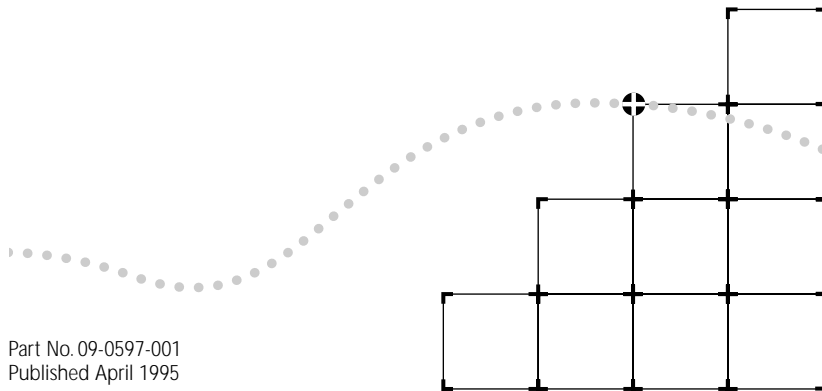




ETHERLINK[®] III PARALLEL TASKING[®] PCI BUS MASTER NETWORK ADAPTERS USER GUIDE

Members of the 3Com EtherLink III family of adapters

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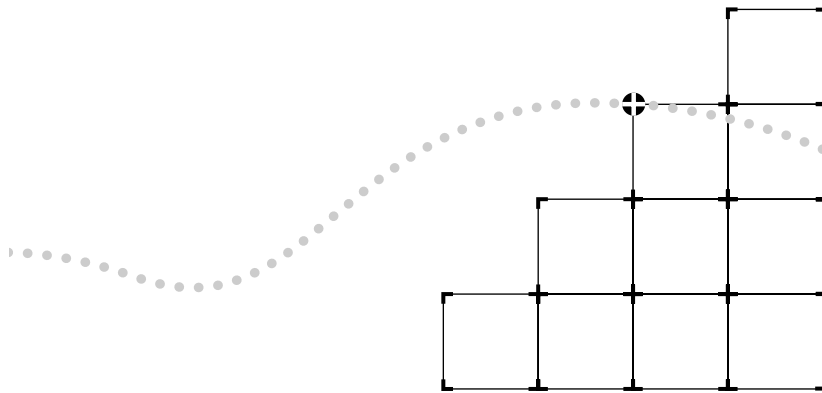


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ABOUT THIS GUIDE

Introduction

This guide describes how to install the following 3Com® EtherLink® III Parallel Tasking® 10 Mbps PCI bus master network adapters:

- 3C590-COMBO (10BASE-T, thin coax, and thick coax) adapter
- 3C590-TPO (10BASE-T) adapter

Also included is information about installing network drivers, troubleshooting the adapter, and using the diagnostic tests if an adapter malfunction occurs.

Throughout this guide, the product number 3C590 designates the EtherLink III family of 10 Mbps PCI adapters.

How to Use This Guide

The following table shows where to find specific information in this guide.

If you are looking for:	Turn to:
Information about the 3Com PCI bus master network adapters and an introduction to PCI technology	Chapter 1
Instructions for installing the adapter	Chapter 2
Procedures for connecting the adapter to the network	Chapter 2
Instructions for installing network drivers	Chapter 3
Details on troubleshooting and running the diagnostic tests	Chapter 4
Procedures for changing software option settings	Appendix A
Information on adapter specifications, pin assignments, and cabling requirements	Appendix B
Information on 3Com's technical support services	Appendix C




Conventions

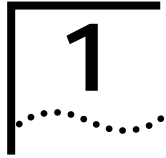
The following tables list text and icon conventions that are used throughout this guide.

Table 1 Text Conventions

Convention	Description
Text represented as screen display	<code>This typeface</code> is used to represent displays that appear on your terminal screen, for example: NetLogin:
Text represented as commands	This typeface is used to represent commands that you enter, for example: print autolink.log
Keys	When specific keys are referred to in the text, they are called out by their labels, such as “the Return key” or “the Escape key,” or they may be shown as [Return] or [Esc]. If two or more keys are to be pressed simultaneously, the keys are linked with a plus sign (+), for example: Press [Ctrl]+[Alt]+[Del].

Table 2 Notice Icons

Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions contain directions that you must follow to avoid immediate system damage or loss of data.
	Warning	Warnings contain directions that you must follow for your personal safety. Follow all instructions carefully.



INTRODUCTION

The 3Com® EtherLink® III Parallel Tasking® adapters are a family of third-generation Ethernet adapters. This family includes the 32-bit bus master Peripheral Component Interconnect (PCI) 10 Mbps Ethernet network adapter, which conforms to the PCI 2.1 specification. This guide contains installation and diagnostic information about the following PCI adapters:

- 3C590-COMBO (RJ-45, BNC, AUI connectors)
- 3C590-TPO (RJ-45 connector)

The two adapters are functionally identical; they differ only in the layout of the components on each board and the type of media supported on the backplates, as shown in Figure 1-1. The name “3C590 PCI adapter” is used in this guide to refer to both EtherLink III 10 Mbps PCI adapters unless otherwise specified.

The bus master driver supplied with this adapter is compatible with the Fast EtherLink 10/100BASE-T PCI adapter. The bus master drivers shipped on the 3C59X *EtherDisk* diskette are compatible with the 3C59X family of adapters; they are not backward-compatible with the 3C5X9 family of EtherLink III adapters.

The 3C590 PCI adapter connects your PCI-compliant personal computer to an Ethernet network wired with IEEE 802.3 standard 10BASE2 or 10BASE5 coaxial cable, or 10BASE-T twisted-pair cable. The cable specification for each adapter type is shown in Table 1-1.

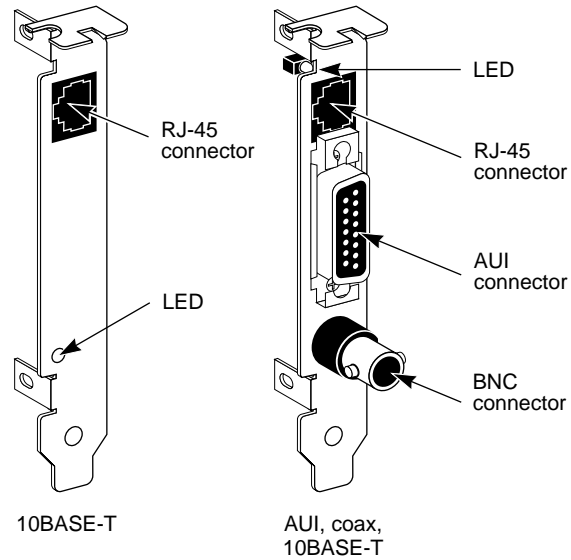


Figure 1-1 3C590 Adapter Backplates

Table 1-1 3C590 PCI Adapter Cable and Connector Specifications

Adapter Type	Cable Specification	Connector Types
3C590-COMBO	10BASE-T	RJ-45
	Thin coax (10BASE2)	BNC
	Thick coax (10BASE5)	AUI
3C590-TPO	10BASE-T	RJ-45

The 3C590 PCI adapter can only be installed in computers containing PCI bus master expansion slots. Be aware that not all PCI slots in a PCI computer may be bus master slots. Check the documentation provided with the PCI computer you are using to determine which PCI slots are bus master slots.

Features

The 3C590 PCI adapter supports the following features:

- AutoLink™ auto installation software, which installs and configures all Novell® NetWare® DOS ODI client software into your operating system
- Auto Select Media Type capability, which enables drivers to automatically detect the type of media connector that connects the adapter to the network
- Network management support through Transcend® PC Link SmartAgent™ software
- The Desktop Management Interface (DMI), which increases the manageability of PCs by standardizing how information relating to PCs is made available and how it is accessed
- LED notification of link integrity and polarity reversal

PCI Technology

The PCI local bus is a high-performance bus that provides a processor-independent data path between the CPU in a PC and high-speed peripherals. This interconnect mechanism is designed specifically to accommodate multiple high-performance peripheral devices that support networking and disk subsystems, graphics, full-motion video, and multimedia.

The PCI specification defines two types of PCI devices: a target and a master. A target is a device that accepts commands and responds to the requests of a master. The master, or bus master, is a more intelligent device that can conduct processing independently of the bus or other devices. A bus master device shares the bus with the main processor and targets. Bus mastering allows a peripheral device to take control of the system bus and not rely on the central processor. The 3C590 PCI adapter is a bus master device.

The PCI specification supports the following features:

- **High performance.** The PCI local bus runs at a clock speed of 33 MHz and employs a 32-bit data bus that supports multiple peripheral components and add-in cards at a peak bandwidth of 132 MBps, up to an order of magnitude greater than that of other PC buses (ISA, EISA, and MCA).
- **Automatic configuration.** A PCI adapter has configuration specifications set in on-board memory and provides installation information to the computer at start-up.
- **Shared slots.** The PCI specification calls for “shared slots,” which denotes the shared expansion backplate slot. This shared backplate slot provides access to one of two types of adapters: a PCI adapter and an ISA adapter, for example, or a PCI adapter and an EISA adapter. Only one adapter at a time can be installed in a shared slot. Manufacturers are currently producing computers that support the PCI bus in conjunction with conventional ISA or EISA buses in the same chassis.

