EtherWORKS *Turbo PCI*

User Information

Order Number: EK-DE435-OM. A01

Revision/Update Information: This is a new manual.

Digital Equipment Corporation
Maynard, Massachusetts

FCC ID: AO9-DE435

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

Note: 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. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

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:

– Re-orient or relocate the receiving antenna

– Increase the separation between the equipment and receiver

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected

– Consult the dealer or an experienced radio/TV technician for help

The use of unshielded Ethernet cables on ThinWire and thickwire ports with this equipment is prohibited due to non-compliance with FCC regulations for a Class B computing device pursuant to Part 15 of FCC Rules.

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

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About This Manual

The EtherWORKS *Turbo PCI* board is a processor-independent adapter designed for the peripheral component interconnect (PCI) bus. The EtherWORKS *Turbo PCI* board provides a connection from PCI compatible systems to local area network (LAN) environments that use IEEE 802.3 and Ethernet protocols.

Manual Organization

This manual contains three chapters and two appendices.

Chapter	Description
1	Provides an overview of the EtherWORKS *Turbo PCI* board and briefly describes the board's features.
2	Describes how to install the EtherWORKS *Turbo PCI* board in a PCI compatible computer, how to run the BIOS Setup utility, and how to run board diagnostics.
3	Contains references to device driver software installation information.
Appendix A	Describes problems you might encounter and suggests possible causes and solutions.
Appendix B	Provides system specifications and cabling requirements.

Manual Conventions

This manual uses the following conventions:
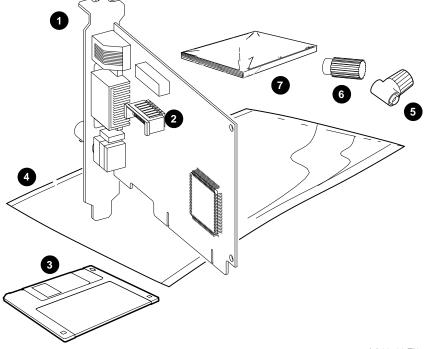
Convention	Description
Note	A note contains information of special importance.
Caution	A caution contains information to prevent damage to the equipment.
PN	Part Number.
❶	A number in a black circle in text refers to the corresponding number in an accompanying illustration.
Enter	A word in a box indicates a key. For example, Enter indicates the Enter key.
variables	In command descriptions, italic type indicates a variable that you supply.
`This type`	Text in monospace type indicates text you enter or text that the system displays.

EtherWORKS *Turbo PCI* Product Kit Contents

The product kit includes the items shown in Figure 1. Verify that you have the following kit items before proceeding:

- EtherWORKS *Turbo PCI* board ❶
- AUI jumper ❷
- 3½ inch distribution diskette ❸
- Anti-static board packaging bag ❹
- T-connector ❺
- Terminator ❻
- Owner's manual ❼

Figure 1   EtherWORKS _Turbo PCI_ Product Kit

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1

Introduction

This chapter describes the EtherWORKS *Turbo PCI* adapter and briefly summarizes its features.

The EtherWORKS *Turbo PCI* board is a processor-independent board that enables you to integrate PCI compatible systems (mobile computers, desktop PCs, high-end workstations, and multiprocessor servers) into an Ethernet/IEEE 802.3 network using ThinWire, AUI, or twisted-pair Ethernet cables. After you install the board in your system, you can use various network software products to integrate your system into a local area network (LAN) environment.

Features

The main features of the EtherWORKS *Turbo PCI* board are as follows:

- Capable of full duplex (20 Mb/s) operation in 10Base-T mode

- High performance 32-bit Direct Memory Access (DMA) architecture

- Auto media selection with software media configuration for 10Base2 ThinWire and 10Base-T twisted-pair Ethernet connections

- Low CPU utilization on the host computer

- Product kit includes ThinWire T-connector and terminator

- Supports 10Base2 ThinWire, AUI, and 10Base-T twisted-pair Ethernet connections

- Provides a comprehensive set of device drivers for the most popular network operating environments.

  - Novell NetWare

  - Microsoft Windows NT (Intel and AXP)

  - Microsoft Windows

  - Microsoft Windows for WorkGroups

  - Digital PATHWORKS

  - LAN Manager

  - SCO Unix

  - DOS

  - OS/2

2

Installation, Configuration, and Diagnostics

The steps to install the EtherWORKS *Turbo PCI* board are as follows:

- Prepare the EtherWORKS *Turbo PCI* board for installation.

