



ETHERNET USER'S MANUAL

FOR
CN650E/2



CNet
TOTAL NETWORK SOLUTIONS

ETHERNET

USER'S MANUAL

FOR

650E/2

Manual Revision 2.10

This manual is for 650E/2 VER:B.

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This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, 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 J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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TABLE OF CONTENTS

CHAPTER 1	
UNPACKING INFORMATION	1-1
CHAPTER 2	
QUICK START-UP	2-1
HARDWARE INSTALLATION	2-1
SOFTWARE INSTALLATION	2-1
TROUBLESHOOTING	2-2
CHAPTER 3	
GENERAL DESCRIPTION	3-1
CHAPTER 4	
PRODUCT SPECIFICATIONS	4-1
KEY FEATURES	4-1
SPECIFICATIONS	4-2
CHAPTER 5	
INSTALLATION	5-1
INSTALLING THE 650E/2 ETHERNET BOARD	5-2
Cable Type	5-2
Installing the Remote Boot PROM	5-2
Installing the Board	5-3
System Configuration Settings on the 650E/2 Ethernet Board	5-5
Starting the Reference Diskette Program	5-6
Setting the Configuration Option	5-9
Saving the 650E/2 Setting	5-11
CHAPTER 6	
INSTALLING THE DRIVERS	6-1
CHAPTER 7	
TROUBLESHOOTING	7-1
TROUBLESHOOTING TIPS	7-1

LIST OF FIGURES

Figures

Figure 5-1	
Location of Components	5-1
Figure 5-2	
Installing Remote Boot PROM	5-3
Figure 5-3	
Removing an Expansion Slot Cover	5-4
Figure 5-4	
Inserting a 650E/2 Ethernet Board into an IBM PS/2	5-5

Tables

Table 5-1	
The Software Configuration Options of 650E/2 Ethernet Board	5-10

CHAPTER 1

UNPACKING INFORMATION

The 650E/2 Ethernet board is shipped in a box that contains the following items:

- 650E/2 Ethernet board
- BNC T-connector
- 3.5" diskette
- User's Manual

To setup a thin Ethernet cable network, you need to prepare:

- Thin coaxial cables
- Barrel connectors (to connect thin Ethernet cable segments)
- BNC terminators (to close off each end of one cable segment)

CHAPTER 2

QUICK START-UP

This information is only meant for experienced installers who will use the default settings.

HARDWARE INSTALLATION

The default settings of the 650E/2 Ethernet board are as follows:

- IRQ: 3
- I/O Address: 1000H—102FH

If you need to change any default setting, please read Chapter 5, “Installation”. If you don’t need to change any default setting, insert the 650E/2 Ethernet board into any available expansion slot.

SOFTWARE INSTALLATION

You must install drivers for the board after you installed the 650E/2 Ethernet board in your system. You can use the 3.5" diskette shipped with the 650E/2 to install the network software. For more information, refer to Chapter 6 “Software Installation”.

TROUBLESHOOTING

If the board doesn’t work after installation, review the installation procedures and board options in Chapter 5 to make sure the board is seated firmly and that all options are configured properly. If the board still won’t work, refer to Chapter 7, “Troubleshooting”.

CHAPTER 3

GENERAL DESCRIPTION

The 650E/2 is a jumperless MCA adapter, which allows you to set up a local area network (LAN) using either twisted-pair or thin Ethernet cables for network connection. The 650E/2 can be used with most network hardware that complies with the IEEE 802.3 Ethernet standard. It is designed for the Micro Channel PS/2 Computer.

The 650E/2 Ethernet board has two cable ports available for network interconnection using either a twisted-pair or a thin coaxial cable, and supports auto-detection of twisted-pair wire/coaxial cable. If you want to change the network medium, you just have to connect a proper cable to the port. Be careful not to use the two ports at the same time.

The 650E/2 supports two adapter types, 'NE/2 compatible mode' and '650E/2 standard mode'. The default adapter type is '650E/2 standard mode'.

If you want to change the default setting, you have to run the MODE.EXE program. For more details, refer to the READ.ME file in the enclosed diskette.

CHAPTER 4

PRODUCT SPECIFICATIONS

The 650E/2 Ethernet board is a jumperless 16-bit Micro Channel PS/2 Ethernet interface card designed to connect your system to a network using either twisted-pair cable or thin Ethernet cable.

Port J1 (Twisted-pair 8 pin connector) uses twisted-pair cable.