For detailed information about the PCI local bus, consult the PCI specification.

2

INSTALLING THE PCI ADAPTER

This chapter describes how to install the 3C590 PCI adapter in your computer. It includes instructions for inserting the adapter into the computer and connecting the adapter to the network using the on-board transceiver or an external transceiver.

After installing the adapter, you can load the network drivers, as detailed in Chapter 3. If necessary, you can change the software option default settings, as explained in Appendix A.

Before You Begin



CAUTION: *Each adapter is packed in a clear plastic antistatic container to protect it during shipment. To avoid damaging any static-sensitive components after removal from the container, be sure to reduce any static electricity on your person. One way to do this is to touch the metal chassis of your computer. You can maintain grounding by wearing a wrist strap attached to the chassis.*

- 1 Open the shipping container and carefully remove its contents.
- 2 Inspect each item for damage.

If you find any damage, contact your network supplier and the carrier that delivered the package.

Installing the Adapter

To insert the adapter into the computer, follow these steps:

- 1 Turn off the computer and disconnect the unit from its power source.
- 2 Remove all jewelry from your hands and wrists.
- 3 Select an appropriate expansion slot and remove its expansion cover plate.
- 4 Insert the adapter in the PCI bus connector and secure the screw.



Be sure to insert the 3C590 PCI adapter only in a PCI bus connector. As shown in Figure 2-1, PCI bus connectors are the short connectors; both ISA and EISA connectors are longer. Although the adapter can physically fit into a larger bus connector, it will only function when installed in a PCI connector.

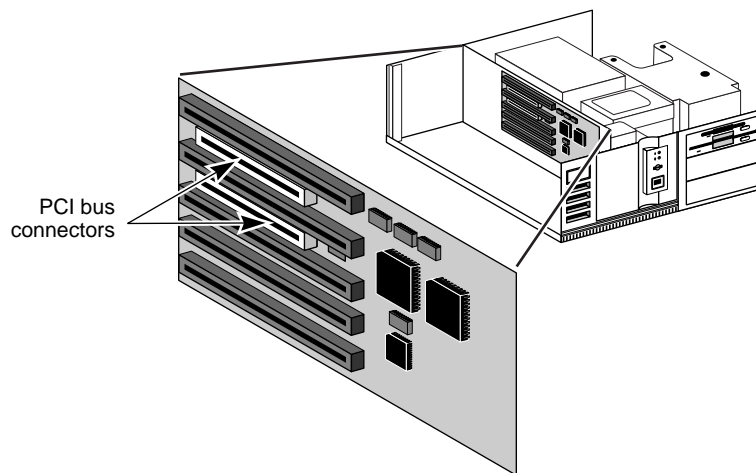


Figure 2-1 PCI and EISA Bus Connectors in a PCI Computer



If you are installing a PCI adapter in a computer that supports both PCI and EISA, be aware that the PCI bus is the primary bus and has priority over the EISA bus. Access to the EISA bus will be

slower than access to the PCI bus. In some cases this is slow enough to cause the EISA bus to time out and hang the computer.

Refer to the documentation provided by the computer's manufacturer for details on installing expansion boards.

Connecting to the Network



You must connect the adapter to the network before installing the drivers.

This section describes how to connect different types of network cables to the 3C590 PCI adapters. Table 2-1 lists the types of network cable connectors that are found on 3C590 PCI adapters.

Table 2-1 Connectors for 3C590 PCI Adapters

Cable Type	Connector	Transceiver Type
Thick coaxial	AUI	External
Twisted-pair	RJ-45	On-board TP
Thin coaxial	BNC	On-board coax

Connecting to the On-board Transceiver

Each 3C590 PCI adapter is equipped with an on-board transceiver to allow easy connection to the network.

Connecting to Thin Ethernet Cable

The 3C590-COMBO adapter is factory-set to use the on-board transceiver as the default with thin Ethernet cable.

- 1** Connect the T connector to the adapter's BNC connector (see Figure 2-2).

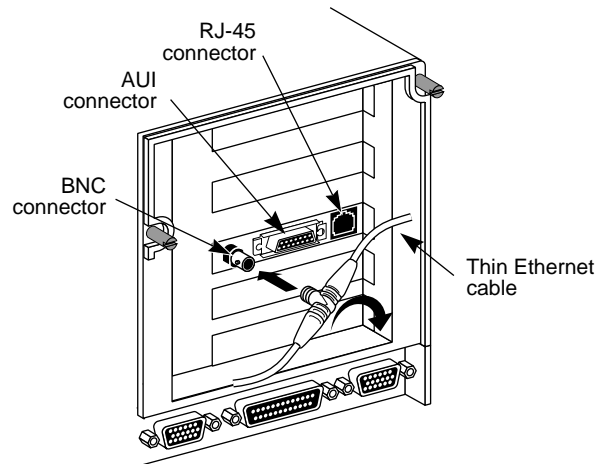


Figure 2-2 Connecting Thin Ethernet Cable

- 2 Align the T connector's slots with the pegs on the BNC connector.
- 3 Push the T connector in and twist it clockwise until it stops.

The next step is to load the drivers, as explained in Chapter 3.

Connecting to Twisted-pair Cable

The 3C590-COMBO and 3C590-TPO adapters are both equipped with an on-board transceiver for connection to twisted-pair cable. The 3C590-TPO adapter is factory-set to use the on-board transceiver as the default.

- 1 Make sure that the connector on your cable is wired appropriately for standard 10BASE-T adapter cards.
Refer to Appendix B for RJ-45 connector pin assignments.
- 2 Align the RJ-45 plug on the end of the twisted-pair cable with the notch on the adapter's connector and insert it into the adapter socket.

The next step is to load the drivers, as explained in Chapter 3.

Connecting to an External Transceiver

You can install AUI-equipped adapters and, by employing an external transceiver, use either thin or thick coax, fiber-optic, or twisted-pair cabling. Follow these steps to connect to an external transceiver:

- 1 Locate the adapter's AUI connector and move the slide latch to the open position, as shown in Figure 2-3.

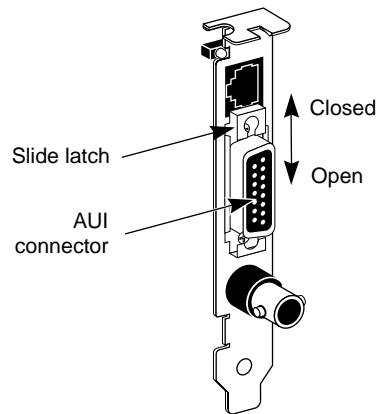


Figure 2-3 Slide Latch

- 2 Connect the AUI cable or transceiver to the AUI connector on the adapter, as shown in Figure 2-4.

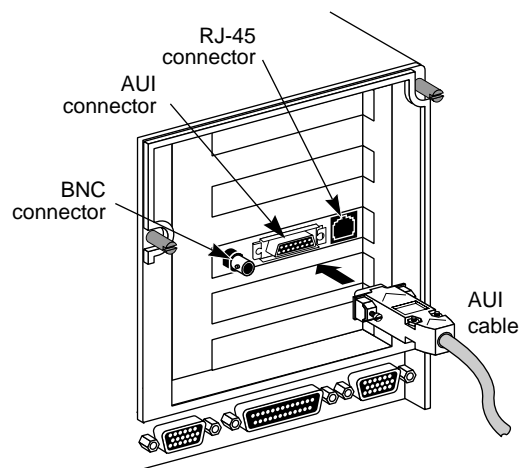


Figure 2-4 Connecting the AUI Cable

- 3** Move the slide latch to the closed position to lock the cable in place.
- 4** Connect the other end of the AUI cable to the external transceiver.

The next step is to load the drivers, as explained in Chapter 3.

Using Auto Select Media Type

The Auto Select Media Type function is implemented by the drivers contained on the 3C59X *EtherDisk*[®] diskette supplied with the 3C590 PCI adapter. This includes NetWare ODI drivers and NDIS 2.01 drivers. It also includes NDIS 3.0 drivers for Windows for Workgroups and Windows NT[™]. The NDIS drivers function with 486 and Pentium[™] processors.

If you have one of these drivers installed, as soon as you connect a network cable to the system, the Auto Select Media Type function will detect the type of cable making the connection and automatically select that media type. If you change the type of network cable connected to the adapter, you must reload the driver for the Auto Select Media Type function to detect the cable type.

If the driver is unable to detect which cable is connected or whether there is any cable connected, the Auto Select Media Type function defaults to the type of connector that is stored internally in the EEPROM. The default connector for the 3C590-COMBO adapter is AUI.



