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HP 10/100 3Com 3C905B-TX Network Interface Card

User's Guide

Rev. 1 - June 1998

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Introduction

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Introduction

The 3Com® 3C905B-TX network interface card (NIC) provides a high-performance connection to an Ethernet or Fast Ethernet network. This NIC operates at 100 Mbps or 10 Mbps automatically, depending on the speed of the connected hub.

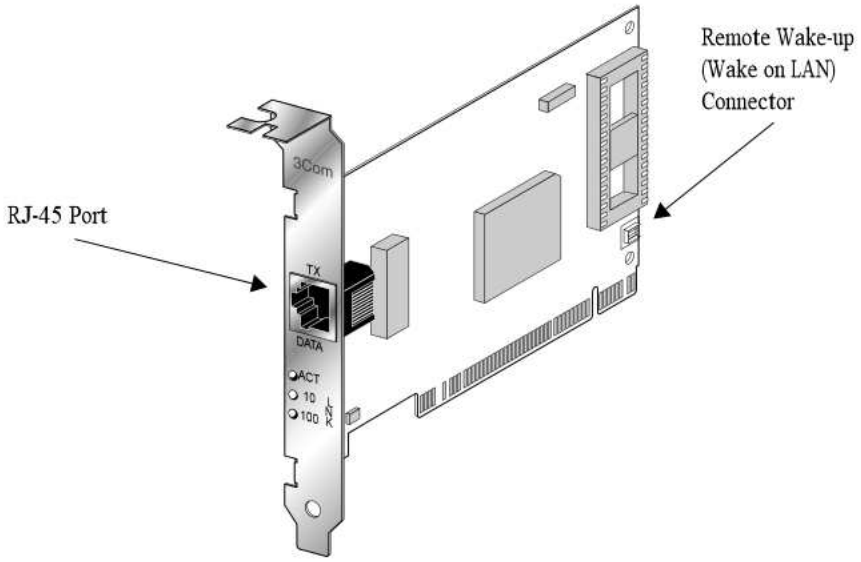


Figure 1 3C905B-TX NIC

The 3Com Remote Wake-Up NIC (3C905B-TX), shown in Figure 1, operates as a wake-up NIC only in PCs with the Remote Wake-Up connector attached to the PC motherboard. This NIC provides a network connection with or without the Remote Wake-Up connector installed.

This chapter describes the 3C905B-TX NIC features and PC requirements.

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Industry-Leading Performance

The 3C905B-TX NIC provides the following performance features:

- Interactive Access technology to minimize CPU utilization
- Parallel Tasking® II architecture for high throughput and low processor utilization
- Full-duplex 10 Mbps and 100 Mbps support
- 32-bit bus master design with full scatter gather and infinite bursting performance

Remote Wake-up

Remote Wake-Up support is enabled for the 3C905B-TX NIC. If you are using the 3C905B-TX NIC in a PC that supports Remote Wake-Up through the PCI bus, the 3Com NIC receives wake-up signals and wakes the PC from a sleep or "off" state.

Dynamic*Access* Software (not supported by HP)

Dynamic*Access*™ software delivers intelligence at the edge of the network to optimize network performance and control.

Dynamic*Acces*s features include PACE™ Interactive Access technology, dRMON (distributed RMON) support, and support for PACE real-time and multimedia applications.

PACE class of service drivers enable prioritization of multimedia and business-critical applications like video conferencing and distance learning. With the 3Com PACE drivers, you can set the class of service for each application.

The Dynamic*Access*™ software is not supported by Hewlett-Packard.

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Installation and Configuration

The 3Com NIC Diagnostics program allows you to test the 3C905B-TX NIC, configure it, and display the NIC configuration information.

The NIC Diagnostics Help system includes the 3C905B-TX Release Notes, Frequently Asked Questions, and KnowledgeBase.

Microsoft Windows 95 detects the 3C905B-TX NIC and installs the network driver from 3Com *EtherDisk Diskette #2*.

The AutoLink™ installation software automatically installs all Novell NetWare DOS ODI client software into your operating system.

10/100 Mbps Support

The single RJ-45 connector on the network cable supports 10 Mbps or 100 Mbps speeds.

NWay auto-negotiation enables the 3C905B-TX NIC to automatically run at the speed that the connected hub supports. The 3C905B-TX NIC works with products that comply with IEEE 10BASE-T and 100BASE-TX specifications.

Installation Requirements

The following operating systems and HP PC platforms are supported for installation of the network interface card.

Supported Operating Systems

- Windows 95 SR2 or later
- Windows NT 4.0 and Service Pack 3

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The driver installation diskettes contain drivers for other network operating systems. For more information on installing these drivers, refer to the readme files provided on the installation diskettes. The latest drivers are available on HP's Web site at:

`http://www.hp.com/go/vectrasupport`

Supported Platforms

To find out on which PCs you can install a 3C905B-TX card, go to the following HP Web sites:

- For Vectra PCs
  `http://www.hp.com.go/vectraaccessories`
- For Kayak PC Workstations
  `http://www.hp.com.go/kayakaccessories`

NT Service Pack

If an NT service pack is already installed on the PC, it must be re-installed after the Network Interface Card (NIC) and software is installed. When using the HP preloaded NT 4.0 software, the latest service pack can be found in the **`C:\I386\SPx`** directory.
On some platforms you also need to reinstall the video drivers. Check your PC documentation for more details.

Operating System Master Diskettes

During the software installation you will need to have your operating system master diskettes or CD-ROM available.

When using HP preloaded operating system software, the master diskettes can be found in the following directories:

- **`C:\I386`** (Windows NT 4.0)
- **`C:\WINDOWS\OPTIONS\CABS`** (Windows 95)

NOTE

Make sure that you are running the latest BIOS for your PC, even if your PC is new. You can download the latest BIOS version from the HP's Support Web site at:
`http://www.hp.com/go/vectrasupport`

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How Do I Install the 3C905B-TX NIC?

To complete installation, install the NIC in your PC, connect it to the network, and install the network driver. The installations steps are depicted in Figure 2.

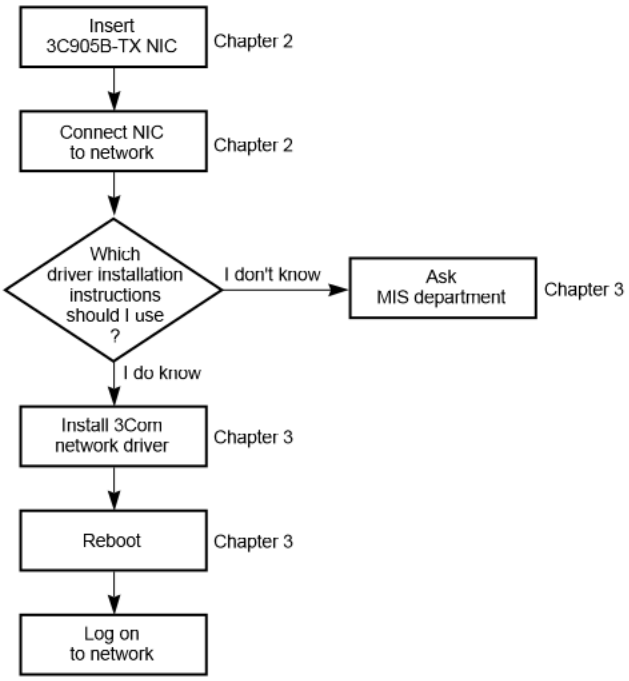


Figure 2 3C905B-TX NIC Installation Steps

Proceed to Chapter 2 to install the 3C905B-TX NIC in your PC and connect it to the network.

