

Digital EtherWORKS Pocket Ethernet Adapter

User Information

Order Number: EK-DEPEA-OM. A01

FCC ID: AO9-DEPEA

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 Thick Wire 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 Digital EtherWORKS Pocket Ethernet Adapter-Modul in Verbindung mit Turbo Personalcomputersystemem entsprechen den Funkentstöranforderungen der DBP-Verfugung 523/69 und VDE0871 Grenzwertklasse B.

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First Edition, 1993

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This document was prepared using VAX DOCUMENT Version 2.1.

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About This Manual

The Digital EtherWORKS Pocket Ethernet Adapter (DEPEA) is an external pocket-sized adapter that extends the current Digital family of Ethernet adapters. The DEPEA provides a connection from IBM compatible personal computers (PCs) to local area network (LAN) environments that use IEEE 802.3 and Ethernet protocols.

In this manual, DEPEA refers to both the DEPEA-A x 10BASE-T (twisted-pair) and DEPEA-B x 10BASE2 (ThinWire) models of the adapter unless otherwise noted.

Manual Organization

This manual contains four chapters and two appendices.

Chapter	Description
1	Provides an overview of the DEPEA and briefly describes the product's features.
2	Describes how to install the DEPEA.
3	Contains information about installing the software device drivers.
4	Describes the diagnostic and configuration features of the DEPEA.
Appendix A	Describes problems you may 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 to the reader.
Caution	A caution contains information to prevent damage to the equipment.
<i>x</i>	A lowercase x in italic type indicates the generic use of a letter.
❶	A number in a black circle in text refers to the corresponding number in an accompanying illustration.
[]	Brackets indicate optional elements in command description.
PN	Part number.
<i>Italic type</i>	Italic type emphasizes important information, indicates complete titles of documents, and in command descriptions, indicates a variable that you supply.
This type	Text in monospace type indicates text you enter or text that the system displays.

Product Kit Contents

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

- Digital EtherWORKS Pocket Ethernet Adapter (DEPEA) ❶
- AC/DC power adapter with DC power cord ❷
- T-connector (supplied with DEPEA-Bx models only) ❸
- Power cord ❹ (country-dependent)
- DEPEA carrying bag ❺
- 3½ inch distribution diskette ❻ containing the software device drivers and README files
- User Information Guide ❼

Figure 1 DEPEA Product Kit

1

Introduction

This chapter describes the Digital EtherWORKS Pocket Ethernet Adapter (DEPEA) and briefly summarizes the features of this product.

The DEPEA is an external pocket-sized adapter that connects to a standard parallel printer port, eliminating the need to install an internal Ethernet board. Because the DEPEA supports standard Ethernet cabling, it provides a flexible LAN connectivity solution for users of laptops, notebooks, and desktop personal computers (PCs).

Features

The main features of the DEPEA are as follows:

- Supports Ethernet cabling.
- Connects externally to a standard parallel printer port. This provides a good alternative for workstation users where motherboard slots or power is at a premium.
- Easy to handle and transport. This provides an economical choice for infrequent network users because the DEPEA can be moved from computer to computer.
- Contains no configuration switches or jumpers.
- Uses an external power supply.
- Provides driver and diagnostic programs on a 3½ inch distribution diskette.

2

DEPEA Installation

This chapter describes how to plug the DEPEA into a computer parallel printer port, the DEPEA indicator lights (LEDs) and connector ports, and how to attach office cable to the DEPEA connector ports.

Printer Port

The DEPEA connects externally to a standard computer parallel printer port using a 25-pin D-shell connector ❶. The device is secured by rotating the thumb screw locks ❷ clockwise until it locks in place (see Figure 2-1).

LEDS

The top panel of the DEPEA contains two LEDs: a diagnostic/activity LED ❸ and an AC/DC power OK LED ❹ (see Figure 2-1). The DEPEA-Ax model contains a link LED located to the right of the RJ-45 connector (see ❹, Figure 2-2).

The amber diagnostic/activity LED lights when diagnostics are performed on the adapter module and blinks to show network activity. If the LED remains on after diagnostics have been run, then the module has failed the diagnostics.

The green power OK LED lights when the adapter is receiving power.

The link LED lights when an RJ-45 media connection is active (a good cable link).

Figure 2–1 The Digital EtherWORKS Pocket Ethernet Adapter (DEPEA)

Connectors

There are two models of the DEPEA to provide the following types of connectivity:

DEPEA-Ax

This model provides an RJ-45 modular jack that complies with the IEEE 802.3 10BASE-T standard interface. The maximum cable segment length must not exceed 100 meters.

