

EtherWORKS

Ethernet PCMCIA Card

Installation Manual

Part Number: EK-DEPCM-OM

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- Increase the separation between the equipment and receiver
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- 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 the FCC Rules.

These products are found compliant with the requirements of CISPR-22 Class B and are eligible to bear the CE Mark label.

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About This Manual

This is an installation guide for Digital's EtherWORKS PCMCIA cards, namely, EtherWORKS Turbo and EtherWORKS Turbo Plus. Read the manual before attempting to install the cards. All information in this manual refers to both products unless otherwise stated. It covers the following topics :

- Product description, summary of features and specifications
- Description of important card parts, media coupler, LED indicators
- Hardware installation procedure

 Procedures for software driver installation and additional information or changes that become available after the manual is printed are in README.TXT files. Use the DOS DIR command to locate all available README.TXT files on the Driver Diskette that comes with the package. View each file's content using the DOS TYPE command.

Package Contents

Carefully unpack the contents of the package and check them against the corresponding checklist that follows:

EtherWorks Turbo

- EtherWORKS Turbo PCMCIA Card
- Media Coupler (with 10BASE-T connector)
- Driver Diskette
- Installation Manual


EtherWORKS Turbo Plus

- EtherWORKS Turbo Plus PCMCIA Card
- Media Coupler (with 10BASE-T and 10BASE2 connectors)
- Driver Diskette
- Installation Manual

Please inform your dealer immediately should there be any wrong, missing, or damaged parts.

If possible, retain the carton, including the original packing materials. Use them again to repack the product in case there is a need to return it for repair.

Back up your Driver Diskette and use the copy as the working diskette. Do this to protect the original from accidental damage.

 Fill in the **Owner Registration Card** and mail it to Digital Equipment Corporation.

Quick Installation Guide

1Step™ for DOS Workstations

1Step is designed to simplify the process for installing the EtherWORKS PCMCIA card for NetWare® or other network operating systems. To quickly install and configure your card for both NetWare and non-NetWare users, do the following:

1. Turn off the power of your host PC.
2. Install the EtherWORKS PCMCIA card into the Type II PCMCIA slot.
3. Turn on the power switch.
4. After the system boots up, insert the Driver Diskette that comes with your package into the floppy drive.

1Step for NetWare

Before you begin, view the README.TXT file in the Driver Diskette's root directory by typing:

```
A:\> TYPE README.TXT    Press <Enter>
```

Included in the Driver Diskette are special DOS commands to automatically configure the card, install the appropriate NetWare driver and log on to your NetWare server. From drive A, enter one of the following DOS commands:

| DOS Command | Description |
|------------------------|--|
| ODI <Enter> | Novell recommends that you use the DOS ODI driver on all new NetWare products, including NetWare 3.11, NetWare 4.x and NetWare Lite. |
| MPX <Enter> | The high-performance MPX driver is a DOS ODI-compatible driver. For best performance, MPX drivers should be used on both the workstation and the server for NetWare 3.11 and NetWare Lite. |
| INSTALL <Enter> | Copies the 1STEP.EXE and related files to your hard disk. This choice is required for non-NetWare network operating systems; optional for NetWare. |
| 1STEP <Enter> | After using INSTALL, 1STEP runs the integrated hardware configuration and software installation program. |

1Step for Non-NetWare Operating Systems

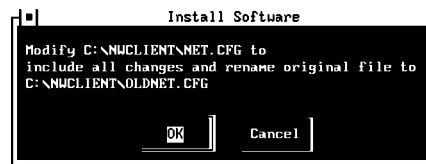
1Step is an integrated adapter configuration and software installation program.

To install and run 1Step, type this command at your DOS prompt:

```
A:\> INSTALL    Press <Enter>
```

Short-Cut Keystrokes

1. To install the software, select the appropriate network operating system, then press <F3>. A dialog box will confirm your action.

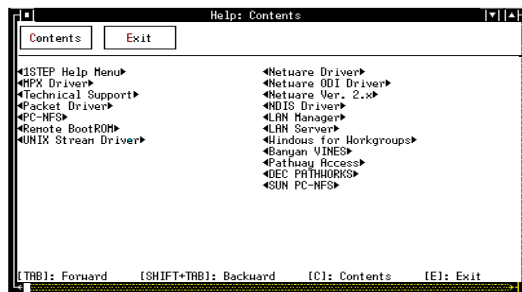


2. To exit 1Step, press <F10>.
3. To manually select configuration parameters:
 - a. Press ↓ or ↑ keys to change the highlighted value.
 - b. Press <Tab> or <Shift><Tab> to move forward to a new field or back to the previous field.
4. To list all choices, press <Alt> ↓. Use ↓ or ↑ keys to change the highlighted value. Press <Enter> to accept the highlighted value and close the list box.

Help

1. To view on-line help files, press the <F1> function key.
2. Press <Tab> or <Shift> <Tab> to move forward or back to another field or button.