3

INSTALLING THE NETWORK DRIVERS

This chapter describes how to install the network drivers required to let the 3C590 PCI adapter operate with your network operating system. If you are running NetWare 2.x, 3.1x, or 4.x, you can use 3Com's AutoLink auto installation feature, which automatically installs all the NetWare DOS ODI client software, including drivers. If you are running any other network operating system, follow the driver installation instructions in the section "Non-NetWare Environments" later in this chapter. For additional information when using the menu screens, press [F1] to access Help.

The 3C59X *EtherDisk* diskette contains the latest versions of the network drivers available when 3Com shipped the adapter. It also contains other important information concerning the 3C590 PCI adapter.



The drivers on the 3C59X EtherDisk diskette (3C59X drivers) are compatible with the following bus master adapters: Fast EtherLink PCI 10/100BASE-T (3C595) adapters and EtherLink III PCI 10 Mbps adapters (3C590). The 3C59X drivers are not backward-compatible with the 3C5X9 family of EtherLink III adapters (ISA, EISA, or MCA).

To obtain network operating system drivers not included on the 3C59X *EtherDisk* diskette, contact the manufacturer of that network operating system or application. To obtain a list of supported drivers along with software driver updates and patches for the drivers on the 3C59X *EtherDisk* diskette, use one of the bulletin board services listed in Appendix C, "Technical Support." For example, Document 9071 in 3Com's CardFacts® fax service contains a list of all available drivers.

Accessing DOS

The 3Com program is a DOS-based program that loads network drivers, modifies some adapter parameters, and runs diagnostic tests on the adapter. If you are using an operating interface other than DOS, such as OS/2® or Windows 3.x, you must exit from that interface before installing the drivers. Table 3-1 provides the procedures to use to access DOS from various operating systems.

Table 3-1 Accessing DOS from Other Operating Systems

Operating System	Procedure
OS/2	<ol style="list-style-type: none">1 Boot your computer from a plain DOS diskette.2 Run the 3Com program from the DOS command prompt.
Windows 3.x	<ol style="list-style-type: none">1 Exit Windows completely (select File, Exit Windows, OK).2 Run the 3Com program from the DOS command prompt.

Installing NetWare Drivers

This section describes how to install NetWare drivers in four different networking situations, which are listed below:

- One adapter in a client
- Multiple adapters in a client
- One adapter in a server
- Multiple adapters in a server

Finding the Adapter's Port Address

When operating in a NetWare environment, you must obtain the adapter's port address before installing the client driver in a multiple adapter situation or before installing one or more server drivers. To find the appropriate port address, follow these steps:

- 1 Access the Configuration and Diagnostic Program on the 3C59X *EtherDisk* diskette.**

Refer to the section "Detailed Installation" later in this chapter for instructions for accessing the main menu.

- 2 When the Configuration and Diagnostic screen appears, select Configuration and Diagnostic Program, and press [Enter].**

A screen appears, listing all installed adapters.

- 3 Select the adapter whose port address you want.**

- 4 Select the View item in the menu bar. Press [Enter].**

A screen appears with the port address shown as a four-digit hexadecimal number.

One Adapter in a Client

To install the driver for a single adapter in a NetWare DOS ODI environment, follow the instructions in this section. The 3Com DOS ODI driver is 3C59X.COM.



DOS ODI client drivers that support the 3Com PCI adapter support shared interrupts. However, since there is no industry-standard way to support shared interrupts, other adapters may support them differently, or not at all. If you think that another PCI adapter does not support shared interrupts, contact its manufacturer for a shared interrupt driver.

AutoLink Requirements

3Com's AutoLink auto installation software is designed to automatically install all necessary NetWare DOS ODI client software, including drivers. It also modifies the CONFIG.SYS and AUTOEXEC.BAT files. It automatically logs on to the server and updates the client software if your system administrator has already configured a 3Install account on your server.

To use the AutoLink feature to install the NetWare DOS ODI driver, your computer must meet the following requirements:

- Use the Novell NetWare 2.x, 3.1x, or 4.x network operating system
- Have only one 3C590 PCI adapter installed
- Be intended for use as a NetWare DOS ODI client

If this does not describe your network environment, refer to the appropriate section later in this chapter.

If you have a boot PROM or want to optimize driver performance, refer to Appendix A, "Software Option Settings."

Fast Installation

To use the AutoLink program to install NetWare DOS ODI client software on a PC with a single adapter, follow the steps below:

- 1 Insert the 3C59X *EtherDisk* diskette.
- 2 At the prompt, type:
`INSTALL [Enter]`
- 3 Follow the instructions displayed on the screen.
- 4 Remove the diskette and reboot the computer.

Detailed Installation

For a more detailed description of the installation of a single 3C590 PCI adapter as a NetWare DOS ODI client, follow the steps below.



You can use the AUTOLINK.CFG file to control the AutoLink process. The AUTOLINK.CFG file in the root directory contains default settings and descriptions of other control parameters.

- 1 Make sure that you have booted the computer under DOS, version 6.x or later, and that your computer is connected to the network (refer to Chapter 2).
- 2 Insert the 3C59X *EtherDisk* diskette in a floppy drive on your computer and make that drive the active drive.

For example, if the diskette drive is A, type the following command:

A: [Enter]

- 3 At the prompt, type:

INSTALL [Enter]

Alternatively, at the prompt, type:

AUTOLINK [Enter]



If a caution message appears, indicating a possible problem with your PCI BIOS, follow the displayed instructions, which provide a workaround patch. If the patch does not solve the problem, contact your computer vendor for a new BIOS.

- 4 The first time you use the diskette to install an adapter, a license screen appears. To accept the terms and conditions of the 3Com end-user software license agreement, type the following:

Y



To view the full text of the license agreement, press [F1].

(Once you have agreed to the terms and conditions of the 3Com license agreement, the license information screen will not appear again.)

The AutoLink information screen appears, as shown in Figure 3-1.

- 5 Read the screen and press [Enter].
- 6 When the main menu screen shown in Figure 3-2 appears, select NetWare DOS ODI Client, and press [Enter].

Auto installation may take a few moments. Several messages appear while the AutoLink program is running. A final message indicating successful installation appears.

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 log of all the events that occurred during the AutoLink installation and configuration process.

- a To display the file, type:

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

- b To print the file, type:

```
print autolink.log
```

- 7 When the auto installation process is finished, remove the diskette and reboot the computer.

When you do this, a DOS ODI client starts.



To ensure that your computer is configured with the latest client software, ask your system administrator to configure a 3Install account on the server. Instructions for configuring a 3Install account are contained in the README.TXT file located in the \QINSTALL\SERVER directory on the 3C59X EtherDisk diskette.

This concludes the procedure for installing a single adapter in a NetWare DOS ODI client using the AutoLink feature.

```
EtherDisk for 3C59X Fast EtherLink/EtherLink III Bus Master Adapters v.X.X
ESC=Cancel

3Com's auto installation software (AutoLink) automatically configures your
adapter and workstation for use as a NetWare client. To use AutoLink:

* Have only one 3Com EtherLink III PCI adapter installed
* Use NetWare v2.X, v3.1X, or v4.X as your network operating system
* Have DOS on the client being installed

AutoLink edits your AUTOEXEC.BAT and CONFIG.SYS files and saves the old
versions. Select General Information/Release Notes in the main menu for
information on AutoLink server support. To manually set up your adapter
or for information/drivers for other NOSs, use the options under Standard
Installation and Configuration in the main menu.

(C) Copyright 1995, 3Com Corporation. All Rights Reserved
[ENTER]=Continue
[ESC]=Exit Program
```

Figure 3-1 AutoLink Information Screen

```
EtherDisk for 3C59X Fast EtherLink/EtherLink III Bus Master Adapters v.X.X
ESC=Cancel F1=Help

MAIN MENU

Auto Installation with Configuration (AutoLink)
  NetWare DOS ODI Client
Standard Installation and Configuration
  Network Drivers ...
  Configuration/Diagnostic/Troubleshooting ...
  General Information/Release Notes

This option will install a complete DOS ODI client.

(C) Copyright 1995, 3Com Corporation. All Rights Reserved

[ENTER]=Execute Function
[↑↓]=Scroll
[F1]=Help [ESC]=<Cancel>
```

Figure 3-2 Main Menu

Multiple Adapters in a Client

If you are running NetWare and have installed multiple adapters in a PCI computer, follow these steps:

- 1 **With the main menu displayed (Figure 3-2), select Network Drivers.**
- 2 **When the Network Drivers screen appears, select Install Novell NetWare Drivers.**
- 3 **When the Novell NetWare Drivers screen appears, select Copy DOS ODI Client Driver.**

A message about PCI adapter backward compatibility appears, followed by instructions to specify a target drive. The default drive is C:\NWCLIENT.

