FCC NOTICE: The equipment described in this manual has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etcetera) certified to comply with the Class B limits may be attached to this computer. Operation with noncertified peripherals may result in interference to radio and television reception. This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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 the receiving antenna.
– Move the computer away from the receiver.
– Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: *How to Identify and Resolve Radio-TV Interference Problems*. This booklet is available from the US Government Printing Office, Washington, DC 20402, Stock No. 004–000–00398–5

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

BENUTZERHINWEIS: Das DEC EtherWORKS *Turbo*-Modul in Verbindung mit IBM Personalcomputersystemem entsprechen den Funkentstöranforderungen der DBP-Verfugung 523/69 und VDE0871 Grenzwertklasse B.

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DEC EtherWORKS *Turbo* Owner's Manual

Order Number EK-DE200-OM.003

Digital Equipment Corporation

July 1991

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About This Manual

The DEC EtherWORKS *Turbo* board is a communications option that lets you integrate various IBM-AT or compatible personal computers into a network.

You do not have to know a lot about computers to install the option; however, this manual assumes that you already understand the basic concepts and uses of Ethernet networks, and that you are familiar with personal computers. For more information on compatibility of the *Turbo* board with your computer, see your system administrator.

This manual is organized as follows:

- Chapter 1 contains installation instructions.
- Chapter 2 contains information on board configuration.
- Chapter 3 contains problem solving information.
- Appendix A provides information about hardware and software features.
- Appendix B provides a ROM installation procedure.

This document uses the following conventions:

Convention	Meaning
CAUTION	Provides information to prevent damage to equipment.
NOTE	Provides general information.
PN	Part number.
❶	Indicates part of an illustration.

Before you install the DEC EtherWORKS *Turbo* board, be sure you have the following components, shown in Figure 1.

- DEC EtherWORKS *Turbo* board, ❶ packaged in an anti-static bag. ❼
- DEC EtherWORKS *Turbo* Owner's Manual ❷
- T-Connector ❸
- Terminator ❹
- Installation diskette (5¼ inch) ❺
- Installation micro-diskette (3½ inch) ❻

NOTE

If your DEC EtherWORKS *Turbo* board does not have a ROM ❽ in the location shown in Figure 1, refer to Appendix B.

This manual shows you how to install and configure the DEC EtherWORKS *Turbo* board. You use the installation diskette to help you test the system.

Using this manual, you should be able to prepare an IBM-AT or compatible personal computer and a DEC EtherWORKS *Turbo* board for use on a network. This manual describes how to change the DEC EtherWORKS *Turbo* board configuration for use with ThinWire or ThickWire Ethernet networks.

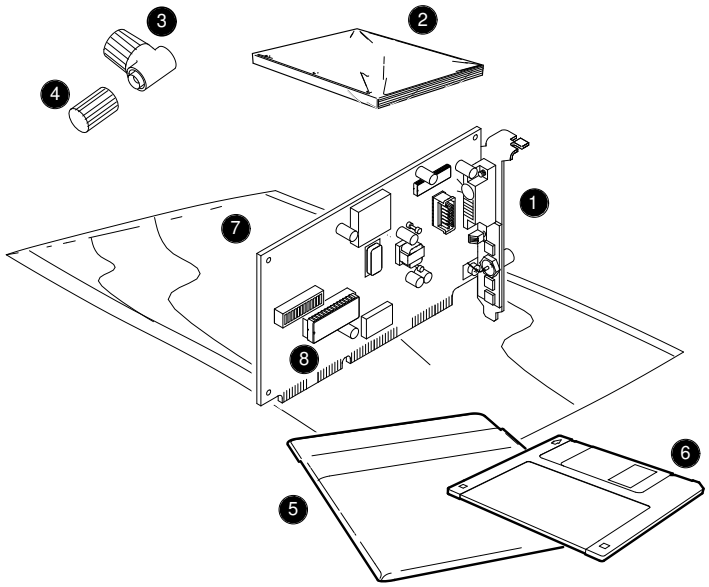

Figure 1 DEC EtherWORKS *Turbo* Product Kit (Digital PN DE200)

1
Installing the DEC EtherWORKS *Turbo* Board

1.1 Introduction

This chapter describes how to install the DEC EtherWORKS *Turbo* board into an IBM-AT or compatible personal computer. The only tool you need is a flat-head screwdriver. Before you begin, you should make a copy of the diskettes you need from the DEC EtherWORKS *Turbo* Product Kit (Figure 1–1).

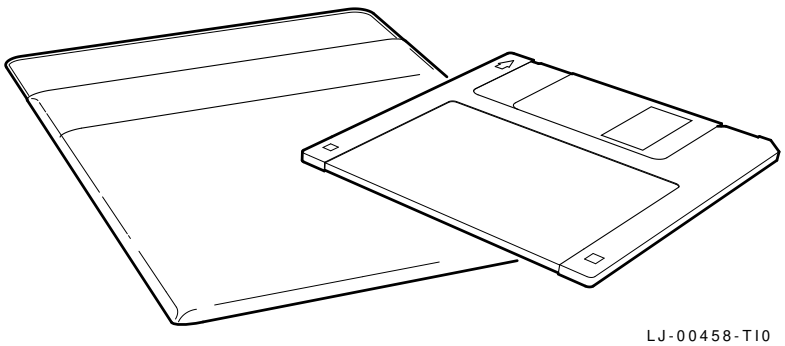

Figure 1–1 Product Kit Diskettes

1.2 Preparing Your Computer System

Perform the following steps to prepare your IBM/PC/AT or compatible personal computer. The following illustrations show an IBM PC personal computer; for other personal computers you can use the same procedure, with minor modifications, to install the DEC EtherWORKS *Turbo* board.