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Installing the NIC

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Installing the NIC

Before you begin, make sure that you also have the user guide and the 3C905B-TX *EtherDisk* diskettes.

CAUTION

Each NIC is packed in an antistatic container to protect it during shipment. Before handling the NIC, touch the metal chassis of your PC. Maintain grounding by wearing a wrist strap attached to the chassis. Handle the NIC by its backplate and top edge. Do not touch the edge connector.

To install the 3C905B-TX NIC in your PC and connect it to the network, follow these steps:

1 Open the shipping container and inspect each item for damage.

2 Remove all jewelry from your hands and wrists. Use only insulated or nonconductive tools.

3 Unplug the PC and disconnect all cables.

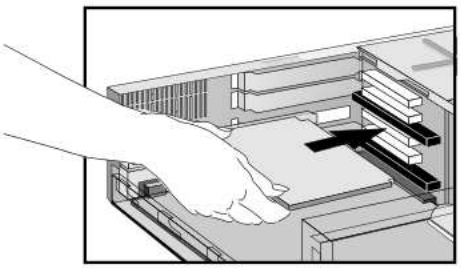
4 Remove the PC cover.

5 Choose an empty bus mastering PCI slot. A sample PCI slot is shown in Figure 3. If you do not know how to identify a PCI slot, check your PC documentation or ask your system administrator.

6 Remove the PCI slot's backplate. Store it in a safe place.

7 Insert the 3C905B-TX NIC into an empty PCI slot, shown in Figure 3.

Make sure that the NIC is firmly seated in the slot.



The card may be installed in a minitower model or in a desktop model.

Figure 3 Inserting the NIC

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8 Secure the NIC by replacing the retaining bracket or the screw you removed earlier.

9 Insert the cable into the connector on the NIC, shown in Figure 4.

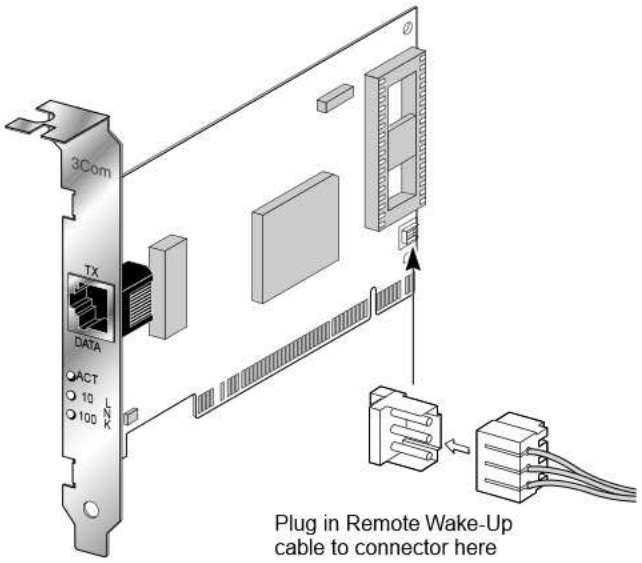


Figure 4 Connecting the NIC to the Connector

10 Attach the cable to the connector on the PC motherboard or backplane. For more information on the Wake on LAN connector on your PC, refer to the Upgrade and Maintenance Guide for your PC. This document is available on the HP Web site at the following address:

`http://www.hp.com/go/vectrasupport/`

11 Reconnect all cables and replace the PC cover.

12 The 3C905B-TX Remote Wake-Up NIC is installed. Go back to the next section "Updating LAN-specific Fields in the HP PC Setup Utility" to complete installation.

13 Replace the PC cover and reconnect all previously connected cables.

14 Proceed to the next section, "Updating LAN-specific Fields in the HP PC Setup Utility."

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Updating LAN-specific Fields in the HP PC *Setup* Utility

Having physically installed the network interface card in the PC, you now need to check that the BIOS is configured to use the card. To do this you need to use the HP PC *Setup* utility.

Starting the HP PC *Setup* Utility

1 Restart the PC.

2 Press F2 when **F2=Setup** is displayed on the screen during the PC's start-up routine. The opening window of the HP PC *Setup* utility is displayed.

Which Fields Need Updating?

You need to check, and update if necessary, all the fields that are LAN-related.

The bulleted list given below gives guidelines on how to configure a LAN interface. The field names used in your version of the *Setup* program may be slightly different to those shown below.

If you want to boot from the network:

- Check that **Security ⇐ Boot Devices Security ⇐ Start from Network** is enabled.
- Change the boot order so that Network appears first (**Advanced ⇐ Advanced CMOS Setup ⇐ 1st Boot Device‹ Network**).

NOTE

You can only boot a PC from the network if it has boot ROM integrated in its BIOS (as with the HP Vectra VL Series 8 PC for example) or if it contains an NIC with an embedded boot ROM chip.

On other platforms such as the HP Vectra VL Series 7, VE Series 7 or Series 8 PCs, a boot ROM chip is needed in order to boot from the network. This component can be ordered from 3Com, and it is not supported by HP.

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If you want to wake up your PC from the network:

- Check that the PC can be woken up from the network (**Power ⇐ Suspend Wakeup ⇐ Network [Enabled]**).

If you want to power on your PC from the network:

- Check that the PC can be powered on from the network (**Power ⇐ Power-On ⇐ Network [Enabled]**).

Proceed to the next section, "Connecting to the Network" to complete installation.

Connecting to the Network

You must connect the NIC to the network before installing the network driver.

To connect the 3C905B-TX NIC to the network cable, follow these steps:

1 Connect the network cable to the RJ-45 port on the 3C905B-TX NIC, as shown in Figure 5.

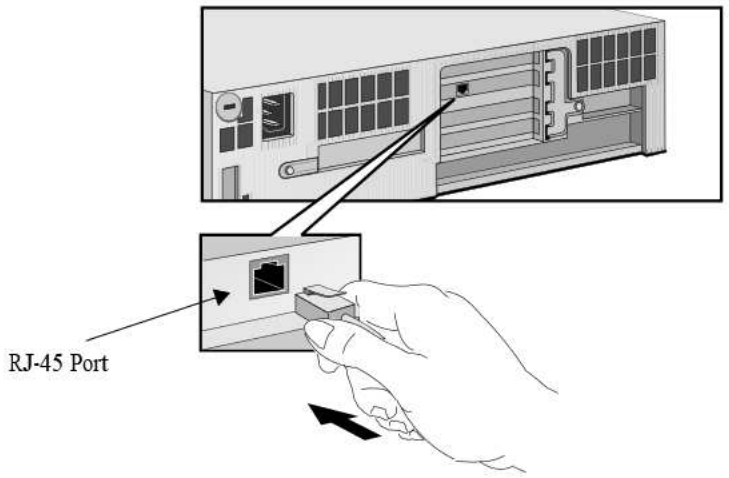


Figure 5 Connecting the Network Cable to the RJ-45 Port

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2 Connect the other end of the network cable to a 10BASE-T or a 100BASE-TX network port.