If you are using an ODI driver with multiple adapters already installed, and you have not updated the NET.CFG file, the message shown below appears:

```
NetWare DOS ODI client Multiple EtherLink III  
Adapters found.  
Use NET.CFG to specify I/O Port.
```

Specify which adapter you want the driver to recognize by adding the I/O port address to the NET.CFG file using the PORT=XXXX parameter.

One Adapter in a Server

If you are running NetWare and have installed a single adapter in a PCI computer that is functioning as a server, follow the instructions in this section.

The 3C59X *EtherDisk* diskette contains a NetWare 4.x server driver (3C59X.LAN) and the NetWare Loadable Modules (NLMs) that enable the NetWare 4.x driver to be used with NetWare 3.11 or 3.12 software. These files are found in the \NETWARE subdirectory.

Driver Installation with NetWare 3.11

To install the 4.x server driver while running NetWare 3.11, follow these steps:

- 1 Copy the contents of the appropriate NETWARE subdirectory to the boot partition of the server's hard disk.
- 2 When you start the server, enter the following commands:

```
load C:LSLENH.NLM [Enter]  
load C:3C59X.LAN PORT=XXXX [Enter]
```

where XXXX is the adapter's port address. (To determine the port address, refer to the section "Finding the Adapter's Port Address" earlier in this chapter.)

If the load sequence above is not followed, the system will not operate correctly.

- 3 When this has been done, bind the protocol to the driver as usual.



When running the 3C59X.LAN driver with NetWare 3.11, you must update the MONITOR.NLM file that accompanied NetWare 3.11 with the MONITOR.NLM file from Novell. For the latest NLMs, contact Novell.

Driver Installation with NetWare 3.12

To install the 4.x server driver while running NetWare 3.12, follow these steps:

- 1 Copy the contents of the appropriate NETWARE subdirectory to the boot partition of the server's hard disk.
- 2 When you start the server, enter the following commands:

```
load C:3C59X.LAN PORT=XXXX [Enter]
```

where XXXX is the adapter's port address. (To determine the port address, refer to the section "Finding the Adapter's Port Address" earlier in this chapter.)

- 3 When this has been done, bind the protocol to the driver as usual.

Multiple Adapters in a Server

If you are running NetWare and have installed multiple adapters in a PCI computer that is functioning as a server, follow the instructions in this section.

The 3C59X *EtherDisk* diskette contains a NetWare 4.x server driver (3C59X.LAN) and the NetWare Loadable Modules (NLMs) that enable the NetWare 4.x driver to be used with NetWare 3.11 or 3.12 software. These files are found in the \NETWARE subdirectory.

Driver Installation with NetWare 3.11

To install the 4.x server driver while running NetWare 3.11, follow these steps:

- 1 Copy the contents of the appropriate \NETWARE subdirectory to the boot partition of the server's hard disk.
- 2 When you start the server, enter the following commands:

```
load C:LSLENH.NLM [Enter]
load C:3C59X.LAN PORT=XXXX NAME=X [Enter]
load C:3C59X.LAN PORT=XXXX NAME=Y [Enter]
```

where XXXX is the adapter's port address and NAME X and Y are names that you assign to help distinguish the multiple adapters. (To determine the port address, refer to the section "Finding the Adapter's Port Address" earlier in this chapter.)

If the load sequence above is not followed, the system will not operate correctly. Make sure that the PORT=XXXX parameter is completed for all adapters.

- 3 When this has been done, bind the protocol to the user-assigned names.



When running the 3C59X.LAN driver with NetWare 3.11, you must update the MONITOR.NLM file that accompanied NetWare 3.11 with the MONITOR.NLM file from Novell. For the latest NLMs, contact Novell.

Driver Installation with NetWare 3.12

To install the 4.x server driver while running NetWare 3.12, follow these steps:

- 1 Copy the contents of the appropriate NETWARE subdirectory to the boot partition of the server's hard disk.
- 2 When you start the server, enter the following commands:

```
load C:3C59X.LAN PORT=XXXX NAME=X [Enter]  
load C:3C59X.LAN PORT=XXXX NAME=Y [Enter]
```

where XXXX is the adapter's port address and NAME X and Y are names that you assign to help distinguish the multiple adapters. (To determine the port address, refer to the section "Finding the Adapter's Port Address" earlier in this chapter.)

If the load sequence above is not followed, the system will not operate correctly. Make sure that the PORT=XXXX parameter is completed for all adapters.

- 3 When this has been done, bind the protocol to the user-assigned names.

Non-NetWare Environments

To install drivers in a non-NetWare environment, follow these steps:

- 1 Access the main menu as described in the section "Detailed Installation" earlier in this chapter.
- 2 Select Network Drivers in the main menu.
- 3 Select the appropriate driver for your network operating system from the menu choices.

The menu program copies the selected driver to a specified disk drive.

Refer to the on-line text files on the 3C59X *EtherDisk* diskette for information about working in other network operating systems. Refer also to the network operating system manuals for additional information.

NDIS Drivers

If you have installed NDIS drivers in a computer with multiple 3Com adapters, you must specify the slot number for each adapter as documented in the PROTOCOL.INI file on the 3C59X *EtherDisk* diskette. The file is located on the startup diskette or the hard drive. The NDIS drivers are as follows:

NDIS 2.0x	EL59X.DOS
NDIS 3.0x	
Windows for Workgroups	EL59X.386
Windows NT, version 3.5	EL59X.SYS

Additional Drivers

Contact your 3Com reseller for information on UNIX® and other drivers.

Using Transcend PC Link SmartAgent Software

3Com's SmartAgent™ driver agents, which provide network management capabilities for adapters and PCs, are available with Transcend PC Link SmartAgent software or on 3Com's bulletin board service. (For information on 3Com's BBS, refer to Appendix C, "Technical Support.") NetWare DOS ODI client driver agents can be installed after ODI drivers are loaded. NDIS DOS and OS/2 driver agents can be installed after NDIS drivers are installed. NetWare 3.x servers require a NetWare Loadable Module (NLM) driver agent, which is available only with the 3Com Transcend PC Link SmartAgent product. The driver agents occupy less than 6 KB on client PCs. They are fully SNMP-compliant when used with SmartAgent SoftHub™/DOS or SoftHub/NLM software, one copy of which is included with each copy of Transcend PC Link SmartAgent, Transcend WorkGroup Manager, or Transcend Enterprise Manager software.

These driver agents permit remote management of PCs and the 3C590 PCI adapter through use of 3Com's Transcend network management application software, such as Transcend WorkGroup Manager for Windows, or through any other SNMP manager system.

WorkGroup Manager software integrates hub and adapter management, using a graphical interface to let you automatically monitor traffic and error levels and control network access. WorkGroup Manager features virtual grouping of PCs for more efficient and effective management. It will also let you discover and track PC and adapter hardware, software, configurations, and users.

When you install the 3C590 PCI adapter and drivers, make sure the Transcend PC Link SmartAgent driver agents are fully installed and configured. This includes entry of user-definable information in NET.CFG files for NetWare PCs and PROTOCOL.INI files for NDIS-based PCs.

For more information on WorkGroup Manager software, contact your authorized 3Com representative.

Desktop Management Interface

3Com's support of the Desktop Management Interface (DMI) makes the management of PCs and 3C590 PCI adapters easier. Support of DMI allows any DMI-compatible management application to seamlessly access 3Com adapter information.

3Com's SmartAgent driver agents can take full advantage of the Management Information File (MIF), which is included with the DMI software. DMI supports NetWare ODI DOS and NDIS DOS drivers.

For information about DMI software and instructions on how to install it, access 3Com's bulletin board service, as described in Appendix C.

4

PERFORMING TROUBLESHOOTING AND DIAGNOSTIC TESTS

This chapter explains how to isolate and solve 3C590 PCI adapter problems.



Make sure that the adapter is correctly installed. (See Chapter 2 for installation instructions.)

Troubleshooting with the Diagnostic Tests

The three diagnostic tests on the 3C59X *EtherDisk* diskette check the adapter's overall operation and permit the isolation of faults. You can run the diagnostic tests after installing one or more 3C590 PCI adapters, or when a fault is suspected. If the tests in their default configuration do not isolate the problem, you can change the test parameters to meet specific situations.



Always run the diagnostic tests with no device drivers or memory managers installed. Whenever you plan to run the diagnostic tests, you must first boot your computer from a DOS diskette containing no device drivers, or you must exit to DOS if you have an operating system other than DOS. (Refer to the section "Accessing DOS" in Chapter 3.)

If you are running under DOS 6.x or higher, press [F5] when the message informs you that MS-DOS® is starting. This prevents the CONFIG.SYS and AUTOEXEC.BAT files from being loaded into memory. After running the diagnostic tests, you should reboot your computer to communicate on the network.

The diagnostic tests are divided into three groups, designated Group 1, Group 2, and Group 3.

Group 1 tests check the physical components and circuitry on the adapter.

The Group 2 test (for the 3C590-COMBO adapter only, *not* the 3C590-TPO adapter) checks the adapter's ability to transmit and receive data via the internal transceiver.