1. Remove any diskette(s) from the diskette drive(s).
2. Set all power switches to O (off).
3. Unplug the keyboard connector from the rear of the system unit and disconnect any cables.
4. Disconnect any option cables and the monitor cable from the rear of the system unit.
5. Unplug the power cord from the wall socket, then disconnect the cord from the rear of the system unit.
6. Remove the screws from the rear of the system unit (Figure 1–2).
7. Slide the cover toward the front of the system unit until the cover is free.

NOTE

The DEC EtherWORKS *Turbo* board has a switch pack that lets you determine how the board operates. This switch pack is already set to correspond to the needs of most customers (*default settings*). The settings may meet your computer's requirements. If they do not, you must change the settings on the board. (The settings are found in Chapter 2.)

NOTE

If the DEC EtherWORKS *Turbo* board is set to use an interrupt request line, base memory address, or I/O address that another option module uses, your computer or other boards may not operate correctly when you boot the system. To test the board with its default settings, you may need to remove other option modules from the computer.

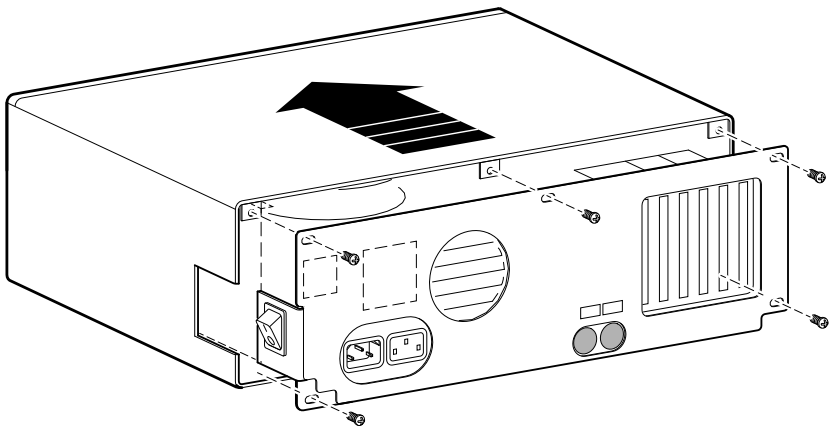

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Figure 1–2 Removing the Screws and System Unit Cover

1.3 Selecting the Network Interface

The DEC EtherWORKS *Turbo* board has a *shunt connector* ❶ that lets you determine how the board interfaces with the network—either ThinWire or ThickWire Ethernet networks. The DEC EtherWORKS *Turbo* board is shipped with the setting preselected for the ThinWire Ethernet network.

You may need to move the shunt connector on the DEC EtherWORKS *Turbo* board before you install it in your computer.

Table 1–1 summarizes the settings and Figure 1–3 shows the settings.

Table 1–1 Decision Table for Moving the Shunt Connector

If you Want To ...	Then ...
Connect to a ThinWire Ethernet network ❷	Leave the shunt connector in the left position. Look for the arrows on the board pointing to the ThinWire position (*default settings*).
Connect to a ThickWire Ethernet network ❸	Move the shunt connector right. Look for the arrows on the board pointing to the ThickWire position.

CAUTION

Static electricity can damage printed circuit boards or chips, or both. It is strongly recommended that a grounded wrist strap and grounded work surface-to-earth ground be used when handling these components.

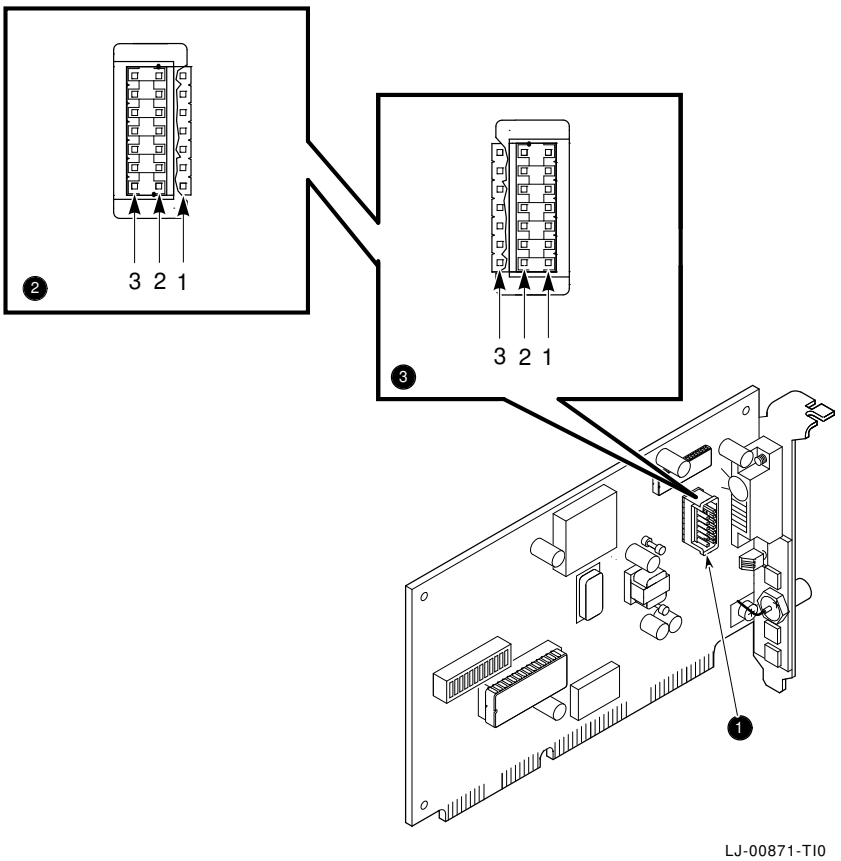

Figure 1–3 Network Interface Settings

1.4 Installing the DEC EtherWORKS *Turbo* Board

Use the following steps for the installation procedure:

1. **Remove the option slot cover from the slot you plan to use.**

   Remove the screw from an available 16-bit option slot on the rear panel insert. Save the screw for later use.