Port BNC1 (BNC connector) uses thin Ethernet cable with an internal, built-in transceiver.

The twisted-pair J1 connector pin-outs are as follows:

Pin	Description
1	Data out+
2	Data out-
3	Data In+
4	NC
5	NC
6	Data In-
7	NC
8	NC

KEY FEATURES

- High performance and low power consumption
- Jumperless and switchless
- Software configurable

- 2-in-1 MCA board types supported
(Novell NE/2 compatible mode & 650E/2 standard mode)
- Auto-selection of media types
(Twisted-pair wire & coaxial cable)
- 16K byte buffer memory
- Diagnostics LEDs provided
- Zero-wait operation state

SPECIFICATIONS

Bus interface:	16 bit IBM PS/2 Micro Channel
Media interface:	10Base2 and 10Base-T
Diagnostics LEDs:	G-LED (green) for UTP linking indication Y-LED (yellow) for activity indication
Interrupt channels:	3, 4, 5, 9, 10, 11, 12, 15
I/O base addresses:	1000H, 2020H, 8020H, A0A0H, B0B0H, C0C0H, C3D0H
Boot ROM size:	8K bytes
ROM addresses:	C8000H, CA000H, CC000H, CE000H, D0000H, D2000H, D4000H
Operating temperature:	0° - 50°C
Relative humidity:	0 - 90 % (non-condensing)
Power requirement:	+ 5V DC ($\pm 5\%$) 1A typical
Physical dimension:	172.99 (L) x 88.2 (W) mm

CHAPTER 5

INSTALLATION

This chapter explains how to configure the 650E/2 Ethernet board, install the board in your computer, and connect it to the file server.

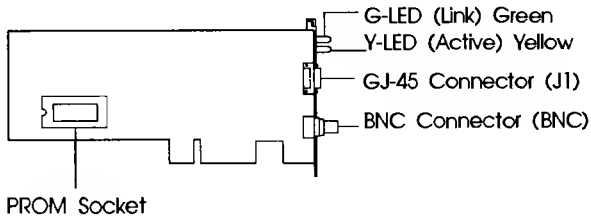


Figure 5-1
Location of Components

INSTALLING THE 650E/2 ETHERNET BOARD

Cable Type

The 650E/2 has a twisted-pair connector and a BNC connector on the metal mounting bracket. See Figure 5-1. The twisted-pair connector is used for 10Base-T Ethernet connection, while the BNC connector is for 10Base2 Ethernet connection. The 650E/2 supports auto-detection of media types. If you want to change the medium, you just have to connect a proper cable to the port.

- When the twisted-pair jack is connected, the G-LED on the bracket will be lit.
- When the BNC port is connected, the G-LED on the bracket will be off.

WARNING

You can connect the 650E/2 using either a twisted-pair cable or a coaxial cable, but not both at the same time.

Installing the Remote Boot PROM

To install a Remote Boot PROM on a 650E/2 Ethernet board, refer to Figure 5-2 and perform the following steps:

- 1 Position the Remote Boot PROM on the PROM socket, aligning the notch on the PROM with the notch on the socket.

WARNING

If you don't align the notch on the PROM with the notch on the socket, you may damage both the PROM and the board.

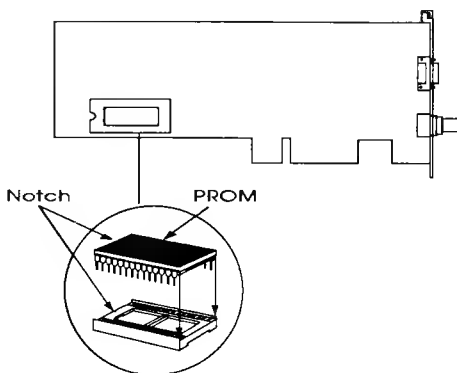


Figure 5-2
Installing Remote Boot PROM

- 2 Push the PROM all the way down into its socket. Be careful not to bend any of the pins.

Installing the Board

To insert a 650E/2 interface board into an IBM PS/2 computer, complete the following steps.

- 1 Turn off the computer.
- 2 Remove the cover according to the manufacturer's instructions.
- 3 Loosen the screw on an empty expansion slot cover.
- 4 Pull out the expansion slot cover as shown in Figure 5-3. (Refer to the system that most closely resembles the one you are using.)
- 5 Insert the 650E/2 interface board into the slot, and press it firmly into the expansion slot connector. See Figure 5-4.