The Group 3 test (the Echo Exchange Test) tests the adapter's ability to transmit and receive data while on the network.

If the adapter passes all three tests successfully, hardware failure is ruled out. If a problem still remains, look at cabling, software, and other issues that affect functionality on the network.

Starting the Diagnostic Program

To use the 3C59X *EtherDisk* diskette Configuration and Diagnostic Program, follow these steps:

- 1 In the main menu, select Configuration/Diagnostic/Troubleshooting and press [Enter].

Refer to Chapter 3 for instructions for accessing the main menu.

- 2 When the Configuration and Diagnostic screen appears, select Configuration and Diagnostic Program, and press [Enter].



If you are testing multiple adapters, a screen listing all installed adapters appears. Highlight the adapter you want to test and press [Enter]. A screen appears, showing the selected adapter with the Install menu item highlighted.

- 3 Continue with the instructions given in the next section, "Running the Group 1 Tests."



You can also run the tests from the command line. At the system prompt, type:

3C59XCFG

Running the Group 1 Tests

The Group 1 tests include:

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



For a description of each Group 1 test, access Help by pressing [F1]. When the Help screen appears, tab to the <Index> command button and press [Enter]. Use the arrow keys to move through the Index listings. Select Test Definitions and press [Enter].

To run the Group 1 tests, follow these steps:

- 1 Under the Test pull-down menu, select Run Tests. Press [Enter].**

The Run Tests dialog box appears, with the <Start> command button highlighted.

- 2 Press [Enter] to start the tests.**

Group 1 tests run ten times (default setting) unless you specify otherwise. The test results are displayed on the screen in the Results column.

To run the tests continuously, go to the Repetitions box on the Test Setup screen, and select Continuous (and deselect Halt on Error in the Errors box). To access the Test Setup screen, select Test in the menu bar, and then select Test Setup in the drop-down menu. Press [Enter].

Running the Group 2 Test

The Group 2 test is called the Network Loopback Test. It tests the 3C590-COMBO adapter's ability to transmit and receive data via the internal transceiver. This test requires installation of a loopback plug at the adapter's BNC transceiver connection. Or, you can run the test on a nonproduction network on which only the computer being tested is operating.



CAUTION: *Running the Group 2 test while connected to an active network can cause intermittent failures.*

Assembling a Loopback Plug

If you do not have a loopback plug, you may be able to get one from your authorized network supplier, or you can make your own. To assemble the loopback plug, connect two 50-ohm network cable terminators to a T connector, as shown in Figure 4-1. You can purchase the terminators from your network supplier (3Com part number 3C535).

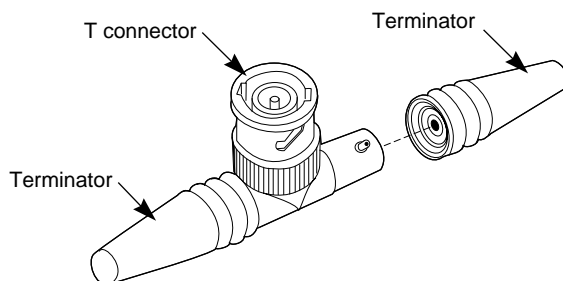


Figure 4-1 Assembling a Loopback Plug

Starting the Group 2 Test

To run the Group 2 test on a 3C590 PCI adapter, follow these steps:

- 1 Connect the loopback plug to the round BNC connector on the back of the adapter.
- 2 Start the Configuration and Diagnostic Program, as described earlier in this chapter.

- 3 Select Test Setup from the Test menu.
- 4 Enable the Group 2 test. Highlight <OK> and press [Enter].
- 5 Go to the Run Tests dialog box to start the tests.
- 6 After the test is completed:
 - a Exit the Configuration and Diagnostic Program.
 - b Remove the loopback plug.

Running the Group 3 Test

The Group 3 test is called the Echo Exchange Test. It tests the adapter's ability to transmit and receive data while on the network.



CAUTION: Do not use an active network to run the Group 3 test.

To run the Group 3 test on the network, you need a second computer set up as an echo server. The echo server receives packets from the adapter being tested and echoes them back to the adapter.

The second computer must be equipped with a 3Com adapter. The diagnostic program that comes with the adapter supports the 3C590 echo server diagnostic program.

Setting Up an Echo Server

If your echo server contains a 3C590 PCI adapter, select the Echo Server menu item under the Test menu, and click the <Start> command button to make the computer an echo server.

If you are setting up an echo server using a 3Com adapter other than a 3C590 PCI adapter, follow these steps:

- 1 Select a computer to use as an echo server.
- 2 Insert the *EtherDisk* diskette in a floppy drive.

The diagnostic program comes on the *EtherDisk* diskette that accompanied the adapter.

3 Start the diagnostic program on the echo server.

The diagnostic program that you use depends on the adapter that is installed in the echo server. After the system prompt of the drive containing the Configuration and Diagnostic Program, enter the name of the appropriate program (for example, 3C523) from Table 4-1.

Table 4-1 Diagnostic Programs

Diagnostic Program Name	Adapter in the Echo Server
3C503.EXE	EtherLink II [®] or II TP, EtherLink II/16 or II/16 TP
3C505.EXE	EtherLink Plus [®]
3C507.EXE	EtherLink 16 or EtherLink 16 TP
3C5X9CFG.EXE	EtherLink III family
3C523.EXE	EtherLink/MC
3C523TP.EXE	EtherLink/MC TP
3C527.EXE	EtherLink/MC 32
3C59XCFG.EXE	3C590 PCI

4 In the Configuration and Diagnostic Program main window, select Echo Server from the Test menu on the menu bar.

The program notifies you that your computer is now set up as an echo server.

Starting the Group 3 Test

To run the Group 3 test on a 3C590 PCI adapter, follow these steps:

1 Start the Configuration and Diagnostic Program.

This program must be on the computer containing the adapter you want to test.

2 Select Test Setup from the Test menu.

3 Enable the Group 3 test. Highlight <OK> and press [Enter].

4 Go to the Run Tests dialog box to start the tests.

5 After the test is completed:

- a** Exit the program on the echo server.
- b** Exit the Configuration and Diagnostic Program.

Getting Help If a Test Fails

If any test fails, you can get additional information as follows:

- Highlight the test that failed in the Run Tests dialog box and press [Enter].
- Highlight the <Zoom> command button and press [Enter].

If the diagnostic tests fail, the adapter may not be defective. The problem may be incorrect option settings, option settings that conflict with the settings of other adapters, or improper installation. Follow the steps below to test the adapter further.



CAUTION: *Make sure to turn the power off before inserting or removing the adapter from the computer.*

1 Make sure the board is seated correctly in the slot.

Check the adapter installation by reviewing the installation instructions in Chapter 2.

2 Inspect all cables and connections.

If you are using thin Ethernet cable, make sure that you have a T connector attached to the adapter and all other adapters on the network. Make sure that the thin Ethernet segment is terminated at both ends with a 50-ohm terminator.

3 Make sure that the PCI slot with the adapter in it is activated. PCI computers allow PCI slots to be activated or deactivated. This is done through the computer's CMOS utility, or in some cases, with a special PCI utility. Refer to your computer documentation for information about activating PCI slots.

In addition, bus mastering is not supported on all PCI slots in all computers. The 3C590 PCI adapter provides better

performance in a bus master slot, but will work in a non-bus master slot. Refer to your computer documentation.

The original slot may be defective.

- 4 **Make sure that you booted your computer under DOS version 6.x or later, and that no device drivers or memory managers are loaded.**
- 5 **If you are running the Group 2 test (only on the 3C590-COMBO adapter), make sure that the loopback plug is securely attached to the adapter's BNC connector and that the adapter is attached to a properly cabled nonproduction network.**

If this test fails, try another loopback plug.

- 6 **If you are running the Group 3 test, make sure that the adapter is connected to a properly cabled and inactive network and that an echo server is set up on the network.**
- 7 **Make sure that the settings for the adapter's options are not the same settings used in the computer or on any other adapter boards installed in the computer.**

If you need help, select Configuration/Diagnostic/Troubleshooting on the 3C59X *EtherDisk* diskette main menu.

- 8 **Install the adapter in another PCI slot and run the diagnostic tests again.**

The original slot may be defective.

- 9 **Replace the failed adapter with a working adapter and run the diagnostic tests again.**

Use the same option settings as those used on the failed adapter. If the working adapter passes all tests, the original adapter is probably defective. For details on repair procedures, refer to Appendix C, "Technical Support."

- 10 Install the adapter in another functioning computer and run the tests again.

Your computer may be defective. If the adapter passes the tests in the second computer, contact the reseller or manufacturer of the original computer.

- 11 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 log of all the events that occurred during the AutoLink installation and configuration process.