   CAUTION
   For safe operation, make sure there are no missing slot covers remaining when you complete the installation.

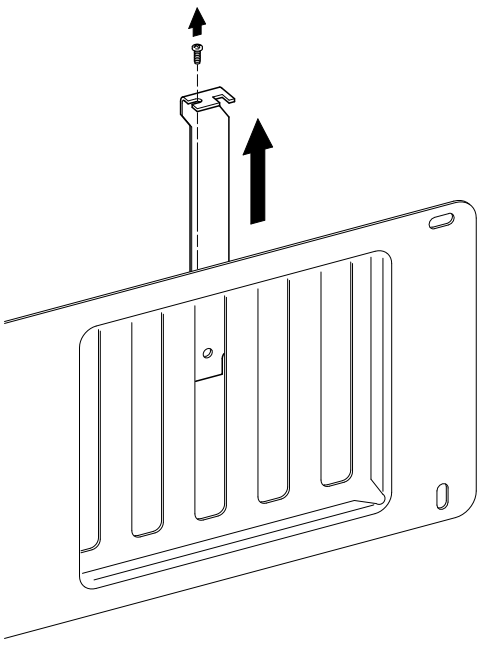

Figure 1–4 Removing the Slot Cover

2. **Place the DEC EtherWORKS *Turbo* board in the 16-bit option slot.**

   When placing the board in the option slot, tip the board downward and toward the rear of the system box. This allows the BNC connector on the mounting bracket to clear the opening in the rear of the system unit. (Figure 1–5).

3. ***Firmly* press the DEC EtherWORKS *Turbo* board into place until it is securely seated.**

   Make sure the BNC connector is centered in the opening.

4. **Replace the screw on the slot cover.**

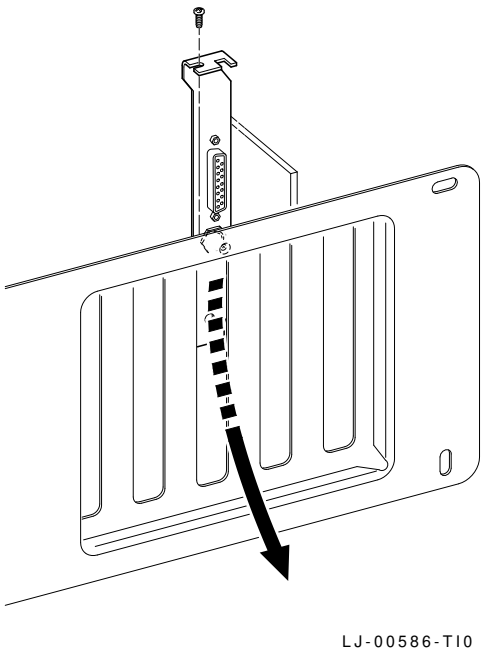

Figure 1–5 Installing the DEC EtherWORKS *Turbo* Board

5. **Replace the system unit cover.**

   a. Slide the cover toward the rear of the system unit.

   b. Replace the screws (Figure 1–6) at the rear of the system unit.

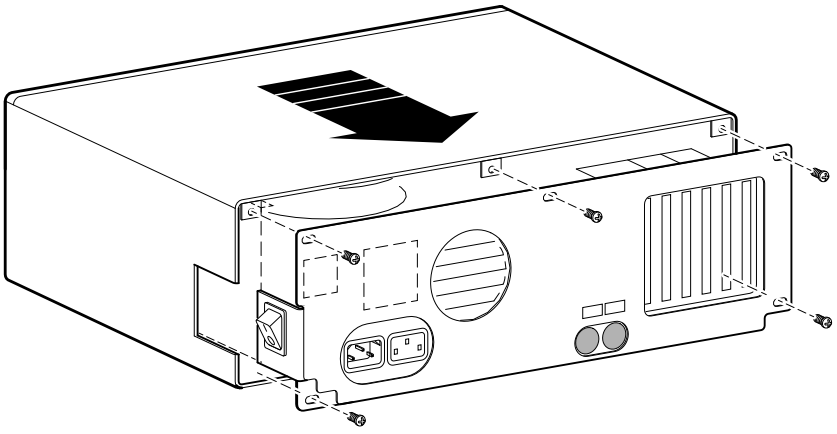

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Figure 1–6 Replacing the Screws and the Cover

6. **Plug the keyboard connector into the rear of the system unit and connect the cables.**

   a. Connect any option cables and the monitor cable to the rear of the system unit.

   b. Connect the power cord to the rear of the system unit, then plug the other end into the wall socket.

1.5 Running the Power Up Self-Test

A power up self-test runs automatically each time the computer is turned on or reset.

Turn power to your monitor and system unit on.

When the self-test completes successfully, the screen displays DEC EtherWORKS *Turbo* configuration information, and then the system prompt.

If an error code, such as DE200 88, displays on the screen during the restart process, a self-test error has occurred. Note the self-test code and refer to Section 3.2.

1.6 Connecting to a Network

Depending on how you configured the DEC EtherWORKS *Turbo* board in Section 1.3, use one of the following procedures to connect your system to the network. For ThinWire Ethernet, refer to Section 1.6.1; for ThickWire Ethernet, refer to Section 1.6.2.

1.6.1 Connecting the DEC EtherWORKS *Turbo* Board to ThinWire Ethernet

1. **Attach the T-Connector to the ThinWire Ethernet connector.**

   Push the connector nut of the T-Connector onto the BNC connector on the bottom of the DEC EtherWORKS *Turbo* board mounting bracket, then turn the nut clockwise until it locks into place (Figure 1–7).

