

DEC 3000 Model 400/400S AXP

Owner's Guide

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Preface

Purpose of This Guide

This guide is intended for all users of the DEC 3000 Model 400/400S AXP system. It describes how to install and operate the system. To install options in the DEC 3000 Model 400/400S AXP system, refer to the *DEC 3000 Model 400/400S AXP Options Guide*.

Structure of This Guide

This guide consists of 14 chapters, 4 appendices, and an index, and is organized into three parts as Table 1 describes.

Table 1 Parts Description

| Part | Title | Description |
|------|---------------------|---|
| I | Basic Operations | Chapters in Part I describe basic operations for using your workstation or server system, including installing, turning on, and maintaining your system. These chapters are for all DEC 3000 Model 400/400S AXP system users. |
| II | Advanced Operations | Chapters in Part II describe advanced operations for your system, including use of console commands and the alternate console feature. These chapters are for users who understand or want to learn about advanced system operations. |

(continued on next page)

Table 1 (Cont.) Parts Description

| Part | Title | Description |
|------|-----------------|---|
| III | Troubleshooting | Chapters in Part III describe what to do in the event of a system problem. These chapters are applicable only if your system is not working properly or if it is displaying errors. |
| IV | Appendixes | The appendixes in Part IV provide information such as specifications, and port pinouts. |

Conventions

The following conventions are used in this guide:

| Convention | Description |
|--------------------------|---|
| RZ2x | RZ2x refers to the RZ-series fixed disk drives, including the RZ24L, RZ25, and RZ26. |
| <code>Return</code> | A key name in a box indicates that you press a named key on the keyboard. |
| <code>Ctrl/x</code> | A sequence such as <code>Ctrl/x</code> indicates that you must hold down the key labeled Ctrl while you press another key. |
| <code>show config</code> | Lowercase color type in this format indicates a command that you must enter exactly as shown. For example: <code>>>> show config <code>Return</code></code> |
| <i>variable</i> | Lowercase color italics indicate a variable value that you must provide. For example: <code>>>> set variable <code>Return</code></code> |
| CAUTION | Cautions provide information to prevent damage to equipment or software. Read these carefully. |

| Convention | Description |
|----------------|--|
| WARNING | Warnings contain information to prevent personal injury. Read these carefully. |

Task Symbols

All of the tasks described in this guide have been assigned a symbol indicating the level of difficulty in completing the task. The task symbols that appear in the margin next to the task should be used as a guide to help you decide whether you wish to complete the task, or request help.

Different tasks within a category may require different levels of expertise. For instance, one intermediate task may require software expertise, while another intermediate task may require hardware expertise. Check the *Before You Begin* section at the beginning of most chapters, for the specific kind of experience required to complete a task. This section will be identified by the information icon, defined below.



Information

This section contains important background information that will help you to perform the tasks listed and to operate your DEC 3000 Model 400/400S AXP correctly.

Task Categories



The tasks fall into four categories indicated by four symbols:

Basic Task

This task does not require any specific experience to complete.



Intermediate Task

Some specific experience is required to complete this task.



Advanced Task

Specific experience is highly desirable to complete this task.

Task Symbols on Bookmark

The task symbol explanations provided here are also printed on the bookmark provided with this guide. You can use the bookmark for reference while using this manual.

Part I

Basic Operations

Part I provides an overview of the DEC 3000 Model 400/400S AXP system and its configurations. It also describes how to install the system and how to perform basic operations.

This section includes the following chapters.

| Chapter | Title |
|---------|-------------------------------------|
| 1 | Introduction to Your System |
| 2 | Preparing to Install Your System |
| 3 | Installing a Workstation System |
| 4 | Installing a Server System |
| 5 | Connecting Your System to a Network |
| 6 | Starting Up Your System |
| 7 | Turning Off Your System |
| 8 | Maintaining Your System |

1

Introduction to Your System

Chapter Overview

Introduction

Congratulations on choosing a DEC 3000 Model 400/400S AXP, high-performance, desktop system that uses Digital's DECchip 21064 RISC microprocessor, making it one of the most powerful desktop systems ever designed.

The DEC 3000 Model 400/400S AXP system is based on the Digital Alpha AXP architecture, providing all the advantages of a 64-bit computing environment and the choice of different operating systems.

In This Chapter

This chapter introduces you to your DEC 3000 Model 400/400S system, gives you an idea of its design and special capabilities, and describes the available options.

This chapter covers the following information:

- System Configurations
- Overview of the DEC 3000 Model 400/400S AXP System
- Operating Systems
- Software Product Descriptions (SPD)
- Graphics Capabilities
- Integrated Services Digital Network (ISDN)
- Audio Capabilities
- Available Options

System Configurations

Two System Configurations

The DEC/3000 Model 400-series system is available in two configurations:

- A workstation, Model 400
- A server system, Model 400S

This guide describes the installation and set up of both configurations, along with information common to both configurations.

Workstation Configuration

Your DEC 3000 Model 400 AXP workstation is preconfigured with a graphics module, and is shipped with a monitor. Chapter 3 describes how to install a workstation system.

Server Configuration

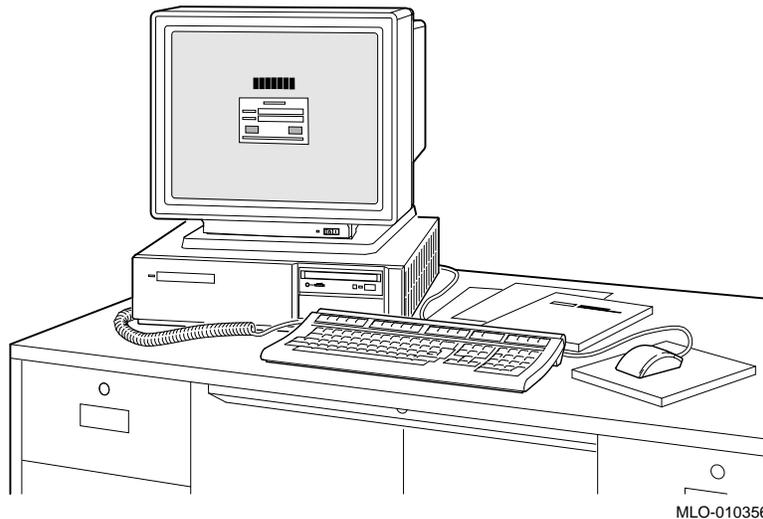
Your DEC 3000 Model 400S AXP system is preconfigured as a server, and will not have a graphics module, nor be shipped with a monitor. Chapter 4 describes how to install a server system.

Overview of the DEC 3000 Model 400/400S AXP System

Workstation Components

The DEC 3000 Model 400 AXP workstation consists of four components: a system unit, a monitor, a keyboard, and a mouse. Figure 1-1 shows a basic workstation configuration.

Figure 1-1 The DEC 3000 Model 400 AXP Workstation



Server Components

The DEC 3000 Model 400S AXP system configuration consists of a system unit. The server configuration does not include a monitor, keyboard, or a mouse.

Overview of the DEC 3000 Model 400/400S AXP System

System Highlights

The DEC 3000 Model 400/400S AXP system provides the following special features:

| This feature... | Provides... |
|-------------------------------------|---|
| True 64-bit Alpha RISC architecture | Significant performance advantages. |
| Flexible memory architecture | Expandable memory from 32 to 128 megabytes using 2-, 4-, or 8-megabyte single inline memory modules (SIMMs). |
| Internal and external options | Increased storage capacity, graphics, communications, and other capabilities to your system. |
| An AUI thickwire Ethernet port | Connection to an AUI Ethernet network. |
| A 10BASE-T network port | Connection to a twisted-pair network. |
| ISDN network port | An industry-standard port for an ISDN network connection. |
| Three TURBOchannel slots | Access to high-performance module interconnect technology that allows a variety of options, including graphics, multimedia, communications and other third-party options. |
| Secure system feature | Additional system security for limited access to core console functions. |
| Audio technology | Built-in telephone-quality audio input and output capabilities. |
| Two supported operating systems | Support for OpenVMS AXP or DEC OSF/1 AXP operating systems. |
| Multi-head support | Capability to support multiple graphics devices. The number of graphics devices supported is operating system-dependent. |

Operating Systems

Choice of Operating Systems

Digital's Alpha AXP architecture allows you to choose from various operating systems for your DEC 3000 Model 400/400S AXP system. The operating system is the core software installed on your DEC 3000 Model 400/400S AXP system that allows you to install and run applications.

The following operating systems are currently supported for use on your DEC 3000 Model 400/400S AXP system:

- OpenVMS AXP
- DEC OSF/1 AXP

These are the two operating systems supported with the first shipment of the DEC 3000 Model 400/400S AXP systems. Other operating systems may be available at a later time.

OpenVMS AXP Operating System

The OpenVMS AXP operating system is a general purpose, multiuser operating system that can be used in many different environments for a wide variety of applications.

Features of OpenVMS AXP

The OpenVMS AXP operating system promotes ease of use and improved programming productivity, and facilitates system management.

OpenVMS AXP offers a combination of commercial features and open system benefits, including the following capabilities:

- Integrated networking
- System security
- Distributed computing
- Windowing capabilities

Additionally, OpenVMS AXP supports a large number of industry standards to facilitate application portability and interoperability.

Operating Systems

DEC OSF/1 AXP Operating System

The DEC OSF/1 AXP operating system is Digital Equipment Corporation's implementation of the Open Software Foundation (OSF) operating system components and Motif graphical user interface and programming environment.

Description of DEC OSF/1 AXP

DEC OSF/1 AXP is compliant with the OSF Application Environment Specification (AES), which specifies the interface to support portable applications designed to run on a variety of hardware platforms.

In addition, the DEC OSF/1 operating system complies with the following standards and industry specifications:

- FIPS 151-1
- POSIX (IEEE Std. 1003.1-1988)
- XPG3 BASE branding
- XTI
- AT&T System V Interface Definition (SVID) Issue 2 (Base System and Kernel Extensions)

DEC OSF/1 AXP Architecture

The DEC OSF/1 AXP operating system is an advanced kernel architecture based on Carnegie Mellon University's Mach V2.5 kernel design with components from Berkeley Software Distribution 4.3 (BSD) and other sources. DEC OSF/1 AXP provides numerous features to assist application programmers in developing applications that use shared libraries, multithread support, and memory mapped files.

To ensure a high level of binary compatibility with the ULTRIX operating system, the DEC OSF/1 AXP operating system is compatible with the Berkeley 4.3 programming interfaces.

Software Product Descriptions (SPD)

SPD Description

The Software Product Description (SPD) is the official defining document for software products licensed by Digital Equipment Corporation, including third-party products licensed by Digital. An SPD describes all important functional characteristics of the software. The terms and conditions under which the corporation sells and licenses its software products identify SPDs as the documents that specify Digital's obligation under software warranty.

SPDs also describe a software product's system environment and identify required and optional hardware and software. All information contained in the SPD is valid in the international marketplace.

For more information on the SPD for your operating system, please contact your Digital sales representative.

You May Have Factory-Installed Software

If your DEC 3000 Model 400/400S AXP system is shipped with an installed internal fixed disk drive, the operating system is factory-installed on the disk. Depending on which operating system you ordered, your system will start with the OpenVMS AXP Factory Installed Software (FIS) procedure, or the DEC OSF/1 AXP Factory-Installed Software (FIS) Startup Procedure.

Chapter 6 describes how to start your system.

Graphics Capabilities

Graphics Options

The DEC 3000 Model 400 AXP workstation graphics and multimedia options are available via the use of a TURBOchannel graphics module. All preconfigured DEC 3000 Model 400 AXP workstations are shipped with a TURBOchannel graphics module installed. TURBOchannel-based graphics provide a wide variety of Digital and third-party graphics options.

DEC Open3D Software

Three dimensional (3D) graphics support is provided by the DEC Open3D software. Contact your Digital sales representative for availability of the DEC Open3D software as a layered product for both the OpenVMS AXP and the DEC OSF/1 AXP operating systems.

OpenVMS AXP Graphics

If your system is running the OpenVMS AXP operating system, the TURBOchannel graphics options listed in Table 1-1 are available.

Table 1-1 Graphics Capabilities for OpenVMS AXP

| Graphics Option | Capabilities Provided |
|--------------------|--|
| HX | 8-plane, accelerated 2D graphics and windowing operations. |
| PXG+ ¹ | Configurable 3D graphics: either 8- or 24-plane graphics, double buffered and optional 24-bit Z-buffer graphics. |
| PXGT+ ¹ | 96-plane 3D accelerated graphics: 24-plane frame and double buffer graphics, 24-bit Z-buffer and additional 24-bit configurable buffer graphics. |

¹Requires the DEC Open3D software

3D Applications for the OpenVMS AXP Operating System

In addition to the hardware three-dimensional (3D) graphics described in Table 1–1, there are also 3D software applications available for use on the OpenVMS AXP operating system. Two applications, DEC PHIGS (Programmer’s Hierarchical Interactive Graphics System) and DEC GKS (Graphics Kernel System) can be run as layered products. For more information, contact your Digital sales representative.

DEC OSF/1 AXP Graphics

If your system is running the DEC OSF/1 AXP operating system, the TURBOchannel graphics options listed in Table 1–2 are available.

Table 1–2 Graphics Capabilities for DEC OSF/1 AXP

| Graphics Option | Capabilities Provided |
|------------------------|--|
| HX | 8-plane, accelerated 2D graphics and windowing operations. |
| TX | 24-plane, true-color 2D graphics. |
| PXG+ ¹ | Configurable 3D graphics: either 8- or 24-plane double buffered graphics, and optional 24-bit Z-buffer graphics. |
| PXGT+ ¹ | 96-plane 3D graphics accelerator: 24-plane frame and double buffer graphics, 24-bit Z-buffer graphics, and additional 24-bit configurable buffer graphics. |

¹Requires the DEC Open3D software

Graphics Capabilities

Multiple Graphic Devices

Your DEC 3000 Model 400/400S AXP system is capable of supporting multiple 2D graphics devices. For information about installing another 2D graphics option in your system, see the *DEC 3000 Model 400/400S AXP Options Guide*.

Information about setting up your system to use more than one monitor is provided in the documents listed in Table 1–3.

Table 1–3 Setting Up Multiple Graphics Devices

| For this operating system... | See this document... |
|------------------------------|---|
| OpenVMS AXP | <i>OpenVMS Alpha Version 1.0 Upgrade and Installation Manual</i> |
| DEC OSF/1 AXP | <i>X Window System Administrator's Guide</i> , vol. 8, available from O'Reilly and Associates, Inc. |

Integrated Services Digital Network (ISDN)

Note: ISDN Not Yet Available

Though your DEC 3000 Model 400/400S AXP system can provide ISDN capabilities, they are not yet agency approved and available for your system. Currently, a plug has been placed in the ISDN port pending approval of ISDN licenses. Once agency approval of ISDN for the DEC 3000 Model 400/400S AXP system has been granted, you will be contacted by your Digital sales representative to inform you of the ISDN certification. At that point, you must remove the plug from the ISDN port before connecting the ISDN network.

The following information explains the ISDN capabilities for your DEC 3000 Model 400/400S AXP system pending license approval.