To install the DEPEA-Ax:

1. Turn the PC power off.
2. Plug the DEPEA into the PC parallel printer port and secure the device using the thumb screw locks (see Figure 2–1).
3. Plug the office cable ❶ into the DEPEA RJ-45 jack ❷ (see Figure 2–2).
4. Plug the DC power cord ❸ on the power adapter into the power socket located to the left of the network connector.
5. Plug one end of an AC power cord into the power adapter and the other end into a standard electrical outlet.
6. Turn the PC power on and proceed to Chapter 3 for driver installation instructions.

Figure 2-2 DEPEA-Ax Installation

DEPEA-Bx

This model provides a BNC connector that complies with the IEEE 802.3 10BASE2 standard interface. The maximum cable segment length must not exceed 185 meters.

To install the DEPEA-Bx:

1. Turn the PC power off.
2. Plug the DEPEA-Bx into the parallel printer port of your computer and secure the device using the thumb screw locks (see Figure 2-1).
3. Attach a 50-ohm terminator ❶ to the T-connector ❷ if you are connecting to the end of the network. (A terminator is not supplied with this product.)
4. Attach the office cable ❸ to the T-connector; attach the T-connector to the DEPEA BNC connector ❹ (see Figure 2-3).
5. Plug the DC power cord ❺ on the power adapter into the power socket located to the left of the network connector.
6. Plug one end of an AC power cord into the power adapter and the other end into a standard electrical outlet.
7. Turn the PC power on and proceed to Chapter 3 for driver installation instructions.

Figure 2-3 DEPEA-Bx Installation

Operation Mode

Many computer designs allow the parallel printer port to be changed from unidirectional to bidirectional or enhanced printer port (EPP) mode of operation to improve the input/output (I/O) transfer rate. The DEPEA supports all modes; however, the EPP mode is recommended for the best results. Refer to your computer user manual for instructions on how to change the mode of operation.

3

Software Device Driver Installation

This chapter describes how to install the DEPEA software device driver files required for PATHWORKS, LAN Manager-based, and NetWare network operating systems. These files (NDIS, ODI, and Windows for WorkGroups) are contained on the DEPEA distribution diskette.

The DEPEAR diagnostic utility will execute automatically during device driver installation. Refer to Chapter 4 and Appendix A if any problems occur during the installation. Refer to the driver README text file for additional information.

Figure 3-1 provides the format and contents on the distribution media.

Figure 3-1 Distribution Media (Format and Contents)

NDIS-DOS Device Driver Installation

The following procedure assumes that you are installing the NDIS driver in a PATHWORKS environment and therefore a \DECNET subdirectory exists. If you are not installing the NDIS driver in a PATHWORKS environment, copy all relevant protocol files into a subdirectory and use that subdirectory to execute the protocol.

If this is a first-time installation, check with your PATHWORKS system manager to ensure that your PC has been properly configured as a PATHWORKS client with the required node name and address.

To install the NDIS-DOS device driver:

1. Change to the C:\DECNET subdirectory (or your protocol subdirectory) by entering the following command:

```
C:\> CD DECNET
```

2. Insert the DEPEA distribution diskette into the disk drive (for example, drive A) and copy the necessary files:

```
COPY A:\NDIS\DOS\DEPEA.DOS
```

3. Update the existing DECNET\PROTOCOL.INI file with the following DEPEA parameter values:

```
DRIVERNAME=DEPEA$  
INTERRUPT=7  
IOADDRESS=0X378  
DIAGNOSTIC=1  
PMODE=3
```

These values are contained in the PROTOCOL.INI file located in the A:\NDIS\DOS directory. To disable the diagnostic utility, change the parameter to DIAGNOSTIC=0.

4. Add the following two lines to the CONFIG.SYS file:

```
DEVICE=\DECNET\PROTMAN.SYS/I:C:\DECNET  
DEVICE=\DECNET\DEPEA.DOS
```

Note

Change all references to a previous network device (for example, DEPCA) to the current device (DEPEA).

5. Reboot the system.

ODI Client Device Driver Installation

The DEPEA.COM device driver file is used in conjunction with the LSL.COM, IPXODI.COM, and NETX.COM files that are provided on the NetWare version 3.11 DOS/ODI service diskette. You have the option to specify the printer port mode (Pmode=*x*) for the DEPEA, where 1 is unidirectional, 2 is bidirectional, or 3 is EPP.

If this is a first-time installation, check with your NetWare system manager to ensure that your PC has been properly configured as a NetWare client.