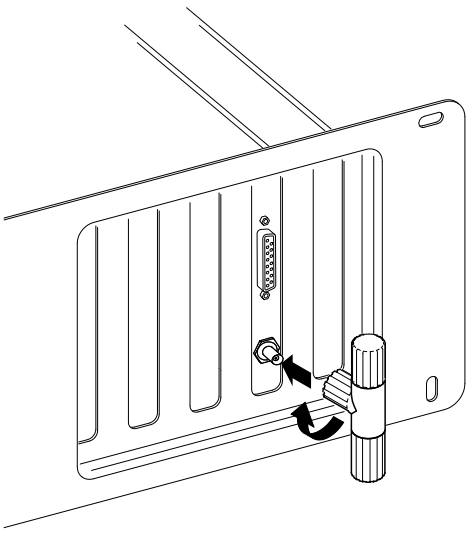

Figure 1–7 Connecting to a ThinWire Network

1.6.2 Connecting the DEC EtherWORKS *Turbo* Board to ThickWire Ethernet

Connect the transceiver cable to the ThickWire Ethernet connector (Figure 1–8).

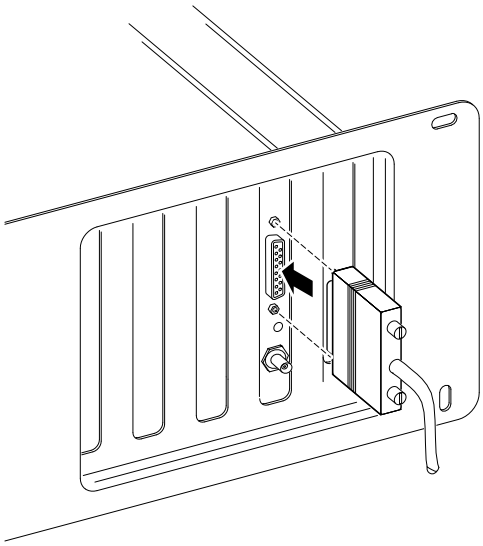

Figure 1–8 Connecting to a ThickWire Network

1.7 Software Installation

Read the file named "README.TXT" on the installation diskette. This file contains the instructions for loading the DEC EtherWORKS software drivers onto your system.

2
Configuring the DEC EtherWORKS *Turbo* Board

2.1 Introduction

The DEC EtherWORKS *Turbo* board has a switch pack containing 12 switches that enable the board to operate in a configuration without interference with the other boards in your computer. This chapter describes how to change the settings on the switch pack.

If you have many add-on options in your system, you may have to change the interrupt request (IRQ) line, the I/O address setting, or the memory address setting on the DEC EtherWORKS *Turbo* board to create a compatible operating set.

2.2 Default Settings

The DEC EtherWORKS *Turbo* board is shipped with the switches preselected (*default settings*) to work in most installations. These settings are shown in Table 2–1 and illustrated in Figure 2–1.

Table 2–1 Default Settings on the DEC EtherWORKS *Turbo* Board

Switch	Position	Function	Meaning
SW1 SW2	ON OFF	Sets the base memory address range.	Sets the base memory address range to D0000 - DFFFF (hex).
SW3 SW4	ON ON	Selects the buffer memory size.	Enables 64 KB memory size.
SW5	ON	Sets the I/O address.	I/O starting address is set to 300 (hex).
SW6	ON	Enables or disables remote boot feature.[1]	Remote boot disabled.
SW7	OFF	Sets the timeout period for the remote boot attempt. [1]	Sets a 30 second timeout period.
SW8 SW9 SW10 SW11 SW12	ON OFF OFF OFF OFF	Enable IRQ5 Enable IRQ9 Enable IRQ10 Enable IRQ11 Enable IRQ15	IRQ5 enabled.

[1]This feature requires that the option ROM chip be installed; see Appendix B for more information.

2.3 Check the Other Options

You can set only one adapter board in the computer to use a specific interrupt request line, I/O address, or base memory address. If you do not know the settings for the other adapters:

- Ask your system administrator for a list of the settings.
- Check the adapter documentation for the possible settings.
- Inspect the adapter boards to determine the actual settings.

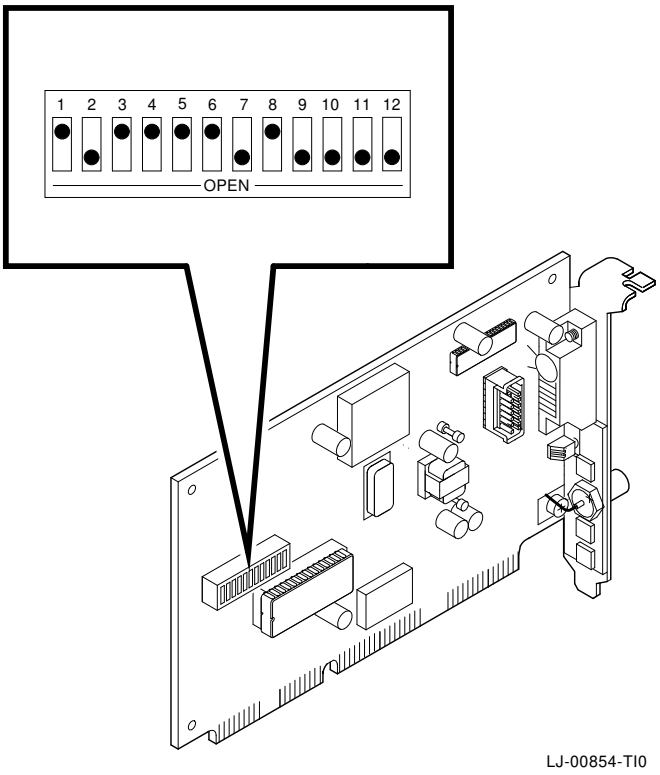

Figure 2–1 DEC EtherWORKS *Turbo* Board Switch Pack

If you find that a conflict exists, you can change the appropriate setting on the DEC EtherWORKS *Turbo* board. To do this, refer to the sections that follow. The switches being described are highlighted in the illustrations.