3. Press <Enter> to view information on the topic.
4. Press <Alt> <C> to view help contents of selected field.
5. Press <Alt> <E> to exit the help window.



Running DOS over 1Step

To run a DOS shell within 1Step, press <F6>.

Troubleshooting

Here are some helpful suggestions to eliminate any problems you may have in your network installation.

“Clean Boot”

Many installation problems are caused by incompatible device drivers and resource conflicts. The best way to troubleshoot your installation is to boot your computer without the AUTOEXEC.BAT and CONFIG.SYS files.

Create a bootable system diskette or rename AUTOEXEC.BAT and CONFIG.SYS to other names and re-boot your computer.

Chapter 1

Introduction

The EtherWORKS PCMCIA card is a "feature-packed" credit card-sized adapter for PCMCIA-compliant personal computers. The card comes in two models:

- EtherWORKS Turbo
- EtherWORKS Turbo Plus

The EtherWORKS Turbo has a single connector for dedicated users of 10BASE-T while the EtherWORKS Turbo Plus includes a media coupler with auto-selectable 10BASE-T and 10BASE2 connectors. It plugs into a Type II PCMCIA slot, providing a 16-bit bus interface and a 16KB network data packet buffer. Two media couplers are available for users to choose from. One has a single connector for unshielded twisted-pair connection and the other has a 10BASE-T and 10BASE2 connector. The card is switchless, software configurable, and provides full support for the PCMCIA Card Information Structure (CIS).

Features

- Conforms to IEEE 802.3, PCMCIA Release 2.1, JEIDA 4.1 Standard
- Includes 1Step installation program that configures the Card, runs diagnostics and installs software drivers
- Fits into Type II PCMCIA slot
- Credit card-size
- Provides 68-pin connector for attachment to PC and 15-pin flat connector for attachment to media coupler
- Media coupler comes in 2 types, one for 10BASE-T and another for 10BASE-T and 10BASE2 applications
- Switchless design, hardware settings are software configurable
- "Hot card" insertion and removal
- Low power consumption
- No external power supply required
- Extensive driver support including Novell NetWare, Microsoft LAN Manager, Microsoft Windows for Workgroups, Microsoft Windows NT*, IBM LAN Server 2.x, DEC PATHWORKS V4.x, Banyan VINES V5.5, FTP PC/TCP, IBM TCP/IP for DOS and OS/2*, NCSA TCP/IP, Wollongong Pathway Access

* developing

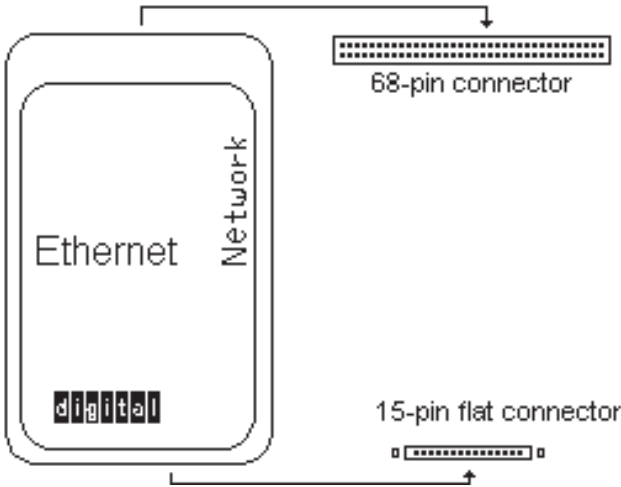
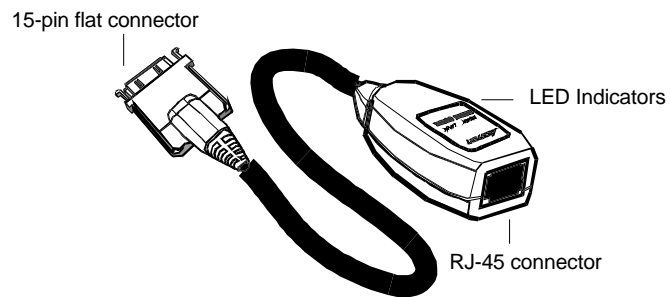
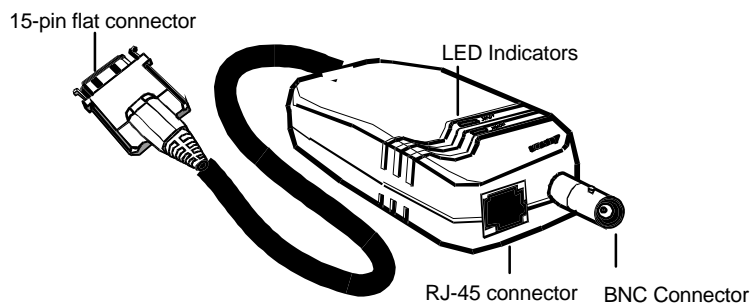


