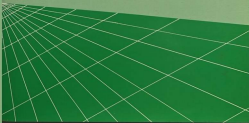


# ETHER-3500

Ethernet Network Interface Card  
for PC/XT/AT



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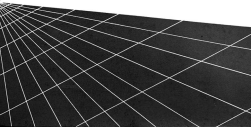
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# FCC Warning

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions in this manual, may cause interference to radio communications. This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart of Part 15 of FCC Rules, which are designed to provide reasonable protection against radio interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

# ETHER-3500

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# Chapter 1

## Introduction

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### Hardware Overview

The Ether-3500 network interface card is an Ethernet card for the IBM PC/XT/AT, PS/2 models 30 and lower, and their compatibles. It transfers data at 10 megabits per second over an RG-58 A/U thin cable for Cheapernet connections or a thick cable for Ethernet connections. Up to 1,024 computers may be connected together and communicate with each other on a network.

Designed as a compatible and industrial-standard local area network (LAN), the Ether-3500 network interface card runs most popular networking software, such as Novell's NetWare.

The features of this network interface card are summarized below.

- 10-megabit-per-second data transfer rate
- Compliance to the Ethernet/IEEE 802.3 industry standard
- On-board transceiver for use with the RG-58 A/U thin cable for Cbusernet connections with a maximum of 30 nodes per segment
- Usable with the thick cable for Ethernet connections
- Extensive use of VLSI components to provide high hardware reliability, small power consumption and reduced network interface card size
- On-board socket for optional boot ROM to allow the computer to remote-boot DOS or network system from another network computer
- Compatibility with Novell NetWare. The Ether-3500 network interface card runs Novell's NetWare by using Novell-provided 3Com 3C501 driver software.

## How to Use This Guide

This installation guide details the hardware installation procedure for the Ether-3500 network interface card.

This installation guide consists of two chapters and one appendix. Their contents are outlined below:

- |             |  |
|-------------|--|
| Chapter 1.  | <i>Introduction</i><br>This chapter gives an overview to the hardware characteristics.   |
| Chapter 2.  | <i>Installation Procedure</i><br>This chapter provides the step-by-step instructions for a network hardware installation.        |
| Chapter 3.  | <i>Running NetWare</i><br>This chapter tells you how to run NetWare with the Ether-3500 card.                                    |
| Appendix A. | <i>Network Interface Card Configuration Reference</i><br>This appendix lists the jumper settings for the network interface card. |

Read carefully and perform all the procedures described in chapters 2 and 3.

Refer to appendix A if your PC has other add-on cards installed whose use of the I/O address, base memory address, and/or IRQ line poses conflict with the factory-set settings on your network interface card.

## Chapter 2

# Installation

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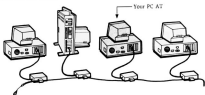
The steps you need to perform to install the Ether-3500 cards are:

1. Verify the jumper settings on the network interface card against the default settings.
2. Insert the network interface card into your computer.
3. Connect the computer to the network trunk cable.

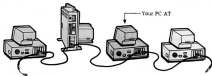
This procedure presumes that you already have planned your network cable layout and properly installed the cable.

At the end of the procedure, you will have established a computer connection onto the network. The following figures illustrate what you will accomplish at the end.





Ethernet Network



Cheapsenet Network

## Step 1, Verify Jumper Settings

The jumpers on the network interface card are used to configure the hardware parameters used by your network interface card, in relation to the interface with your PC's system board. These parameters are for the interrupt line (IRQ), DMA channel, base I/O address, base memory address, remote boot function, and type of cable used.

Your network interface card is factory-set to the following:

- IRQ: line 3
- DMA channel: 1
- Base I/O address: 300h
- Remote boot: disabled
- Base memory address: D0000h
- Cable used: thin

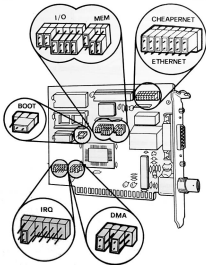
The above settings are considered very safe, as they do not pose any conflicts with most computers and add-on cards.

Verify that the settings on the jumpers on your network interface card are the same as shown the in figure on the following page.