- Install the EtherWORKS *Turbo PCI* board into a PCI compatible computer.

- Configure your computer for some installations using the BIOS Setup utility.

- Run the NICDIAG Diagnostic utility after you install the EtherWORKS *Turbo PCI* board.

- Connect your system to the network.

- Install the software (see Chapter 3).

The only tool you need is a screwdriver.

―――――――――――――― **Caution** ――――――――――――――

Static electricity can damage electronic components. Use an antistatic wrist strap while handling the components.

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Preparing the Board

Your EtherWORKS *Turbo PCI* board provides auto media selection with software media configuration features for 10Base-T twisted-pair networks and 10Base2 ThinWire networks.

If you intend to use a 10Base-T twisted-pair network, no board preparation is needed—the AUI jumper has no effect. Proceed to the Installing the Board section of this chapter.
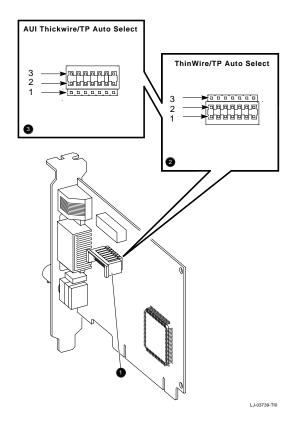
When not using a 10Base-T twisted-pair interface, the AUI jumper (❶, Figure 2–1) on the EtherWORKS *Turbo PCI* board determines which media interface, 10Base2 ThinWire or AUI, is used. The default AUI jumper setting is for a ThinWire network.

If you intend to use an AUI network, change the AUI jumper setting before you install the board in your computer. Table 2–1 provides instructions for setting the AUI jumper; Figure 2–1 shows the AUI jumper settings.

Table 2–1   AUI Jumper Settings

If you want to ...	Then ...
Connect to a 10Base2 ThinWire Ethernet network ❷	Leave the AUI jumper in the position connecting pin rows 1 and 2 (default setting).
Connect to Ethernet network using AUI cable ❸	Remove the AUI jumper assembly from the board. Rotate the assembly 180°, then position it over pin rows 2 and 3. Press the AUI jumper assembly firmly into place.
Connect to a 10Base-T twisted-pair Ethernet network	AUI jumper has no effect.

Figure 2–1 Configuring Media Interface

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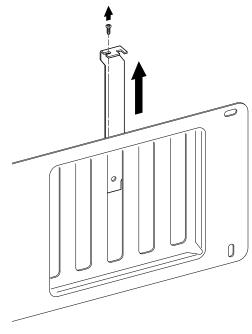
Installing the Board

The EtherWORKS *Turbo PCI* board has bus mastering support for high performance operation. Refer to your computer documentation to choose a bus-mastering PCI slot on your system. Then use the following procedure to install the EtherWORKS *Turbo PCI* board.
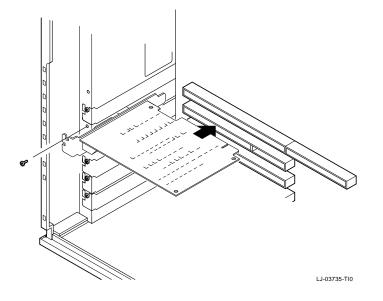
1. Set all power switches (system and peripherals) to the off position.

2. Unplug the power cord from the wall socket, then disconnect the cord from the system unit. Unplug any external devices.

3. Remove the computer cover(s) to access the PCI slots.

4. Unscrew and remove the system's option slot cover from an available PCI slot that supports bus mastering (Figure 2–2).

5. Insert the EtherWORKS *Turbo PCI* board into the slot, then push firmly into place (Figure 2–3).

6. Replace the screw to secure the board.

7. Replace the computer cover(s).

8. Connect the power cord to the system unit, then plug the power cord into the wall outlet. Reconnect any external devices.

9. Power on the system and peripherals.

Figure 2–2 Removing the PCI Slot Cover

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Figure 2–3   Installing the EtherWORKS *Turbo PCI* Board

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Configuration

Your EtherWORKS *Turbo PCI* board will be configured automatically in most PCI systems. Use your system's BIOS Setup utility only if you wish to modify the configuration after you install the EtherWORKS *Turbo PCI* board, or if you need to change the computer settings.