Figure 1.1 Connector Pin Layouts for EtherWORKS Models DEPCM-AA and DEPCM-BA



*Figure 1.2 Media Coupler with RJ-45 Connector
(for EtherWORKS, Model DEPCM-AA)*



*Figure 1.3 Media Coupler with RJ-45 and BNC Connectors
(for EtherWORKS, Model DEPCM-BA)*

LED Indicators

Transmit/Receive LED

Color : Green

Function: Monitors signals transmitted to and received from the network

The green LED labeled Tx/Rx lights up to indicate that the EtherWORKS card is transmitting or receiving signals from the network. This LED is normally off. It will flash off and on when the card transmits signals to the network. The frequency of flashing rapidly increases with the network traffic.


| LED Indicator | Function |
|---------------|--|
| Rx/Tx | Lights up to indicate that the Card is receiving/transmitting signals from and to the network; flashes off and on at a rate proportional to the traffic level on the network |
| Link | Lights up to indicate that a valid twisted-pair link exists; should be on under normal operating condition |

Figure 1.4 LED Indicators

Link LED

Color : Green
Function: Monitors link status of card's twisted-pair connection

The EtherWORKS card supports the link integrity test function. This function is enabled automatically when the unit is configured for twisted-pair cabling. The green link LED labeled LINK lights up to indicate that a valid 10BASE-T link is established. It is on under normal operating conditions. If the LED remains off after power is applied, check the RJ-45 port's cable connection.

 The Link LED only monitors the 10BASE-T (RJ-45) connection. To check the condition of the BNC link, run Test Adapter from 1Step.


Chapter 2

Installation

This chapter describes the procedure for installing the EtherWORKS card, running diagnostics, installing software drivers and the RELEASE.TXT.

Installing the EtherWORKS PCMCIA Card

1. Turn off the host computer.

 Once you have installed and configured the EtherWORKS card and loaded the software driver, you can insert or remove it while the host PC is on. The card is "hot swappable," thus, inserting or removing it while the host PC is on will not affect the PC.

2. Insert the EtherWORKS card in the PCMCIA slot of the computer.

Insert the card in the computer with the 68-pin connector facing the PCMCIA slot and the label facing up. Slide the card all the way into the slot. See **Figure 2.1** for illustration.

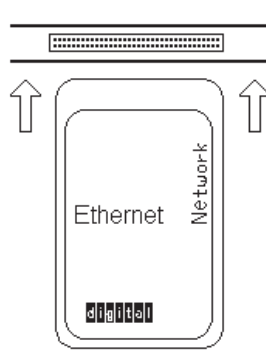


Figure 2.1 Insert the EtherWORKS card into Type II PCMCIA slot

3. Plug the media coupler to the card's 15-pin connector.

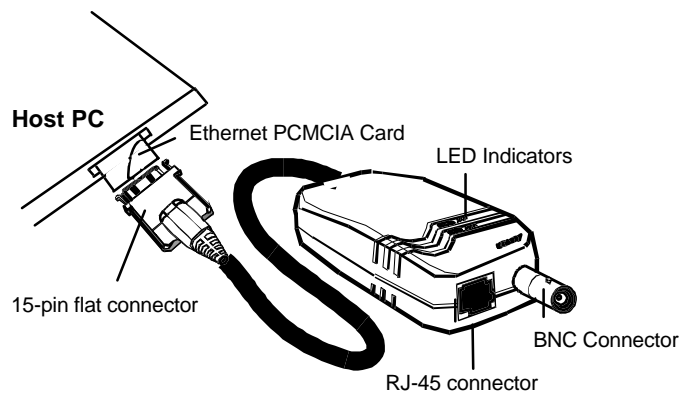


Figure 2.2 Plug 15-pin flat connector to 15-pin mating connector

2-2 Installation

4. Connect the media coupler to the network using either UTP cabling or thin coax.

a. Using UTP cabling

Plug the free end of the UTP cable into an RJ-45 mating connector on a twisted-pair hub or a network access port which is usually on a wall connection.

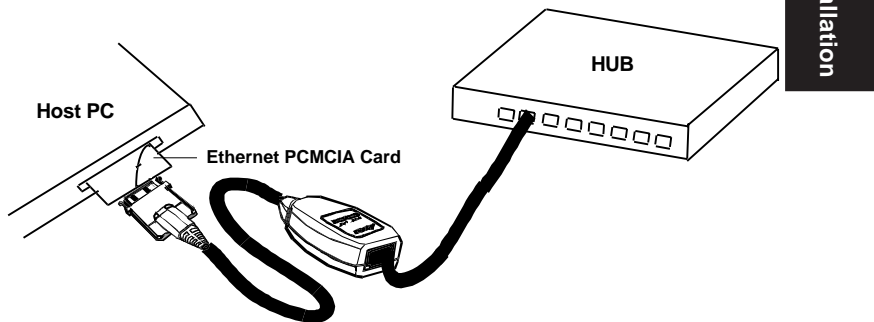


Figure 2.3 Connection using twisted-pair

b. Using thin coax cabling

Plug a T-connector connected to a thin coax cable to the BNC connector on the media coupler.