3 Check the LEDs.

After installation, and before you install the network driver, the LEDs indicate the following:

- 10 LNK LED - green - 10 Mbps link integrity
- 100 LNK - green - 100 Mbps link integrity
- ACT LED - OFF - until the network driver is installed

See Table 2 for more LED information.

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3

Installing the Network Driver

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Installing the Network Driver

This chapter describes how to install the network driver that completes your PC connection to the network. The 3C905B-TX software is installed with the network driver.

Instructions are provided for Windows 95, Windows NT, and NetWare DOS client and server driver installation. Table 1 provides a complete list of supported drivers and text files that describe how to install them.

Go to the section your MIS department recommends and follow the instructions to install the network driver on your PC.

You can obtain the latest network drivers on HP's Web site at:
`http://www.hp.com/go/vectrasupport`

Windows 95

This section describes how to install the network driver when your PC is running Windows 95.

This driver can be used in Microsoft and NetWare environments, and instructions are included for both.

Do not use the AutoLink software to install the driver if you are running Windows 95.

Follow these steps to install the network driver in a PC running Windows 95:

1 Install the 3C905B-TX NIC and connect it to the network, as described in Chapter 2.

2 Restart the PC.

Windows 95 automatically detects the NIC in the PC.

If Windows 95 does not detect the 3C905B-TX NIC, see Chapter 4,"Troubleshooting."

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3 Select *Driver from disk provided by the hardware manufacturer* and click *OK*.

4 Insert *EtherDisk Diskette #2* in your drive and, if the diskette is in drive A, click *OK*.

5 Otherwise, supply the correct drive letter and click *OK*.

6 Once the 3Com installation files are read, Windows 95 prompts you for the Windows 95 network installation files.

7 Enter the correct path to the Windows 95 files (CAB files) and click *OK*. On HP Windows 95 preloaded systems, the path is **C:\Windows\Options\CABS**

8 If Windows prompts you to reboot, click *No*.

9 Open the Windows 95 Control Panel.

10 In the Control Panel, double-click *Network*.

11 The Network screen appears.

12 For Microsoft networks, select the Configuration tab. For Novell NetWare networks, go to step 13.

The default Microsoft network setup contains the following components:

```
Client for Microsoft Networks
Client for Novell Networks
3Com EtherLink XL Adapter
3Com dRMON SmartAgent PC software
IPX/SPX compatible protocol
NetBEUI protocol
```

If a protocol is missing, follow these steps:

a Select the protocol and click *Add*.
b From the *Select Network Protocol* menu, select *Microsoft* in the left pane. In the right pane, select the protocol and click *OK*.

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If a client is missing, follow these steps:

a Select the client and click *Add*.
b From the *Select Network Client* menu, select *Microsoft* in the left pane, select the client in the right pane, and click *OK*.

13 For NetWare only, on the Network screen, remove the following network components, if present:

```
Microsoft Client for Microsoft Network NetBEUI
```

The network components should now include:

```
Client for NetWare Networks
3Com EtherLink XL Adapter
3Com dRMON SmartAgent PC software
IPX/SPX Compatible Protocol
```

If a protocol is missing, follow these steps:

a Select the protocol and click *Add*.
b From the *Select Network Protocol* menu, select *Microsoft* in the left pane. In the right pane, select the protocol and click *OK*.

If a client is missing, follow these steps:

a Select the client and click *Add*.
b Select *Microsoft*.
c Click *Client for NetWare Networks* and then *Properties*.

To select the NetWare server, follow these steps:

a Under the General tab, set your preferred server and the first network drive and click *OK*.
b Set the primary network logon to *Client for NetWare Networks* and click *OK*.

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14 When the configuration is correct, click the Identification tab.

- The computer name is the name of your PC. Give your PC a unique name of up to 15 characters. The PC name cannot include blank spaces.
- A workgroup (such as your department) is composed of the PCs you usually communicate with and the workgroup's shared resources (such as printers).
- If you use peer group networking, the workgroup name is your peer group. Peers can see each other when they look in the Network Neighborhood.
- For information on peer-to-peer networking, see the W95NDIS3.TXT file in the HELP directory on *EtherDisk Diskette #1*.
- Your computer description is visible to other members of your workgroup in the Network Neighborhood.

15 Click *OK*.

The network connection is configured. Windows 95 prompts you to restart the PC.

16 Click *Yes*.

After the PC restarts, you can log on to your network. If you have problems, see Chapter 4.

Confirming Installation

Complete the following procedure to confirm that the 3C905B-TX NIC is properly installed:

1 Double-click the *My Computer* icon.

2 Double-click the *Control Panel* icon.

3 Double-click the *System* icon.

The System Properties box appears, detailing your system setup.

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4 Click the Device Manager tab.

A list of devices appears, arranged by type.

5 Double-click *Network Adapters*.

The name of the installed 3C905B-TX NIC appears:

```
3Com EtherLink XL Adapter (3C905B)
```

6 Double-click the 3C905B-TX name to display a description of the 3C905B-TX NIC and its current status.

The dialog box confirms that the 3C905B-TX NIC is working properly. If a yellow exclamation point or a red X appears next to the 3Com EtherLink XL adapter name, go to "Frequently Asked Questions" in Chapter 4 to troubleshoot the NIC.

7 Click *Cancel* to leave each dialog box and return to the Control Panel.

Windows NT

This section describes how to install the network driver in a PC running Windows NT versions 4.0 or 3.51.

Do not use the AutoLink software to install the driver if you are running Windows NT.

Before you begin, obtain *EtherDisk Diskette #2* and Windows NT installation files (on hard disk, diskettes, or CD).

If Windows NT networking is not installed, you may also need the following information from your MIS department:

- Whether you are on a LAN or are connecting to one through a modem
- Protocol used in the Microsoft Windows Network (typically TCP/IP or NetBEUI)
- Name of the Windows NT server domain or workgroup you belong to
- IP address if you are not using DHCP

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Windows NT Version 4.0

If you already have the 3C905B-TX network driver and want to update it, follow the instructions provided in the next section.

Updating the Network Driver

To update the driver, follow these steps:

1. Install the 3C905B-TX NIC and connect it to the network, as described in Chapter 2.
2. Restart the PC and start Windows NT.
3. In the Control Panel, double-click *Network*.
4. In the Network window, select the Adapter tab.
5. Select *3Com EtherLink XL NIC*.
6. Click *Update*.
7. Insert *EtherDisk Diskette #2*.

   The driver is updated.

CAUTION

If an NT service pack is already installed on the PC, it must be re-installed after the Network Interface Card (NIC) and software is installed. When using the HP preloaded NT 4.0 software, the latest service pack can be found in the **`C:\I386\SPx`** directory.
On some platforms you also need to reinstall the video drivers. Check your PC documentation for more details.

Installing the Network Driver

Follow these steps to install the network driver in a PC running Windows NT version 4.0:

1. Install the 3C905B-TX NIC and connect it to the network, as described in Chapter 2.
2. Restart the PC and start Windows NT.
3. In the Control Panel, double-click *Network*.
4. In the Network window, select the Adapter tab.