Change the default settings only under the following conditions:

- If your computer has other non-standard add-on cards that use the same hardware parameters as the above settings
- If your computer uses a remote boot ROM for remote boot
- If your network uses the thick Ethernet trunk cable

To change the default settings, refer to appendix A for complete details.



## **Step 2, Insert Network Interface Card in PC**

Insert the network interface card in your PC as follows:

1. Turn off the PC's power, then remove or open the cover of the PC.
2. Insert the network interface card into any available I/O expansion slot.
3. Secure the network interface card to the rear of the PC chassis by tightening the screw.
4. Replace or close the cover of the PC.

## Step 3, Connect PC to Trunk Cable

The way a PC is connected to the trunk cable differs depending on whether the cable is a thick (Ethernet) cable or a thin (Cheapernet) cable. If your network uses the thin cable, read the next section, *Connect PC to Thin Cable*. If your network uses the thick cable, refer to *Connect PC to Thick Cable*.

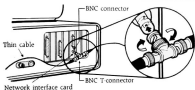
### Connect PC to Thin Cable

A BNCT-connector should already have been installed on the thin trunk cable for each PC to be connected. The thin cable must already have been selected on jumper JP6 on your network interface card. (This selection is the default setting on jumper JP6.)

Do as follows to connect:

1. Make sure that the power of your PC is off, and that no metal cable connectors touch any other metal objects. Failure to observe this may damage both your PC and the network.

2. Connect the thin cable to the network interface card.



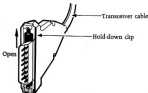
## Connect PC to Thick Cable

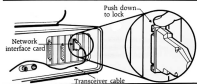
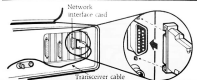
Standard external transceivers for Ethernet should already have been connected to the thick trunk cable. One computer will connect to one external transceiver through a transceiver cable.

The thick cable must already have been selected on jumper JP6 on the network interface card. Refer to appendix A for how to select.

Do as follows to connect:

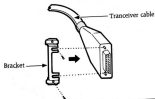
1. Make sure that the power of your PC is off, and that no metal cable connectors touch any other metal objects. Failure to observe this may damage both your PC and the network.
2. Connect the transceiver cable to the network interface card. Put the hold-down clip to the lock position to prevent accidental disconnections of the transceiver cable and damage to the network interface card.



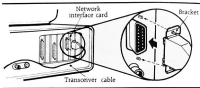


**Note:**

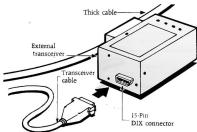
If your transceiver cable connector does not have a hold-down clip, place a bracket on the connector and tighten the screws.







3. Connect the transceiver cable to the external transceiver. Lock the connector or tighten the screws to prevent accidental disconnections.



## Chapter 3

# Running NetWare

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The Ether-3500 card runs Novell's NetWare by directly using the driver programs for the 3C501 card, which is provided with NetWare by Novell.

This chapter provides an example on how to generate these driver programs so your Ether-3500 card can run NetWare 2.15. The procedure to generate NetWare driver programs for other NetWare versions can be slightly different. But, in general, the procedure is the same as that to generate NetWare driver programs for the 3C501 card.

## **Generate NetWare Driver for Workstation**

To generate the NetWare driver program for your Ether-3500 card to run NetWare with a workstation configuration, follow the following procedure:

1. Run the program SHGEN.EXE on the NetWare diskette labeled "SHGEN-1".
2. Select 3Com 3C501 as your hardware.
3. Follow all the operations as you are prompted on the screen.
4. At the end of the procedure, you should have generated a program named IPX.COM. To run NetWare as a workstation, load in this program, then run the NET3.COM program on your NetWare "SHGEN-2" diskette.

## **Generate NetWare Driver for File Server**

To generate the NetWare driver program to let your Ether-3500 card run NetWare with a file server configuration, follow the following procedure:

1. Run the NETGEN.EXE program on the NetWare "NETGEN" diskette.
2. Select 3Com 3C501 as your hardware.

3. Follow all the operations as you are prompted on the screen.
4. At the end of the procedure, you should have generated a program named **NET\$OS.EXE**. Run this program to let your computer become a NetWare file server.