_____ **Note** _____

Refer to your computer documentation for instructions on how to use your system's BIOS Setup utility.

_____

BIOS Setup Utility

The BIOS Setup utility enables you to select and permanently store information about the computer's hardware and software in the battery-backed memory of the CMOS RAM. This information takes effect each time the computer boots and can be changed each time you run Setup.

The PCI device option allows you to configure the PCI slots on your computer's main logic board. Table 2–2 lists the PCI option settings available for the EtherWORKS *Turbo PCI* board.

Table 2–2 EtherWORKS *Turbo PCI* Option Settings

This setting . . .	Allows you to . . .	EtherWORKS *Turbo PCI* Requirements
Enable/disable device	Individually enable or disable each PCI slot.	PCI slot must be enabled.
IRQ	Individually set an IRQ default for each PCI slot (none, IRQ 5, 9, 10, 14, or 15).	IRQ 5, 9, 10, 14, or 15.
Enable master	Enable bus mastering on a PCI slot.	PCI slot must be enabled for bus mastering.[1]
Latency timer	Set the PCI latency timer (in PCI clocks) for each PCI device.	All settings supported.

[1]Some PCI computers have a slot that does not support bus mastering. Make sure the EtherWORKS *Turbo PCI* board is installed in a PCI slot that has bus mastering capabilities.

Running Setup

To run the BIOS Setup utility, use the following procedure:

1. Power on your computer and allow the power-on self-test (POST) to complete.

2. Make note of any configuration errors listed, then press F1 to display the setup screens.

3. Follow the instructions on your screen, or from any on-line help pop-up screens, to configure your computer.

Diagnostics

The EtherWORKS *Turbo PCI* distribution diskette contains the NICDIAG diagnostic utility for DOS-based computers. For other systems, refer to your computer documentation. It is recommended that you run this utility after initial installation to ensure the EtherWORKS *Turbo PCI* board is set up to meet your system requirements and to verify board functionality.

To install multiple boards in your system, invoke the BIOS Setup utility, then perform the following steps for each PCI slot containing an EtherWORKS *Turbo PCI* board:

- Enable the PCI slot.

- Assign an IRQ number.

- Enable bus mastering.

Note

Make sure you perform these steps prior to running the diagnostic utility.

When you run the NICDIAG diagnostics, make sure both the NICDIAG.EXE and DIAG.EXE files are in the same directory.

The NICDIAG Diagnostic utility prevents diagnostics from running if it detects an active EtherWORKS *Turbo PCI* board. The board is considered active if a network device driver is loaded. If necessary, remove the statement that loads the device driver in the CONFIG.SYS or other files and cold boot the computer to deactivate the board, or press F5 to bypass all startup files.

Accessing the Diagnostic Utility

To access the Diagnostic utility, use the following procedure.

1. Insert the EtherWORKS *Turbo PCI* distribution diskette into the disk drive.

2. Set the system to the disk drive being used.

3. Type NICDIAG at the DOS prompt.

   An introductory window appears. Follow the screen instructions to display the Main Menu.

4. Select the *View Configuration* option, then press Enter to display the current EtherWORKS *Turbo PCI* board configuration. Press Enter again to display more detailed configuration information. These parameters are for viewing only, and cannot be changed.

5. Select the *Diagnostic* option, then press Enter to run the diagnostics.

   When the diagnostics are complete, the screen displays the diagnostic result code and lets you know whether the board diagnostics passed or failed.

6. Press ESC to return to the NICDIAG Main Menu.

7. Select the *Exit* option from the Main Menu.

   The following warning message appears:

   ```
   Do you really want to quit? (Y/N)
   ```

8. Press Y to exit NICDIAG.

9. Restore the CONFIG.SYS file if modified.

10. Reboot your system.

Connecting to a Network

Depending on how you configured the EtherWORKS *Turbo PCI* board, use one of the following procedures to connect your system to the network.

Connecting to a ThinWire Ethernet Network

To connect the EtherWORKS *Turbo PCI* board to a ThinWire network:

1. Attach the ThinWire cable(s) to a T-connector.

2. If the system is at the end of an Ethernet segment, attach a terminator to the unused side of the T-connector. If the system is between consecutive networked systems, ensure that two ThinWire cables are attached to the T-connector. Termination is usually required at each end of a ThinWire cable segment.

3. Push the T-connector onto the BNC connector, located near the bottom of the board mounting bracket, then twist the T-connector to lock it in place (see ❶ in Figure 2–4).