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If this 3C905B-TX NIC is replacing a NIC already installed, follow these steps:

a Select the existing 3Com NIC (that is being replaced) in the Installed Adapters group.

b Click *Remove*.

c Click *Yes* in the Warning dialog box.

d Reboot the PC and repeat steps 2, 3, and 4.

5 Click *Add Adapter*.

6 In the Select Network Adapter window, select *Have Disk*.

7 Insert *EtherDisk Diskette #2* in drive A and in the Insert Disk window, click *OK*.

8 In the Select OEM Option box, select *3Com EtherLink Adapter (3C905B)*, and then click *OK*.

9 Select the Protocol tab.

10 Select the appropriate protocol for your network.

11 In the Network Settings window, click *Close*.

If you are prompted for network information, enter the information supplied by your MIS department.

Windows NT prompts you to reboot.

12 Click *Yes* to restart your PC. The driver installation is complete.

To confirm successful installation, double-click the *Network* icon in the Control Panel. Click the Adapters tab. The 3C905B-TX NIC should appear in the list. If it does not appear, see Chapter 4 for troubleshooting information.

CAUTION

If an NT service pack is already installed on the PC, it must be re-installed after the Network Interface Card (NIC) and software is installed. When using the HP preloaded NT 4.0 software, the latest service pack can be found in the **`C:\I386\SPx`** directory.
On some platforms you also need to reinstall the video drivers. Check your PC documentation for more details.

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Windows NT Version 3.51

If you already have the 3C905B-TX network driver and want to update it, follow the instructions provided in the next section.

Updating the Network Driver

To update the driver, follow these steps:

1. Install the 3C905B-TX NIC and connect it to the network, as described in Chapter 2.
2. Restart the PC and start Windows NT.
3. In the Control Panel, double-click *Network*.
4. Select the 3Com adapter and click *Properties*.
5. Record the settings for the NIC resources.
6. Click *Cancel*.
7. Double-click *Network* again in the Control Panel.
8. In the list of Network Software and Adapter Cards, select the 3Com adapter.
9. Click *Update*.
10. When prompted, enter the directory path (a:\), insert *EtherDisk Diskette #2*, and click *OK*.
11. Click *OK* to close the Network dialog box and complete the process.

Installing the Network Driver

Follow these steps to install the network driver in a PC running Windows NT version 3.51:

1. Install the 3C905B-TX NIC and connect it to the network, as described in Chapter 2.
2. Restart the PC and start Windows NT.
3. In the Control Panel, double-click *Network*.
4. In the Network Settings window, click *Add Adapter*.
5. In the Add Network Adapter window, select *<Other> Requires disk from manufacturer*.

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6 Click *Continue*.

7 Insert *EtherDisk Diskette #2* in drive A and click *OK*.

8 In the Select OEM Option box, select *3Com EtherLink XL PCI Adapter (3C905B)*.

9 Click *OK*.

The Bus Location window appears.

10 Click *OK*.

Windows NT copies the files from *EtherDisk Diskette #2*.

If you are prompted for network information, contact your MIS department for the requested information.

11 In the Network Settings Change window, click *OK*.

Windows NT completes the installation.

12 Click *Restart* to restart your PC.

If you have problems, see Chapter 4 for troubleshooting information.

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NetWare for Windows 3.1x, Windows for Workgroups, and DOS

The AutoLink program installs DOS client software and drivers for Novell NetWare in Windows 3.1x, Windows for Workgroups 3.11, and DOS environments.

CAUTION Do not use the AutoLink program if you are running Windows 95 or Windows NT.

The AutoLink program modifies the CONFIG.SYS and AUTOEXEC.BAT files. It logs on to the server and updates the client software if your MIS department has already configured a 3Install account on your server.

AutoLink Requirements

To use the AutoLink program, your computer should have only one 3C905B-TX NIC installed and have 1 MB of free hard disk space.

Running the AutoLink Program

1 Install the NIC and connect it to the network, as described in Chapter 2.

2 Reboot, using a DOS diskette.

3 Insert *EtherDisk Diskette #1* in drive A.

4 Run the Install program. Enter:

```
a:install
```

This opens the main menu.

5 From the main menu, select *Auto Install and Config for NetWare (AutoLink)* and press Enter.

6 Select *DOS*, *Windows 3.1x*, or *Windows for Workgroups 3.11* and follow the instructions.

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7 When the auto installation process is finished, remove *EtherDisk Diskette #1* and reboot the PC.

NOTE

If you are running Windows 3.1x, after you connect to the NetWare server, run the WSINSTALL program for full Windows support. Contact your MIS department for the location of this NetWare utility.

If you experience problems that occur only when using the AutoLink program, display or print the AUTOLINK.LOG file. The AUTOLINK.LOG file contains a list of all the events that occurred during the AutoLink installation and configuration process.

- To display the file, enter:

```
type autolink.log | more
```

- To print the file, enter:

```
print autolink.log
```


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Supported Network Drivers

Table 1 provides the text file names and driver names for drivers supported by Hewlett-Packard. These text files describe how to install the network driver and are located in the HELP directory on *EtherDisk Diskette #1*.

Table 1 Network Driver Text File Names

Network Operating System	Text File Name	Network Driver Name
Windows 95	W95NDIS.TXT	EL90XND3.SYS/ EL90XND4.SYS
Windows 95 NDIS 2	W95NDIS2.TXT	EL90X.DOS
Windows NT 3.51	WINNT.TXT	EL90XND3.SYS/
Windows NT 4.0	WINNT.TXT	EL90XND4.SYS
NetWare Client 32	CLIENT32.TXT	3C90X.LAN
NetWare OS/2	NWOS2ODI.TXT	3C90X.SYS
NetWare client for DOS, Windows 3.1, and Windows for Workgroups	AUTOLINK.TXT (NETWARE directory)	3C90X.COM
Windows for Workgroups (NetWare)	WFWNETWR.TXT	3C90X.COM
Windows for Workgroups (NDIS 2)	WFWNDIS2.TXT	EL90X.DOS
Windows for Workgroups (NDIS 3)	WFWNDIS3.TXT	EL90X.386
Microsoft LAN Manager	LANMAN.TXT	EL90X.DOS

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Non-Supported Network Drivers

The following network drivers are provided on the *EtherDisk* diskettes but not supported by Hewlett-Packard:

Network Operating System	README (for driver installation)	Network Driver Name
Netware 4.1 Server	NETWARE.41X	3C90X.LAN
Banyan VINES	BANYAN.TXT	EL90X.DOS
Artisoft LANtastic	LANTASTK.TXT	EL90X.DOS
IBM LAN SERVER (DOS)	LANSRVR.TXT	EL90X.DOS
IBM LAN SERVER (OS/2)	LANSRVR.TXT	EL90X.OS2
DEC PATHWORKS	PATHWORK.TXT	EL90X.DOS (DOS) and 3C90X.COM (Netware)

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Troubleshooting

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Troubleshooting

This chapter explains how to isolate and solve NIC problems, including the following topics:

- Status LEDs
- 3Com NIC Diagnostics program
- Accessing the 3C905B-TX Help system
- 3Com support services
- Removing the 3C905B-TX software
- Checking Remote Wake-Up
- Crossover cable troubleshooting tips
- Frequently Asked Questions
- Accessing the HP Support Web pages

NOTE

The HP Support Web site offers the latest drivers, troubleshooting information, and software updates at:
`http://www.hp.com/go/vectrasupport`

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Status LEDs

Before the LEDs can be used for troubleshooting, the NIC must be connected to the network (Chapter 2) and the network driver must be installed (Chapter 3).