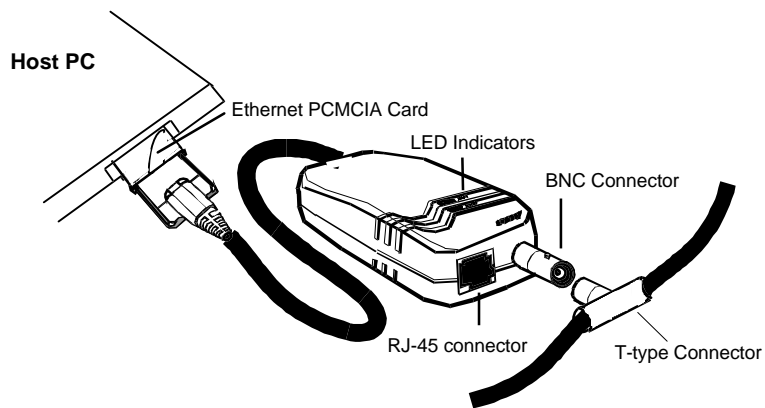




Figure 2.4 Connecting to a thin coax cable

- 
 Attach both ends of the T-connector to the network cabling. If the card is at the end of the network segment, install a 50 ohm terminator at the open end of the T-connector which is not attached to the network. Do this to prevent accidental shorts that may disrupt network operation.

5. Power on the PC.

Hardware installation is now complete. The EtherWORKS card gets its power from the PC.

- 
 To avoid a shock hazard, do not connect or disconnect cables or perform installation or maintenance of the card during an electrical storm.

2-4 Installation

6. Install 1Step.


1Step is a quick and easy installation and configuration software. To install, insert the Driver Diskette in the floppy drive of the host PC (e.g., drive A:). Type the following from DOS, press <Enter> and follow screen instructions to complete the process.

```
A:\> INSTALL Press <Enter>
```

7. Run 1Step.

When the installation process is complete, 1Step is automatically executed for you. 1Step also copies the intelligent enabler program to the CONFIG.SYS file. However, to invoke the 1Step program again after quitting it, simply type the following from DOS while in the appropriate directory location.

```
C:\> 1STEP Press <Enter>
```

 This version of 1Step supports installation for NetWare and NDIS drivers. Installation procedures for other drivers supported by the adapter are in the README.TXT files stored in the Driver Diskette. View the contents of each file using the DOS TYPE command. From 1Step, you can also press <F1> to bring up the on-line help.

8. Configure the EtherWORKS card using user-selected settings.


Choose the appropriate parameter option, such as I/O Base Address and Interrupt. If you are using the default settings skip this step.

9. Run Diagnostics.

Test the EtherWORKS card and media coupler by running the diagnostics program. Select Test Adapter from the Action Menu to run *Diagnostics*. Return to the 1Step Screen by pressing <Esc>.

10. Select the EtherWORKS card's software configuration.

From the Software Configuration block on the 1Step Screen, choose settings for the network operating system, driver, protocols, frame type, and identify the directory location of the drivers.

 This version of 1Step supports NetWare and NDIS drivers. If you're installing a driver other than these, refer to the corresponding README.TXT file on the Driver Diskette for installation instructions. Check the RELEASE.TXT file in the root directory of the same diskette for a complete list of all the drivers that the PCMCIA adapter supports.

11. Install EtherWORKS card's software configuration.

Choose the Install Software command from the Action Menu to install your network environment. Follow screen instructions to complete the process. If you are using NetWare, a batch file for running the driver that you've selected is automatically created for you. Run this file to start up the NetWare system. Refer to *Setting the Software Configuration* section for more information.

Removing the EtherWORKS Card

To remove the card, do the following:

1. Remove the media coupler from its connection to the EtherWORKS card.

Squeeze the locking arms on either side of the coupler-to-card connector. Pull to unplug the media coupler from the adapter.

2. Remove the coupler from the RJ-45 or T-connector on the network cable.
3. Remove the card from the slot and store it together with the coupler in a safe place.

Running Diagnostics

When hardware installation is complete, run diagnostics to check the card and the network cabling. Do so by selecting the Test Adapter command from the Action Menu. 1Step is in the root directory of the Driver Diskette that comes with the package. For more information, see the chapter on *Using 1Step*.

Software Driver Installation

The Driver Diskette contains all the software driver programs supported by the adapter. Refer to the RELEASE.TXT file for a listing of these programs.

If your NOS is NetWare or NDIS, use 1Step to install the corresponding driver. The driver installation programs for network operating systems other than these are contained in separate subdirectories. Refer to the README.TXT file in each subdirectory for the driver installation instruction.