Integrated Services Digital Network (ISDN)

Plug in ISDN Connector

Your system is shipped with a foam plug inserted in the ISDN connector so that the port is inaccessible. Before using the port when ISDN is available, remove the foam plug carefully so that you do not damage any of the port connections.

ISDN Capabilities

ISDN is a digital telecommunications network, providing connectivity for voice and data applications.

Your DEC 3000 Model 400/400S AXP workstation includes an ISDN Basic Rate S/T interface, which includes:

- two 64-kilobits-per-second B channels
- one 16-kilobits-per-second D channel

Use of ISDN B Channels

The B channels can be used for digitized voice, circuit-switched data transmission at up to 64 kilobits per second, or for packet-switched data transmission.

Use of ISDN D Channels

The D channel uses a protocol standardized by the International Telegraph and Telephone Consultative Committee (CCITT) for setting up D Channel connections. The D channel can also be used for low-speed packet transmission.

Audio Capabilities

Audio Overview

The DEC 3000 Model 400/400S AXP system features telephone-quality audio input and output capabilities. Port pinouts for the audio jack on the system unit are provided in Appendix B.

Audio Capabilities

DECsound Application

Systems shipped with the OpenVMS AXP operating system include the DECsound application as part of the DECwindows Motif software package. DECsound is an easy-to-use software application that lets you play back recorded messages, record audio messages, mail recorded messages, and include recorded messages in compound documents.

XMedia Application

Audio support for DEC OSF/1 AXP systems is provided by XMedia, Digital's distributed multimedia software development environment.

Available Options

Internal Options

You can install the following hardware options inside the DEC 3000 Model 400/400S AXP system unit:

| Option | Capabilities Provided |
|---|--|
| Two half-height RZ2x-series fixed disk drives | Up to 2 gigabytes of additional storage capacity. |
| One 5¼-inch or one 3½-inch removable media device (RMD) | Additional data storage on any of the following devices: the RX26 diskette drives, the RRD42 compact disc drive, the TLZ06, the TZ30, or the TZK10 tape drive. |
| Up to 128 megabytes of total memory | Increased performance. |
| Up to three TURBOchannel modules | A variety of TURBOchannel options, including 2D and 3D graphics options. (TURBOchannel options require from one to three TURBOchannel slots inside the system unit.) |

Available Options

TURBOchannel Options

There are a total of three TURBOchannel option slots on your system. Preconfigured workstation systems use one or more slots for a graphics option, depending on the TURBOchannel option installed.

Installing Internal Options

For information about adding TURBOchannel and other internal options to your system, see *DEC 3000 Model 400/400S AXP Options Guide*.

External Options

You can add one or more of the following external options to your system:

- A printer such as a color or PostScript laser printer
- A modem
- A puck or stylus tablet
- A 2- or 4-megabyte RX26 floppy disk drive
- A 1.2-gigabyte TLZ04, 4 MM DAT (digital audio tape) drive
- A 4-gigabyte TLZ06, 4 MM DAT (digital audio tape) drive
- A PMTCE-AA TURBOchannel extender box
- A BA350-SA expansion box
- A BA353 expansion box

Adding External Options

For more information about external options and how to add them to your DEC 3000 Model 400/400S AXP, see the *DEC 3000 Model 400/400S AXP Options Guide*.

Ordering Options

Contact your Digital sales representative for more information about ordering DEC 3000 Model 400/400S AXP system options.

2

Preparing to Install Your System

Chapter Overview

Introduction Before you install your DEC 3000 Model 400/400S AXP system, you need to prepare your site, and familiarize yourself with your system hardware.

In This Chapter This chapter covers the following topics:

- Choosing a Location
- Customizing Your Work Area
- Unpacking a Workstation System
- Unpacking a Server System
- A Closer Look at Your System
- Where to Go Next

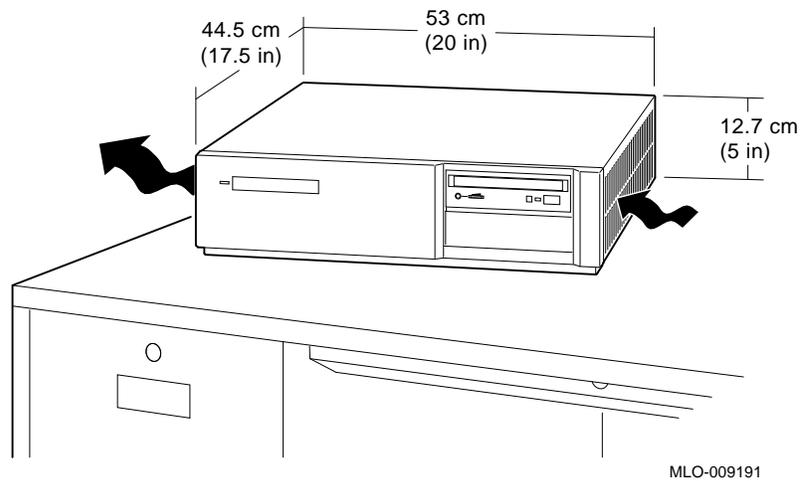
Choosing a Location



Space Requirements

When choosing a location, consider the system measurements as shown in Figure 2-1. Make sure to leave enough room for air to circulate around the system unit. Table 2-1 describes the specific circulation requirements.

Figure 2-1 Dimensions of System



Monitor Requirements

When allocating space for your new DEC 3000 Model 400 AXP workstation, consider also the size of your monitor. For your convenience, the monitor cable that Digital provides allows you to place your monitor up to 10 feet away from the system unit.

Floor Stand Considerations

If you are installing your system in a floor stand, see the *BA47X-AA Vertical Floor Stand: Installing Your System*.

Location Requirements Choose a location for your DEC 3000 Model 400/400S AXP that meets the requirements listed in Table 2–1:

Table 2–1 Requirements for System Location

| Requirement | Explanation |
|---|--|
| Dedicated power source with isolated ground | Power source must be 110–120 VAC or 220–240 VAC. Specific power requirements and electrical specifications are provided in Appendix A. |
| Moderate temperature | Hardware operating conditions for the workstation or server range from 10°C to 35°C (50°F to 95°F). |
| Relative humidity | Relative humidity should range between 10 percent and 90 percent. |
| Ample circulation | Do not place your system near a heat source. Provide a minimum of three inches of clearance on all sides of the system unit. This allows air to circulate around the system to prevent excess heat and to keep the system air vents clean. |
| Working room | Leave enough room on your desktop for your monitor, keyboard, mouse pad, and any papers and materials that you may need. |

What to Avoid in a Location When choosing a location for your workstation, try to avoid the hazards listed in Table 2–2:

Table 2–2 Hazards to Avoid

| Hazard | How to Avoid |
|-------------------|---|
| Dust and dirt | Do not position the system unit directly on the floor. Dust and dirt damage system components. |
| Heat and sunlight | Do not place your DEC 3000 Model 400/400S AXP in direct sunlight, close to a heater, or near a photocopier. |
| Unstable location | Place your DEC 3000 Model 400/400S AXP on a desktop or table that is steady and strong enough to support your system and the monitor. Your new workstation weighs approximately 20.4 kilograms (45 pounds). A monitor can weigh up to 34 kilograms (75 pounds). |

Customizing Your Work Area

Ergonomic Considerations

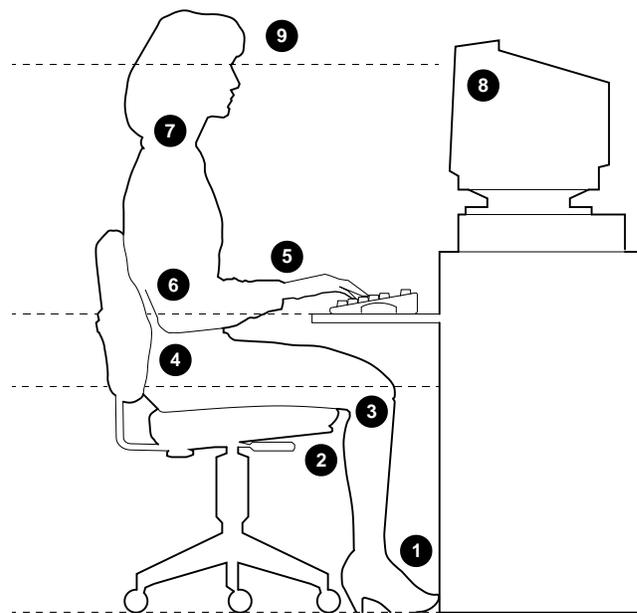
Considering the ergonomics of your working environment before installing your system can help you to work more effectively once you begin using your DEC 3000 Model 400/400S AXP.

Comfort in your workplace can be achieved by making sure that your chair, monitor, keyboard, and mouse are set at the right height and distance for you and the work that you are doing.

Positioning System Components

Figure 2-2 shows the optimal positioning for your system, and Table 2-3 explains the elements in the figure.

Figure 2-2 Positioning Your System



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Table 2–3 Positioning Your System Components

Adjust your chair so that...

- ❶ Your feet are flat on the floor—use a footrest if needed.
 - ❷ Your legs form a right angle to the floor.
 - ❸ The backs of your knees are free from the seat cushion.
 - ❹ The body weight rests on the spine with support of the lower back region.
-

Adjust your monitor and keyboard so that...

- ❺ Your wrists are straight and supported. Keyboard, mouse, and mousepad are at elbow height.
 - ❻ Your elbows are close to your sides, with your upper arms perpendicular to the floor.
 - ❼ You maintain a neutral neck posture (not straining or tilting up or down) with the top of the video screen no higher than eye level.
-

Adjust lighting and monitor so that...

- ❽ Light is directed away from the screen to reduce glare. Look away to distant objects frequently. Use the tilt and swivel capabilities of your monitor to place it in the most comfortable position for your own use.
 - ❾ The screen is the correct distance for your vision.
-

Unpacking a Workstation System



Checking the Box Contents

Your DEC 3000 Model 400 AXP workstation arrives in two boxes, one for the system unit and accessories, the other for the monitor.

Before installing your system, check to see that you have all of the parts shown in Figure 2-3. The parts shown are for preconfigured systems. If you did not order a preconfigured system, check your contents list to make sure that what you ordered has arrived in your shipment.

If Parts Are Missing

If you are missing any parts for your DEC 3000 Model 400 AXP workstation, contact your Digital sales representative immediately.

WARNING: Two People Required

The system unit and the monitor shipped with your system are both quite heavy. Digital recommends that two people remove these items from the shipping boxes, as indicated on the shipping cartons.

Monochrome Monitor Contents

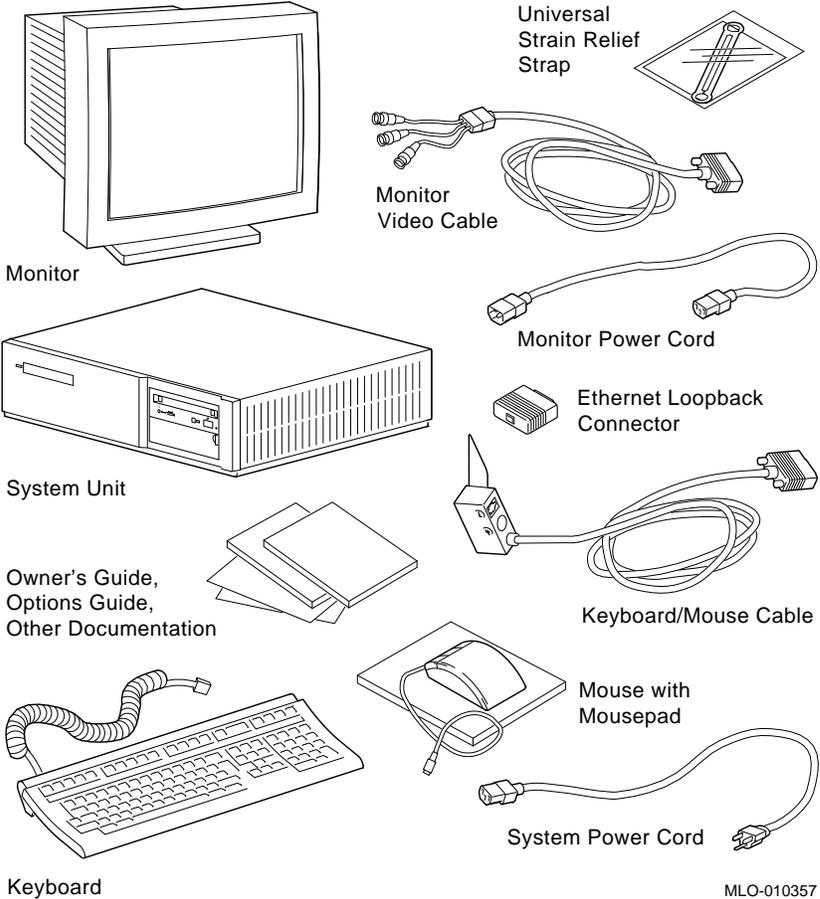
If your system is shipped with a monochrome or greyscale monitor, the accessory kit will include two monitor video cable terminators. Information about installing these terminators is provided in Chapter 3.

Unpacking a Workstation System

Parts Required for Installation

The accessory kit for your system includes many parts, some of which you do not need during system installation. See Figure 2-3 for the parts you need.

Figure 2-3 Workstation Components and Parts Required for Installation

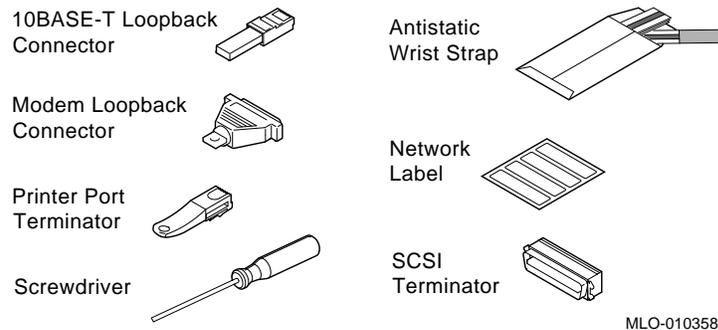


Unpacking a Workstation System

Save These Parts for Later

You do not need the parts shown in Figure 2-4 during installation. However, please save them for future use.

Figure 2-4 Components and Parts to Save



For Users in Germany

To comply with certain international standards, Digital includes German regulatory information (sometimes referred to as the FTZ postcard) in every system and monitor box. Disregard this material if your system is not located in Germany.

For Users In Australia

The yellow warning label, part number 36-39563-01, attached to the shipping container and system unit, is required by the country of Australia for systems that provide ISDN functionality but are not yet certified for use in Australia. Disregard these labels if your system is not located in Australia.

Unpacking a Server System



Checking the Box Contents

Before installing your DEC 3000 Model 400S AXP system, check to see that you have all of the parts shown in Figure 2-5. You can also check to see that you have all parts listed on the contents list that arrives with your system.