The 3C905B-TX NIC has three status LEDs, as shown in Figure 6 and described in Table 2.

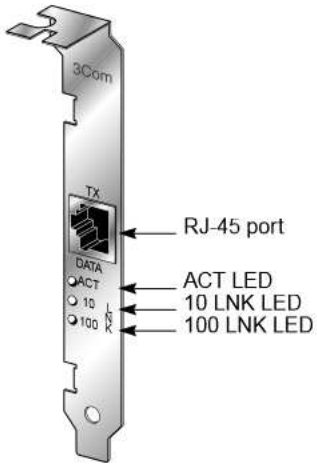


Figure 6 LEDs

Table 2 LED Descriptions

LED	Description	Flashing	Steady	Off
10 LNK	Green: Link integrity	Reversed polarity	Good 10BASE-T connection between NIC and hub	No connection between NIC and hub
100 LNK	Green: Link integrity	Reversed polarity	Good 100BASE-TX connection between NIC and hub	No connection between NIC and hub
ACT	Yellow: Port traffic for either speed	Network traffic present	Heavy network traffic	No traffic

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3Com NIC Diagnostics Program

Use the 3Com NIC Diagnostics program for Windows 95 and Windows NT to test the 3C905B-TX NIC and change configuration. To change the NIC's configuration, see Chapter 5. If you are running NetWare Client 32 with the NetWare ODI driver, use the DOS diagnostic program described in the INSTRUCT.TXT file in the HELP directory on *EtherDisk Diskette #1*.

NOTE The 3Com NIC Diagnostics program is installed with the driver. Driver installation is described in Chapter 3. You must install the driver before you run the program.

Accessing the 3C905B-TX Help System

You can display the 3C905B-TX NIC Help system, a Windows Help application that includes 3C905B-TX Release Notes, Frequently Asked Questions, and the 3C905B-TX KnowledgeBase. The Help system was installed with the network driver.

To display the 3Com Help system, follow these steps:

1 Install the 3C905B-TX NIC, connect it to the network (Chapter 2), and install the driver (Chapter 3).

2 Click the Windows *Start* menu.

3 Select *Programs*.

4 Select *3Com NIC Utilities*.

5 Select *3Com NIC Diagnostics Help*.

The Help screen for the 3Com NIC Diagnostics General screen appears.

6 Click the links to display information about each of the 3Com NIC Diagnostics screens.

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Displaying Release Notes, Frequently Asked Questions, and the KnowledgeBase

To access the Release Notes, Frequently Asked Questions, and KnowledgeBase information, follow these steps:

1 Click the Support tab, shown in Figure 7.

2 Click the *Release Notes* button on the Support screen.

The Release Notes Help screen appears.

- Click the *Release Notes* link to display tips about installing and using the 3C905B-TX NIC.
- Click the *Frequently Asked Questions* link to display common questions asked by customers and answered by support experts.
- Click the *KnowledgeBase* link to display 3C905B-TX NIC compatibility topics.

NOTE To display the entire Help system, click the Help button on each NIC Diagnostics screen. To display information about any item on each screen, click the question mark (?), drag it to the item, and click. The pop-up box displays information about the selected item.

Running the NIC Self-Test

Run the NIC self-test to check the physical components, connectors, and circuitry on the NIC.

1 Make sure that the 3C905B-TX NIC is installed and connected to the network (Chapter 2) and the network driver is installed (Chapter 3).

2 Start the 3Com NIC Diagnostics program by clicking the Windows *Start* menu.

3 Select *Programs*.

4 Select *3Com NIC Utilities*.

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5 Select *3Com NIC Diagnostics*.

A warning message appears. Click *OK* to disconnect your PC from the network to conduct this test.

The 3Com NIC Diagnostics General screen appears, as shown in Figure 7.



Figure 7 3Com NIC Diagnostics Program General Screen

To access the 3Com NIC Diagnostics program later by clicking its icon in the system tray, click the check box next to Enable Tray Control.

6 Click the Diagnostics tab to display the Diagnostics screen, shown in Figure 8.

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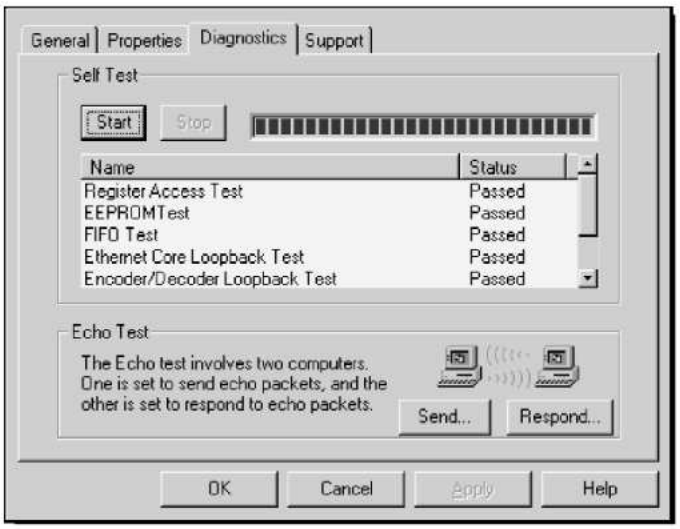


Figure 8 Diagnostics Screen

7 Click *Start* in the Self-Test area.

The following tests run in sequence:

- Register Access
- EEPROM
- FIFO
- Ethernet Core Loopback
- Encoder/Decoder Loopback
- Interrupt

You can click *Stop* to stop the tests. Otherwise, the tests run continuously to completion.

NOTE Click the Help button to display help for this screen. Click the question mark (?) at the top of the screen, drag it to a test, and click. The pop-up box displays information about the selected test and what to do if the test fails.

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Running the Echo Test

The echo test tests the 3C905B-TX NIC's ability to transmit and receive data while on the network.

You need two PCs with 3Com NICs installed to run an echo test: one PC to send data and one PC to receive data.

CAUTION Running the echo test while connected to an active network can cause intermittent failures. To avoid this, connect to an inactive network on which only the PC being tested is operating.

To run the echo test, follow these steps:

1 Make sure that the 3C905B-TX NIC is installed in the sending PC and connected to the network (Chapter 2) and that the network driver is installed (Chapter 3).

2 Install a 3C905B-TX NIC in another PC (the echo server), connect it to the network, and install the network driver.

   The echo server PC is the *responding* PC.

3 On both PCs:

   a Click the Windows *Start* menu.

   b Select *Programs*.

   c Select *3Com NIC Utilities*.

   d Select *3Com NIC Diagnostics*.

   e Click the Diagnostics tab to display the Diagnostics screen, shown in Figure 8.