From 1Step, press <F1> to get help for installing drivers for other network operating systems other than NetWare and NDIS.

RELEASE.TXT File

In addition to 1Step, special DOS commands, software drivers and README.TXT files, the Driver Diskette contains a RELEASE.TXT file. It is located in the root directory of the diskette, and provides you with information about the Driver Diskette's contents. Use the DOS TYPE command to check the contents of the file.

Chapter 3

Using 1Step™

1Step is designed to simplify the EtherWORKS card's installation for NetWare or other network operating systems. This chapter describes how to use 1Step for card hardware and software configuration, diagnostics, and software driver installation.

Getting Started

Install the 1Step Installation Program into your hard disk drive. Insert the Driver Diskette that comes with the package into the host PC's floppy disk drive. At the DOS prompt, type the following:

```
A:\> INSTALL    Press <Enter>
```

A subdirectory named 1Step is automatically created for you. Follow screen instructions to complete the process. When installation is complete, 1Step is immediately executed.

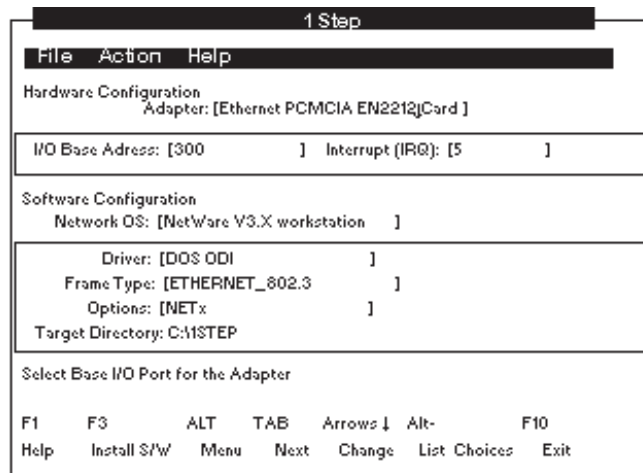


Figure 3.1 1Step Screen

Overview: Running 1Step

1. Run your mouse driver.

The 1Step Installation Program allows you to select options using the mouse. To use this function, you should run your mouse driver first. Please check your mouse's Installation Manual for instructions to run the mouse driver.

2. Type the following command from DOS to display the 1Step main screen:

```
C:\> 1STEP Press <Enter>
```

3-2 Using 1Step

3. Select the appropriate hardware settings for the EtherWORKS card.

Select values for I/O base address and Interrupt.

4. Run diagnostics.

Select Test Adapter from the Action Menu to run the diagnostics program.

5. Select the appropriate software configuration for the Card.

Identify the Network OS, Driver, Frame Type and memory management option in use and the directory location of the drivers.

6. Run the Install Software command.

Skip this step if you did not perform step 5. Run the Install Software command from the Action Menu. Executing this command automatically creates a software configuration file and a batch file. Simply run the batch file from DOS to install the driver you've selected.

7. Select Exit to go back to DOS.

Select Exit from the File menu to leave 1Step and go back to DOS.



The File Menu includes a DOS Shell command that allows quick switching between DOS and 1Step, if necessary. Type Exit at the DOS prompt to return to 1Step.

Setting the Hardware Configuration

Select the appropriate I/O Base Address and Interrupt. You can point and click with the mouse or use keyboard strokes to make selections.

Selecting I/O Base Address

The I/O Base Address is a channel through which information is transferred between the EtherWORKS card and the host PC. It is important to note that each peripheral installed in the host PC should be assigned a unique I/O Base Address. Check the documentation that came with your computer to determine which addresses are already in use.

The card provides seven I/O Base address selections, which include 300, 240, 280, 2C0, 320, 340 and 360. The factory default setting is 300H.

Selecting Interrupt

The interrupt is an electronic signal from the EtherWORKS card that goes to the host computer's CPU when a request is made. Each peripheral installed in the host PC is assigned a unique interrupt channel. (The word interrupt is used interchangeably with IRQ). A unique interrupt channel should be assigned for the card. Check the documentation that came with your computer to determine which addresses are already in use.

Make sure that a unique interrupt is assigned to the card. There are eight interrupt selections available, namely, 3, 4, 5, 2, 10, 11, 12 and 15. The adapter's default interrupt setting is 5.

Setting the Software Configuration

Select the appropriate Network Operating System, Driver, Frame Type, and Memory Management Options and name the directory in which the drivers are stored. You can point and click with the mouse or use keyboard strokes to make selections.

Then run the Install Software command from the Action Menu to install the network environment that you've selected. For NetWare users, a batch file (i.e., STARTNET.BAT) for running and easily loading the NetWare driver from DOS during start up operations will automatically be created. Simply execute the batch file to run the driver and load NetWare automatically.