## Generate NetWare Driver for Bridge

To generate the NetWare driver program for your Ether-3500 card to run NetWare with a bridge configuration, follow the following procedure:

1. Run the **BRGEN.EXE** program on the NetWare's "BRGEN-1" diskette.
2. Select **3Com 3C501** as your hardware.
3. Follow all the operations as prompted on the screen.
4. At the end, you should have generated a program named **BRIDGE.EXE**. This program is run to let a PC become a dedicated Novell bridge station.

## Appendix A

# Network Interface Card Configuration Reference

---

This appendix lists the followings for your reference:

- The hardware interrupt lines (IRQ) selectable for the network interface card
- The DMA channels selectable for the network interface card
- The base I/O addresses selectable for the network interface card
- The base memory addresses selectable for the network interface card
- Cable selection (thick cable(Ethernet) or thin cable (Cheapernet))
- Remote boot options

Selections are made by adjusting the jumpers on your network interface card.

## Hardware Interrupt Lines

An interrupt request (IRQ) is made when a hardware device such as the Ethernet network interface card needs a service from the PC system. You should configure your network interface card so it will utilize an IRQ line not used by your PC's other hardware and add-on cards. If your network interface card and another device in your PC use the same IRQ line, change the IRQ line so as to avoid the conflict.

Jumper JP1 is used to set the IRQ line.



IRQ	JP1
2	
3	
4	
5	
6	
7	

\*Default setting

## Direct Memory Access (DMA)

Your network interface card by default uses a Direct Memory Access (DMA) channel to transfer data between the card itself and the PC's main memory.

Jumper JP2 is used to set your DMA channel.



DMA	JP2
@ 1	
3	

\* Default setting

## Base I/O Address

Your network interface card uses one of the base I/O addresses listed in the following table for communication between the micro-processor of your PC and the network interface card. Jumper JP5.2 is used to set your base I/O address.



I/O	JP5.2	I/O	JP5.2
300h		100h	
340h		104h	
380h		160h	
3c0h		1F0h	
3e0h		200h	
390h		210h	
360h		220h	
370h		230h	
380h		240h	
390h		250h	
3A0h		260h	
3B0h		270h	





NO	IPS-2	NO	IPS-2
280h		340h	
290h		350h	
2A0h		360h	
2B0h		370h	
2C0h		380h	
2D0h		390h	
2E0h		3A0h	
* 300h		3B0h	
310h		3C0h	
320h		3D0h	
330h		3E0h	

\* Default setting

## Base Memory Address

Your network interface card uses a base memory address for system internal purposes. Jumper JP5.1 is used to select the address.

If the remote boot function is used, the following base addresses cannot be selected: C000h and C400h.










MEM	JP5.1	BOOT ROM
C000h		—
C400h		—
C800h		C800h
CE00h		CE00h
*D000h		D000h
D400h		D400h
D800h		DA00h
DC00h		DE00h

\* Default setting

## Trunk Cable

Two types of trunk cable can be used with the network interface card: the thick cable (Ethernet) and the thin cable (Cheapernet). Cable type selection is to be made on jumper JP6 to match the type of cable used by your network.

---

	<table border="1"> <thead> <tr> <th>Cable</th><th>JP6</th></tr> </thead> <tbody> <tr> <td>* CHEAPERNET</td><td></td></tr> <tr> <td>ETHERNET</td><td></td></tr> </tbody> </table>	Cable	JP6	* CHEAPERNET		ETHERNET	
Cable	JP6						
* CHEAPERNET							
ETHERNET							








\* Default setting

---

## Remote Boot

Your network interface card allows your PC to remote-boot the DOS system from another network computer. To make use of this optional feature, a remote boot ROM must be installed on your network interface card. You will then need to enable the remote boot function by setting jumper JP4 to On.

---

 On Off BOOT	<table><tr><th>Remote Boot</th><th>JP4</th></tr><tr><td>Disabled</td><td></td></tr><tr><td>Enabled</td><td></td></tr></table>	Remote Boot	JP4	Disabled		Enabled	
Remote Boot	JP4						
Disabled							
Enabled							

\*Default setting

---