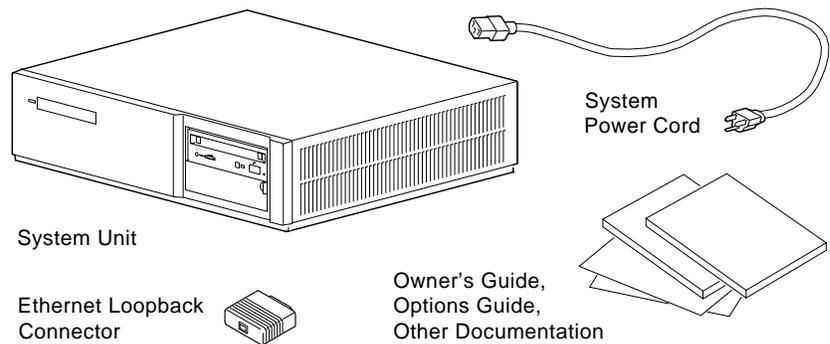
If Parts Are Missing

If you are missing any parts for your DEC 3000 Model 400S AXP, contact your Digital sales representative immediately.

Parts Required for Installation

The accessory kit for your system includes many parts, some of which you do not need during system installation. See Figure 2-5 for the parts you need.

Figure 2-5 Server Components and Parts Required for Installation



Unpacking a Server System

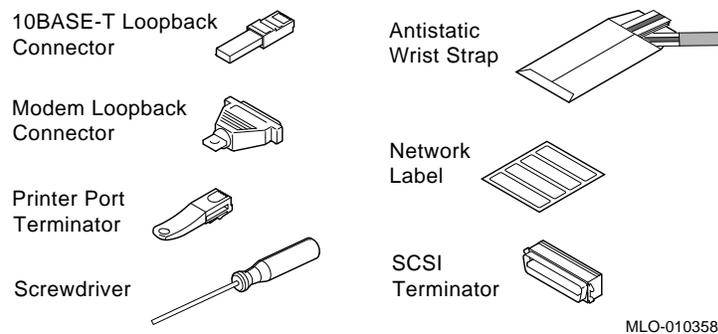
WARNING: Two People Required

The DEC 3000 Model 400S AXP system unit is quite heavy. Digital recommends that two people remove it from the shipping box, as indicated on the packing carton.

Save These Parts for Later

You do not need the parts shown in Figure 2-6 for installation. Please save them for future use.

Figure 2-6 Components and Parts to Save



For Users In Germany

To comply with certain international standards, Digital includes German regulatory information (sometimes referred to as the FTZ postcard) in every system box. Disregard this material if your system is not located in Germany.

For Users In Australia

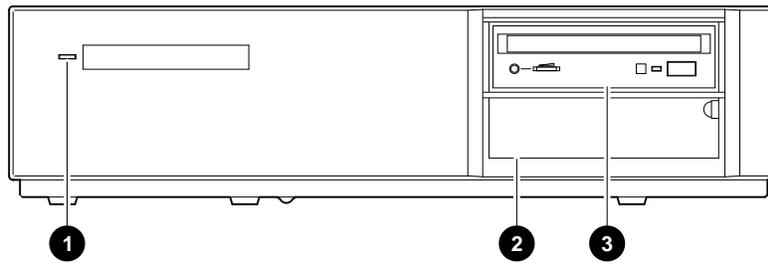
The yellow warning label, part number 36-39563-01, attached to the shipping container and system unit, is required by the country of Australia for systems that provide ISDN functionality but are not yet certified for use in Australia. Disregard these labels if your system is not located in Australia.

A Closer Look at Your System

Front of the System Unit

Take a minute to familiarize yourself with the front of the system unit, shown in Figure 2–7. Table 2–4 describes the items shown.

Figure 2–7 Front of System Unit



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Table 2–4 Front of the System Unit

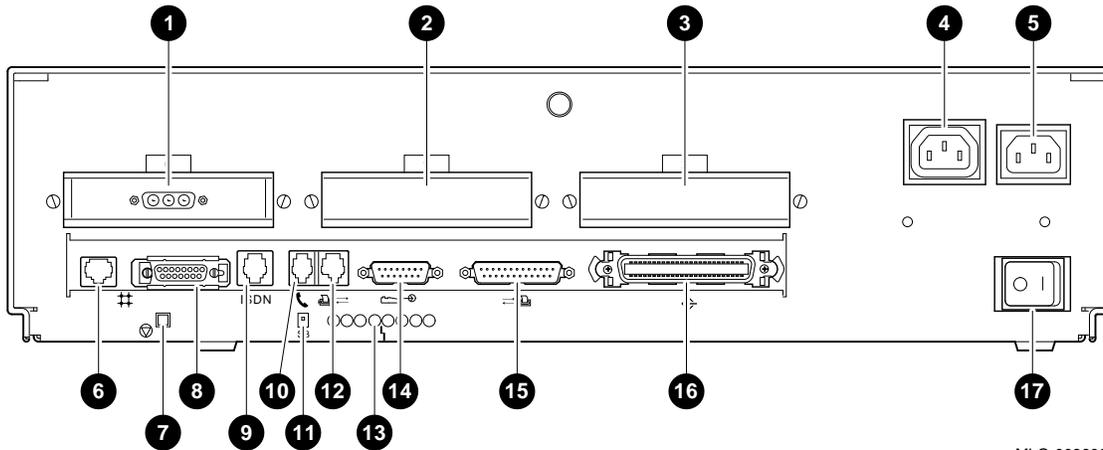
| Feature | Function |
|--|---|
| ❶ Power indicator light | When lit, indicates that the system unit is on. |
| ❷ Pulldown door | Flap door covering the system serial number and part number. |
| ❸ Optional removable media device slot | Slot for inserting: an RRD42 compact disc drive, an RX26 floppy disk drive, a TLZ06, TZK10, or TZ30 tape drive. |

A Closer Look at Your System

Back of the System Unit

Take a minute to familiarize yourself with the ports, switches, and indicators on the back of the system unit, shown in Figure 2-8. Table 2-5 explains the functions of these features.

Figure 2-8 Back of System Unit



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Table 2–5 Back of the System Unit

| Feature | Function |
|---|---|
| ❶, ❷, and ❸ TURBOchannel slots 0, 1 and 2 | In this diagram, TURBOchannel slot 0 contains a graphics option. |
| ❹ Auxiliary power socket | To connect the monitor power cord so the monitor will not require a connection to a separate power outlet. |
| ❺ System power socket | To connect the system unit power cord. |
| ❻ 10BASE-T port | To connect a 10BASE-T Ethernet network cable. |
| ❼ Halt button | To place the system in console mode. |
| ❽ AUI Ethernet network port | To connect an AUI Ethernet network cable (sometimes referred to as standard or Thickwire Ethernet). |
| ❾ ISDN port | Functionality currently not supported. |
| ❿ Audio port | To connect the audio input and output adapter. |
| ⓫ Alternate console switch | Toggle switch to redirect console output from a monitor (switch up) to an alternate console such as a terminal (switch down). |
| ⓬ Alternate console/ printer port | To connect a terminal as an alternate console, or a printer. |
| ⓭ Diagnostic display lights | Used for diagnostic testing purposes. |
| ⓮ Keyboard/mouse port | To connect the keyboard/mouse extension cable. |
| ⓯ Synchronous /asynchronous communications port | To connect a communications device such as a printer, plotter, modem, or console terminal. |
| ⓰ SCSI port | To connect Small Computer System Interface (SCSI) peripheral devices. |
| ⓱ Power On/Off switch | To turn the system unit power on () and off (O). |

A Closer Look at Your System

System Unit Symbols

The rear of your system unit has symbols next to most of the connectors and ports. Following is an explanation of these symbols.



Halt Button

Press the halt button to put the system into console mode.



Network Interface Port

Insert the cable for a network connection.

ISDN

ISDN Interface Port

ISDN currently not available.



Handset Jack

Insert a telephone-style handset into this jack to use the audio input and output features of the system.

S3

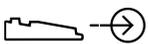
Alternate Console Switch

Indicates the alternate console toggle switch that directs console output to the monitor or to an alternate console, such as a terminal.



Alternate Console/Printer/Communications Port

Connect an alternate console, such as a terminal or a printer, to this port. You can also connect a communications device, such as a modem, here.



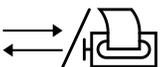
Keyboard/Mouse Port

Attach the keyboard/mouse cable assembly to this port.



Diagnostic Display Lights

Indicates the diagnostic display lights on the system unit.



Communications/Printer Port

Connect a communications device, such as a modem, to this port. You can also connect a printer or terminal to this port.



SCSI Port

Attach a SCSI cable or terminator to this port.

Where to Go Next

Determine Your Next Task

Use Table 2–6 to determine which chapter to read next.

Table 2–6 Where to Go Next

| If you... | Go to... |
|--|-----------------|
| Are installing a workstation | Chapter 3 |
| Are installing a server | Chapter 4 |
| Installed your system using the <i>Setting Up Your Workstation</i> card or the <i>Setting Up Your Server</i> card and you want to: | |
| a. Connect to a network | Chapter 5 |
| b. Start up your system | Chapter 6 |

3

Installing a Workstation System

Chapter Overview

Introduction

If your system is configured as a workstation, see the installation instructions in this chapter. For a server system, see Chapter 4. Your DEC 3000 Model 400 AXP workstation is designed to be installed quickly and easily. The information in this chapter explains how to connect the cables to the system unit and to the monitor, and how to prepare the DEC 3000 Model 400 AXP for startup. Starting your workstation is explained in Chapter 6.

In This Chapter

This chapter covers the following topics:

- Before You Begin
- Task Overview
- Connecting the DEC 3000 Model 400 AXP Workstation
- Checking Your Installation
- Where to Go Next

Before You Begin



What You Should Have Done Already

Before you install your system components, you should have completed the following tasks:

- Determined any ergonomic considerations you may have.
- Chosen a location for your DEC 3000 Model 400 AXP workstation.
- Unpacked your workstation.
- Familiarized yourself with the ports and controls on the rear of the system unit.

If you have not performed all of these tasks, do so now. They are covered in Chapter 2.

What You Should Know Beforehand

Note that:

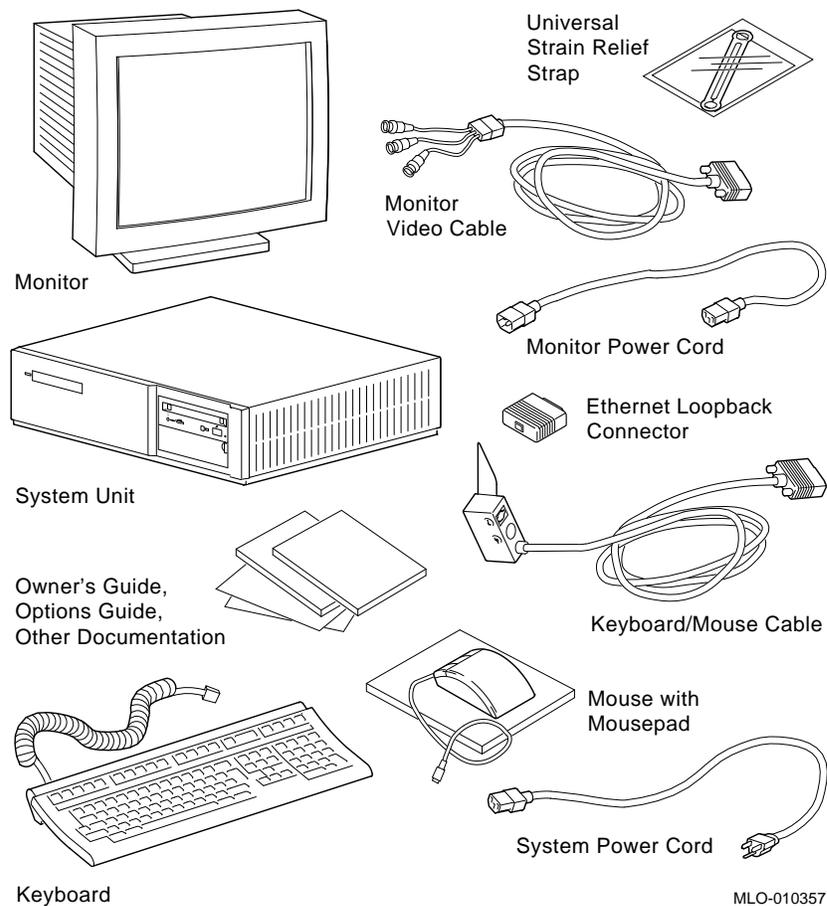
- Installing your system requires little or no previous knowledge of computer systems. Connecting your DEC 3000 Model 400 AXP workstation should take about 15 minutes.
- This chapter covers connecting your DEC 3000 Model 400 AXP system as a standalone workstation. You may connect your workstation to a network with a few minor adjustments to the procedures in this chapter. Chapter 5 explains how to connect to a network.
- The accessory kit shipped with your workstation includes parts that you do not need during installation. Save any terminators or additional parts in case you need them later.

Task Overview

Parts for Installation

Figure 3-1 lists the parts required to install your workstation.

Figure 3-1 Parts Required to Install your Workstation



Task Overview

Installation Steps

Table 3-1 gives an overview of the steps involved in installing your DEC 3000 Model 400 AXP workstation system components. You do not need to install the SCSI terminator on your system.

Table 3-1 Steps to Install Your DEC 3000 Model 400 AXP Workstation

| Step | Connect the... | To the... |
|------|--------------------------------|---|
| 1 | Universal strain relief strap | Monitor video cable |
| 2 | Monochrome monitor terminators | Monitor video cable (for monochrome or greyscale monitors only) |
| 3 | Monitor video and power cables | Rear of the monitor |
| 4 | Monitor video cable | System unit graphics connector |
| 5 | Monitor power cord | System unit auxiliary power socket |
| 6 | Ethernet loopback connector | AUI Ethernet port |
| 7 | Keyboard/mouse cable | Keyboard/mouse port |
| 8 | Keyboard and mouse cables | Keyboard/mouse extension cable |
| 9 | System unit power cord | System unit power socket |
| 10 | System unit power cord | Appropriate wall outlet |

Connecting the DEC 3000 Model 400 AXP Workstation



Step 1: Universal Strain Relief Strap to Video Cable

The universal strain relief strap (USRS) is included in the bag with your monitor video cable. Attaching the strap to the cable can prevent the weight of the cable from pulling out of the monitor.

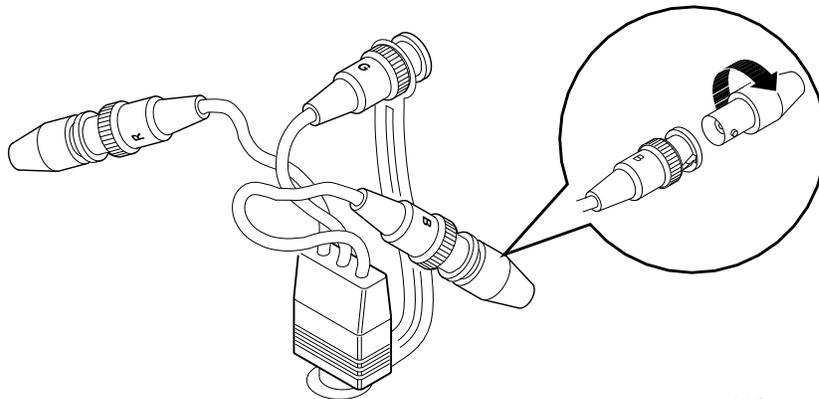
Instructions for attaching the USRS are included with the strap. Complete those steps to install the USRS.