You can save both hardware and software configurations in a *.1st configuration file, if necessary. You may also create several *.1st files containing different adapter hardware and software configurations. For easy start up, simply load the *.1st file you need by selecting Open Configuration File from the File Menu, or simply typing 1Step (filename.1ST) from DOS. See sections on *Saving a Configuration File* and *Installing the Software Driver* for more information.

Selecting the Network OS

The version of 1Step that comes with this package supports installation for various NetWare and NDIS drivers. Instructions for installing other drivers, including packet drivers and UNIX drivers are in README.TXT files.

Press <F1> to activate on-line help. Then select the driver you need to view the corresponding README.TXT file containing driver installation instructions.

Selecting the Driver

The EtherWORKS card provides support for NetWare and NDIS drivers. Install the driver you need depending on your NOS.

Selecting Frame Type

Select the Frame Type appropriate for your adapter from the choices provided. The card provides 4 selections, which include Ethernet_802.3, Ethernet_II, Ethernet_802.2 and Ethernet_SNAP. The factory default frame type is Ethernet_802.3 for NetWare 3.x and Ethernet 802.2 for NetWare 4.0.

Selecting Memory Management Options

The host PC may be using a Memory Management software. There are 4 selections available, namely, Normal, Use XMSNETx, Use EMSNETx and DOS5+LOADHIGH. The default setting is Normal. Move your cursor to the field named Options to change the settings, if necessary.

Identifying the Driver's Directory Location

Type the directory path in the box labeled Directory to indicate the user-selected location for the NetWare drivers. When you select Install Software from the Action Menu, 1Step searches this path to find the files it needs. You can also do the same using available 1Step Command Set. For related information, see the section on *1Step Command Set*.

Menu Bar Commands

The menu bar, located right below the title bar, contains 3 menus, namely, File, Action and Help. Selecting any of the three menus brings up a pull-down menu containing a list of commands. Use the mouse or keyboard strokes to make a selection. Then follow screen instructions to complete the operation.

Opening the File Menu

Opening the File Menu displays a list of commands for opening an existing configuration file (*.1st), saving/printing the file and exiting the File menu.

| File Menu Commands | Action |
|--------------------------|---|
| Open Configuration File | Opens an existing *.1ST configuration file |
| Save Configuration File | Saves hardware and software configuration to *.1ST file |
| Print Configuration File | Prints the configuration file |
| DOS Shell | Opens DOS within 1Step |
| Exit | Exits 1Step and returns to DOS |

The *.1st file contains the EtherWORKS card's hardware and software network environment configuration. The user can create different card configuration files and save them into separate *.1st files. If necessary, the user can easily open and use any *.1st file, or simply print it for reference.

Opening an Existing Configuration File

1. Select Open Configuration File from the File Menu to bring up the Open dialog box.
2. Select a file to open. Identify its path or directory location. The name of the file that you have selected should appear in the filename box, while its path should be indicated in the line immediately below the filename box.
3. Select <OK> to confirm your choice. Or select <Cancel> to abort operation.

Saving a Configuration File

1. Select Save Configuration File from the File Menu to bring up the Save dialog box.
2. Type a filename in the filename box. Make sure you identify the directory where you want to save the file.
3. Select <OK> to confirm your choice. Or select <Cancel> to abort the operation

Printing an Existing Configuration File

1. Select Print Configuration from the File Menu to bring up the Print dialog box.
2. Select the target printer -- choose either LPT1, LPT2, or LPT3 or file (i.e., create a print file).

3. Type the name of the configuration file that you wish to print. Include the path for the file.
4. Select Append to add the contents of the specified print file to another existing file, if necessary.
5. Select Replace to use the same name as a currently existing print file and automatically overwrite it, if necessary.
6. Type the number of copies that you want to print. The default entry is 1. Skip this step if you want to use the default.
7. Select <OK> to confirm your selections. Or select <Cancel> to abort the operation.

Calling DOS within 1Step

1. Select DOS Shell from the File Menu to exit to DOS.
2. Type any command you wish to execute from DOS.
3. Type exit and press <Enter> to return to DOS.

Exiting to DOS

Select F10 to exit from the File Menu and return to DOS.

Opening the Action Menu

Opening the Action Menu displays a list of commands to install software driver, run diagnostics to test the adapter installation and update the drivers.

| Action Menu Commands | Action |
|----------------------|--|
| Install Software | Creates a batch file for running the selected NetWare driver |
| Test Adapter | Runs diagnostics to test the adapter installation |

Installing the Software Driver

Select the Install Software command from the Action Menu to change the adapter's software configuration. This command installs the software driver files in your computer. A dialog box prompting you of the progress of the operation automatically appears on the screen. Click <OK> or press <Enter> to proceed and return to the 1Step main screen.

Running Diagnostics

Select the Test Adapter command from the Action Menu to run diagnostics. The test runs on a single PC. However, for better results, the best test environment is to have two or more PCs on the network running the test simultaneously.