Connecting to a Twisted-Pair Ethernet Network

To connect the EtherWORKs *Turbo PCI* board to a twisted-pair network:

Plug the twisted-pair Ethernet cable connector into the 8-pin (RJ-45) connector, located near the top of the board's mounting bracket, until it clicks and locks in place (see ❷ in Figure 2–4).

Connecting to a Full Duplex Device

To configure a full duplex connection, make sure that you are connecting to another device that supports full duplex mode to avoid serious network problems. Full duplex mode is enabled by the software. See the README.TXT file referenced in Chapter 3 for further information.

Connecting to an AUI Ethernet Network
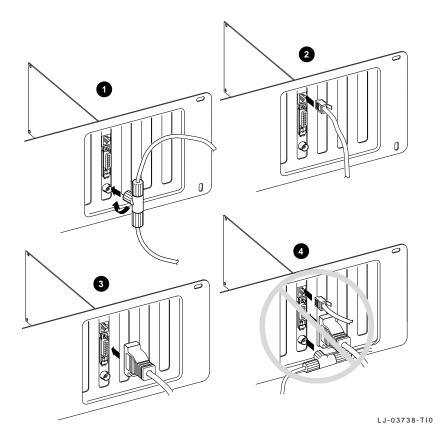
To connect the EtherWORKS *Turbo PCI* board to an AUI network:

1. Slide the latch assembly, located on the board's AUI connector, upward.

2. Plug the AUI cable connector into the 15-pin AUI connector, located on the board's mounting bracket.

3. Slide the latch assembly downward to lock the connector in place (see ❸ in Figure 2–4).

_____ **Note** _____

Do not connect more than one Ethernet cable to the EtherWORKS *Turbo PCI* board at the same time (see ❹ in Figure 2–4).

_____

Figure 2–4   Connecting to the Ethernet Network

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3
Device Driver Information

The EtherWORKS *Turbo PCI* distribution diskette files,
README.TXT and RELEASE.NOT, contain device driver
software and installation information. The diskette also contains
configuration information for PATHWORKS, LAN Manager-based,
Windows NT, and NetWare network operating systems (NOS).

- Refer to the README.TXT file located in the diskettes root
  directory for a complete list of the supported device drivers
  and the directory structure for each of the supported operating
  environments.

- Refer to the RELEASE.NOT file for information that pertains to
  exceptions to known installation or configuration problems.

The diskette contains additional README.TXT files within the
directory structures for each supported operating environment. These
files contain information that pertains to the specific device driver or
operating environment corresponding to the subdirectory where they
are found.

Obtaining Current EtherWORKS *Turbo PCI* Driver Files

The device driver software included in your EtherWORKS *Turbo PCI* kit could become outdated as the software evolves. The most current driver software files are available from the Internet, Compuserve, and the DECpc Bulletin Board Service. To obtain these files, use the following procedures:

- **To obtain the EtherWORKS *Turbo PCI* driver files from the Internet:**

    1. Perform an ftp connect to ftp.digital.com. The password is anonymous.

    2. Enter your Logon ID. (It does not matter what you select for your Logon ID.)

    3. Using lowercase letters, change your directory to the following:

            cd /pub/micro/msdos/network

    4. Select image mode:

            ftp> i

    5. Perform a get command on the DE435.ZIP file:

            ftp> get DE435.ZIP

- **To obtain the EtherWORKS *Turbo PCI* driver files from CompuServe:**

    1. Select the following forum and enter the LAN Controllers library:

            DECPCI (GO DECPCI)

    2. Retrieve the latest version of the DE435.ZIP file.

    For information on how to obtain a CompuServe account in the U.S., call 1-800-848-8990.

- **To obtain the EtherWORKS *Turbo PCI* driver files from the DECpc Bulletin Board Service:**

  1. Using a modem, connect to DECpc Bulletin Board Service by dialing 508-496-8800.

  2. Follow the screen's menu-driven instructions to download the driver files.

A
Problem Solving

This appendix describes problems you could encounter when installing the EtherWORKS *Turbo PCI* board and suggests possible causes and solutions. The EtherWORKS *Turbo PCI* board is also referred to as board in this appendix.

Fault Isolation By Symptom

Table A–1 describes how to isolate faults by the symptoms that are occurring.