Step 2: Terminators to Cable Connectors

If you are using a color monitor, go directly to step 3.

If you received a monochrome or a greyscale monitor, two monitor terminators were shipped with your system. Use these to terminate two of the monitor video cable connectors. Connect a cable terminator to the monitor video cable connectors marked red (R) and blue (B), as shown in Figure 3-2.

Figure 3-2 Terminating the Monitor Video Cable



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Step 3: Monitor Cables to Monitor

Complete the following steps to connect the monitor cables to the back of the monitor.

- Step ❶ for a color monitor.
- Step ❷ for a monochrome or greyscale monitor.
- Step ❸ for all monitors. Table 3–3 shows the locations of the connectors on the backs of various monitors. Shaded areas indicate location of connectors.

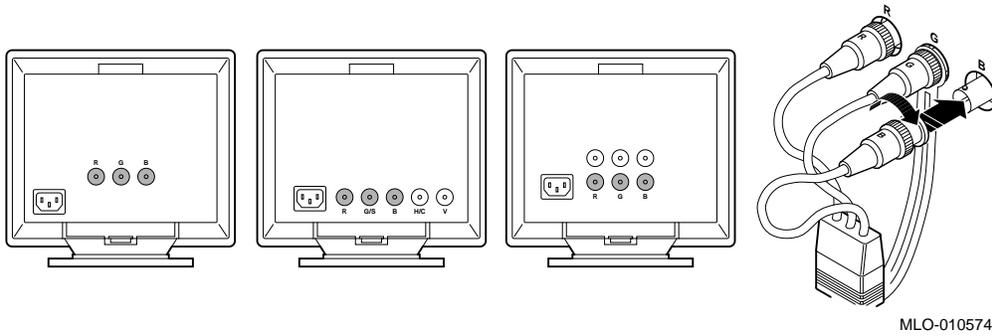
Table 3–2 Making Monitor Connectors

| Step | See diagram with... | Then... |
|------|---|--|
| ❶ | Three connectors (color monitor) | Connect all three cable connectors to the monitor, matching the color cables, red (R), green (G), and blue (B), with the corresponding connectors marked R, G, and B on the monitor. |
| | Five connectors (color monitor) | Do not use the H/C and V connectors. Connect the other three cable connectors as described above. |
| | Six connectors (Video In and Video Out) | Use the three Video In connectors. Connect the three cable connectors as described above. |
| ❷ | One connector (monochrome or greyscale monitor) | Connect only the middle, green (G) cable connector. |
| ❸ | Monitor power cord | Connect the monitor power cord to the power socket on the rear of your monitor. The power socket may be in a different location from the position shown here. |

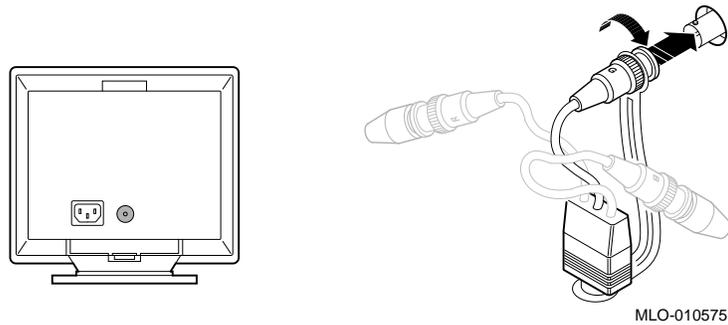
Connecting the DEC 3000 Model 400 AXP Workstation

Table 3-3 Connecting the Monitor Cables to the Monitor

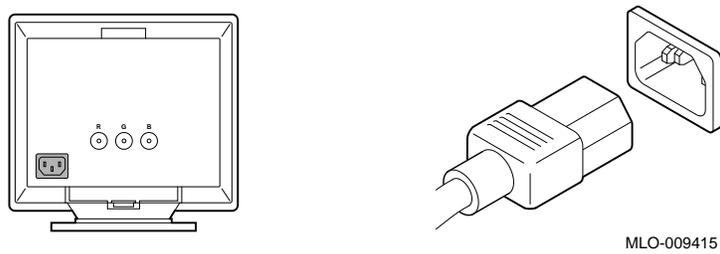
1 Connect the cable to a color monitor... **Like this...**



2 Connect the cable to a monochrome monitor... **Like this...**



3 Connect the monitor power cord... **Like this...**

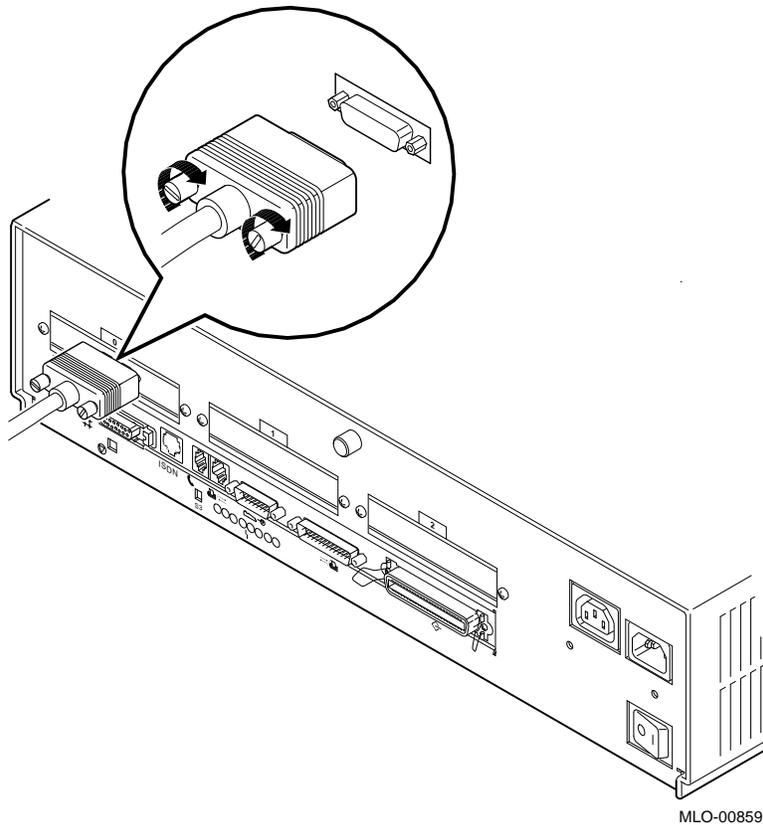


Connecting the DEC 3000 Model 400 AXP Workstation

Step 4: Monitor Video Cable to System Unit

Connect the other end of the monitor video cable to the graphics connector on the system unit, as shown in Figure 3-3. The graphics connector extends from one of the three TURBOchannel slots on the rear of the system unit. Preconfigured systems use Slot 0. Tighten the thumbscrews on both sides of the connector to ensure the cable is securely connected.

Figure 3-3 Connecting the Monitor Video Cable



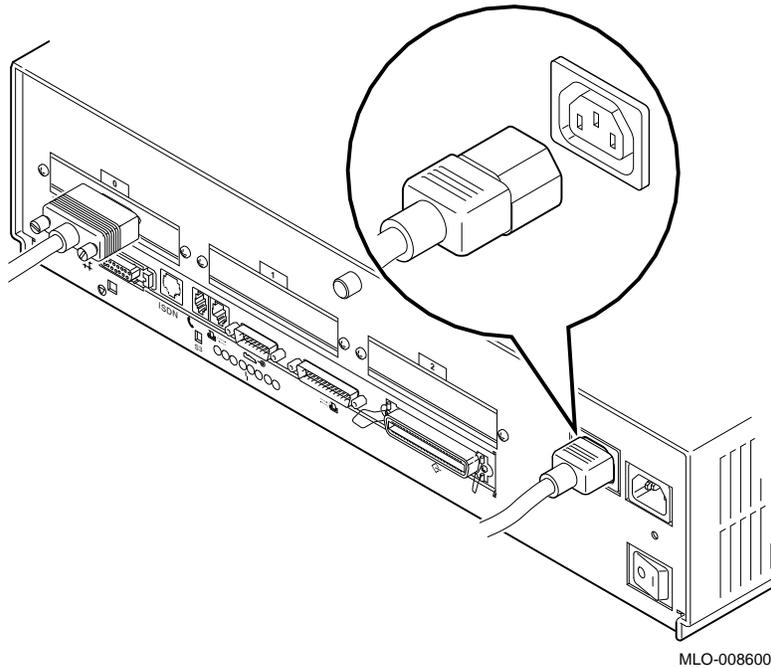
MLO-008599

Connecting the DEC 3000 Model 400 AXP Workstation

Step 5: Monitor Power Cord to System Unit

Connect the other end of the monitor power cord to the auxiliary power socket on the rear of the system unit, as shown in Figure 3-4.

Figure 3-4 Plug End of the Monitor Power Cord

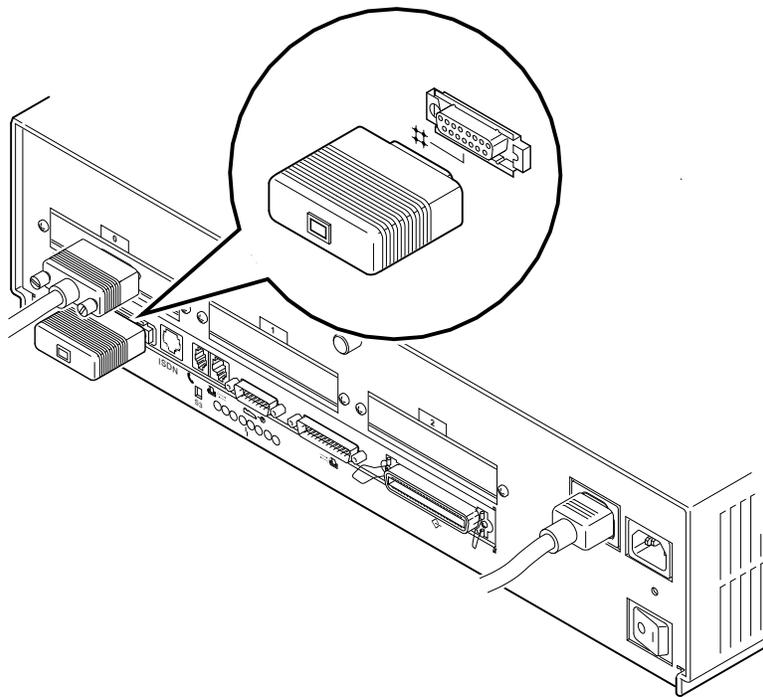


Connecting the DEC 3000 Model 400 AXP Workstation

Step 6: Ethernet Loopback Connector

Connect the Ethernet loopback connector to the AUI Ethernet port on the system unit, as shown in Figure 3-5. If you plan to connect to an AUI Ethernet network or a ThinWire Ethernet network, you may omit this step. After you have completed the steps in this chapter, see Chapter 5 for information about network connections.

Figure 3-5 Connecting the Ethernet Loopback Connector



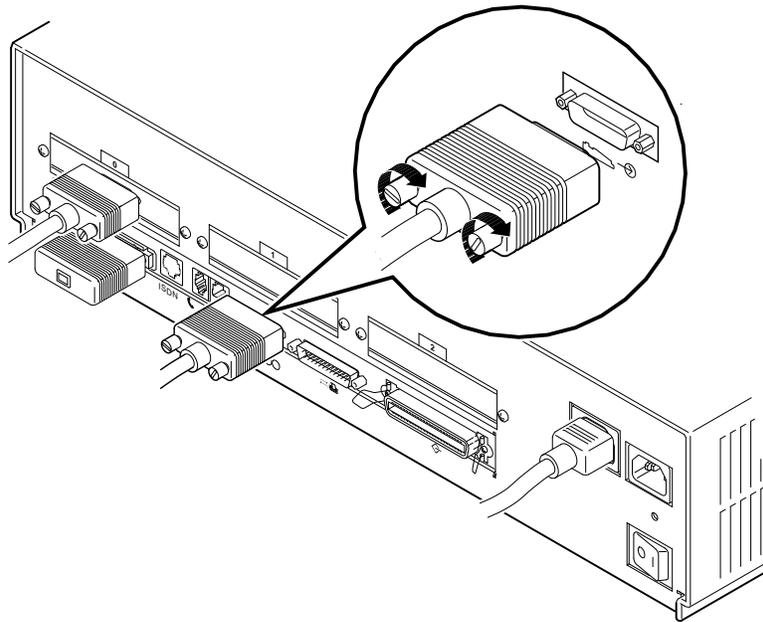
MLO-008598

Connecting the DEC 3000 Model 400 AXP Workstation

Step 7: Keyboard/Mouse Cable to System Unit

Connect the keyboard/mouse extension cable to the keyboard/mouse port on the system unit, as shown in Figure 3-6. Tighten the thumbscrews on both sides of the connector to ensure the cable is securely connected.

Figure 3-6 Connecting the Keyboard/Mouse Cable



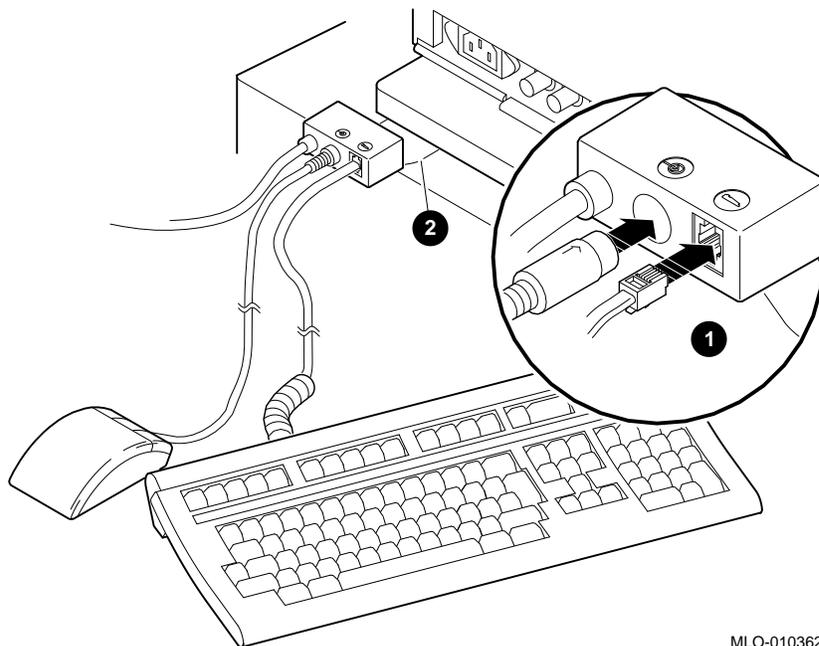
MLO-008597

Connecting the DEC 3000 Model 400 AXP Workstation

Step 8: Keyboard and Mouse Cables to Extension Cable

Connect the keyboard cable and the mouse cable to the keyboard/mouse extension cable ❶, as shown in Figure 3-7. The extension cable is provided for the mouse and keyboard so that each can be located away from the system unit.