Running diagnostics on a single PC only allows monitoring of the adapter and the corresponding cabling system. However, this does not check the network condition.

3-10 Using 1Step

The program runs several tests. The screen prompts you with a PASS or FAIL remark to indicate the result of each test. If a test fails, a Description dialog box automatically appears on the screen to show the error message, the reason for failure, and possible solutions.

```
Ethernet PCMCIA Adapter Test Program
Ver 1.00 05-08-93 (c) Copyright Accton Technology Corp.

Configuration Test : PASS
I/O Test          : PASS
ID Test           : PASS
RAM Test          : PASS
Internal Loopback Test : PASS
External Loopback Test : PASS
Interrupt Test    : PASS
Network Function Test : ON

----- Node ID: (00 00 EB 08 62 ED) -----
TX Count : 448604 Packets  RX Count : 0 Packets
Time     : 3065 Seconds   Performance: 1.204e+006 BPS

Press <F1> to Reset Counters, <F2> to Toggle ON/OFF, <ESC> to Exit
```

Using 1Step™

On the screen, you will see the number of transmit (Tx Count) and receive packets (Rx Count) over a transmission period (Time). In addition, the program automatically calculates the EtherWORKS card's performance in bytes per second (BPS).

Key Conventions for the Test Adapter Option

| Key to press | Function |
|--------------|--|
| <F1> | While the diagnostics is running, pressing <F1> resets all counters, including Tx Count, Rx Count, Time, Performance, to zero. |
| <ESC> | Aborts the operation and returns to the 1Step main screen |
| <F2> | Toggles the packet transmission (Network Function Test) to on or off |

Available Diagnostic Tests

1. Configuration Test to identify the host PC's type
2. I/O Test to check the I/O accessibility
3. ID Test to verify if the card's ID is correct
4. RAM Test (or Memory Test) to check the condition of the on-board RAM
5. Internal Loopback Test to check the adapter's controller
6. External Loopback Test to check the adapter's network link
7. Interrupt Test to check the interrupt generation
8. Network Function Test to check the adapter's ability to receive and transmit network packets

Common Problems

Common causes of Card failure after installation follows:

- Card configuration conflicts, for example, the most common are I/O base address and interrupt (IRQ) conflicts
- Cable problem such as cable breaks, unterminated line

3-12 Using 1Step

Verifying Problem Cause

To find out the cause of adapter failure:

1. Run the Test Adapter option from the Action Menu. If a problem is detected, check the Description dialog box for possible causes and solution.
2. Monitor the media coupler's LED indicators to check the receive/transmit and link (if any) conditions.
3. Re-check the coupler's cable, terminator or other related network components.

Opening the Help Menu

Opening the Help Menu displays the About and Help commands. The About command provides copyright information about 1Step. The Help command provides on-line assistance to understand the functions available in 1Step.

Appendix A

Specifications

System Configuration

| | |
|-----------------------------|---|
| End-User Devices Supported: | PCMCIA-compliant computers |
| Standard Conformance | : IEEE 802.3 Standard, PCMCIA Release 2.1 Type II, JEDIA 4.1 |
| Bus-Width | : 16-bit |
| RAM Buffer | : 16KB (optional 64 KB) |
| I/O Base Address | : 240H to 360H, software selectable |
| Interrupt | : 2, 3, 4, 5, 10, 11, 12, 15 |
| Media Coupler | : RJ-45 for UTP (Model No. EN2212-1); RJ-45 for UTP and BNC for thin coaxial (Model No. EN2212-2) |
| Dimensions | : 85mm x 54mm x 5mm |
| Drivers | : Novell NetWare, Microsoft LAN Manager, Microsoft Windows for Workgroups, Windows NT*, IBM LAN Server 2.x, DEC PATHWORKS V4.x, Banyan VINES V5.5, FTP PC/TCP, IBM TCP/IP for DOS and OS/2*, NCSA TCP/IP, Wollongong Pathway Access |

* developing

Operating Environment

| | |
|-------------------|---|
| Power Requirement | : BNC Transceiver: +5V/0.28A max. (typical) Twisted-pair: +5V/0.16A max. (typical) |
| Temperature | : 0°C to 55°C (Standard Operating) |
| Humidity | : 10% to 90% (Noncondensing) |

Hardware Certification

| | |
|-----|---------------------------------------|
| FCC | : Meets Part 15, Class A Requirements |
|-----|---------------------------------------|

Appendix B

Troubleshooting

1Step includes a diagnostics program for checking the EtherWORKS PCMCIA card's components and the network cabling. Run diagnostics from 1Step by selecting Test Adapter from the Action Menu. The card may fail some tests due to various reasons — some of which may be easily remedied by the user. This section provides tips to isolate and solve common problems.