- a To display the file, type:

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

- b To print the file, type:

```
print autolink.log
```

Changing the Test Setup

To change the test parameters, follow these steps:

- 1 Choose Test Setup from the Test menu in the main window of the Configuration and Diagnostic Program or use the <Test Setup> command button in the Run Tests dialog box.
- 2 Press [Tab] to highlight any of the fields within the Test Setup dialog box.
- 3 To change a setting in any field, follow these steps:
 - a In the Group Select box, use the arrow keys to select a test group.



For more information on the Group 2 or Group 3 tests, refer to the appropriate sections earlier in this chapter.

- b In the Group XTests box, use the arrow keys to highlight a test. Press the [Space Bar] to enable or disable an individual test.

- c In the Repetitions box, specify the number of times you want to run the tests, or use the arrow keys to select the Continuous option.
 - d In the Errors box, press the [Space Bar] to select or deselect the Halt on Error parameter.
- 4 When you are satisfied with the new test setup, highlight the <OK> command button and press [Enter].
 - 5 To run the tests, choose Run Tests from the Test menu and select the <Start> command button.



CAUTION: Do not use an active network to run the Group 2 or Group 3 tests.

Miscellaneous Checks

Check for specific hardware problems, such as broken traces or loose/broken solder connections.

If you have installed the adapter correctly and you still experience problems, check the software.

Make sure that you have installed the correct drivers for the network operating system you are running (refer to Chapter 3, "Installing the Network Drivers").

If any problem persists, refer to Appendix C, "Technical Support."

Link Beat LED

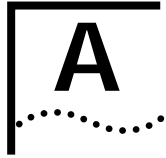
The 3C590 PCI adapters have an LED for the link beat (see Figure 1-1). The link beat LED confirms that there is an active connection between the adapter and the hub.



When you first install the adapter and power up the computer, the LED lights, but the link beat is inactive. For the link beat to be active (enabled), you need to have run the Group 3 test or have loaded the network drivers.

If you are experiencing any problems, first make sure that your hub complies with the 10BASE-T specifications and then check the LED. The meaning of LED activity is given below:

- If the LED is on, the link beat is working.
- If the LED is off, the link beat has not been established or there is a problem with the connection between the adapter and the hub.
- If the LED is blinking, the cable polarity is reversed.



SOFTWARE OPTION SETTINGS

When you insert one or more 3C590 PCI adapters in a PCI-compliant PC, the adapter is automatically configured.

The PCI automatic configuration utility sets the I/O Port Address and Interrupt Request Level parameters. You cannot change these settings.

It also enters default software settings for these options:

- Boot PROM
- Media Type
- Network Driver Optimization
- Full Duplex

If desired, you can change these default software option settings.



To load the drivers, you must use the AutoLink or Network Drivers options on the main menu of the Configuration and Diagnostic Program on the 3C59X EtherDisk diskette. Refer to Chapter 3.

Changing Software Option Settings

You should change the default settings of a 3C590 PCI adapter only if a conflict with another device or adapter exists. For information on settings of other standard devices, select the Configuration/Diagnostic/Troubleshooting option on the 3C59X *EtherDisk* diskette main menu.

The default settings can also be changed in the following situations:

- You have a boot PROM.
- You want to optimize driver performance for DOS or for operation on a server.

- You want to deactivate the Auto Select Media Type option. (Select this option if you are unsure of the media connection to your adapter.)
- You want to change the type of network connector.
- You want to enable full duplex.

Table A-1 lists each software option, the default setting, and the available settings.

Table A-1 Option Settings

Option	Default Setting	Available Settings
Boot PROM	Disabled	Disabled, 8 K, 16 K, 32 K, 64 K
Media Type	Auto Select for 3C590-COMBO. On-board TP for 3C590-TPO.	On-board Coax (BNC), On-board TP (RJ-45), External (AUI/DIX), Auto Select
Network Driver Optimization ¹	Normal	Normal, Minimized CPU Utilization, Maximize Network Performance
Full Duplex ²	Disabled	Disabled, Enabled

¹ This option specifies whether to optimize the network driver for a normal environment, a minimized CPU utilization environment, or a maximized network performance environment. You may choose to use a larger percentage of CPU resources under DOS in order to improve network throughput.

In a multitasking environment, choosing the Minimized CPU Utilization option saves the resources of the CPU for other tasks. If no other applications are making major demands on CPU resources, you may choose the Maximize Network Performance option.

² Full duplex operation is possible only when used in an environment where the hub or a switch supports it. Do not enable the Full Duplex option unless your hub is set for full duplex.

To change software option settings, follow these steps:

- 1 Make sure that you have booted the computer under DOS, version 6.x or later, and that your computer is connected to the network (refer to Chapter 2).**
- 2 Insert the 3C59X *EtherDisk* diskette in a floppy drive on your computer and make that drive the current drive.**

For example, if the diskette drive is A, type the following command:

A: [Enter]

- 3 Type at the prompt:

`INSTALL [Enter]`

- 4 The first time you use the diskette to install an adapter, a license screen appears. To accept the terms and conditions of the 3Com end-user software license agreement, type the following:

`Y`



To view the full text of the license agreement, press `[F1]`.

(Once you have agreed to the terms and conditions of the 3Com license agreement, the license information screen will not appear again.)

The AutoLink information screen appears.

- 5 Read the screen and press `[Enter]`.
- 6 When the main menu screen appears, as shown in Figure A-1, select Configuration/Diagnostic/ Troubleshooting.

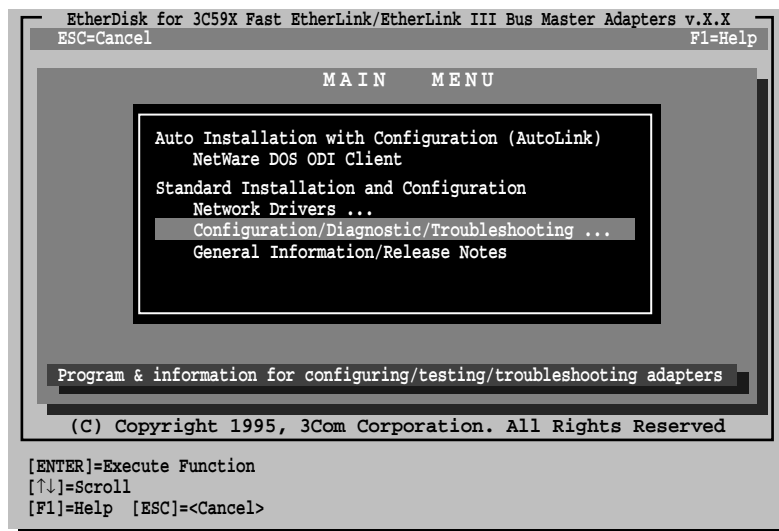


Figure A-1 Main Menu

- 7 Select Configuration and Diagnostic Program from the next screen.
- 8 Do one of the following:
 - If you have a single adapter installed, the menu selection Configure Adapter appears already highlighted. Press [Enter].
 - If you have multiple adapters installed, use the arrow keys to select an adapter, as shown in Figure A-2. Press [Enter].

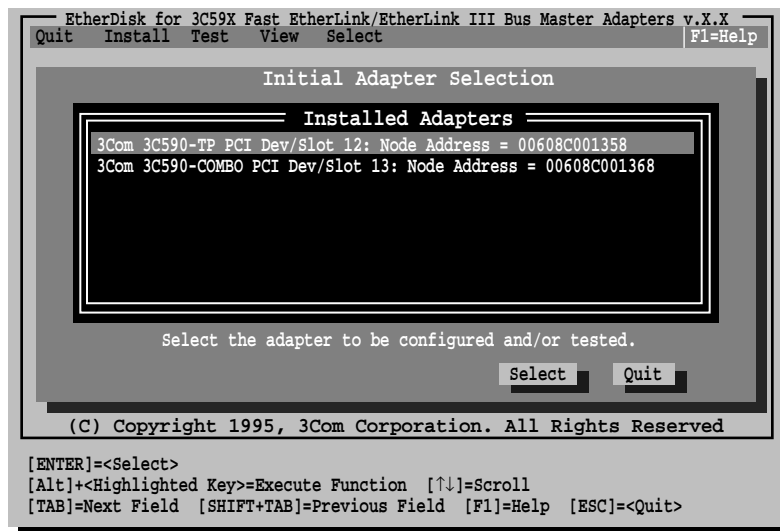


Figure A-2 Main Window with Multiple Adapters

- 9 When a screen identifying the adapter appears with the Configure Adapter menu item highlighted, press [Enter].
- 10 Press [Shift]+[Tab] to highlight the first option in the main dialog box, and use the arrow keys to highlight the parameter you want to change.

Figure A-3 is an example of the adapter configuration dialog box, showing both the automatically set configuration values, which you cannot change (I/O Port Address and Interrupt Request Level), and the default software option settings, which you can change.