Figure 3-7 Connecting the Keyboard and Mouse to the Extension Cable



MLO-010362

The Plastic Mylar Tab

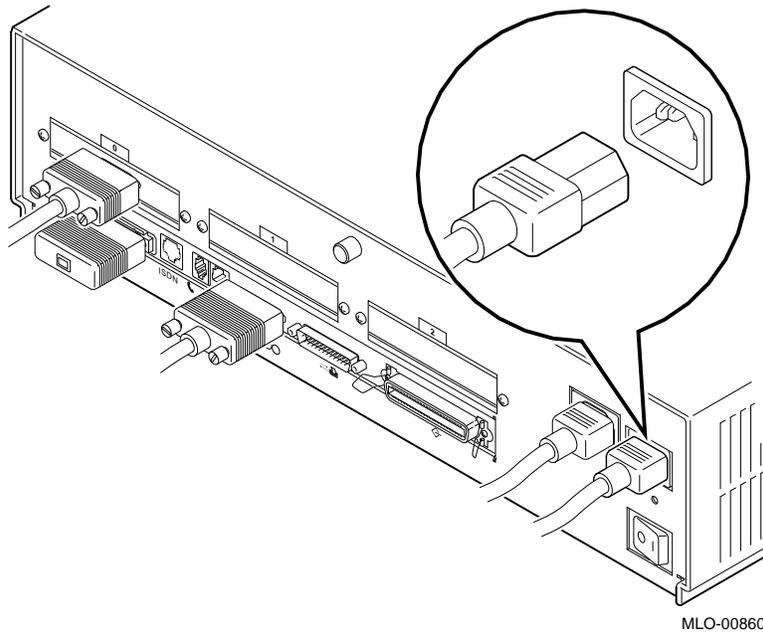
To keep the keyboard/mouse extension cable in position, you can place the plastic Mylar tab ❷ of the extension cable under the base of the monitor.

Connecting the DEC 3000 Model 400 AXP Workstation

Step 9: System Power Cord

Connect the system power cord to the system power socket on the rear of the system unit, as shown in Figure 3–8.

Figure 3–8 Connecting the Power Cord to the System Unit

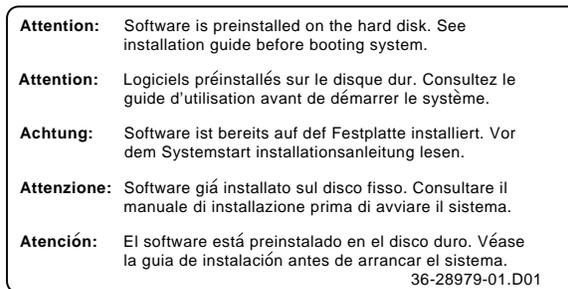


Yellow Sticker on Power Connector

If there is a sticker similar to the one shown in Figure 3–9 covering the system power socket on the rear of the system unit, your system already has either the OpenVMS AXP or the DEC OSF/1 AXP operating system factory-installed on an internal fixed disk drive.

Connecting the DEC 3000 Model 400 AXP Workstation

Figure 3–9 Factory-Installed Software Sticker



MLO-007596

Step 10: Power Outlet

Make sure that the power On/Off switch is in the off (O) position. Connect the other end of the power cord into a power outlet of the correct voltage.

Checking Your Installation



Check Alternate Console Switch

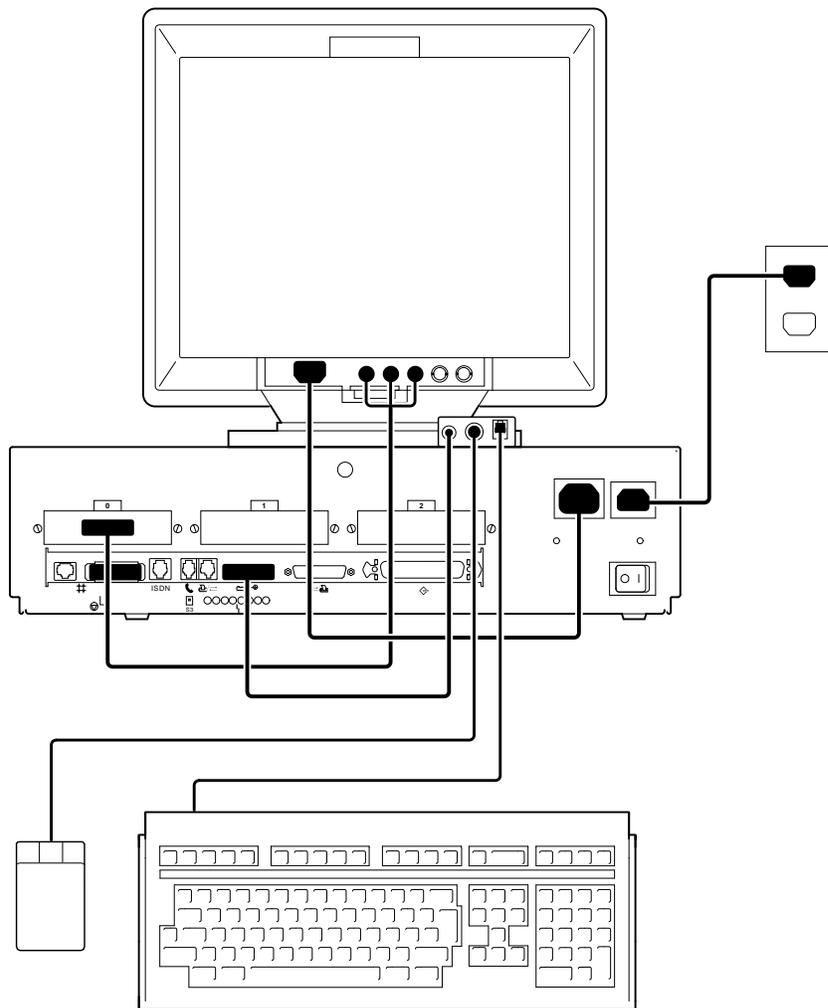
The alternate console switch should be in the up position for a workstation. Make sure that the switch is in the correct position while checking your connections. See Figure 2–8 for the location of the alternate console switch.

An Installed Workstation

Figure 3–10 shows all of the connections on an installed workstation. Check your system against this diagram to make sure you have installed everything correctly.

Checking Your Installation

Figure 3–10 A Connected Workstation



MLO-010363

Where to Go Next

Where to Go Next

Determine Your Next Task

After installing your DEC 3000 Model 400 AXP workstation, use Table 3-4 to determine which chapter to read next.

Table 3-4 Where to Go Next

| If you want to... | Go to... |
|---|-----------------|
| Connect your system to network hardware | Chapter 5 |
| Start your system | Chapter 6 |

4

Installing a Server System

Chapter Overview

Introduction

If your system is configured as a server, see the installation instructions in this chapter. For a workstation system, see Chapter 3. Your DEC 3000 Model 400S AXP server is designed to be installed quickly and easily. The information in this chapter explains how to install the server system and prepare it for startup. Starting your server system is explained in Chapter 6.

In This Chapter

This chapter covers the following topics:

- Before You Begin
- Task Overview
- Connecting the DEC 3000 Model 400S AXP Server
- Checking Your Installation
- Where to Go Next

Before You Begin



What You Should Have Done Already

Before you can proceed with this chapter to install your system components, you should have already completed the following tasks:

- Chosen a location for your DEC 3000 Model 400S AXP server.
- Unpacked your system.
- Familiarized yourself with the ports and controls on the rear of the system unit.

If you have not performed all of these tasks, do so now. They are covered in Chapter 2.

What You Should Know Beforehand

Note that:

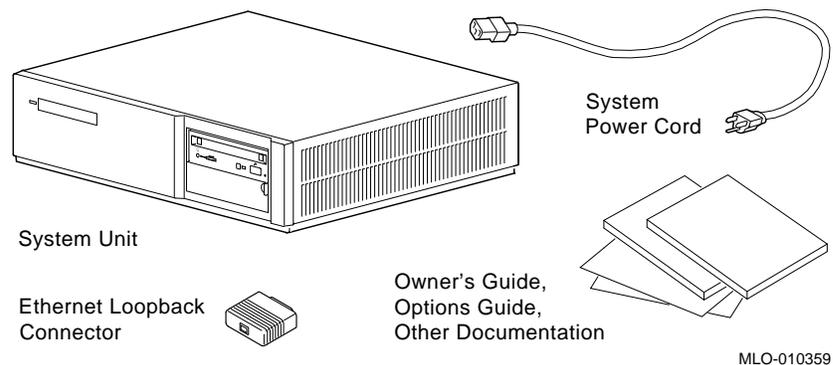
- Installing your system requires little or no previous knowledge of computer systems. Connecting your DEC 3000 Model 400S AXP server should take about 15 minutes.
- This chapter covers connecting your DEC 3000 Model 400S AXP system as a standalone server system. You may connect your server to a network with a few minor adjustments to the procedures in this chapter. Chapter 5 explains how to connect to a network.

Task Overview

Parts for Installation

The accessory kit shipped with your system includes parts that you do not need during installation. Figure 4-1 identifies the parts required to install your server. Save any terminators or additional parts in case you need them later.

Figure 4-1 Parts Required to Install Your Server



Task Overview

Installation Steps

Table 4-1 gives an overview of the steps involved in installing your DEC 3000 Model 400S AXP server system components. You do not need to install the SCSI terminator on your system.

Table 4-1 Steps to Install Your DEC 3000 Model 400S AXP Server

| Step | Connect the... | To the... |
|------|------------------------------------|--------------------------------|
| 1 | Ethernet loopback connector | AUI Ethernet port |
| 2 | Alternate console (terminal) cable | Alternate console/printer port |
| 3 | System power cord | System power socket |
| 4 | Power cord | Appropriate wall outlet |

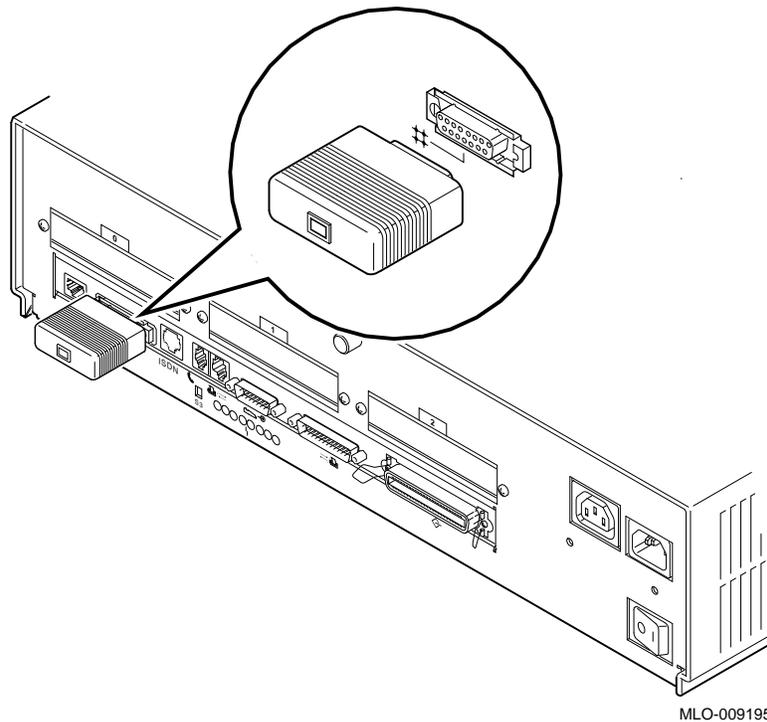
Connecting the DEC 3000 Model 400S AXP Server



Step 1: Ethernet Loopback Connector

Connect the Ethernet loopback connector to the AUI Ethernet port on the system unit, as shown in Figure 4–2. If you are planning to connect to an AUI Ethernet network or a ThinWire Ethernet network using a DECXM transceiver, you may omit this step. After you have completed the connections in this chapter, see Chapter 5 for information about network connections.

Figure 4–2 Connecting the Ethernet Loopback Connector

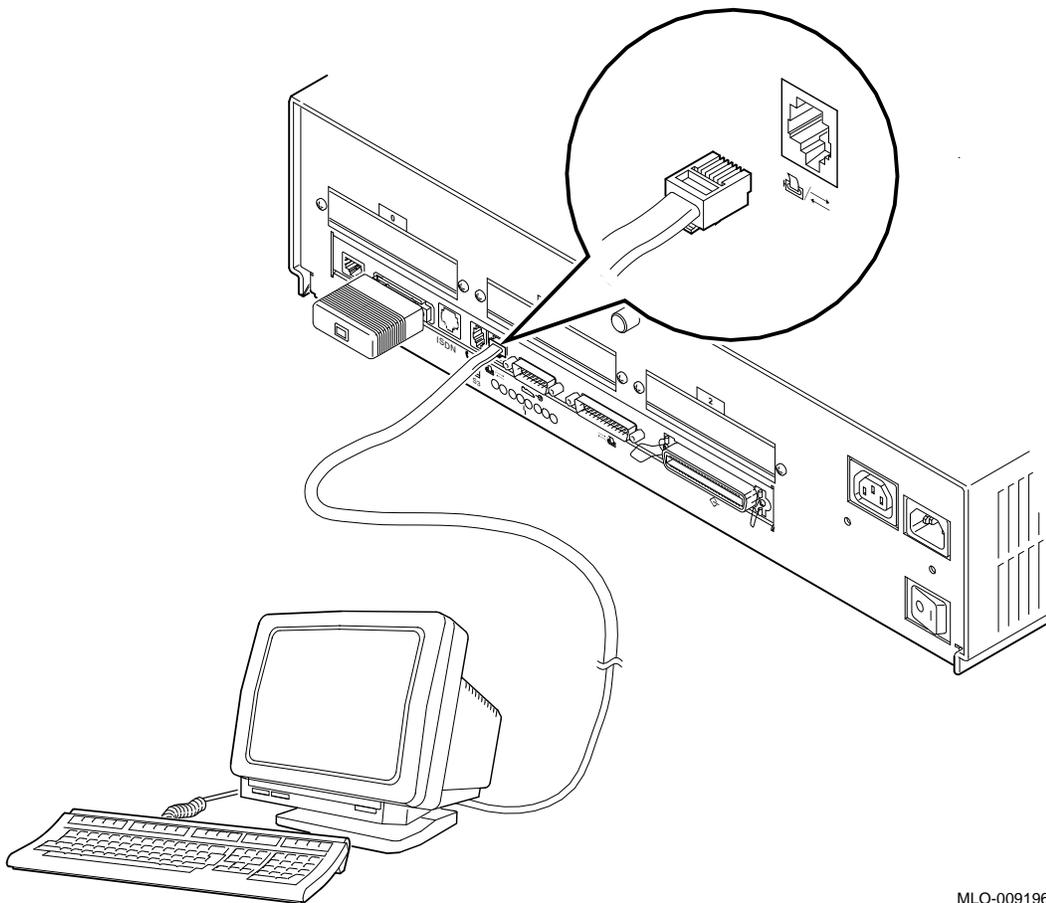


Connecting the DEC 3000 Model 400S AXP Server

Step 2: Alternate Console

To display console and other information on an alternate console device, connect a terminal to the alternate console/printer port on the back of the system unit as shown in Figure 4-3. See Chapter 12 for more information on using an alternate console device.