2.4 Memory Addressing Range and Size Selection (SW1 - SW4)

Switches SW1 and SW2 select the memory addressing range, and SW3 and SW4 select the size of the system memory space the DEC EtherWORKS *Turbo* board uses. Table 2–2 lists six possible memory addressing ranges and the switch settings that select them.

Only one adapter can be set to use a given memory addressing range. Check the documentation supplied with your personal computer and other adapters to determine memory address requirements. If the other adapters in your computer use memory addressing ranges that conflict with one of these ranges, select a range that is unused.

Table 2–2 Switch Settings and Memory Addressing Ranges

Buffer Size	SW1	SW2	SW3	SW4	Memory Addressing Range
64 KB	On	On	On	On	C0000—CFFFF
	On	Off	On	On	D0000—DFFFF (*default setting*)
	Off	On	On	On	E0000—EFFFF[1]
32 KB	On	On	Off	Off	C8000—CFFFF
	On	Off	Off	Off	D8000—DFFFF
	Off	On	Off	Off	E8000—EFFFF[1]

[1]Some PCs do not support the E0000 - EFFFF or E8000 - EFFFF address ranges; check your PC manual for this information.

NOTE

Setting both SW1 and SW2 to the OFF position is an illegal configuration and may prevent the computer from working correctly.

The DEC EtherWORKS *Turbo* board works best when the entire 64 Kbytes of network buffer memory is enabled for its operation. Some adapter boards and system configurations do not permit the allocation of this amount of memory. Network performance is slower when you select 32 Kbytes, but you can use the DEC EtherWORKS *Turbo* board in configurations where address space is at a premium.

Example:

Figure 2–2 shows the settings for SW1 through SW4 that select a buffer size of 32 Kbytes in the C8000 - CFFFF (hex) system memory addressing range.

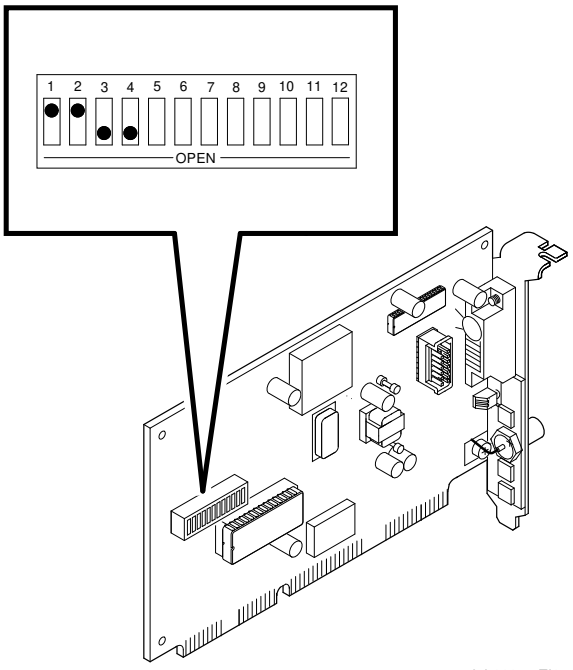

Figure 2–2 Setting Memory Range C8000-CFFFF for 32 KB

2.5 I/O Address Selection (SW5)

The DEC EtherWORKS *Turbo* board uses one of two I/O address ranges (primary and secondary) to communicate with the CPU. Only one adapter board in the computer can be set to use a given I/O address range.

- Switch SW5 set to ON selects the primary I/O address range (300 - 30F; *default setting*).
- Switch SW5 set to OFF selects the secondary I/O address range (200 - 20F) (Figure 2–3).

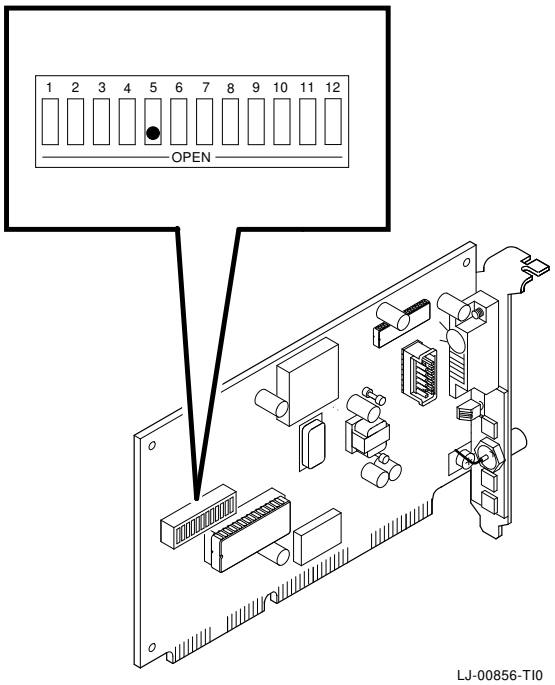

Figure 2–3 Switch Selecting I/O Address 200 - 20F (hex)

2.6 Remote Boot Selection (SW6)

Switch SW6 determines whether the remote boot feature is enabled or disabled.[1]

- Switch SW6 set to ON disables remote boot (*default setting*).
- Switch SW6 set to OFF enables remote boot (Figure 2–4).