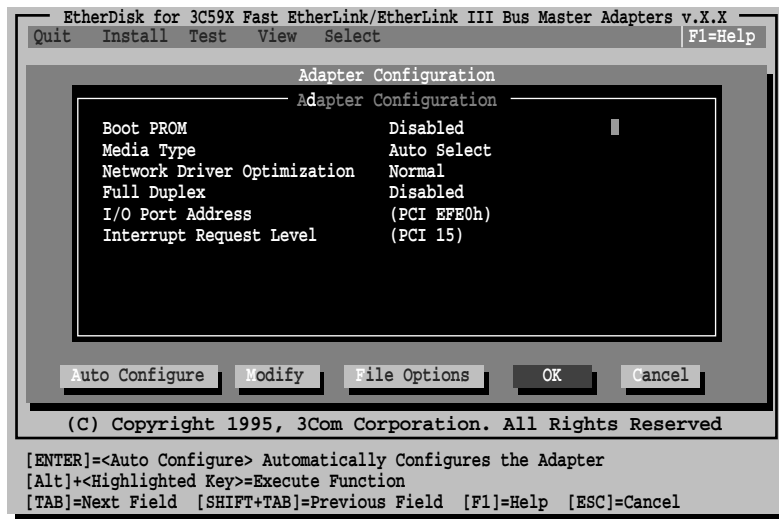


Figure A-3 Configuration Dialog Box

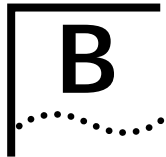
- 11 Press [Enter].
A second dialog box appears.
- 12 Use the arrow keys to scroll through the list of settings for that option. Select a setting and press [Enter].
- 13 Continue this procedure for any of the other parameters you want to change.
Refer to the on-line help (using [F1] when the option is highlighted) for more information about each of the settings.
- 14 Press [Tab] to highlight <OK>. Press [Enter].
You must highlight <OK> and press [Enter] to save the new settings to the adapter.

Saving Software Option Settings

If you want to use the same settings on other adapters, you can save the configuration settings to a file. Select <Save> under <File Options> in the Adapter Configuration dialog box. For example, type:

D:\CONFIG\3C59X.SET

where *x* represents the last digit of the adapter number. This saves the settings to the default file 3C59X.SET in the CONFIG directory in drive D. Refer to the on-line help (using [F1]) for more information.



SPECIFICATIONS

This appendix lists the specifications, connector pin assignments, and cable requirements for the 3C590 PCI adapters.

Adapter Specifications

Network Interface

3C590-TPO	Ethernet IEEE 802.3i 10BASE-T industry standard for a 10 Mbps baseband CSMA/CD local area network
3C590-COMBO	IEEE 802.3i 10BASE-T and Ethernet IEEE 802.3 industry standard for a 10 Mbps CSMA/CD local area network

Physical Dimensions

Length:	173.228 mm (6.82 inches)
Height:	99.695 mm (3.925 inches)

Environmental Operating Range

Operating temperature:	0° to 70° C (32° to 158° F)
Humidity:	10 to 90% noncondensing

Power Requirements

Operating voltage:	+5 V ± 12 V
3C590-COMBO	+12 V @ 400 mA and +5 V @ 250 mA
3C590-TPO	250 mA @ 5 V

RJ-45 Connector Pin Assignments

Figure B-1 shows the RJ-45 connector pin assignments.

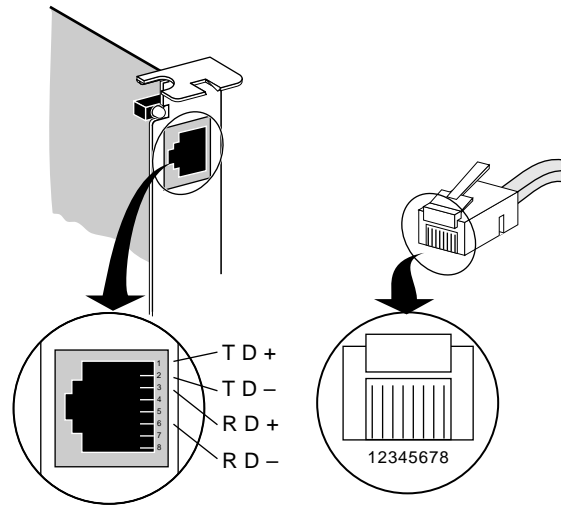


Figure B-1 RJ-45 Connector Pin Assignments

AUI Connector Pin Assignments

Table B-1 lists the pin assignments for the AUI (attachment unit interface) connector.

Table B-1 AUI Connector Pin Assignments

Pin	Function	Pin	Function
1	Collision shield	9	Collision -
2	Collision +	10	Transmit -
3	Transmit +	11	Transmit shield
4	Receive shield	12	Receive -
5	Receive +	13	+12 volts
6	Power return	14	Voltage shield
7	Not used	15	Not used
8	Not used		

Cable Requirements

In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Examples of supported cable types are shown below:

For unshielded twisted-pair (UTP) connections (100 ohm):

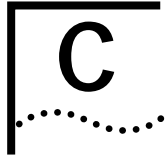
- Level 3 LAN and high-speed data cable, for example, Anixter® CM-00424BAG-3 or equivalent
- Level 4 extended distance LAN cable, for example, Anixter CM-00424BAG-4 or equivalent
- Level 5 data grade media cable, for example, AT&T® type 2061, 1061, or equivalent

For thin coax connections:

- RG58 A/U or C/U (50 ohm \pm 4)

For thick coax connections:

- RG59 B/U (50 ohm)



TECHNICAL SUPPORT

3Com provides easy access to technical support information through the variety of services described in this appendix.

On-line Technical Services

3Com offers worldwide product support seven days a week, 24 hours a day, through the following on-line systems:

- 3Com Bulletin Board Service (3ComBBS)
- World Wide Web Site
- Ask3ComSM on CompuServe[®]
- 3ComFactsSM Automated Fax Service

3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available via modem seven days a week, 24 hours a day. To reach the service, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	Baud Rate	Telephone Number
Australia	up to 14400 baud	(61) (2) 955 2073
France	up to 14400 baud	(33) (1) 69 86 69 54
Germany	up to 9600 baud up to 9600 baud	(49) (89) 627 32 188 (49) (89) 627 32 189
Hong Kong	up to 14400 baud	(852) 537 5601
Italy (fee required)	up to 9600 baud	(39) (2) 273 00680
Japan	up to 14400 baud	(81) (3) 3345 7266
Singapore	up to 14400 baud	(65) 534 5693
Taiwan	up to 14400 baud	(886) (2) 377 5838 (886) (2) 377 5840
U.K.	up to 14400 baud	(44) (144) 227 8278
U.S.	up to 14400 baud	(1) (408) 980 8204

World Wide Web Site

Access the latest networking information on 3Com's World Wide Web site by entering our URL into your Internet browser:

`http://www.3Com.com/`

This service features news and information about 3Com products, customer service and support, 3Com's latest news releases, selected articles from 3TECH™, 3Com's award-winning technical journal, and more.

Ask3Com on CompuServe

Ask3Com is a CompuServe-based service containing patches, software, drivers, and technical articles about all 3Com products, as well as an interactive forum for technical questions. To use Ask3Com, you need a CompuServe account.

To use Ask3Com:

- 1** Log on to CompuServe.
- 2** Enter `go threecom`
- 3** Press [Return] to see the Ask3Com main menu.

3ComFacts Automated Fax Service

3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, seven days a week. Within this service, you may choose to access CardFacts® for adapter information, or NetFacts® for network system product information.

- **CardFacts** provides adapter installation diagrams, configuration drawings, troubleshooting instruction, and technical articles.

Document 9999 provides you with an index of adapter documents.

- **NetFacts** provides data sheets and technical articles on 3Com Corporation's hub, bridge, router, terminal server, and software products.

Document 8888 provides you with an index of system product documents.

Call 3ComFacts using your touch-tone telephone.

International access numbers are:

Country	Fax Number
Hong Kong	(852) 537 5610
U.K.	(44) (144) 227 8279
U.S.	(1) (408) 727 7021

Local access numbers are available within the following countries:

Country	Fax Number	Country	Fax Number
Australia	800 123853	Italy	1678 99085
Denmark	800 17319	Netherlands	06 0228049
Finland	98 001 4444	Norway	800 11062
France	05 90 81 58	Sweden	020 792954
Germany	0130 8180 63	U.K.	0800 626403

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Diagnostic error messages
- A list of system hardware and software, including revision levels
- Details about recent configuration changes, if applicable

If you are outside the U.S. and Canada, contact your local 3Com sales office to find your authorized service provider:

Country	Telephone Number	Country	Telephone Number
Australia (Sydney)	(61) (2) 959 3020	Mexico	(525) 531 0591
(Melbourne)	(61) (3) 653 9515	Netherlands	(31) (3) 402 55033
Belgium	(32) (2) 7164880	Singapore	(65) 538 9368
Brazil	(55) (11) 241 1571	South Africa	(27) (11) 803 7404
Canada	(905) 882 9964	Spain	(34) (1) 3831700
France	(33) (1) 69 86 68 00	Sweden	(46) (8) 632 91 00
Germany	(49) (89) 6 27 32 0	Taiwan	(886) (2) 577 4352
Hong Kong	(852) 868 9111	United Arab Emirates	(971) (4) 349049
Italy	(39) (2) 273 02041	U.K.	(44) (1628) 897000
Japan	(81) (3) 33457251		

Returning Products for Repair

A product sent directly to 3Com for repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to 3Com without an RMA number will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S. and Canada	(800) 876 3266, option 2	(408) 764 7120
Europe	(44) (1442) 278000	(44) (1442) 236824
Outside Europe, U.S. and Canada	(1) (408) 492 1790	(1) (408) 764 7290

GLOSSARY

10BASE2

The IEEE standard for a 10 megabit per second baseband network on thin coaxial cable.