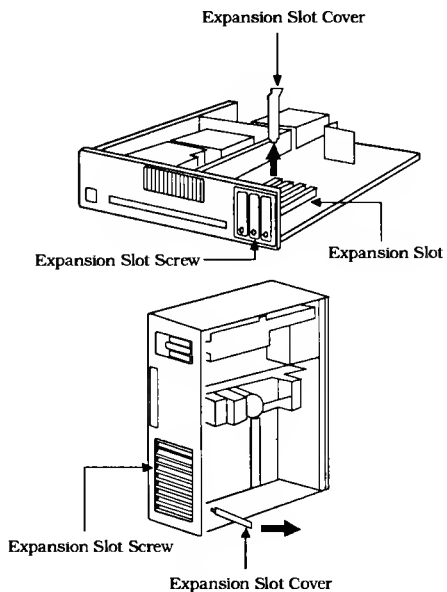


Figure 5-3
Removing an Expansion Slot Cover

- 6 Fix the expansion slot screw so that board will remain in place.
- 7 Replace the computer cover and fix the cover screws.

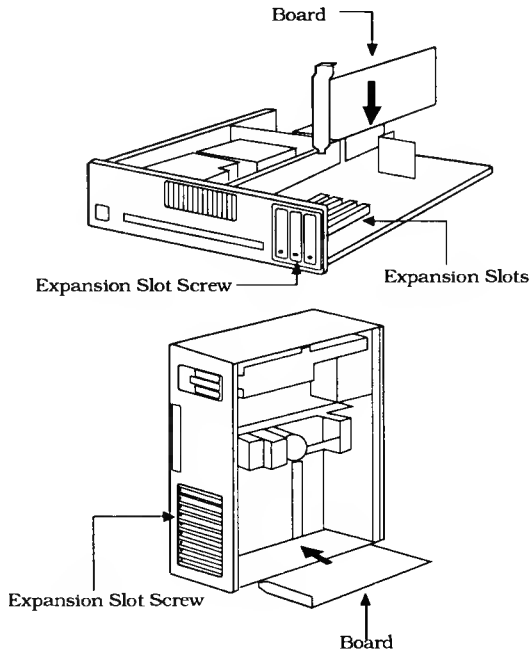


Figure 5-4
Inserting a 650E/2 Ethernet Board into an IBM PS/2

System Configuration Settings on the 650E/2 Ethernet Board

The instructions in the following sections explain how to use the IBM REFERENCE diskette program to set the interrupt line, base I/O address, and Boot PROM address on 650E/2 Ethernet boards.

To complete these instructions, you need a working copy of the IBM PERSONAL SYSTEM/2 REFERENCE diskette that comes with your IBM PS/2 computer. If you have not made a working copy of the REFERENCE diskette, do it before continuing with these instructions. You also need the 650E/2 diskette that is enclosed in your 650E/2 package.

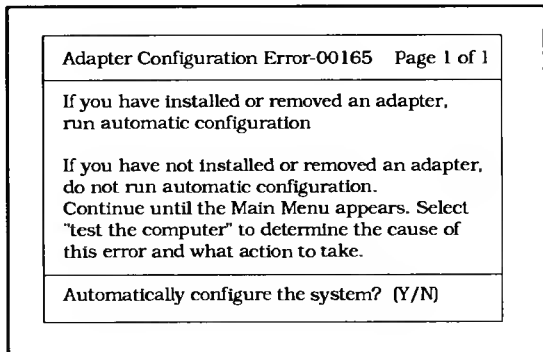
Starting the Reference Diskette Program

To load the REFERENCE diskette program, copy the 650E/2 option files, and view the station's board configuration, complete the following steps.

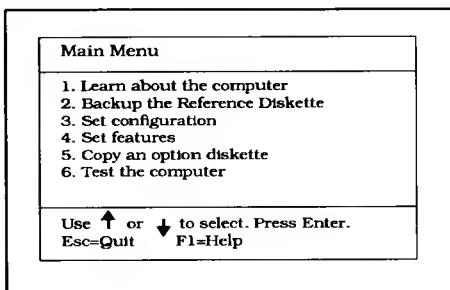
1. Boot the station with the working copy of the REFERENCE diskette.

After the station is booted, the screen will display an IBM logo. A prompt instructing you to press <Enter> will appear in the lower left corner.

2. Press <Enter> to go to the next screen. Because you have added a new interface board to the station, you will receive an error message similar to the following:



3. Answer "No" to the prompt at the bottom of the screen by typing N, if you do not want to configure the system automatically. The REFERENCE diskette's "Main Menu" will appear.