Figure 4-3 Connecting a Terminal to the System Unit



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Connecting the DEC 3000 Model 400S AXP Server

Check the Alternate Console Switch

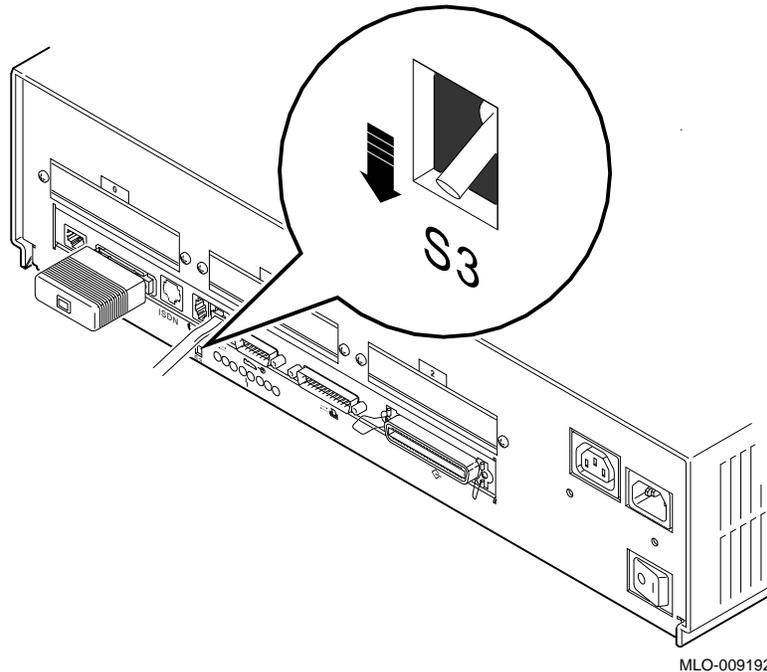
If you connected a terminal to use as an alternate console device (Step 2), you should check to make sure that the alternate console switch is in the correct position.

Determine Switch Position

The alternate console switch on the rear of the system unit directs console output to one of two destinations: a monitor or an alternate console device, such as a terminal.

To display console information on a terminal, the switch should be in the down position as shown in Figure 4-4.

Figure 4-4 Checking the Alternate Console Switch

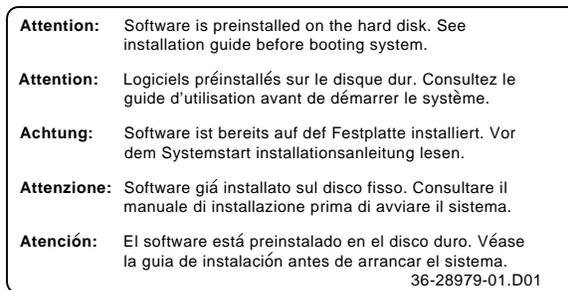


Connecting the DEC 3000 Model 400S AXP Server

Yellow Sticker on Power Connector

If there is a sticker similar to the one shown in Figure 4–5 covering the power socket on the rear of the system unit, your system already has either the OpenVMS AXP or the DEC OSF/1 AXP operating system factory-installed on an internal fixed disk.

Figure 4–5 Factory-Installed Software Sticker



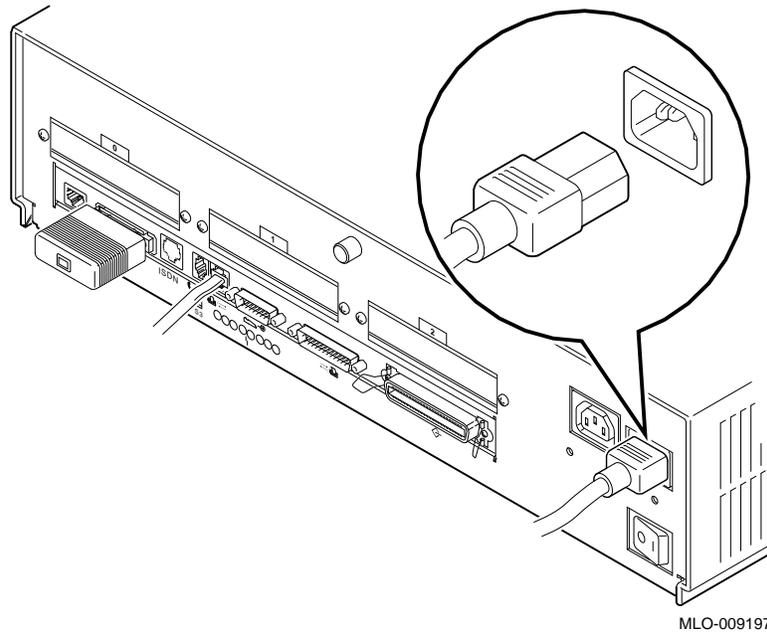
MLO-007596

Connecting the DEC 3000 Model 400S AXP Server

Step 3: System Power Cord

Connect the system power cord to the system power socket on the rear of the system unit, as shown in Figure 4-6.

Figure 4-6 Connecting the Power Cord to the System Unit



Connecting the DEC 3000 Model 400S AXP Server

**Step 4: Power
Outlet**

Make sure that the power On/Off switch is in the off (O) position.
Connect the other end of the power cord into a power outlet of
the correct voltage.

Checking Your Installation

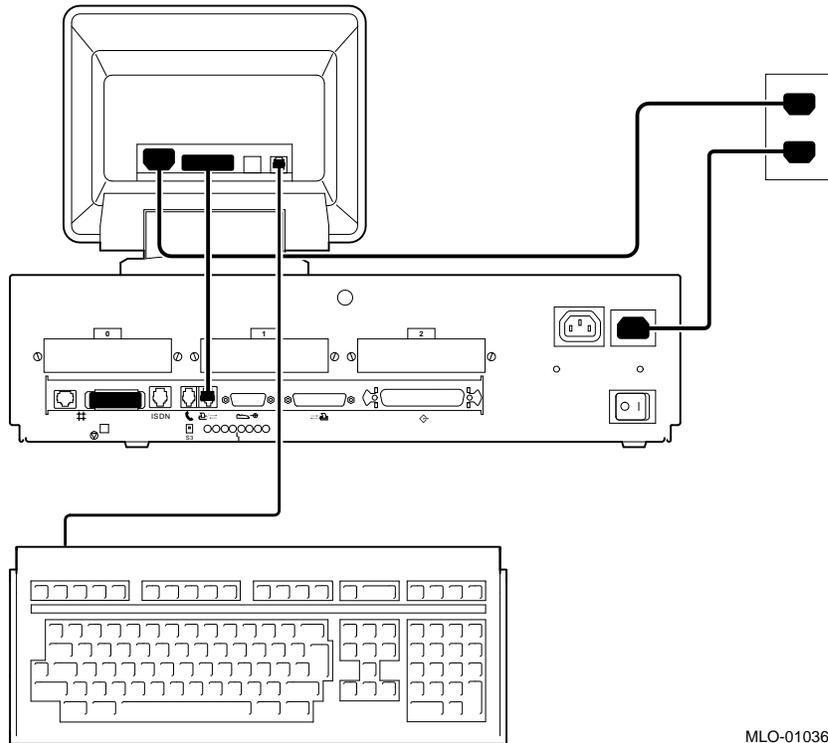


**An Installed
Server**

Figure 4-7 shows all of the connections on an installed server.
Check your system against this diagram to make sure you have
installed everything correctly.

Checking Your Installation

Figure 4-7 A Connected Server



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Where to Go Next

Where to Go Next

Determine Your Next Task

After installing your DEC 3000 Model 400/400S AXP server, use Table 4-2 to determine which chapter to read next.

Table 4-2 Where to Go Next

| If you want to... | Go to... |
|----------------------------------|-----------------|
| Connect your system to a network | Chapter 5 |
| Start your system | Chapter 6 |

5

Connecting Your System to a Network

Chapter Overview

Introduction

At some point, you may want to connect your DEC 3000 Model 400/400S AXP system to a network at your site. There are two parts to the task: making the hardware connections and establishing the network software connection.

In This Chapter

This chapter describes how to complete the hardware connections to a network. For the networking software connection, see your system or network administrator at your site.

This chapter covers the following topics:

- Before You Begin
- Connecting to an AUI Ethernet Network
- Connecting to a 10BASE-T Network
- Connecting to a ThinWire Network
- Setting and Verifying the Network Connection
- Completing the Network Connection

Before You Begin



What You Should Do First

Before connecting your DEC 3000 Model 400/400S AXP system to a network, you need to:

1. Turn off your system if it is already on. See Chapter 7.
2. Determine the network type at your site.
3. Understand the network connectors on your system.
4. Obtain the correct Ethernet cables or connectors to connect to the appropriate network port on the rear of your workstation.
5. Obtain and register your network information, if necessary.

What You Should Know Beforehand

For the tasks described in this chapter, only basic hardware knowledge is desirable, as for the tasks you performed when you installed your system.

Determining Your Network Type

See your network administrator to find out the network type at your site. If there is more than one network, find out to which one you will be connecting your system.

Network Labels

For your convenience, network labels are shipped with your system. See Figure 2-6 to identify the network labels. Use the network labels to record pertinent information about your system, such as the network node name and/or number. You can adhere the label to the front of your system behind the pulldown door. (See Figure 2-7 for the location of the pulldown door.)

Available Networks

You can connect four different types of networking cables to your DEC 3000 Model 400/400S AXP system:

1. AUI Ethernet
2. ThinWire Ethernet (by attaching a DECXM transceiver or a DESTA unit to the AUI Ethernet port)
3. 10BASE-T Ethernet
4. ISDN (Integrated Services Digital Network), when available. See Chapter 1 for a description of the ISDN services and availability. Instructions for ISDN installation are not provided at this time.

Network Cables and Adapters

Once you determine your network type, be sure that you have the cables and connectors listed in Table 5–1 before trying to connect your system to a network.

Table 5–1 Required Network Cables

| Network | Cable | Adapter |
|-------------------|---|---|
| AUI Ethernet | BNE4C-xx | – |
| 10BASE-T Ethernet | BN24F-xx or BN26K-xx twisted-pair cable | – |
| ThinWire Ethernet | BNE4C-xx or BNE4D-xx, BC16M-xx ThinWire cable | DECXM-AA transceiver (or DESTA-BA) and H8225 ThinWire terminator ¹ |

¹Terminator required only if DEC 3000 Model 400/400S AXP system is the last one on a ThinWire cable

Registering Network Information

Most types of networks require that you register network information, such as a node name and number. If network registration is required at your site, complete this task before you start using your system on the network. See your system or network administrator for assistance.

Connecting to an AUI Ethernet Network



Procedure Overview

To connect your DEC 3000 Model 400/400S AXP system to an AUI Ethernet network, sometimes referred to as thickwire or standard Ethernet, complete the steps in Table 5–2.

Table 5–2 Steps for Connecting an AUI Ethernet Network

| Step | Action |
|------|--|
| 1 | Removing loopback connector. |
| 2 | Connect the AUI Ethernet cable. |
| 3 | Push the sliding connector lock to secure cable. |

Step 1: Loopback Connector

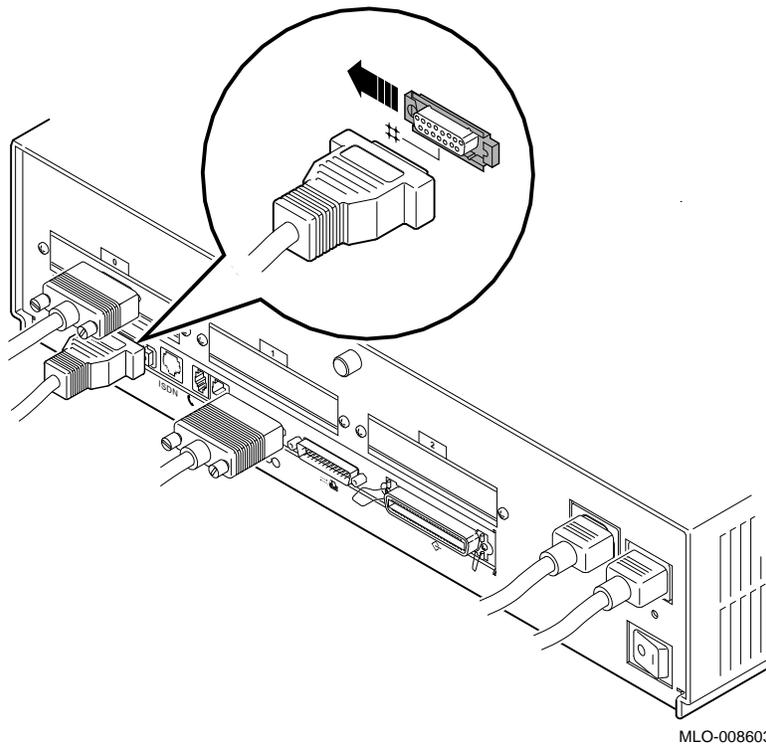
If the loopback connector is still connected to your system, remove it now. Keep the loopback connector in a safe place. You may need it later for testing purposes.

Step 2: AUI Ethernet Cable

Connect the AUI Ethernet cable (BNE4C-xx) to the AUI port on the rear of the system unit as shown in Figure 5–1. Be sure to attach the cable securely by securing the sliding connector lock.

Connecting to an AUI Ethernet Network

Figure 5–1 Connecting to an AUI Ethernet Network



Step 3: Sliding Lock

Push the sliding lock on the AUI Ethernet cable connector to the left, using your finger. The sliding lock prevents the cable from becoming disconnected.

Connect the other end of the cable to the AUI Ethernet network transceiver or DELNI unit.

Connecting to a 10BASE-T Network



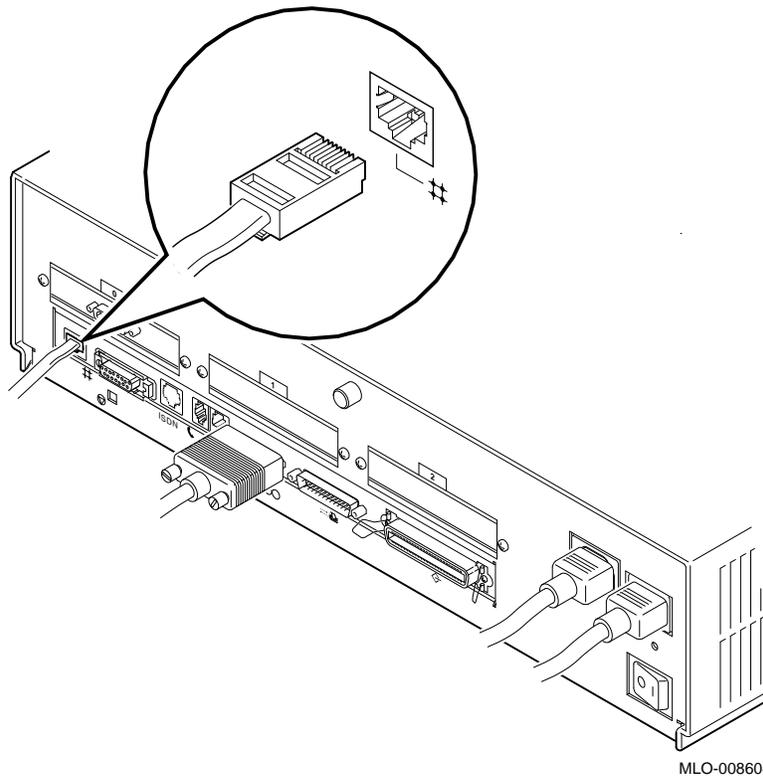
Procedure Overview

To connect your DEC 3000 Model 400/400S AXP system to a 10BASE-T network, sometimes referred to as a twisted-pair network, complete the following tasks.