Symptoms

1. Unshielded twisted-pair connection results in EtherWORKS card failure, Link LED indicator is off
2. Running Test Adapter results to External Loopback Test failure

Possible Cause

Invalid twisted-pair link

Suggestions

1. Check the RJ-45 connection for loose cabling.
2. Check for wrong RJ-45 pin assignments.

Symptoms

1. Coax connection results to EtherWORKS card failure, Rx/Tx LED indicator flashing on and off
2. Running Test Adapter for diagnostics shows External Loopback test failure

Possible Cause

Bad coax cable link

Suggestions

1. Check BNC connection for loose cabling
2. See to it that both ends of the network segment are properly terminated. Terminate open end of the network segment with a 50-ohm terminator.

Symptom

EtherWORKS card failure, suddenly cannot log into the network

Possible Causes

1. Bad cable connection
2. EtherWORKS card not properly installed in PCMCIA slot
3. Host PC's slot defective

Suggestions

1. Check cabling for loose connection or wrong pin assignment if you're using the RJ-45 connection.
2. Check if the card is properly inserted in the PCMCIA slot; it may have been accidentally loosened.
3. Install the card in another PC, or install it on another slot. If the problem is eliminated, then the original PC's slot is defective. Contact your PC vendor for assistance.

Symptom

Cannot run mouse while running 1Step

Possible Cause

1. IRQ conflict

Suggestions

1. Change the IRQ setting of the Card.
2. Run mouse driver.

Symptom

1. EtherWORKS card failure after configuration

Possible Cause

1. Configuration conflict
2. The enabler program cannot recognize the host PC's controller.

Suggestions

1. Check I/O and IRQ for possible setting conflicts. Make sure they don't conflict with other devices.

Contacting Technical Support

Below are the international telephone numbers to call for technical support for the Digital EtherWORKS 3 *Turbo* adapters.

| | |
|---------------------|-----------------|
| 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 |
| Mexico | 520140810017 |
| Netherlands | 030-832888 |
| Northern Ireland | 0232 381381 |
| Norway | 02-256300 |
| Philippines | 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 |

Appendix C

Glossary

BNC

A connector with a half-twist locking shell typically used for thin coaxial cable

Boot ROM

Read-only memory chip that allows a workstation to communicate with file server and to read a DOS boot program from the server

Card Services

A software management interface which automatically allows allocation of system resources (e.g., memory and interrupt) once the Socket Service detects that a PC Card has been inserted in the PC

Collision

A condition in which two packets are being transmitted over a medium at the same time. Their interference makes both unintelligible.

CSMA/CD

(Carrier sense multiple access with collision detection). Medium access control technique for bus-tree topologies

Driver

Program that enables the network operating system to communicate

with LAN cards

Enabler program

Program that directly controls PC's host controller in the absence of Socket Services

Ethernet

A network communication system developed and standardized by DEC, Intel, and Xerox, using baseband transmission, CSMA/CD access, logical bus topology, and coaxial cable. The successor IEEE 802.3 standard provides for integration into the OSI model and extends the physical layer and media with repeaters and implementations that operate on fiber optics, broadband, and unshielded twisted-pair

Frame

A group of bits that include data plus one or more addresses. Generally refers to a link layer (layer 2) protocol

IEEE 802.3 standard

Standard for the physical and electrical connections in local area networks developed by the IEEE (Institute of Electrical and Electronics Engineers)

Interrupt

Signal suspending a program temporarily; transfers control to operating system when input or output is required

I/O address

Input/output address. Starting address for data input and output.

JEIDA

Japanese Electronic Industry Development Association

Loopback

Diagnostic test in which a signal is transmitted across a medium while sending device waits for its return

MPX Technology

Ethernet technology developed by Accton for accelerating adapter installation, configuration and throughput, fine tuning adapter hardware and software performance, easy problem prevention, tracking and troubleshooting

NetWare

Novell's network operating system, which provides the ability to transparently share services across dissimilar platforms. Uses the NetWare Core Protocol (NCP), Internetwork Packet Exchange (IPX), and Sequential Packet Exchange (SPX) protocols

PCMCIA (Personal Computer Memory Card International Association)

Non-profit trade association and standards body that defines the standard for the PC Card technology

1Step

Program bundled with Digital's EtherWORKS PCMCIA cards for quick hardware/software installation and diagnostics

RJ-45 connector

Most common terminator for unshielded twisted-pair wiring

Socket Service

A BIOS level software interface that provides a way for accessing the PCMCIA slots of a computer

10BASE2

IEEE's specifications for running Ethernet using thin coaxial cable

TCP/IP

Transmission Control Protocol/Internet Protocol. Protocol suite developed by the Advanced Research Projects Agency (ARPA); includes TCP as the primary transport protocol and IP as the network layer protocol

Type II slot

One of three PC Card types; the Type II slot is 5mm thick to accommodate applications that require more room for components such as fax/modem and network cards

Unshielded twisted-pair

Cable composed of two insulated wires twisted together to reduce electrical interference; used in common telephone cord

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