To install the ODI device driver:

1. Create a NETWARE subdirectory from which to execute the client driver. Copy the files located in the directory A:\ODI\CLIENT from the DEPEA distribution diskette into this subdirectory and set the default to this directory. (The following assumes the root directory of the C:\> disk drive is being used.)

```
C:\> MD NETWARE
C:\> CD NETWARE
```

2. Copy the necessary files from the DEPEA distribution diskette to the login directory:

```
C:\NETWARE> COPY A:\ODI\CLIENT\*.*
```

3. Update the existing NET.CFG file located in the C:\NETWARE\CLIENT directory with the following:

```
DIAGNOSTIC=1
PMODE=3
```

4. Copy the following files to the login directory on the server:

```
C:\NETWARE\NETX.COM
C:\NETWARE\IPXODI.COM
C:\NETWARE\LSL.COM
```

5. Reboot the system.
6. Continue with the standard NetWare login procedure.

Windows for WorkGroups Device Driver Installation

The Microsoft Windows for WorkGroups (WINWGRP) installation kit contains eight diskettes. The seventh diskette will prompt you to install diskette eight to configure the network environment. If WINWGRP is already installed on your system, go to section B; otherwise, insert diskette eight and proceed as follows.

A. To install the device drivers during an installation of Windows for WorkGroups:

1. Select the Unlisted or Updated Network Adapter option, then click on Continue.
2. Remove the WINWGRP diskette from the disk drive, insert the DEPEA distribution diskette to load the OEMSETUP.INF file, then enter the file location path:

A:\WINWGRP

Note

Do not include the filename as part of the path.

The program will indicate that you have selected a Digital DEPEA Ethernet Adapter. Click on OK to proceed with the installation.

3. When the program prompts you for the PROTMAN.DOS file, remove the DEPEA distribution diskette from the disk drive, insert the WINWGRP diskette to load the PROTMAN.DOS file, then enter the following:

A:\

4. When the program prompts you for the driver, remove the WINWGRP diskette, insert the DEPEA distribution diskette to load the DEPEA.DOS file, then enter the file location path:

A:\WINWGRP

Click on OK to proceed with the installation. The screen will display the recommended settings for your adapter. Select the Advanced option to modify any settings to comply with your PC operating environment. Click on Continue to accept the settings and complete the installation.

5. Reboot the system.

B. To install the device drivers on a PC with Windows for WorkGroups previously installed:

1. Start the Windows for WorkGroups program on your PC.
2. Select the Main option.
3. Select the Control Panel option.
4. Select the Network option.
5. Click on Adapters.
6. Click on Remove to delete the current network adapter.
7. Click on Add.
8. Select the Unlisted or Updated Network Adapter option, and click on OK.
9. Insert the DEPEA distribution diskette into drive A, and enter the OEMSETUP.INF file location path.

A:\WINWGRP

Note

Do not include the filename as part of the path.

10. Click on OK to proceed with the installation.
11. When the screen displays the configuration settings for the DEPEA and prompts you to indicate whether they are correct, click on OK. Click on Close to clear the screen.
12. Click on OK to accept the settings and complete the installation.
13. Reboot the system.

4

Diagnostics and Configuration

This chapter describes the diagnostic and configuration features of the NICDIAG.EXE diagnostic utility contained on the DEPEA software distribution diskette.

Diagnostic Utility

The NICDIAG.EXE utility is used in conjunction with the DEPEAR.D.COM utility to test the DEPEA for proper installation, operation, and to view the configuration setup. The NICDIAG.EXE and the DEPEAR.D.COM files must be in the same directory to run diagnostics.

To execute the NICDIAG.EXE diagnostic utility:

1. Change the disk drive to your top-level directory:

```
CD A:\
```

2. Enter NICDIAG at the DOS prompt.

The utility is menu driven and provides help for each option at the bottom of the screen.

3. Enter the following format to invoke NICDIAG.EXE:

```
A:\NICDIAG [Pmode=x]
```

The parameters for Pmode are defined as follows:

- x = 1 for unidirectional mode
- x = 2 for bidirectional mode
- x = 3 for EPP mode

Note

The NICDIAG utility will not allow diagnostics to be run when it detects that the DEPEA device is *active*. The device is considered active if a network device driver is loaded. It may be necessary to remove the statement that loads the device driver in the CONFIG.SYS file or other file and power cycle the DEPEA to *deactivate* the device.

To run diagnostics in loopback mode, disconnect the cable from the network and terminate it using the proper turnaround connectors: for the DEPEA-A_x, use an H4082-AA loopback connector; for the DEPEA-B_x, attach 50-ohm terminators to both ends of the BNC T-connector.

Diagnostic Tests

The diagnostic program contains the functionality to show parameters and results for the following tests.

Buffer Memory Access Test

This test performs read/write functions to verify that the data transfer between the DEPEA and your PC is secure and that the DEPEA local random access memory (RAM) has no failure.

DEPEA Internal Register Test

This test performs read/write functions using all DEPEA registers and patterns to verify the reliability of the DEPEA internal registers.

Ethernet Address ROM Test

This test performs a checksum to verify the Ethernet address read-only memory (ROM). The address is preprogrammed and cannot be altered.