Table A–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 it is not connected to the video board.	Be sure the monitor cable is firmly connected to the video board. Set the monitor power switch to ON.
	The board is not seated firmly.	Turn your system off, reseat the board, then turn the system on again (see Chapter 2).

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

Symptom	Possible Cause	Recommended Action
	The board is preventing the computer from operating correctly.	Disconnect the ThinWire or twisted-pair cable from the board. Turn your system off, reseat the board, then turn your system on again. If the problem persists, contact your system administrator or authorized service representative.
The system is on, but nothing happens. The keyboard does not respond.	The board is preventing the computer from operating correctly.	Disconnect the ThinWire or twisted-pair cable from the board. Turn the computer off, reseat the board, then turn the computer on again.
The system is on, but the network does not start.	The network interface is set incorrectly.	Set the AUI jumper to the correct setting.
	The network cables are loose.	Secure all cables. Remember that only one interface may be used at a time on the board.
	A conflict exists with another board in the system:	
	• The IRQ settings are incorrect.	Check the BIOS setup.

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

Symptom	Possible Cause	Recommended Action
	• The PCI slot containing the board is not enabled.	Use the BIOS Setup utility to enable the PCI slot.
The system is on and displays a DE435 configuration error during system startup.	A possible problem exists with the board.	See Table A–2. Press the F1 key to continue.
		Reinsert or replace the board and try starting the system again.
	The error code could be a system error code.	See your computer owner's manual for additional information. If the problem persists, contact your system administrator.

Diagnostic Test Errors

Table A–2 describes the EtherWORKS *Turbo PCI* board diagnostic test error messages and the recommended corrective actions for each group of messages.

_____ **Note** _____

If the board detects an error and is not operating, you can still use your computer.

_____

Table A–2 Diagnostic Test Error Codes

Error Message	Recommended Actions
Err 1, Memory allocation error	This indicates insufficient memory for diagnostics; release some memory. If problem persists, contact your system administrator.
Err 2, Registers W/R error	Ensure board is seated firmly in bus slot, or try another available bus slot. If problem persists, board could be defective. Contact Digital Technical Support.
Err 4, Adapter not enabled or found	Ensure the PCI device was configured correctly in the BIOS Setup utility, or try another available bus slot. If problem persists, board could be defective. Contact Digital Technical Support.
Err 5, Undefined error code	This error code is reserved for future use.
Err 7, Bus error: parity error Err 8, Bus error: master abort Err 9, Bus error: target abort	Board could be defective. Contact Digital Technical Support.

Table A–2 (Cont.)   Diagnostic Test Error Codes

Error Message	Recommended Actions
Err 10, EtherWRKS babbler, can't transmit Err 11, Transmit time-out error Err 12, Receive time-out error Err 13, Receive data failure Err 14, RDES0: receive error detected Err 15, RDES0: framing error Err 16, RDES0: overflow error Err 17, RDES0: CRC error Err 18, RDES0: runt frame Err 19, RDES0: length error Err 20, RDES0: collision seen Err 21, EtherWRKS failed to detect CRC error Err 22, TDES0: transmit error detected Err 23, TDES0: deferred Err 24, TDES0: underflow error Err 25, TDES0: link fail	These messages indicate network-related test failures. If driver was installed before running diagnostics, disable drivers and network software, power down computer, rerun diagnostics. If problem persists, board could be defective. Contact Digital Technical Support.
Err 26, TDES0: heartbeat fail	Ensure AUI device supports heartbeat test and is enabled. If not supported, ignore error. If supported, check or replace cable or AUI device. If problem persists, board could be defective. Contact Digital Technical Support.
Err 27, TDES0: excessive collisions Err 28, TDES0: late collision Err 29, TDES0: no carrier Err 30, TDES0: loss of carrier Err 31, TDES0: jabber time-out	These messages indicate network-related test failures. If driver was installed before running diagnostics, disable drivers and network software, power down computer, rerun diagnostics. If problem persists, board could be defective. Contact Digital Technical Support.