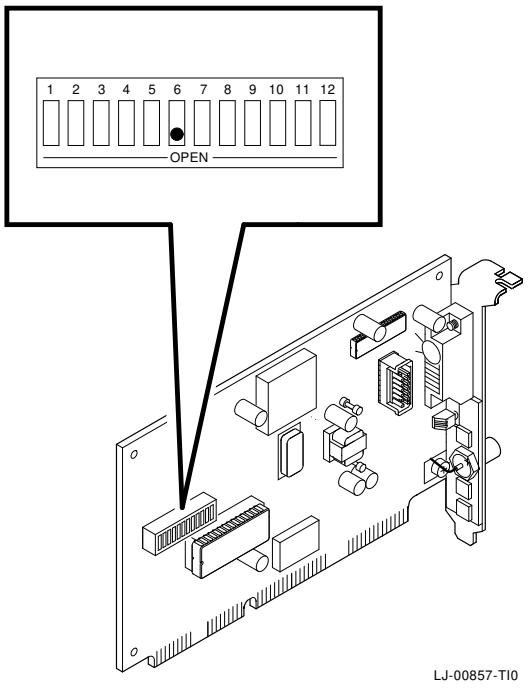

Figure 2–4 Switch Enabling Remote Boot

[1] This feature requires that a remote boot ROM chip be installed; refer to Appendix B for more information.

2.7 Remote Boot Period Selection (SW7)

Switch SW7 controls the time period for trying to enable a remote boot operation.

- Switch SW7 set to OFF sets the remote boot timeout to 30 seconds (*default setting*).
- Switch SW7 set to ON sets the remote boot timeout to 150 seconds.

Example:

To set the longer remote boot timeout, set switch SW7 to the ON position (Figure 2–5).

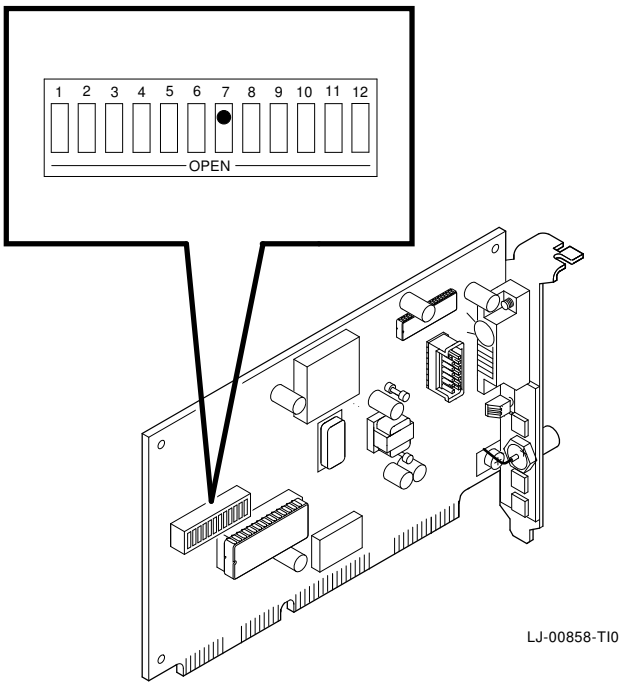

Figure 2–5 Switch Selecting 150 Seconds for Remote Boot

2.8 Interrupt Request Line Selection (SW8 - SW12)

You can use switches SW8 through SW12 to select an interrupt request line (IRQ). The DEC EtherWORKS *Turbo* board uses one IRQ line for the network interface (NI). Table 2–3 lists the switches and the interrupt request lines enabled.

Table 2–3 Switch and Interrupt Request Line

Switch	Interrupt Request Line
SW8	IRQ5 *(default setting)*
SW9	IRQ9
SW10	IRQ10
SW11	IRQ11
SW12	IRQ15

Only one switch should be set to the ON position. By default, SW8 is set to the ON position, selecting IRQ5.

Example:

To select IRQ10 as the board's interrupt request line, set switch SW10 to the ON position and set switches SW8, SW9, SW11, and SW12 to the OFF position (Figure 2–6).

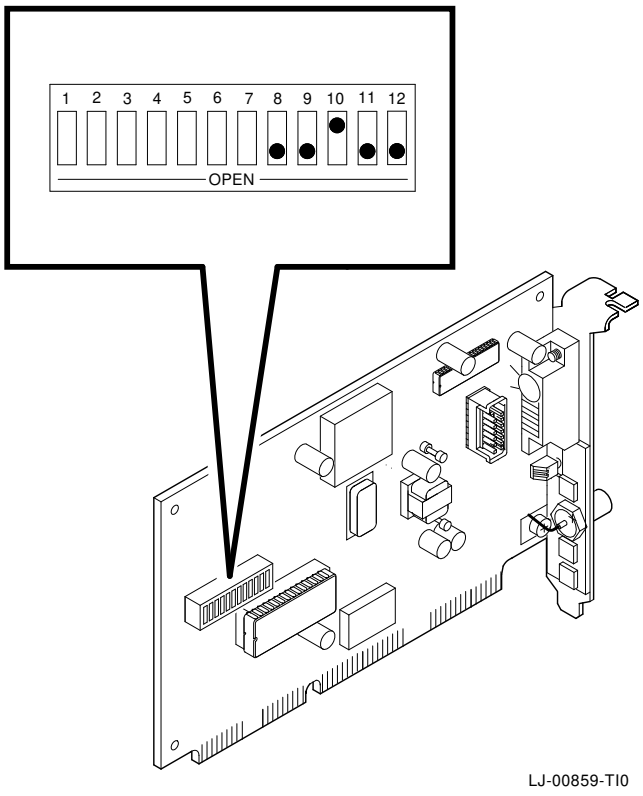

Figure 2–6 Switch SW10 Selecting IRQ10

3
Problem Solving

This chapter describes problems you may encounter with the DEC EtherWORKS *Turbo* board and suggests possible causes and solutions.