10BASE5

The IEEE standard for a 10 megabit per second baseband network on thick coaxial cable.

10BASE-T

The IEEE standard for a 10 megabit per second baseband network on twisted-pair cable.

Agent

A software routine that performs an action when a specified event occurs.

ANSI

American National Standards Institute. A coordinating organization that publishes electronics standards for use in the United States.

AUI

Attachment Unit Interface Connector. Also called the DIX (DEC®-Intel®-Xerox®) connector. This is a female 15-pin D connector used with an external transceiver.

AUI cable

Also known as the transceiver cable. The AUI cable is used to connect an external transceiver to a computing device.

AutoLink

Auto-installation and auto-configuration software for NetWare DOS clients. It automatically configures the adapter by selecting the correct interrupt level and I/O base address, checking for the network connection, and detecting the correct frame type.

Auto Select Media Type

A utility that detects the type of network cable connected to the adapter and automatically selects that connection for packet transmission. This function is implemented by all NetWare ODI drivers, Windows for Workgroups drivers, NDIS 2.01 drivers, and Windows NT drivers.

Backbone

The main transmission medium used to interconnect the workgroup areas of a network. It is usually coaxial or fiber.

Backplane

A motherboard assembly in a PC with connectors and printed circuit traces into which printer circuit boards are inserted.

Bus

A collection of signal lines. The definition of a bus specifies the purpose of each line and the timing relationship of the electrical signals.

Bus master adapter

An adapter that contains its own processor, which allows the adapter to operate independently of the computer's main processor.

Coaxial cable

An electrical wire consisting of two primary electrical elements: an outer braided wire that acts as a ground and an inner one used to carry signals.

Configuration

The software settings that allow different hardware components of a computer system to communicate with one another.

Diagnostic test

A procedure used to detect and isolate a hardware or software malfunction.

DMI

Desktop Management Interface. The management scheme, developed by the Desktop Management Task Force (DMTF), to make management of a PC easier through standardized means of access to information from managed devices. The standard supported by the DMI defines how information on PCs is made available and accessible.

Driver

A program, usually resident in server or workstation memory, that controls the network hardware (such as adapters or controllers) or implements the protocol stacks through which higher-level applications communicate with the network hardware.

Driver agents

Network management programs resident in each PC as device drivers to allow management of the PC by SoftHub.

EISA

Extended Industry Standard Architecture. The EISA 32-bit extended AT personal computer bus architecture is downward compatible with the 16-bit ISA architecture.

EMM386

Expanded Memory Manager. A dual-purpose memory manager that comes with MS-DOS. It provides access to the upper memory area, which enables you to free conventional memory by running device drivers in upper memory. The EMM386 also uses extended memory to simulate expanded memory. Refer to Microsoft documentation for additional information.

Ethernet

A local area network standard defining a physical medium and its method of placing data, or packet signaling, on a cable. Access to the cable is based on CSMA/CD (carrier sense multiple access with collision detection).

ISA

Industry Standard Architecture. A 16-bit extension of the original IBM® PC bus architecture. The IBM Personal Computer AT® bus.

Loopback

A type of diagnostic test in which the transmitted signal is returned to the sending device after passing through all, or a portion of, a data communications link or network. A loopback test permits the comparison of a returned signal with the transmitted signal.

NDIS

Network Driver Interface Specification. Defines the LAN Manager network driver architecture and interfaces that let a DOS or OS/2 system support network adapters. This architecture provides a standardized way to write drivers for network adapters.

NetWare

A series of network operating systems and related products made by Novell, Inc.

Network adapter

A circuit board (module) that goes inside each workstation and server on the network. It allows the device to listen and talk to other stations and nodes on the network.

ODI driver

Open Data-Link Interface. A MAC-level specification developed by Novell and Apple®. Drivers complying with this specification can work with NetWare 2.x, 3.x, and 4.x. Like NDIS, ODI drivers support multiple protocols and adapters, and can be unloaded from memory to conserve conventional DOS RAM space.

Parallel Tasking

Third-generation Ethernet adapter architecture. Parallel Tasking technology accelerates data transfer by processing data packets simultaneously instead of sequentially. For example, when transmission is the task, the Parallel Tasking architecture begins to write data to the network even before an entire frame has been loaded into the adapter's buffer memory. This enables complete parallelism in all data transfers.

PCI

Peripheral Component Interconnect. An advanced high-performance local bus that supports multiple peripheral devices. At 33 MHz, the PCI bus transfers 32 bits of data at up to 132 MBps.

Server

In a client-server computing environment, a device that provides access to network services, such as printers or applications.

SmartAgent

3Com network management software capable of supporting numerous network management and communications protocols. It reduces the computational load on the network management station and alleviates management-oriented traffic on the network while performing automated functions for a network management system or 3Com application.

SoftHub

Software that translates between SNMP and driver agents in Ethernet and token ring adapters. SoftHub/NLM and SoftHub/DOS are SoftHubs.

Transcend

A 3Com integrated management solution based on groups of logically related devices and including a variety of network management tools.

Transceiver

A hardware device that links a node to a network cable and functions as both a transmitter and a receiver.

Twisted-pair

Wiring similar to that found in the telephone system, consisting of two insulated wires loosely twisted around each other to help cancel out induced noise in balanced circuits.

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LIMITED WARRANTY

HARDWARE: 3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its Authorized Reseller:

Internetworking products	One year
Network adapters	Lifetime
Ethernet stackable hubs and unmanaged Ethernet fixed port repeaters	Lifetime* (One year if not registered)
*Power supply and fans in these stackable hubs and unmanaged repeaters	One year
Other hardware products	One year
Spare parts and spares kits	90 days

If a product does not operate as warranted during the applicable warranty period, 3Com shall, at its option and expense, repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com pursuant to any warranty.

SOFTWARE: 3Com warrants that the software programs licensed from it will perform in substantial conformance to the program specifications therefor for a period of ninety (90) days from the date of purchase from 3Com or its Authorized Reseller. 3Com warrants the magnetic media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation hereunder shall be (at 3Com's discretion) to refund the purchase price paid by Customer for any defective software products, or to replace any defective media with software which substantially conforms to 3Com's applicable published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty that its software products will work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a "bug" or defect in the third party's product.

STANDARD WARRANTY SERVICE: Standard warranty service for hardware products may be obtained by delivering the defective product, accompanied by a copy of the dated proof of purchase, to 3Com's Corporate Service Center or to an Authorized 3Com Service Center during the applicable warranty period. Standard warranty service for software products may be obtained by telephoning 3Com's Corporate Service Center or an Authorized 3Com Service Center, within the warranty period. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid, insured, and packaged appropriately for safe shipment. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after receipt by 3Com.

WARRANTIES EXCLUSIVE: IF A 3COM PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, CUSTOMER'S SOLE REMEDY SHALL BE REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. 3COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

3COM SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLIGENCE, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

LIMITATION OF LIABILITY: IN NO EVENT, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE) SHALL 3COM BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE, LOSS OF BUSINESS, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS, EVEN IF 3COM OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow the exclusion of implied warranties or the limitation of incidental or consequential damages for consumer products, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights which may vary from state to state.

GOVERNING LAW: This Limited Warranty shall be governed by the laws of the state of California.

3Com Corporation
5400 Bayfront Plaza
Santa Clara, CA 95052-8145
(408) 764-5000

FCC CLASS B CERTIFICATION

3Com Corporation
Model Nos: 3C590-TPO and 3C590-COMBO
FCC ID: DF63C590
Made in U.S.A.

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.

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, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, 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 try 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 receiver.
- Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

NOTE: In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Refer to the manual for specifications on cabling types.

VDE CLASS B COMPLIANCE

Hiermit wird bescheinigt, dass der 3C590-TPO und 3C590-COMBO in Übereinstimmung mit den Bestimmungen der Vfg 1046/1984 funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

We hereby certify that the 3C590-TPO and 3C590-COMBO adapters comply with the RFI Suppression Requirements of Vfg 1046/1984. The German Postal Service was notified that the equipment is being marketed. The German Postal Service has the right to re-test the equipment and to verify that it complies.