4 Click *Respond* on the Diagnostics screen (Figure 8) of the responding PC.

   The Echo Test Responder screen appears on the responding PC.

5 Click *Start* on the Echo Test Responder screen.

6 On the Diagnostics screen (Figure 8) of the sending PC, click *Send*.

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7 On the Diagnostics screen (Figure 8) of the sending PC, click *Start*.

The statistics for the test appear in the Statistic section of the window.

NOTE Click the Help button to display Help for this screen. Click the question mark (?) at the top of the screen and drag it to a statistic and click. The pop-up box displays information about the selected statistic.

Support Services

The 3Com NIC Diagnostics Program Support screen, shown in Figure 9, provides access to the following support services:

- 3Com NIC Diagnostics program
- 3C905B-TX NIC Release Notes
- 3Com BBS telephone numbers and modem speeds
- 3Com World Wide Web information
- 3Com problem report generator[1]

NOTE The HP Support Web site offers the latest drivers, troubleshooting information, and software updates at:
`http://www.hp.com/go/vectrasupport`

To access the 3Com NIC Diagnostics support screen, click the Support tab on the 3Com NIC Diagnostics program main screen, shown in Figure 7.

The 3Com NIC Diagnostics Program Support screen appears, shown in Figure 9.

1. Please do not use this utility. If you cannot troubleshoot your NIC using the information provided in this Chapter, or on the HP Web site, refer to the HP Support services.

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Figure 9 3Com NIC Diagnostics Program Support Screen

- Click *Diagnostics* to run the 3Com NIC Diagnostics program. Refer to the beginning of this chapter for information on how to use the 3Com NIC Diagnostics program.
- Click *Release Notes* to display the 3C905B-TX Release Notes, Frequently Asked Questions, and the 3C905B-TX KnowledgeBase.
- Click *BBS Information* to display the BBS telephone numbers and modem speeds.
- *The http...* button displays the 3Com World Wide Web address.
- *Problem Report* to generate a 3Com problem report[1].

1. Please do not use this utility. If you cannot troubleshoot your NIC using the information provided in this Chapter, or on the HP Web site, refer to the HP Support services.

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Removing the 3C905B-TX NIC 3NICDIAGS Software

You can remove the 3NICDIAGS software from your PC using Windows 95, Windows NT, or DOS.

Removing the 3NICDIAGS software also removes PACE. The PACE software is not supported by HP.

Windows 95 and Windows NT 4.0

To remove the 3NICDIAGS software, follow these steps:

1 In the Windows Control Panel, select *Add/Remove Programs*.

2 Select *3Com NIC Diagnostic Utilities*.

3 Click *Add/Remove*.

The 3C905B-TX NIC software is removed from your PC.

DOS

To remove the 3NICDIAGS software, follow these steps:

At the DOS prompt, enter:

```
un3c90x.exe
```

The program removes the 3C905B-TX software.

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Checking the Remote Wake-up Function

Check that the WOL connector cable is connected to the network interface card and to the PC's system board.

- If the PC has been powered off (for example, due to an electrical power failure, or because the power cord has been removed), the Remote Power On (RPO) will not work. To enable the RPO, you must first power on the PC, allow Windows 95 or NT 4.0 to boot, then shut down the PC.
- Check that the WOL connector cable is connected to the network interface card and to the PC's system board.
- Check that the LAN-specific fields in the HP PC *Setup* utility are correctly set (see Chapter 2).
- Check that you are running the latest driver software. The latest driver and utilities are available from the HP Support Web site:

  http://www.hp.com/go/vectrasupport

NOTE RPO is only supported under Windows 95 and Windows NT 4.0.

3Com DOS Diagnostic Program

For information about running the 3Com DOS diagnostic program, see the INSTRUCT.TXT text file in the HELP directory on *EtherDisk Diskette #1*.

Crossover Cable Troubleshooting Tips

When you work with network cabling, concentrators, and NICs from different vendors, it is possible to connect everything and still have no communication between file servers and workstations.

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When there are several unknown variables, it is difficult to determine which component is broken. Use these tips to isolate the problem.

1 Determine whether your equipment complies with the 10BASE-T or 100BASE-TX standard.

   This is particularly important for concentrators (hubs or repeaters).

2 Connect a straight-through cable from the PC to the hub.

   The hub performs an internal crossover so that the signal can go from TD+ to RD+ and TD– to RD–. When you look at an RJ-45 connector from the front, pin 1 is identified on the left-hand side when the metal contacts are facing up.

3 Make sure that the TD+ and TD– wires are twisted together, and that the RD+ and RD– wires are twisted together. The example in Figure 10 shows 10BASE-T cabling.

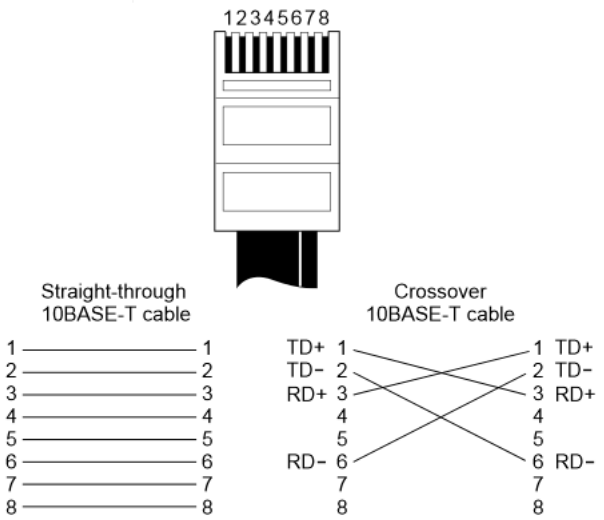


Figure 10 Straight-through and Crossover Cable Pinouts

   Using wires from opposing pairs can cause signals to be lost. For a 100BASE-TX cable, pins #1 and #2, and #3 and #6 must be on the same twisted strand.

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Troubleshooting Hubs with Crossover Cable

When there is doubt whether a hub is performing correctly, or if the impedance settings are in question, a crossover cable can help you isolate the failing component.

1 Connect a file server and a client PC back to back with a crossover cable to verify that the NIC and network operating system are properly configured.

2 To make a crossover cable, simply connect TD+ to RD+ and TD– to RD–.

   The cable performs the crossover that is usually performed by the hub. Make sure that two twisted-pair wires are used. Figure 10 shows the pinouts for the crossover cable. On the straight-through cable, make sure that the wires are from the same twisted pair.

   If the file server and client PC function together as a small network, then either the existing cabling or the hub is the problem.

   - If there is a proper crossover, the appropriate LED comes on.
   - If there is a straight-through connection, the LED does not light.
   - A blinking LED indicates that there is a polarity mismatch (that is, TD+ to RD– instead of TD+ to RD+).

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Frequently Asked Questions

Table 3 describes some common questions and answers about the 3C905B-TX NIC.