3.1 Fault Isolation By Symptom

Table 3–1 lists problems that you might encounter, the possible cause, and the recommended corrective action.

Table 3–1 Fault Isolation By Symptom

Symptom	Possible Cause	Recommended Action
The system is on, but there is no display.	The monitor is not on or is not connected to the video board.	Set the monitor power switch to on and be sure the monitor cable is firmly connected to the video board.
	The DEC EtherWORKS *Turbo* board is not seated firmly.	Remove and reinsert the board **firmly** into the option slot (Section 1.3.)
	The I/O or memory address is set wrong or is causing a conflict with another module.	Check the settings for SW1 - SW5. An address range conflict could exist between the DEC EtherWORKS *Turbo* board and another option module.

Table 3–1 (Cont.) Fault Isolation By Symptom

Symptom	Possible Cause	Recommended Action
	The DEC EtherWORKS board is preventing the computer from operating correctly.	Disconnect the transceiver cable or the twisted-pair cable from the DEC EtherWORKS *Turbo* board. Turn the computer off then on again. If the problem persists, contact your system administrator or authorized service representative.
The system is on, but nothing happens. The DEC EtherWORKS *Turbo* board LED is on for longer than 30 seconds and the keyboard does not respond.	The DEC EtherWORKS *Turbo* board is preventing the CPU from operating correctly.	Disconnect the transceiver cable or the twisted-pair cable from the DEC EtherWORKS *Turbo* board, then turn the computer off then on again.
	The I/O or memory address is set wrong or is causing a conflict with another module.	Check the settings for SW1 - SW5. An address range conflict may exist between the DEC EtherWORKS *Turbo* board and another option module. If the problem persists, contact your system administrator or authorized service representative.
The system does not boot from the diskette.	Switch SW6 is set to the OFF position.	Set SW6 to the ON position.

Table 3–1 (Cont.) Fault Isolation By Symptom

Symptom	Possible Cause	Recommended Action
	The system diskette may be corrupted.	See your system administrator for a bootable system diskette.
The system does not remote boot.	Switch SW6 is set to the ON position, disabling remote boot.	Set switch SW6 to the OFF position.
	A 30-second remote boot time out may not be enough for a busy network.	Set switch SW7 to the ON position, enabling a timeout of 150 seconds.
	The Ethernet address is not registered for this address node.	Re-register this module. If the problem persists, contact your system administrator.
The system is on, but the network does not start.	The network interface or remote boot is set incorrectly.	Check the shunt connector setting.
	The network cables are loose.	Be sure all cables are connected correctly.
	A conflict exists with another board in the system:	
	• IRQ jumpers are set incorrectly.	Check switch settings SW8 through SW12. Refer to Chapter 2.
	• The I/O address or memory address range is set incorrectly.	Check switch settings SW1 - SW5. Refer to Chapter 2.

Table 3–1 (Cont.) Fault Isolation By Symptom

Symptom	Possible Cause	Recommended Action
	The Ethernet address is not registered for this address node.	Re-register this module. If the problem persists, contact your system administrator.
The system is on and displays DE200 and a self-test code during system startup.	A problem could exist with the DEC EtherWORKS *Turbo* board.	See Table 3–2. Press the F1 key to continue. Replace or reinsert the Turbo board and try starting the system again.
	The I/O address or memory address range is set incorrectly, or is causing a conflict with another module.	Check switch settings SW1 - SW5. An address range conflict could exist between the DEC EtherWORKS *Turbo* board and another option module.
	The error code may be an IBM error code.	See your IBM owner's manual for additional information. If the problem persists, contact your system administrator.
The system cannot return to network operation after leaving an application program.	You could be using a program written or compiled in Version 1.0 BASIC (IBM BASIC Version 1.0, Interpreter or Compiler, GW-BASIC Version 1.0).	Do not use these versions of the program. Recompile the program using Version 2.0 or later of BASIC, or contact your software vendor for an updated version of the program.

3.2 Recovering From Self-Test Error Codes

Self-test errors can occur at system startup. Table 3–2 lists the DEC EtherWORKS *Turbo* board self-test error codes, the possible cause, and a recommended action. To recover from some error codes, you can try pressing the F1 function key to resume system operation.

NOTE
Although the DEC EtherWORKS *Turbo* board detects an error and is not operating, you can still use your personal computer.

Table 3–2 DEC EtherWORKS *Turbo* Board Self-Test Error Codes

Error	Description	Recommended Action
80	Memory access conflict	Check switches SW1 - SW5 for a conflict with another installed adapter.
81	Data path error	Check switches SW1 - SW5 for a conflict with another installed adapter. Call your Digital authorized service representative.
82	Address test conflict	Check switches SW1 - SW5 for a conflict with another installed adapter.
83	RAM test conflict	Check switches SW1 - SW5 for a conflict with another installed adapter.
84	Ethernet ROM CRC error	Check switch SW5 for a conflict with another installed adapter. If the problem continues, call your Digital authorized service representative.
85	NI_CSR error	Call your Digital authorized service representative.

Table 3–2 (Cont.) DEC EtherWORKS *Turbo* Board Self-Test Error Codes

Error	Description	Recommended Action
86	LANCE I/O address conflict	Check switch setting SW5.
87	LANCE initialization error	Call your Digital authorized service representative.
88	LANCE IRQ conflict	Check the IRQ switch settings, SW8 - SW12.
89	NI_CSR mask test error	Call your Digital authorized service representative.
8A	LANCE internal loopback error	Call your Digital authorized service representative.
8B	LANCE collision error	Call your Digital authorized service representative.
8C	LANCE CRC error	Call your Digital authorized service representative.
8D	Shadow RAM error	Call your Digital authorized service representative.
8E	Shadow RAM enable error	Call your Digital authorized service representative.
8F	Configuration error	Check switch settings SW8 - SW12 to be sure that only one of the switches is in the ON position. Also check the parameter settings for your network to make sure they match the board configuration.