1. Connect the 10BASE-T cable to the 10BASE-T port on the back of the system unit as shown in Figure 5-2, making sure that the cable is attached securely.
2. Connect the other end of the cable to the network connection.

Connecting to a 10BASE-T Network

Figure 5-2 Connecting a 10BASE-T Network Cable



Connecting to a ThinWire Network



ThinWire Ethernet Connection Procedure

You can connect your DEC 3000 Model 400/400S AXP system to a ThinWire Ethernet network by attaching an Ethernet cable to the AUI Ethernet port on the system unit, and then attaching a DECXM transceiver (or a DESTA unit) to the cable.

To connect your DEC 3000 Model 400/400S AXP to a ThinWire Ethernet network, complete the steps listed in Table 5-3.

Table 5-3 Steps for Connecting a ThinWire Ethernet Network

| Step | Action |
|------|---|
| 1 | Remove loopback connector. |
| 2 | Connect a standard Ethernet cable to the AUI port on the system unit. |
| 3 | Attach the cable to a DECXM transceiver (or a DESTA unit). |
| 4 | Connect ThinWire Cables and T-connector to the DECXM transceiver (or a DESTA unit). |
| 5 | Terminate the T-connector (if necessary). |

Step 1: Loopback Connector

If the Ethernet loopback connector is still connected to your system, remove it now. Keep the loopback connector in a safe place. You may need it for testing purposes later.

Connecting to a ThinWire Network

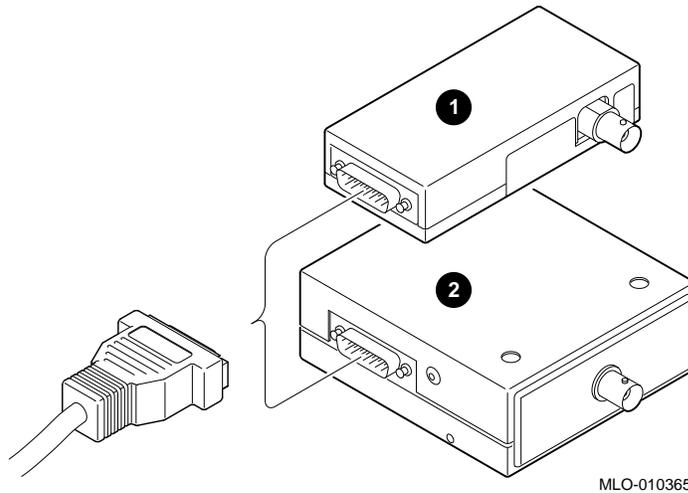
Step 2: Ethernet Cable

Connect an AUI Ethernet cable (BNE4C-xx) to the AUI port on the rear of the system unit, shown in Figure 5-1 of this chapter.

Step 3: DECXM Transceiver or DESTA Unit

Connect the other end of the AUI Ethernet cable to the AUI port on the DECXM transceiver ❶, or a DESTA unit ❷, as shown in Figure 5-3.

Figure 5-3 Connecting the AUI Ethernet Cable to the DECXM Transceiver or a DESTA Unit

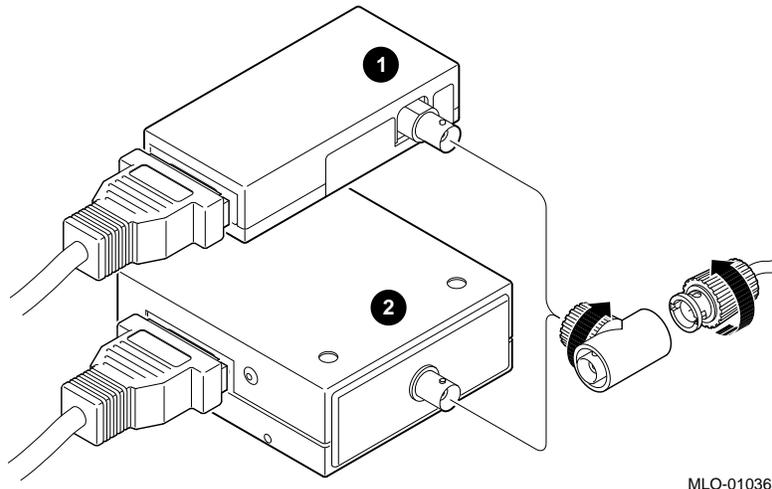


Connecting to a ThinWire Network

Step 4: ThinWire Cables and T-Connector

Connect the ThinWire network cables to the T-Connector and then the T-connector to the DECXM transceiver **1** (or a DESTA unit **2**) as shown in Figure 5-4.

Figure 5-4 Connecting the ThinWire Cables and T-Connector to the DECXM Transceiver or a DESTA Unit

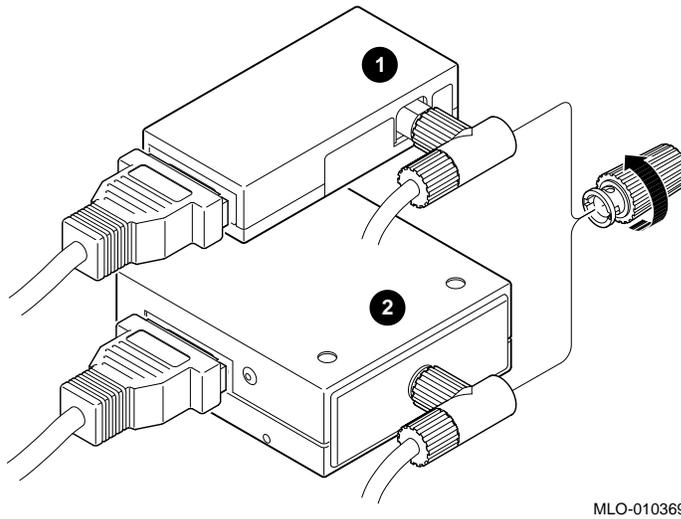


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Step 5: Terminate Connection

If your workstation is the last one on a ThinWire network, you need to terminate the network connection. Do this by connecting a terminator, rather than a ThinWire network cable, to one side of the T-connector connected to either the DECXM Transceiver **1** (or the DESTA unit **2**), as shown in Figure 5-5.

Figure 5-5 Terminating the Ethernet Connection



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For information on correct settings for your DECXM or DESTA unit, refer to Table 5-4 for documentation shipped with the units.

Table 5-4 DECXM and DESTA Documentation

| For this transceiver or adapter... | See this document... |
|------------------------------------|---|
| DECXM transceiver | <i>DECXM-AA Transceiver Installation, Part Number EK-DECXM-IC.</i> |
| DESTA unit | <i>Digital ThinWire Ethernet Station Adapter (DESTA-BA) Installation Card, Part Number EK-DEST1-IN.</i> |

Setting and Verifying the Network Connection



After Cable Connections

After completing the hardware network connections to your DEC 3000 Model 400/400S AXP system, you must complete the following tasks:

1. Set the network connection type.
2. Verify the network connection.

Two Network Settings

There are two firmware network settings recognized by your system—THICK (for an AUI Ethernet or a ThinWire Ethernet network), and TENBT (for a 10BASE-T network). The default setting is THICK. See Table 5-5 for the network setting you should use.

Table 5-5 Network Settings

| For this network... | Use this network setting... |
|---------------------|-----------------------------|
| AUI Ethernet | THICK |
| ThinWire Ethernet | THICK |
| 10BASE-T Ethernet | TENBT |

Setting and Verifying the Network Connection

Setting the Network Type

You set the network type from console mode. To set the network type, complete the following steps:

1. Start your system as Chapter 6 describes.
2. If your system does not stop at the console prompt after the startup tests, press the halt button on the rear of your system unit to display the console prompt (>>>). See Figure 2-8 for the location of the halt button.
3. Enter the following command and press the Return key:

```
>>> set ethernet network_type   
ETHERNET = network_type
```

The variable *network_type* is either THICK or TENBT, depending on which network you are using.

Verify the Network Connection

Once you have set the network type, you can verify the network connections by entering the `test ni` command at the console prompt as follows. The `test ni` command tests the Ethernet network interface (NI).

```
>>>test ni 
```

Successful Result of test ni

If the `test ni` test is successful, you will see a display similar to the following:

```
>>> test ni   
T-STN-NI - OK  
>>>
```

Error Detected During test ni

If the network test detects an error, you will see a display similar to the following:

```
>>> test ni   
T-ERR-NI - Ext Lpbk test failed  
?? 000 NI 0x00f2  
84 FAIL  
>>>
```

Setting and Verifying the Network Connection

If there is an error message, check to make sure the cable is connected securely to the system unit, or see Chapter 13 for more information.

Restarting Your Operating System

To restart your operating system, enter the `boot` command at the console prompt as follows:

```
>>> boot 
```

This is the default command to start your operating system from the disk that was shipped with your system.

If you have modified the default startup procedure by changing the environment variables (described in Chapter 10), enter the appropriate boot command for your system.

Completing the Network Connection



Contact Your Network Administrator

Once you determine that your network cables are connected securely, and your system starts up and tests without errors, contact your network administrator to configure your DEC 3000 Model 400/400S AXP workstation as part of your network.

If your system displays any error messages during the startup test, see Chapter 13 to determine the problem.

6

Starting Up Your System

Chapter Overview

Introduction Once you have installed your DEC 3000 Model 400/400S AXP workstation or server and, optionally, connected to a network, you are ready to start the system.

In This Chapter This chapter covers the following topics:

- Before You Begin
- Turning On the DEC 3000 Model 400/400S AXP System
- Reviewing the Startup Display
- Starting a System with Factory-Installed Software
- Loading Operating System Software
- Where to Go Next

Before You Begin



What You Should Have Done Already

Before you start up your workstation or server system, you should have already completed the following tasks:

- The installation tasks described in Chapter 3 or Chapter 4.
- The network connection steps described in Chapter 5 if your system is to be networked.

If you have not performed these tasks, do so now.

What You Should Know Beforehand

The tasks in this chapter require some experience with computer tasks such as entering console commands and responding to questions that appear on-screen during the factory-installed software procedures.

Factory-Installed Software

Preconfigured workstation and server systems with an internal fixed disk drive include a factory-installed operating system.

Turning On the DEC 3000 Model 400/400S AXP System



Turning on Your System in the Correct Order

Whenever you turn your system on, always turn on the system unit last.

For example, if your system has a monitor or an expansion box connected to it, turn on the units in this order:

1. Monitor
2. An expansion box
3. System unit

By turning on your system components in the correct order, your DEC 3000 Model 400/400S AXP system will detect all connected devices.

CAUTION: System Unit Cover

If you have removed the system unit cover for any reason, be sure to replace it on the system unit and close it securely before turning on the system. For information on replacing the system unit cover, see Figure 11-7.

Turning On the DEC 3000 Model 400/400S AXP System

Workstation Startup Procedure

To start up the DEC 3000 Model 400 AXP system, perform the steps in Table 6-1.

Table 6-1 Steps for Starting a Workstation

| Step | Description |
|------|---|
| 1 | Turn the monitor power switch to the on position (). |
| 2 | Turn on the power switch to any other devices, such as a PMTCE-AA extender box or an expansion box. |
| 3 | Turn the On/Off switch on the rear of the system unit to the on () position, as shown in Figure 6-1. |

Server Startup Procedure

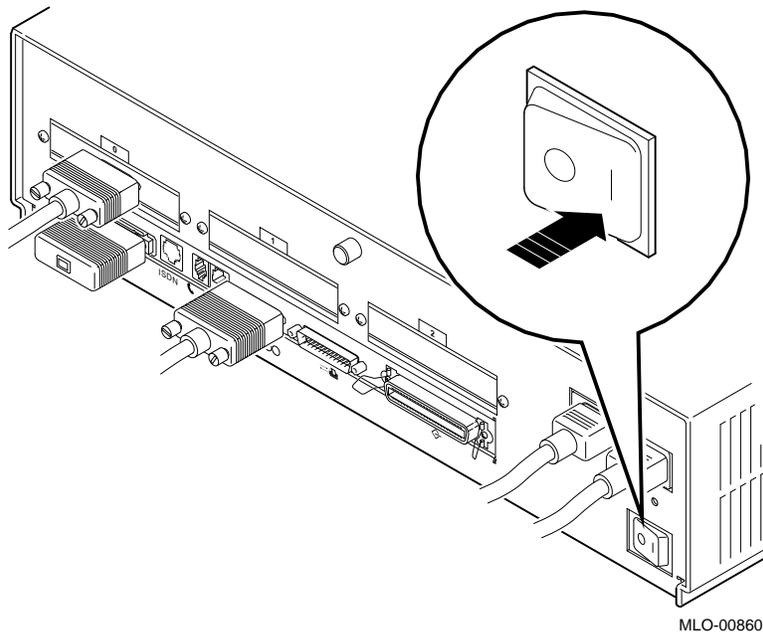
To start up the DEC 3000 Model 400S AXP system, perform the steps in Table 6-2.

Table 6-2 Steps for Starting a Server

| Step | Description |
|------|--|
| 1 | Turn the On/Off switch of the terminal to the on () position. |
| 2 | Turn on the power switch to any other devices, such as a PMTCE-AA extender box or a BA353 expansion box. |
| 3 | Turn the On/Off switch on the rear of the system unit to the on () position, as shown in Figure 6-1. |

Turning On the DEC 3000 Model 400/400S AXP System

Figure 6-1 Turning On the DEC 3000 Model 400/400S AXP System



The power indicator light on the front of the system unit lights if the system has started up successfully.

If the power light does not come on, see Chapter 13.

What You Should See on a Workstation

When you turn on your workstation monitor and system unit, you will see colors (if you have a color monitor) and/or patterns displayed on the monitor screen for a few seconds. After the patterns complete, you should see the system startup display shown in Figure 6-2.

What You Should See on a Server

If you have connected an alternate console device to your server system, you should see the system startup display shown in Figure 6-2 on your terminal screen.

Reviewing the Startup Display



Startup Display

As your system starts up, it performs a series of diagnostic tests. A display similar to the one in Figure 6–2 appears on the screen before the console prompt appears. The console prompt is three greater-than symbols (>>>).

Figure 6–2 Startup Display

```
DEC 3000 - M400
Digital Equipment Corporation
System conducting power up tests.
-----
Devnam          Devstat
-----
    CPU          OK KN15-BA - V2.1-S080-IO60 - DECchip 21064
    ASIC         OK
    MEM          OK 128MB
    NVR          OK
    SCC          OK
    NI           OK Ethernet Address: 08-00-2B-1D-1E-EF, THICK
    SCSI         OK
    ISDN        OK
    TCO         OK
-----
System power up OK.
Enter B to boot software from DKA300

>>>
```

Understanding the Startup Display

The startup display provides the status of hardware components in your system. The two columns provide the following information:

- Devnam indicates the device (or component) name
- Devstat lists the device status following the initial hardware startup tests.

Table 6–3 describes the startup display in more detail.