Table 3 Frequently Asked Questions

Question	Answer
Do I have to configure the 3C905B-TX NIC?	PCI is a self-configuring bus architecture. Most of the time you only need to install the board in your PC; PCI does the rest. If you are installing the 3C905B-TX NIC on a Windows 95 system, check that the PnP OS field in the PC's BIOS is set to Yes. If you are installing the 3C905B-TX NIC on a Windows NT system, check that the PnP OS field in the PC's BIOS is set to No.
Are my Fast EtherLink XL network drivers Microsoft-certified?	Yes, the Fast EtherLink XL network drivers are Microsoft-certified.
Are my Fast EtherLink XL Bus Master ODI drivers Novell-certified?	Yes, the Fast EtherLink XL ODI drivers are Novell-certified.
How do I remove the 3Com icon from my system tray?	Double-click the *3Com* icon to start the 3Com NIC Diagnostics program. In the right bottom corner of the main window, click the Enable Tray Control check box to remove the check mark. Exit the program and the icon will not appear anymore.
How can I remove the 3C905B-TX PACE and 3NICDIAGS software?	In the Windows 95 Control Panel, select *Add/Remove Programs*. Select *3Com NIC Diagnostic Utilities*. Click *Add/Remove*. The PACE and 3NICDIAGS software is removed from your PC.
Does the 3C905B-TX NIC support full-duplex?	Yes, the 3C905B-TX NIC supports full-duplex at 10 Mbps and 100 Mbps operation.

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Table 3 Frequently Asked Questions (Continued)

Question	Answer
Why does the 3C905B-TX NIC install as a "Generic PCI Ethernet Controller" under Other Devices in the Device Manager?	When Windows 95 is installed with the 3C905B-TX NIC already installed, Windows 95 installs the 3C905B-TX NIC as a generic PCI Ethernet controller. To work around this problem, follow these steps: In the Device Manager, double-click *Other Devices*. Click *PCI Ethernet Controller*. Click *Remove*. Restart your PC.
What should I do if a yellow exclamation point appears next to the 3C905B-TX NIC name?	In the Device Manager, double-click *Other Devices*. Click *PCI Ethernet Controller* or the duplicate 3C905B-TX NIC entry. Click *Remove*. Restart your PC.
Does the 3C905B-TX NIC support NetWare versions 3.11 or 4.0x?	The 3C905B-TX does not support NetWare versions 3.11 or 4.0x. These versions require the use of a server driver that conforms to the HSM 3.2 specification. 3Com no longer develops NetWare server drivers to the HSM 3.2 specification.

HP Support Services

The latest drivers and utilities are available on HP's Web site at:

`http://www.hp.com/go/vectrasupport.`

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Changing Configuration

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Changing Configuration

This chapter describes how to display and change configuration settings for the 3C905B-TX NIC using the 3Com NIC Diagnostics program.

Before you change the settings, contact your system administrator.

Configuration Settings

Table 5-1 lists each configuration option, the default setting, and the available settings.

Table 4 Option Settings

Option	Default Setting	Available Settings
Network Driver Optimization	Normal	Minimize CPU Utilization, Maximize Network Performance, Normal
Full-Duplex	Auto Select	Enabled, Disabled, Auto Select
Boot PROM	Disabled	Disabled, 8K, 16K, 32K
Media Type	Auto Select	100BASE-TX, 10BASE-T, Auto Select
PACE	Disabled	Enabled, Disabled
NDIS Driver Speed	None	100 Mbps, 10 Mbps (Windows NT only), N/A (Windows 95)
Remote Wake-Up	Yes	Yes, No

CAUTION

Before setting the 3C905B-TX NIC for full-duplex, make sure that the switch port is also set to full-duplex or supports full-duplex and auto-negotiation (NWay).

Full-duplex at 100 Mbps improves the performance of switch (hub) connections. The 3C905B-TX NIC supports full-duplex at 10 or 100 Mbps. If the switch supports the NWay feature and full-duplex, the 3C905B-TX NIC automatically runs in full-duplex.

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Displaying Configuration Settings

If you are running Windows 95 or Windows NT, use the 3Com NIC Diagnostics program to display and change configuration settings.

NOTE The 3Com NIC Diagnostics program is automatically installed with the network driver. Driver installation is described in Chapter 3.

To display the current configuration of the 3C905B-TX NIC using the 3Com NIC Diagnostics program, follow these steps:

1 Make sure that the 3C905B-TX NIC is installed and connected to the network (Chapter 2) and the network driver is installed (Chapter 3).

2 Start the 3Com NIC Diagnostics program by clicking the Windows *Start* menu.

3 Select *Programs*.

4 Select *3Com NIC Utilities*.

5 Select *3Com NIC Diagnostics*.

The 3Com NIC Diagnostics Program General screen appears, as shown in Figure 11.

6 Click *NIC Details* to display the NIC Details screen.

Each configuration setting is displayed with the current value. Use the scroll bar to display the full list.

NOTE Click the Help button to display Help for this screen. Click the question mark (?) at the top of the screen, drag it to a value, and click. The pop-up box displays information about the selected value.

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Changing Configuration Settings

To change the 3C905B-TX NIC configuration settings with the 3Com NIC Diagnostics program, follow these steps:

1 Click the Properties tab on the 3Com NIC Diagnostics General screen, shown in Figure 11.

The 3Com NIC Diagnostics Properties screen appears, as shown in Figure 12.

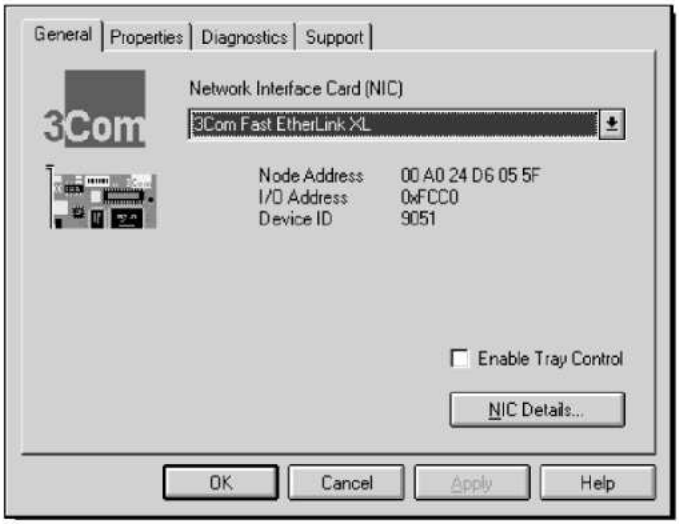


Figure 11 3Com NIC Diagnostics Program General Screen

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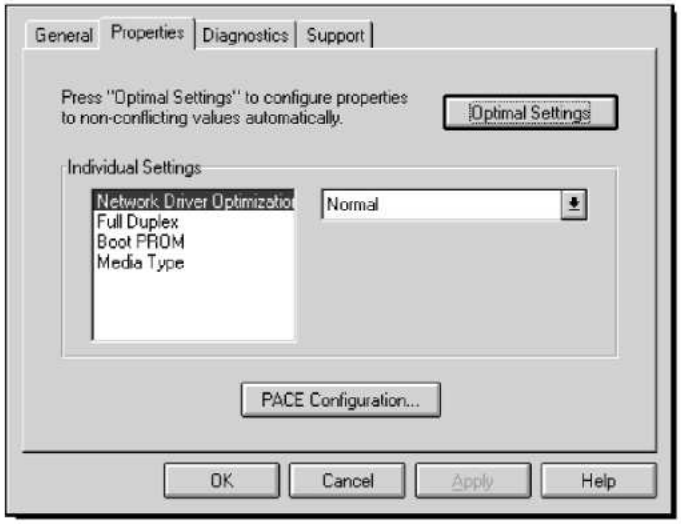


Figure 12 3Com NIC Diagnostics Properties Screen

2 To display the options for each setting, select the setting and scroll through the options pull-down menu to the right.