A
General Information

A.1 Introduction

The DEC EtherWORKS *Turbo* board lets you integrate IBM-AT compatible computers into a network. After installing a DEC EtherWORKS *Turbo* board, you can use various network software products to integrate the computer into a network.

You can install a DEC EtherWORKS *Turbo* board in any IBM-AT or a computer that has an IBM-AT compatible bus.

You can connect the DEC EtherWORKS *Turbo* board to either a ThinWire network or a ThickWire network. You cannot, however, connect the DEC EtherWORKS *Turbo* board to both kinds of networks at the same time.

A.2 Physical Description

The DEC EtherWORKS *Turbo* board is a half-length IBM AT form-factor board that uses the full 16-bit bus connector.

The board measures 17.2 cm x 10.8 cm (6.75 inches x 4.25 inches); the length to the end of the connector is 18.7 cm (7.38 inches).

A.2.1 Functional Components

The major functional blocks on the DEC EtherWORKS *Turbo* board are as follows:

- Ethernet network protocol controller (LANCE)
- ThinWire (BNC connector) network interface
- Standard Ethernet ThickWire (DB-15S connector) network interface

- Diagnostics and remote-boot ROM - 16 Kbytes (optional)
- Network buffer RAM - 64 Kbytes
- Ethernet hardware address ROM

A.2.2 LED

There is one light emitting diode (LED) on the mounting bracket that displays the operating status of the DEC EtherWORKS *Turbo* board. The amber LED comes on during power-up testing and stays on if the test discovers a fault. Chapter 3 contains additional information on the LED.

A.2.3 Environmental Requirements

The environmental (temperature and humidity) requirements for the DEC EtherWORKS *Turbo* board are the same as for your IBM-AT personal computer.

A.3 System Specifications

The DEC EtherWORKS *Turbo* board operates correctly at an I/O channel bus speed of 10 MHz maximum. Table A–1 lists the system specifications of the board.

Table A–1 DEC EtherWORKS *Turbo* Board System Specifications

Memory Buffer Size	Memory Addressing Ranges
64 KB	C0000—CFFFF D0000—DFFFF E0000— EFFFF[1]
32 KB	C8000—CFFFF D8000—DFFFF E8000— EFFFF[1]

[1]Some PCs do not support the E0000 - EFFFF or E8000 - EFFFF memory address ranges; check your PC manual for this information.

Table A–1 (Cont.) DEC EtherWORKS *Turbo* Board System Specifications

I/O Memory Assignments	
I/O	200—20F 300—30F
Network Interface	**Selections**
Interrupt request (IRQ) lines	IRQ5, IRQ9, IRQ10, IRQ11, IRQ15
Power Requirements:	**ThinWire: 14.7 watts (maximum)** **ThickWire: 16.5 watts (maximum)**

DC Amps @ +5V: 2.1 A (maximum)

DC Amps @ +12V: 0.35 A (maximum) ThinWire;
(0.5 A to power external transceiver, DEC AUI (H4000 or equivalent).)

Bus Loads: 2 LSTTL

Operating Environment	
Temperature (at sea level)	15° - 32° C (59° - 90° F)
Relative humidity	8% to 80% (non-condensing)
Radiated emissions	FCC Class B VDE Class B

CAUTION

When adding any option module to your computer, verify that the combined power (wattage) required for all modules in your computer does not exceed the power supply rating. Check your PC documentation for this information.

B
Installing an Option ROM

B.1 Introduction

The ROM chip is optional on the DEC EtherWORKS *Turbo* board and is not required for correct operation. If you purchased the DEC EtherWORKS *Turbo* board from Digital (part number DE200), then the board already has the option ROM installed.

CAUTION
Static electricity can damage printed circuit boards and chips. It is strongly recommended that a grounded wrist strap and grounded work-surface-to-earth ground be used when handling these components.

If your configuration requires that the option ROM chip be installed, use the following procedure to install it.

B.2 ROM Installation Procedure

CAUTION
Improper insertion of the ROM chip can damage the board.

1. Note the location of the notch ❶ on the silk screen surrounding the ROM socket (Figure B–1).
2. Be sure that the notch on the ROM ❷ aligns with the notch on the silk screen and the socket.
3. Align the pins on the chip and press from side to side until the chip is fully seated.

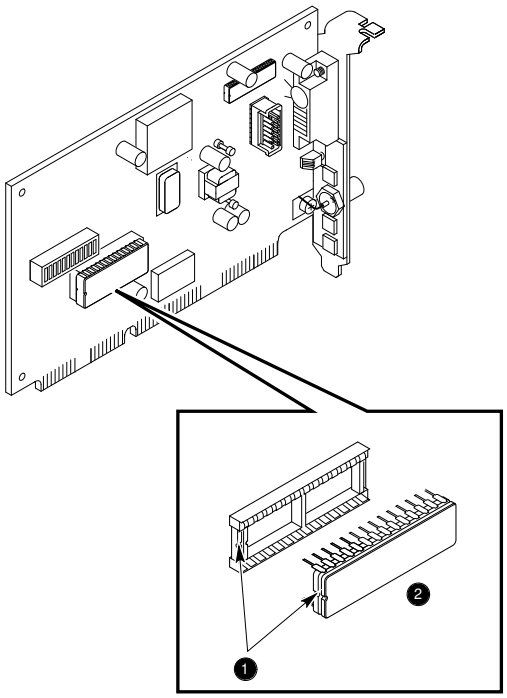

Figure B–1 DEC EtherWORKS *Turbo* ROM Installation