Interrupt Control Test

This test forces the DEPEA to produce an interrupt to confirm the validity of the system interrupt controller.

DEPEA Functions

This test performs step-by-step checks on the DEPEA internal functions.

Internal/External Loopback

This test generates network control and data packets that are sent to three data turnaround points. The data are received by the DEPEA receiver and sent back to the computer for verification.

Configuration

The diagnostic screen reports whether the parallel printer port transfer mode is either unidirectional or bidirectional. Refer to the README file for enhanced printer port (EPP) mode. The diagnostic screen also reports if the unit has been properly connected or if there is a parallel printer port failure.

A

Problem Solving

This appendix describes the Digital EtherWORKS Pocket Ethernet Adapter (DEPEA) error messages, their possible causes, and some solutions.

The DEPEA diagnostics are normally executed prior to the driver being loaded to ensure the hardware is functional before connecting to the network. If any of the diagnostic tests fail, the driver will not load and the network connection cannot be made. A diagnostic failure may be the result of an incorrect software or hardware installation, a resource conflict, or a defective DEPEA.

Error Messages

Table A-1 describes possible DEPEA error messages and the recommended corrective actions for each group of messages.

Table A-1 Error Messages

Message	Recommended Actions
Unable to determine I/O address Ethernet Address ROM CRC failed Wrong Card ID Register R/W test failed	Ensure DEPEA is plugged into the PC parallel printer port correctly; ensure parallel printer port is enabled. Verify that green Power OK LED is on and power adapter is connected correctly. Ensure network configuration file settings (PROTOCOL.INI for NDIS users, NET.CFG for ODI users) match printer port settings. Plug DEPEA into another parallel printer port (if available) or into a different PC, and run diagnostics again.

(continued on next page)

Table A-1 (Cont.) Error Messages

IRQ equal0 IRQ test failed ICR, Interrupt Enable test failed ICR (TNE, RNE, TXD, or RXD) Mask test failed	Ensure that network configuration file settings match those of the PC parallel printer port. Ensure there is no IRQ conflict.
Queue test failed: - Free Memory Queue test - Receive Queue test - Transmit Queue test - Transmit Done Queue test - Page Index Register test - I/O Page Register test - Memory Page Register test	Ensure DEPEA is plugged into the PC parallel printer port correctly; ensure parallel printer port is enabled. Verify that green Power OK LED is on and power adapter is connected correctly.

B

General Information

This appendix provides some general system specification and cabling requirements for the Digital EtherWORKS Pocket Ethernet Adapter (DEPEA).

Functional Components

The major functional components of the DEPEA are as follows:

- H7810 AC/DC power adapter
- Parallel printer port bus interface logic
- Ethernet network protocol controller (MAC)
- Network buffer RAM (128K bytes)
- Ethernet address ROM (32 bytes)

LEDs

The DEPEA contains the following light emitting diode (LEDs):

Table B-1 LEDs

Function	Color	Condition		
		On	Off	Blinking
Diagnostic/Activity	amber	failed	pass	network activity
Power OK	green	power on	no power	–
Link (DEPEA-Ax only)	green	TP link OK	TP link failed	network activity

System Specifications

This section lists the following system specifications for the DEPEA.

Input/Output (I/O) Address

The DEPEA base I/O address can be set to 03BC, 0278, or 0378 (the default).

Interrupt Request (IRQ) Lines

The IRQ lines can be set to either 5 or 7 (the default).

Power Requirements

The electrical requirements for the DEPEA are as follows:

Table B-2 Electrical Parameters

Board	Power (Maximum)	DC Amps (+5.0 V) (Maximum)
DEPEA-A x	1.75 W	350 mA
DEPEA-B x	4.00 W	800 mA

Note

The auto-ranging DEPEA power adapter (H7810) provides a maximum of 6.00 watts of AC to DC power at +5.0 volts.

Operating Environment

The following is the recommended operating environment for the DEPEA:

- Temperature (at sea level): 10°—40°C (50°—104°F)
- Relative humidity: 10% to 90% (non-condensing)
- Radiated emissions: FCC Class B, VDE Class B

Cabling Requirements for the DEPEA

The following cabling is used to connect office cables to the DEPEA:

- 10BASE-T twisted-pair cable for RJ-45 modular jack connection, PN BN24F-xx (where xx stands for segment length in meters)
- 10BASE2 ThinWire cable for BNC connection, PN BC16M-xx

Obtaining Current DEPEA Driver Files

A. To obtain the current DEPEA software driver files on the Internet:

1. Perform an ftp connect to gatekeeper.dec.com. The password is anonymous.
2. Enter your Logon ID. (It doesn't 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 DEPEA.ZIP file:

```
ftp> get
```

B. To obtain the DEPEA software 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 DEPEA ZIP file.

For information on how to obtain a CompuServe account, call (800)848-8990.