Table A–2 (Cont.)   Diagnostic Test Error Codes

Error Message	Recommended Actions
Err 32, TDES0: chained xmt/rcv test error Err 33, Internal loopback test error Err 34, 10Base-T internal loopback test error	These messages indicate an IRQ conflict (when two boards want to use same interrupt line). Reconfigure board to use another IRQ line. If problem persists, board could be defective. Contact Digital Technical Support.
Err 35, 10Base-T external loopback test error Err 36, AUI external loopback test error	Improper termination causing Loopback test to fail. Supplemental network tests require loopback connectors for ThinWire or TP repeater link for TP testing (available when diagnostics are run from NICDIAG diagnostic menu). To test ThinWire coaxial port, remove board from live network, terminate T-connector. To test TP port, board must have valid link to TP repeater (green LED lights when good link). If LED does not light, check TP cabling and TP repeater port. To test AUI port, select AUI port using board AUI jumper and connect to AUI Hub or repeater. If error persists, board could be defective. Contact Digital Technical Support.

Table A–2 (Cont.)   Diagnostic Test Error Codes

Error Message	Recommended Actions
Err 37, Interrupt mask test error Err 38, Force collision test error Err 39, Two buffered xmt/rcv test error	These messages indicate an IRQ conflict (when two boards want to use same interrupt line). Reconfigure the board to use another IRQ line. If problem persists, board could be defective. Contact Digital Technical Support.
Err 40, CSR5: transmit process stopped Err 41, CSR5: transmit jabber time-out Err 42, CSR5: transmit underflow Err 43, CSR5: receive buffer unavailable Err 44, CSR5: receive process stopped Err 45, CSR5: receive watchdog time-out Err 46, CSR5: AUI/TP switch Err 47, CSR5: full duplex short frame rcv Err 48, CSR5: link fail	These messages indicate network-related test failures. If driver was installed before running diagnostics, power down computer, then start again. If problem persists, board could be defective. Contact Digital Technical Support.
Err 49 to 58, Unidentified error code	These error codes are reserved for future use.
Err 59, Unidentified error code	None.

B

General Information

This appendix provides general system specifications and cabling requirements for the EtherWORKS *Turbo PCI* board.

Physical Description

The EtherWORKS *Turbo PCI* board is a PCI form-factor printed circuit board that uses the full 32-bit bus data path interface. The board measures 5.086 inches (129 mm) x 3.750 inches (95 mm), and is constructed using four-layer circuit board technology with two signal layers and two power/ground layers.

Functional Components

The major functional components of the EtherWORKS *Turbo PCI* board are as follows:

- Ethernet network protocol controller (MAC)

- 10Base-T twisted-pair Ethernet (RJ-45 connector) network interface

- 10Base2 ThinWire Ethernet (coaxial) network interface

- AUI Ethernet network interface

LEDs

During normal system power-up, both the amber and green LEDs turn on and remain on. Once the network software and driver are loaded, or the EtherWORKS *Turbo PCI* board's diagnostics are executing, the LEDs reflect status as described in Table B–1.

Table B–1 describes the EtherWORKS *Turbo PCI* board LEDs.

Table B–1   LEDs

This LED...	Indicates	And the status is...
Amber	Network activity	**On** or **blinking**—Network is active.
		Off—Network is inactive.
Green[1]	TP link	**On**—Link is OK.
		Off—Link has failed
		Blinking—Link is failing.

[1]This LED is used when twisted-pair or twisted-pair full duplex mode is selected and a TP cable is attached to the network. Refer to the twisted-pair link LED description for more information.

Network Activity

When the network or diagnostic software is running, the network activity LED turns on whenever transmit or receive data is detected on the network. With low levels of network activity, the LED blinks. As network activity increases, the LED blinks faster and, at times, appears to remain on.

Twisted-Pair Link

When the network or diagnostic software is running, and Twisted-pair or Twisted-pair Full Duplex mode is selected, the TP link LED turns on if receive data or TP link pulses are detected. If no receive data or TP link pulses are detected within 150 milliseconds, the TP link LED turns off, indicating TP link fail status. When Twisted-pair Link Disabled or AUI or ThinWire mode is selected, this LED remains on.

Interrupt Request (IRQ) Lines

The IRQ lines can be set to IRQ5, IRQ9, IRQ10, IRQ14, or IRQ15.

Electrical Parameters

Table B–2 shows the electrical parameters for the EtherWORKS *Turbo PCI* board.

Table B–2   Electrical Parameters

Cable Type	AUI Jumper	Power Maximum	DC Amps (+5.0 V) Maximum	DC Amps (+12.0 V) Maximum
Twisted-pair[1]	ThinWire	3.4 W	0.2 A	0.2 A
	AUI	1.0 W[2]	0.2 A	0.0 A
ThinWire	ThinWire	3.4 W	0.2 A	0.2 A
AUI [3]	AUI	7.0 W	0.2 A	0.5 A

[1]When using twisted-pair cable, the AUI jumper position effects the amount of power consumed by the EtherWORKS *Turbo PCI* board.