- 4 Use the Up- and Down-arrow keys to highlight Option 5 ("Copy an option diskette") and press <Enter> to copy the 650E/2 configuration files from the 650E/2 option diskette to the IBM REFERENCE diskette.
- 5 Follow the instructions on the screen and insert the 650E/2 diskette into drive A when prompted. After the configuration files are copied, you will be back to the "Main Menu."
- 6 Highlight Option 3 ("Set configuration") and press <Enter>. A screen similar to the one shown below will appear:

Setting the Configuration Option

The 650E/2 configuration option consists of the interrupt line (referred to as “Interrupt Level” on the screen), the base I/O address (referred to as “I/O” on the screen), and the Boot PROM address (referred to as “PROM” on the screen). You must change the settings that appear on the screen so that they can match the station’s configuration option. You must change the settings on the screen as follows:

- If the board is installed in a file server or bridge, you must change the setting on the screen to match the server or bridge’s configuration. The setting selected here should match the configuration option you chose when you generated the operating system.
- If the board is installed in a workstation, you can choose any combination of configuration option setting from the chart.

Note *Make sure you choose an interrupt line that does not conflict with those of other boards installed in the station. (IBM’s REFERENCE diskette program allows duplicate interrupt lines, but the netware operation system does not.)*

To change a configuration setting on the “Change Configuration” screen, use the Up- and Down-arrow keys to highlight the option. Then press the F5 and F6 keys to scroll through the screen until you reach the proper setting option.

The possible configuration settings for the 650E/2 are listed in the chart below.

BASE I/O ADDRESS & PROM ADDRESS:

OPTION	BASE I/O ADDRESS	PROM ADDRESS
0	1000H-102FH	0C8000H-0C9FFFH
1	2020H-204FH	0CA000H-0CBFFFH
2	8020H-804FH	0C000KH-0CDFFFH
3	A0A0H-A0CFH	0CE000H-0CFFFFH
4	B0B0H B0DFH	0DCE000H-0DFFFFH
5	C0C0H-C0EFH	0D2000H-0D3FFFH
6	C3D0H-C3FFH	0D4000H-0D5FFFH

- The PROM ADDRESS can be disabled.

Table 5-1

The Software Configuration Options for 650E/2 Ethernet Board

WARNING

If you don't want to use a remote boot ROM, you have to disable the Remote Boot PROM option in IBM PS/2 SYSTEM CONFIGURATION SETTING, otherwise some system errors may occur.

INTERRUPT LINE:

IRQ3, IRQ4, IRQ5, IRQ9, IRQ10, IRQ11, IRQ12, IRQ15

Note: *Configuration options 4, 5, 6 cannot be used in a server running NETWARE v2.0a and below. All configuration options can be used in a file server running NETWARE v2.1x and above.*

Saving the 650E/2 Setting

After you have set the configuration option for your 650E/2 Ethernet board, press the <F10> key to save the changes. Then press <ESC> to exit the “Change Configuration” screen.

CHAPTER 6

INSTALLING THE DRIVERS

The default LAN driver configuration is:

- IRQ: 3
- I/O address: 1000H—102FH
- PROM Address: Disable

After installing the network boards and cables, you are ready to install the network software. This enclosed diskette includes all the drivers for NetWare workstation and file server installation. Refer to the READ.ME file in the diskette to install the drivers.

CHAPTER 7

TROUBLESHOOTING

TROUBLESHOOTING TIPS

- Symptom:** A workstation hangs after configuration information is displayed.
- Solution:** Check if the system configuration settings are the same as 650E/2 workstation shell settings.
- Symptom:** After powered on, the system is not bootable and the screen is blank.
- Solution:** Check if the IRQ, I/O address or memory addresses conflict with those of other boards in the system.
- Symptom:** The error message "File Server Not Found" is displayed.
- Solution:** Be sure the network connected via BNC ports is terminated with 50 ohm terminators. Check if the cable breaks or shorts.
- Symptom:** A workstation or file server hangs after running a LAN driver or system diagnostics, such as NORTON systeminfor and Microsoft Diagnostics.
- Solution:** If you do not use a BOOT PROM, be sure IBM PS/2 System Configuration Setting PROM Address is disabled.
- Symptom:** The error message "Board not found" is displayed.
- Solution:** Check if the 650E/2 board type is correctly set (either "NE/2 compatible mode" or "650E/2 Ethernet board").

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