED.

LED Color	Function	Indication	Meaning
Yellow	Action/Link	On	The adapter is receiving power. The cable connection is good.
		Off	The adapter is not sending or receiving network data. The adapter is not receiving power. The cable connection is bad or you have a driver problem.
		Flashing	The adapter is sending and receiving network data.
Green	Speed	On	Operating at 100 Mb/s
		Off	Operating at 10 Mb/s

3. Make sure you are using the correct drivers.

   Verify that you are using the drivers that came with the adapter.

The computer hangs when the drivers are loaded

Change the PCI BIOS interrupt settings. See *PCI/PXI Installation Tips* for more information.

Diagnostics pass, but the connection fails or errors occur

At 100 Mb/s, make sure you are using a Category 5 cable and you are connected to a 100Base-TX hub or switch—not 100Base-T4.

The Link LED does not light

- Make sure the network drivers are loaded.
- Check the cable connection.

The ACT LED does not light

- Make sure the correct network drivers are loaded.
- The network may be idle.

The Adapter has stopped working

- Run the diagnostics.
- Try reseating the adapter in the PCI/PXI slot or try a different slot.
- The network drivers may be corrupt or missing. Try removing and reinstalling the drivers.

Link LED is not lit when the computer is shut down and power is connected

- Make sure the network cable is attached.

PCI/PXI Installation Tips

PCI/PXI computers are designed to automatically configure add-in boards each time the computer starts. The PCI/PXI computer sets the I/O address and IRQ level for the peripheral boards when the computer starts. The network drivers cannot change these values. If you experience problems when the computer starts, you may have to follow additional steps.

On some computers, manual configuration is possible through the computer's BIOS setup utility. Refer to the documentation that came with your computer. You may need to verify or change some BIOS settings.

The following common solutions may correct your problem:

- Make sure you have installed the adapter in a bus master-enabled slot. On some computers, not all slots are bus master enabled by default. Check your BIOS settings. Enable PCI/PXI bus mastering, if your BIOS has such an option.
- Reserve interrupts (IRQ) and/or memory addresses for ISA adapters. This prevents PCI/PXI boards from using the same settings ISA boards are using. Try changing some of the interrupts that are reserved for ISA, but not being used, to reserved for PCI/PXI.

- Update your BIOS. Sometimes updating the BIOS will correct some configuration problems.
- Configure the PCI/PXI slot for level-triggered interrupts instead of edge-triggered interrupts in BIOS.

Removing an Existing Adapter in Windows 95

If you are replacing an existing Ethernet adapter with the PCI/PXI Ethernet adapter, follow these steps before physically removing the adapter card.

1. Right-click **My Computer**.
2. Select **Properties**.
3. Click the **Device Manager** tab.
4. Double-click **Network Adapters**.
5. Select the adapter and click **Remove**.
6. Click **OK**.
7. Follow the instructions in the section *Installing Your PCI Board* or *Installing Your PXI Board*.

Ethernet Adapter Specifications

Dimensions

PCI-8212.....12.9 by 10.6 cm (5.1 by 4.2 in.)

PXI-8212/8211 .....16.0 by 9.9 cm (6.3 by 3.9 in.)

Power requirements

PCI-8212.....2.5 W @ +5 VDC

PXI-8212 .....1.7 W @ +3.3 VDC or 2 W @ +5 VDC

PXI-8211 .....1.7 W @ +3.3 VDC

Operating environment

Ambient temperature.....0 to 55 °C

Relative humidity .....10% to 90%, noncondensing

Storage environment

Temperature.....–20 to 70 °C

Relative humidity .....5 to 90%, noncondensing

Compliance and Certification

FCC Class A Certified

CE

I/O connectors

GPIB (PCI/PXI-8212 only) .....IEEE 488 Standard 24-pin

Ethernet.....RJ-45

LEDs

Yellow .....Activity/Link

Green .....Speed

Interrupts

GPIB (PCI/PXI-8212 only) .....PCI INTA

Ethernet.....PCI INTB

Ethernet data rate mode .....10 Mb/s or 100 Mb/s

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