NOTE Click the Help button to display Help for this screen. Click the question mark (?) at the top of the screen, drag it to a value, and click. The pop-up box displays information about the selected value.

3 To select a new value, use the pull-down menu and release the mouse button at the value you want.

4 Click *OK*.

The new value is selected. Repeat the process to change any configuration setting on the Properties screen. Click *OK* to save values or *Cancel* to exit without saving values.

Using the DOS Configuration Program

To use the DOS diagnostic program, see the INSTRUCT.TXT file in the HELP directory on *EtherDisk Diskette #1*.

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Appendix A

Specifications

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This appendix lists the specifications and connector pin assignments for the 3C905B-TX NIC.

Specifications

Network Interface	
10 Mbps Ethernet 10BASE-T	Ethernet IEEE 802.3 industry standard for a 10 Mbps baseband CSMA/CD local area network
100 Mbps Ethernet 100BASE-TX	Ethernet IEEE 802.3u industry standard for a 100 Mbps baseband CSMA/CD local area network
Physical Dimensions	
Height:	8.57 cm (3.75 in.)
Length:	12.07 cm (4.75 in.)
Environmental Operating Range	
Operating temperature:	0° to 70 °C (32° to 158 °F)
Humidity:	10 to 90% noncondensing
Power Requirements	
Operating voltage:	+5 V ± 5% @ 650 mA max

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RJ-45 Connector Pin Assignments

Figure 13 shows the RJ-45 connector pin assignments for the 3C905B-TX NIC.

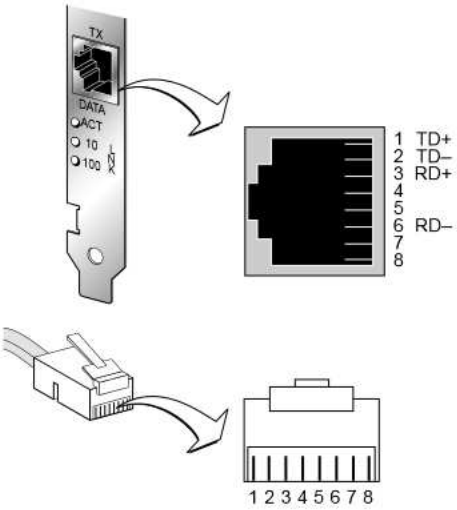


Figure 13 RJ-45 Connector Pin Assignments

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Appendix B

Regulatory Information and Warranty

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DECLARATION OF CONFORMITY
According to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: HEWLETT-PACKARD
Manufacturer's Address: 5 Avenue Raymond Chanas
38053 Grenoble Cedex 09
FRANCE

Declares that the product: Product Name: HP10/100 3Com 3C905B-TX Network Interface Card
Model Number: D6500A & D6509A

Conforms to the following Product Specifications:

SAFETY International: IEC 950:1991 +A1 +A2 +A3+A4
Europe: EN 60950:1992 +A1 +A2 +A3

EMC CISPR 22:1993+A1 / EN 55022:1994 Class B [1)]
EN 50082-1:1992
IEC 801-2:1992 / prEN 55024-2:1992 - 4kV CD, 8kV AD
IEC 801-3:1984 / prEN 55024-3:1991 - 3V/m
IEC 801-4:1988 / prEN 55024-4:1992 - 0.5 kV Signal Lines,
1 kV Power Lines

IEC 555-2:1982+A1:1985 / EN60555-2:1987
IEC 1000-3-3:1994 / EN61000-3-3:1995

FCC Title 47 CFR, Part 15 Class B [2)] / ICES-003, Issue 2 / VCCI-2 [1)]
AS / NZ 3548:1992

Supplementary information: The product herewith complies with the requirements of the following Directives and carries the CE-marking accordingly: The EMC directive 89/336/EEC amended by the directive 93/68/EEC. The Low Voltage Directive 73/23/EEC.

[1)] The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems.

[2)]This Device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Grenoble
May 1998

Jean-Marc JULIA
Quality Manager

For Compliance Information ONLY, contact:
Hewlett-Packard Company, Corporate Product Regulations Manager,
3000 Hanover Street, Palo Alto, CA 94304. (Phone: (415) 857-1501)

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FCC (for USA only)

Federal Communications Commission Radio Frequency Interference Statement
Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna
- increase the separation between the equipment and the receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help.

Hewlett-Packard's FCC Compliance Tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your system. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Notice for Canada

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

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

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Hardware Warranty

This HP accessory is covered by a limited hardware warranty for a period of one year from the date of purchase by the original end user. The type of service provided is return to an HP or repair authorized reseller service center.

At Hewlett Packard's discretion, a defective accessory will be repaired or replaced by a new unit, either of the same type or of an equivalent model.

If this accessory is purchased and used together with an HP Vectra personal computer, it will be covered by the warranty of this computer or workstation, under the same conditions of service and duration.

Please, refer to the warranty statement provided with your HP personal computer or PC workstation for warranty limitations, customer responsibilities and other terms and conditions.

FOR CONSUMER TRANSACTIONS IN AUSTRALIA AND NEW ZEALAND: THE WARRANTY TERMS CONTAINED IN THIS STATEMENT, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT OR MODIFY AND ARE IN ADDITION TO THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

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10BASE-T The IEEE 802.3 standard for a 10 Mbps baseband network on twisted-pair cable.

100BASE-T The IEEE 802.3 standard for a 100 Mbps baseband network over twisted-pair cable.

100BASE-TX The IEEE 802.3 standard for a 100 Mbps baseband network over two-pair Category 5 UTP or STP wire.

full scatter gather Technique that reduces CPU utilization by coordinating multiple storage locations for received data with no CPU utilization and then collecting it from multiple memory locations for transmission.

infinite bursting Technology that enables the 3C905B-TX NIC to move data continuously across the PCI bus without breaks in the data transfer previously caused by cache size limitations. Previously, cache limitations caused the NIC to release and reacquire the PCI bus after every 64-byte burst. Infinite bursting increases throughput and reduces CPU utilization for better performance.

NDIS Network Driver Interface Specification. Defines the network driver architecture and interfaces that let a PC support NICs. This architecture provides a standardized way to write drivers for network NICs.

network interface card (NIC) Network interface card. Also called adapter.

10/100 auto-negotiation (NWay) Signaling scheme that allows the NIC and the hub to negotiate between 10BASE-T and 100BASE-T, and automatically select the highest performance level supported by both devices.

Parallel Tasking II architecture 3Com's third-generation Ethernet NIC architecture. Parallel Tasking technology accelerates data transfer by processing data packets simultaneously instead of sequentially.

PCI Peripheral Component Interconnect. An advanced high-performance local bus that supports multiple peripheral devices. At 33 MHz, the PCI bus transfers data at up to 1056 Mbps.

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