

**E-NET**

**USER'S MANUAL**  
**(FOR EN-9400P3)**

**9410-Rev.B**

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## **Class A Computing Device**

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the User's Manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such 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 necessary to correct the interference.

# CHAPTER 1

## INTRODUCTION

### 1.1 Overview

EN-9400P3 is a 3-in-1 32-Bit PCI Ethernet board. The PCI bus design allows the EN-9400P3 to transfer data between the network board and the station at PCI system clock speed with low CPU utilization. During the packet transfers, this PCI board enables a powerful on-chip DMA function with programmable, unlimited burst size operation on the PCI bus. This provides significant high-speed data throughput even without any buffer memory on the board. As a result, such cost-effective implementation can be more efficient to improve the overall system performance.

Two externally visible LEDs (Link and Activity) offer easy diagnosis and trouble-shooting.

With the built-in Unshielded Twisted-Pair RJ-45, coaxial BNC and AUI type connectors as shown in Fig. 1-1, EN-9400P3 provides the best cabling flexibility in any Ethernet network. The configuration features of PCI system BIOS routine and EN-9400P3 allow easy installation on the PCI local bus.

## 1.2 Checklist

Your EN-9400P3 carton should contain the following items:

- The EN-9400P3 Ethernet Board
- LAN driver diskette
- This user's manual
- T-connector

If any of these items is missing or damaged, please consult the dealer from whom you purchased your EN-9400P3.

## 1.3 Caution

Circuit boards are sensitive to static electricity, which can damage their delicate electronics. You can easily pick up static electricity in dry weather or by walking on a carpeted floor. Follow the rules below to protect your board:

1. Ground yourself by touching the metal chassis of your computer before you pick up your circuit board.
2. Handle the board by the edges only.

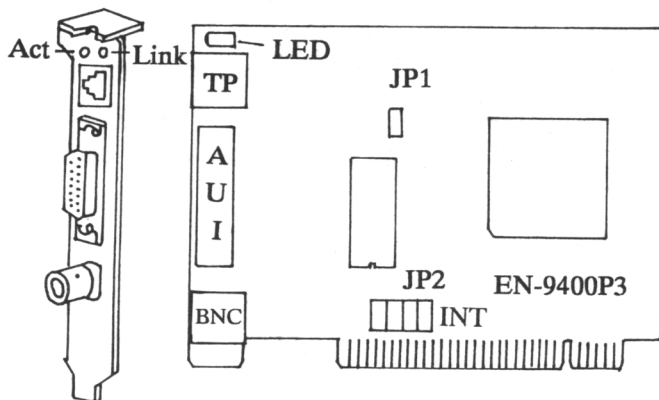


Fig. 1.1 EN-9400P3 Board Layout

## **CHAPTER 2**

# **INSTALLING THE EN-9400P3**

### **2.1 Introduction**

Installing an EN-9400P3 board to your PCI bus-based computers will enable you to have a new station on your network. However, before inserting the EN-9400P3 into your computer, you must check the station's configuration settings and ensure that the cable, connector and interrupt line are set correctly.

It should be noted that any two network interface boards installed in the same file server or bridge might not have the same configuration. The board configuration settings are automatically made upon the system power up. The system BIOS routine is responsible for assigning the board I/O base address and binding the appropriate interrupt channel to the EN-9400P3. The procedures for setting the system BIOS with the PCI Device configuration are described in Section 2.3.

## 2.2 Installing the EN-9400P3

The EN-9400P3 board must be installed in a 32-bit PCI bus-master slot. Refer to your PCI computer manual for the appropriate slots. You can install and configure up to four EN-9400P3 boards in a PCI file server running NetWare system. When multiple EN-9400P3 adapters are to be configured at a time, please enter system BIOS menu and select the available interrupts.

To install the EN-9400P3, remove your monitor from the top of your computer and clear an area around your desk, leaving plenty of room to work. You will need a Phillips screwdriver to complete the installation.

1. Turn OFF your computer and disconnect the power cord. Make sure all connected peripherals are at OFF position. If necessary, position the system for easy access to the back of the chassis.
2. Remove the cover of your system, as described in your system's Owner's Manual.
3. Touch the metal chassis of your computer to discharge any static electricity, which may have built up on your clothes or body.
4. Find an open 32-bit PCI bus slot and remove the slot cover. Save the slot cover so that you can replace it if you take the board out of the slot.
5. Hold the board by the top edge and carefully push the board into the available slot. Make sure that the gold-plated connector fingers on the bottom of the board slide all the way into the slot. The board's mounting bracket should line up with the computer frame.
6. Test the board to see if it is properly connected by gently lifting it. If it resists and stays in place, it is properly installed.
7. Use the expansion slot screw you removed earlier to secure the board in the system.
8. Replace the computer's cover, then reconnect the power cables. Remember to replace the cover mounting screws after replacing the cover.