[2]AUI cable not connected to MAU.

[3]When using the AUI cable, the amount of +12.0 Vdc power used is dependent on the transceiver or medium attachment unit (MAU) to which the board is connected.

_____ **Caution** _____

When adding boards to your computer, verify that the combined power (wattage) required for the boards in your computer does not exceed the power supply rating. Check your computer documentation for this information.

Operating Environment

Table B–3 lists the recommended operating environment specifications for the EtherWORKS *Turbo PCI* board.

Table B–3   Operating Environment

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

Cabling Requirements

You must use one of the following cable types or the equivalent to connect your EtherWORKS *Turbo PCI* board to the network. When referring to the Digital part numbers, the xx stands for cable length in meters.

- 10Base-T twisted-pair cable:

  - BN25G-xx or BN26K-xx—Point-to-point unshielded twisted-pair patch cable to connect an EtherWORKS *Turbo PCI* board to an office wall plate from a repeater.

  - BN26M-xx—Point-to-point shielded twisted-pair office cable to connect an EtherWORKS *Turbo PCI* board to a shielded office wall plate.

  - BN24F-xx—Unshielded twisted-pair office cable with crossover (4-conductor,) 2-twisted pair to connect an EtherWORKS *Turbo PCI* board to another EtherWORKS *Turbo PCI* board, or an EtherWORKS *Turbo PCI* board to an office wall plate from a 900-series DECrepeater.

  - BN26N-xx—Shielded twisted-pair office cable with crossover (4-conductor, 2-twisted pair) to connect an EtherWORKS *Turbo PCI* board to another EtherWORKS *Turbo PCI* board, or an EtherWORKS *Turbo PCI* board to a shielded office wall plate from a 900-series DECrepeater.

- 10Base2 ThinWire cable:

  - BC16M-xx ThinWire cable used with an H8223-00/CDA T-connector and a H8225-00/CDA ThinWire terminator when connecting to an office wall plate.

- AUI cable:

  - BNE4C-xx IEEE 802.3 office transceiver cable

  - BNE3H-xx (PVC) IEEE 802.3/standard transceiver cable

  - BNE3L-xx (Plenum) IEEE 802.3/standard transceiver cable

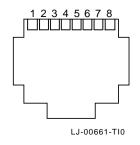For further information about network configuration, planning, and cabling, refer to the following:

- *DECconnect System Planning and Configuration Guide* (PN EK-DECSY-CG)

- *OPEN DECconnect Applications Guide* (PN EC-G2570-42).

Card Connector Pinning (RJ-45)

The EtherWORKS *Turbo PCI* board's 10Base-T twisted-pair networks connector has the following pin signals (see Figure B–1).

Pin Number	Signal Name
1	Transmit +
2	Transmit -
3	Receive +
4	NC (no connection)
5	NC (no connection)
6	Receive -
7	NC (no connection)
8	NC (no connection)

Figure B–1   RJ-45 Connector (Front View)

LJ-00661-TI0

C
International Technical Support

Table C–1 lists the international telephone numbers to call for technical support for the EtherWORKS *Turbo PCI* adapter.

Table C–1 International Support Telephone Numbers

Country	Telephone Number
United States	1-800-354-9000
Australia	31-2-5615252
Austria	0222-86630-555
Belgium	02-7297744
Canada (English)	1-800-267-5251
Canada (French)	1-800-267-2603
Denmark	80301005
Finland	90 9800 2878
France	1-69874123
Germany	01307702
Hong Kong	852-4149779
Israel	052-592-300
Italy	2-1678 20062
Korea	82-2-7991114
Malaysia	60-3-2300111

Table C–1 (Cont.) International Support Telephone Numbers

Country	Telephone Number
Mexico	520140810017
Netherlands	030-832888
Northern Ireland	0232 381381
Norway	02-256300
Phillippines	623-810-5156
Portugal (Lisbon)	01-3877051
Portugal (Oporto)	02-6068805
Republic of Ireland	01-381216
Singapore	330-6225
Spain (Madrid)	34-(9)1-5834257
Spain (Barcelona)	34-(9)3-4012222
Sweden	08-988835
Thailand	66-254-8191
United Kingdom	025 6-59200