## 2.3 PCI Device Configuration for EN-9400P3

For motherboards with bus master jumpers and interrupt jumpers for PCI slots:

- Enable bus master operation in a selected PCI slot using the appropriate motherboard jumper.
- Select an interrupt (IRQ) level to the desired PCI slot using the appropriate motherboard jumper.
- Enter the setup menu of your machine and:
  - Enable bus master on the EN-9400P3 PCI slot.
  - Enable I/O on the EN-9400P3 PCI slot.
  - Define interrupt number on the EN-9400P3 PCI slot.

For motherboards with automatic PCI configuration:

- No specific setup is needed.
- You can enter the system BIOS setup menu to view or specify the interrupt line of the PCI slots.

### **Notice:**

1. Make sure that each EN-9400P3's interrupt line does not conflict with any other board's interrupt.
2. Do not install EN-9400P3 in PCI slave slots.
3. PCI slots are counted from 16, the first PCI board is in slot 16 and the next one will be in slot 17.

## 2.4 10Base-T (TP) / 10Base-2 (BNC) / 10Base-5 (AUI) Connector Selection

The EN-9400P3 board is equipped with three connections: 10Base-T (TP), 10Base-2 (BNC) and 10Base-5 (AUI). The connector/port is enabled by the LAN Driver. Please refer to the READ.ME file in Driver Diskette for the procedures of selecting the required connector. Only one connector on the mounting bracket can be used at a time. When the selected media is Coax, jumper JP1 should be used to select the BNC or AUI connector

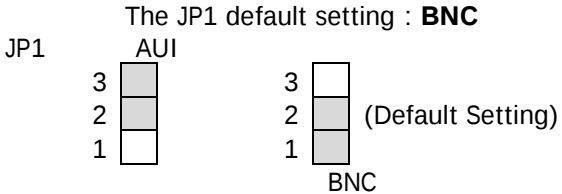


Fig. 2.1 Coax BNC/AUI Selection  
(Note: Shaded area indicates jumpers are shorted.)

## 2.5 Diagnostic LEDs

The “L” (Link status) LED is valid only when using UTP cabling. After EN-9400P3 is initialized successfully, the “L” LED will light when the UTP cable connection is good. The “A” (Activity) LED blinks when data is being received or transmitted. Please refer to Fig. 1.1 of page 1-2 for the LEDs location.

## CHAPTER 3

# TROUBLESHOOTING

This section explains how to locate and solve some simple problems you might encounter with the EN-9400P3. Before reading this troubleshooting section, refer to CHAPTER 2 "INSTALLATION" to verify that your installation procedures were correct.

### Problem / Action

- 
- P. Computer doesn't boot-up when the power switch is on.
  - A. Check the power cord at the back of the computer.
  
  - P. Unable to find EN-9400P3 PCI network board or EN-9400P3 board fails to initialize properly.
  - A. Run the PCI system BIOS setup utility, check the PCI slot INT with board / driver's IRQ. Verify that the IRQ does not conflict with other board's IRQ. Verify the installed PCI slot is master slot.
  
  - P. The EN-9400P3 initializes but the following message: "A File Server could not be found" is displayed.
  - A. Verify the cable is properly connected and terminated. Examine the configuration file (NET.CFG or any other) to make sure it is correctly matching the board settings.

When installing multiple boards at the NetWare file server, please refer to the READ.ME file in the driver diskette. If you can not resolve the network problems, consult your dealer.

# APPENDIX

## A. LAN Driver Installation

Please refer to the READ.ME file in the driver diskette that was shipped along with the EN-9400P3 board for installing your LAN driver.

## B. Technical Specifications

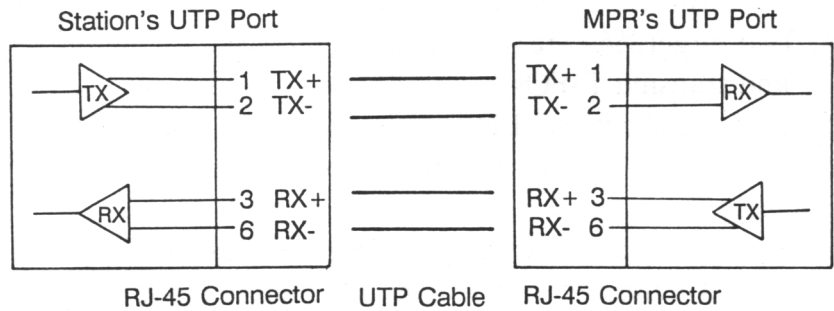
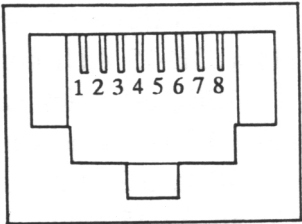
The EN-9400P3 comes with the following features:

1. Features three connectors (software selectable):
  - 1) A DB-15 AUI connector for IEEE 802.3, 10 Base-5 thick cable
  - 2) A BNC connector for IEEE 802.3, 10 Base-2 thin cable
  - 3) An RJ-45 connector for IEEE 802.3, 10 Base-T UTP cable
2. Data transfer rate : 10 megabits per second
3. Data transfer mode: PCI bus master
4. Two large (256-byte) independent receive and transmit FIFOs
5. Link and Activity LEDs on the mounting bracket
6. Suitable for the PCI bus-based and compatibles
7. Cable:
  - 1) 0.4 inch diameter RG-11, 50 ohm coaxial cable, maximum segment length: 500 meters (1640 feet)
  - 2) 0.2 inch diameter RG-58A / U, 50 ohm coaxial cable, maximum segment length: 185 meters (607 feet)
  - 3) 85- to – 110 ohm unshielded twisted-pair (UTP) wire. 10 Base-T maximum wire length: 100 meters (328 feet)
8. Supports full duplex operation
9. Ambient temperature : 0 to 70 degrees C.
10. Power requirement : 2.0A @ + 5V
11. Dimensions: 5.9' x 4.75" (L x H)
12. Complies with FCC Part 15 Class A

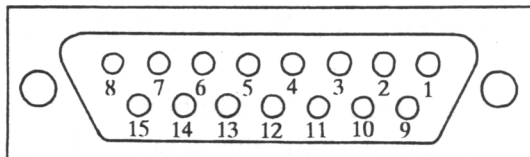
**C. Twisted-Pair Connector Pin-out**

| <u>Pin</u> | <u>Assignment</u>     |
|------------|-----------------------|
| 1          | OUTGOING DATA 1 ( + ) |
| 2          | OUTGOING DATA 2 ( - ) |
| 3          | INCOMING DATA 1 ( + ) |
| 4          | (No Connection)       |
| 5          | (No Connection)       |
| 6          | INCOMING DATA 2 ( - ) |
| 7          | (No Connection)       |
| 8          | (No Connection)       |

**RJ-45 Modular Jack**



## D. AUI 15 pin DTE D-type Connector Pin-out



| <u>Pin</u> | <u>Description</u>                 |
|------------|------------------------------------|
| 1          | Control In Circuit Shield (Shield) |
| 2          | Control In Circuit A (Collision +) |
| 3          | Data Out Circuit A (Transmit +)    |
| 4          | Data In Circuit Shield             |
| 5          | Data In Circuit A (Receive +)      |
| 6          | Voltage Common (Power-GND) *       |
| 7          | Control Out Circuit A              |
| 8          | Control Out Circuit Shield         |
| 9          | Control In Circuit B (Collision -) |
| 10         | Data Out Circuit B (Transmit -)    |
| 11         | Data Out Circuit Shield            |
| 12         | Data In Circuit B (Receive -)      |
| 13         | Voltage Plus (Power + 12V)         |
| 14         | Voltage Shield                     |
| 15         | Control Out Circuit B              |
| Shell      | Protective Ground                  |

- Voltage Common and Voltage Plus use one single twisted-pair in the AUI cable.

## E. EN-9400P3 INT Setup

Most of the PCI mainboards on the market allow your PCI add-on boards to share the same interrupt level. For this type of PCI mainboards, the jumper JP2 on the EN-9400P3 must be set on position INTA when you install single or multiple EN-9400P3 in a PCI mainboard.

On the other hand, some PCI mainboards do not allow your PCI add-on boards to share the same INT. In this situation, you may use the jumper JP2 on the EN-9400P3 to select an appropriate INT that does not conflict with other slot INT in the same PCI machine. Please refer to your PCI system manual and set EN-9400P3 INT jumper JP2 to match the mainboard PCI slot INT setting.

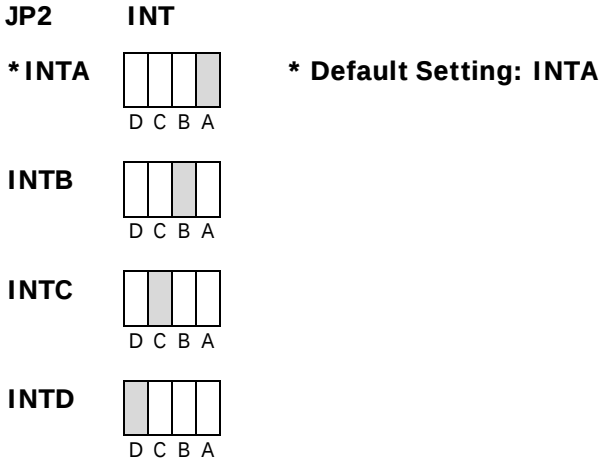


Fig. E.1 EN-9400P3 Interrupt Level Setting  
(Note: Shaded area indicates jumper is shorted.)