Table 6–3 Startup Display Information

| Item | Description |
|-------------|---|
| CPU | Lists the revision level of the system board, the firmware revision numbers and the type of processor. |
| ASIC | Status of the two Application-specific Integrated Circuits (ASICs), one on the system board and one on the I/O board. |
| MEM | Total amount of memory and its status. |
| NVR | Status of non-volatile RAM and time of year (TOY) component. |
| SCC | Status of the Serial Communication Controller, which includes the keyboard and mouse tests. |
| NI | Status of the Ethernet network interface (NI) and the Ethernet address of your system. |
| SCSI | Status of SCSI bus. |
| ISDN | Status of ISDN/audio chip. |
| TC0 | Status of TURBOchannel device(s). There are three TURBOchannel slots available, 0, 1 and 2. This example indicates one TURBOchannel device installed in slot 0. |

Startup Errors

If you see any error messages on the startup display screen, see Chapter 13 for more information.

Starting a System with Factory-Installed Software



Factory-Installed Software Procedure

If your system has factory-installed software (a yellow sticker was covering the system power connector), the factory-installed software startup procedure will run the first time you start your system.

Factory-Installed Software Documentation

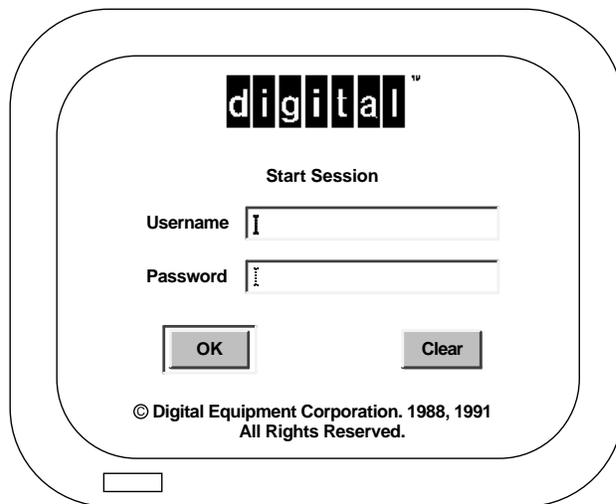
For more information about using the factory-installed software on your system, refer to the documents listed in Table 6–4. Depending on the operating system ordered with your system, one of these documents is included with your shipment.

Table 6–4 Factory-Installed Software Documentation

| For information on... | Refer to the... |
|--------------------------------|--|
| OpenVMS AXP operating system | <i>OpenVMS AXP Factory Installed Software (FIS) User Information</i> shipped with your system. |
| DEC OSF/1 AXP operating system | <i>DEC OSF/1 AXP Factory-Installed Software User Information</i> shipped with your system. |

Starting a System with Factory-Installed Software

Figure 6-4 OpenVMS AXP DECwindows Motif Start Session Screen



ZK-3620A-GE

- If your system is a server and you have connected an alternate console device, press the Return key to display the Username login prompt, and continue as follows.

| Screen Prompt: | Your Input: |
|----------------|---|
| Username: | Type SYSTEM, and press Return to get to the next prompt. |
| Password: | Enter the password you entered during the FIS procedure, and press Return to continue. |

Starting a System with Factory-Installed Software

DEC OSF/1 AXP Initial Startup Screen

If your system has the DEC OSF/1 AXP operating system factory-installed, you will see a display similar to the one shown in Figure 6-5 when you first turn on your workstation or server and after the system startup messages complete.

Figure 6-5 DEC OSF/1 AXP Initial Startup Display

```
*****
*   Welcome to the DEC OSF/1 AXP(tm) Factory-Installed   *
*   Software Startup Procedure.                           *
*****

During this startup procedure, you will be prompted to enter
the following information:

o a system name
o a new superuser password
o your local time zone
o the date and time

To discontinue this procedure and halt your system,
enter n at the following prompt.

Would you like to continue? (y/n):
```

DEC OSF/1 AXP Startup Dialog

The DEC OSF/1 AXP Factory-Installed Software procedure that runs when you start your system prompts you to answer some questions and gives you instructions for completing installation of your DEC OSF/1 AXP operating system.

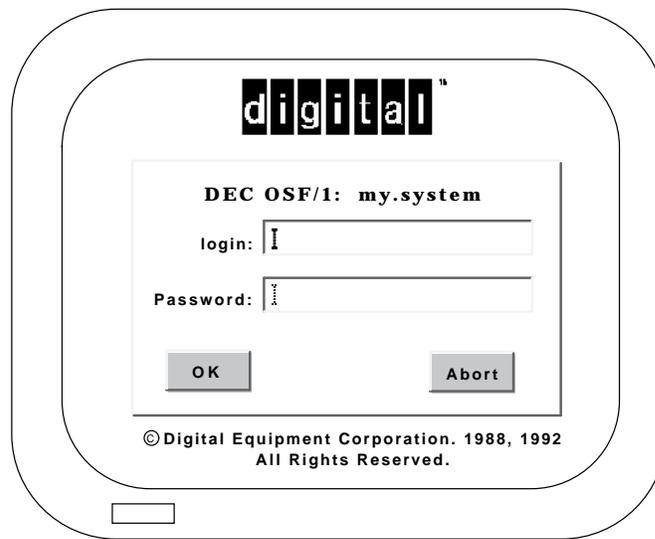
Starting a System with Factory-Installed Software

Log In to Your System

After the DEC OSF/1 AXP FIS procedure completes, you can log in to your system as follows:

- If your system is configured as a workstation, the DECwindows Motif Start Session screen shown in Figure 6-6 will be displayed.

Figure 6-6 DEC OSF/1 AXP DECwindows Motif Start Session Screen



ZK-0766U-R

- If your system is a server and you connected a terminal as an alternate console device, continue as follows at the login prompt.

| Screen Prompt: | Your Input: |
|----------------|---|
| login: | Type root, and press Return to get to the next prompt. |
| Password: | Enter the password you entered during the FIS procedure, and press Return to continue. |

Loading Operating System Software



No Factory-Installed Software

If your system was not preconfigured with an internal fixed disk drive, you do not have factory-installed software on your system. To install the operating system, you must start your system and load your operating system software from a compact disc. Instructions for handling and using compact discs are included with the operating system software shipment.

Loading the Operating System

Loading your operating system software from a compact disc requires specific operating system instructions. These instructions are available in the documents listed in Table 6–5. These documents are included with your operating system software shipment.

Table 6–5 Start the Operating System

| For this operating system... | Refer to... |
|------------------------------|--|
| OpenVMS AXP | <i>OpenVMS Alpha Version 1.0 Upgrade and Installation Manual</i> |
| DEC OSF/1 AXP | <i>Guide to Installing DEC OSF/1</i> |

Where to Go Next

After Your System Starts

Once your DEC 3000 Model 400/400S AXP workstation or server has started, use Table 6-6 to determine what to read next.

Table 6-6 Where to Go Next

| If you want to... | Go to... |
|--|---|
| Start using your system | Your operating system or application software documentation for more information. |
| Connect your system to a network | Chapter 5 |
| Change the default startup procedure for your system | Chapter 10 |

7

Turning Off Your System

Chapter Overview

Introduction This chapter describes the steps you should take to turn off your system.

In This Chapter This chapter covers the following topics:

- Before You Begin
- Task Overview
- Shutting Down the System
- Halting the System

Before You Begin



What You Should Do First

Before turning off your system, determine the current status of your workstation or server system, as Table 7-1 describes.

Table 7-1 Current System Status

| If your system is... | Then you should... |
|---|--|
| Networked, or part of a cluster | See your system manager before shutting down your system |
| Not networked, but running the operating system | See Step 1: Shut Down Operating System |
| At the console prompt (>>>) | See Step 2: Turn Off the Hardware |

What You Should Know Beforehand

Shutting down your system may require knowledge of file backup and operating system shutdown procedures.

The following privileges may also be required:

- For the OpenVMS AXP operating system, the shutdown procedure usually requires certain software privileges
- For the DEC OSF/1 AXP operating system, you may require superuser privileges to shutdown the system

If you do not have the required system privileges, ask your system manager for assistance in this task.

Task Overview

System Shutdown Steps

Table 7-2 gives an overview of the steps involved in shutting down your DEC 3000 Model 400/400S AXP system.

Table 7-2 Steps to Shutting Down Your System

| Step | Action |
|------|--|
| 1 | Shut down the operating system (if it is running). |
| 2 | Turn off the hardware. |

Shutting Down the System



Step 1: Shut Down Operating System

If your system is connected to a network or is part of a cluster, be sure to contact your system manager for further instructions before shutting down the operating system on your system.

Refer to the documentation in Table 7-3 for information about the operating system shutdown procedure:

Table 7-3 Operating System Shutdown Procedure

| For... | Refer to... |
|---------------|---|
| OpenVMS AXP | <i>OpenVMS Alpha Version 1.0 Upgrade and Installation Manual or the System Management, Vol 1A, Guide to Starting Up and Shutting Down the System.</i> |
| DEC OSF/1 AXP | <i>Guide to System Administration.</i> |

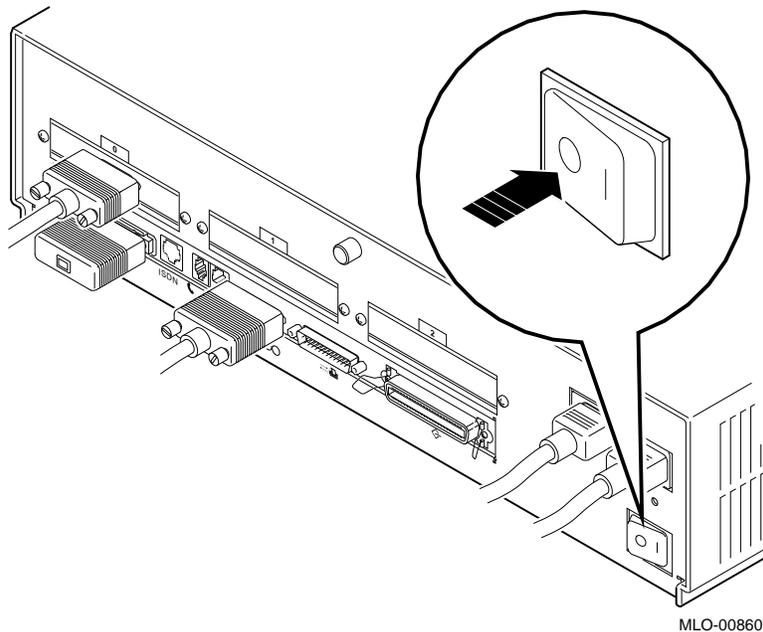
Shutting Down the System

Step 2: Turn Off the Hardware

After shutting down the operating system software, you can turn off the hardware by completing the following steps. Server systems may not have a monitor.

1. Turn off (O) the system unit by pressing the On/Off switch, Figure 7-1.
2. Turn off (O) all expansion boxes.
3. Turn off (O) all peripheral devices (such as printers and modems).
4. Turn off (O) the monitor.

Figure 7-1 Turning Off the System Unit



Halting the System



When to Halt the System

While turning off the hardware usually requires that you first run the operating system shutdown procedures, it may be necessary to halt your system for other reasons. Halting the system returns control from program mode (operating system) to the console mode, and displays the console prompt (>>>).

Table 7-4 describes when to halt the system.

Table 7-4 Halting the Operating Systems

| For this operating system... | Halt the system if you... |
|------------------------------|--|
| DEC OSF/1 AXP | Cannot run the operating system shutdown procedures and need to reboot the system. Do not halt the system while the operating system is actively running, since you may lose data or damage the system disk. |
| OpenVMS AXP | Cannot run the operating system shutdown procedures and need to reboot the system Want to return to console mode to issue the console commands listed later in this chapter. |

Table 7-2 lists the documentation describing operating system shutdown procedures.

System Halt Display

When you press the halt button, you may see a system halt message similar to the one shown in Figure 7–3.

Figure 7–3 System Halt Message

```
>>>
?02 EXT HLT
PC= 00000000.20000000 PSL= 00000000.00001F00
```

This message indicates that the halt button has been pressed. It does not signify an error. Note that a halt message is not always displayed.

If you have halted your system to access console commands, you can continue now.

Screen Display When you Halt a Workstation

If you press the halt button on a workstation system running DECwindows Motif with the OpenVMS AXP operating system, the console prompt appears in the top left-hand corner of the screen. Approximately four lines of console information are displayed at a time. The remainder of the screen continues to display the DECwindows Motif session.

Console Commands You Can Issue

You can use only the following commands when your system is halted while running the OpenVMS AXP operating system:

- continue, to exit from console mode and return to the operating system
- help
- help advanced
- help mips_emulator
- help set
- help show
- printenv
- set
- show

Using other console commands may affect memory contents and thus prevent the system from being able to return to the operating system.

Halting the System

Returning to Program Mode

To return to program mode of your operating system, enter the `continue` command as follows:

```
>>>continue 
```

Press the and keys to remove the console display area from the top of your screen and return to a full DECwindows Motif display.

8

Maintaining Your System

Chapter Overview

Introduction

While your DEC 3000 Model 400/400S AXP system is designed to function in a range of environmental conditions, it is an electrical device that should be treated with care and maintained properly.

Correct use and maintenance of your system unit, monitor, keyboard, and mouse not only ensures that the system functions properly, but also helps avoid more serious problems that could cause permanent damage.

In This Chapter

This chapter covers the correct use and maintenance of your DEC 3000 Model 400/400S AXP system, but does not cover the maintenance that your Digital service representative can perform. The following topics are included:

- Before You Begin
- Maintaining the System Unit and Keyboard
- Cleaning the Monitor
- Cleaning the Mouse

Before You Begin



What You Should Do First

Before performing any maintenance tasks, take these steps:

1. Complete the tasks outlined in Chapter 7 to turn off your system.
2. Prepare any cleaning materials you may need.

You can then complete your system maintenance tasks.

Maintaining the System Unit and Keyboard



Caring for the System Unit

The DEC 3000 Model 400/400S AXP system unit requires adequate ventilation. Ideally, the system unit should be positioned in as dust-free an environment as possible. Also, never position the system unit in direct sunlight where it may become too hot.

Clean your system regularly by wiping dust and particles from the system unit and the keyboard with a soft cloth.

CAUTION: Food and Liquid

Do not place food or liquid on or near your DEC 3000 Model 400/400S AXP system.

Liquid on the System Unit

If you inadvertently spill liquid on the system unit and it goes inside, turn off the system as soon as possible and contact your Digital service representative as indicated in Chapter 13.

Accidental Spills on the Keyboard

While care should be taken not to spill food or liquid on the system unit or the keyboard, follow these steps if you spill water on the keyboard:

1. Turn off the system unit by pressing the On/Off switch to the off (O) position.
2. Unplug the keyboard from the system unit.
3. Wipe up the excess water immediately.
4. Turn your keyboard over to drain any remaining water.
5. Leave the keyboard to dry on its own for several hours before connecting it to your system again.

If the keyboard does not work correctly when you reconnect it, contact your Digital service representative, as described in Chapter 13.

If you spill something like a carbonated drink, tea, or coffee on the keyboard, disconnect the keyboard from the system unit and call your Digital service representative immediately.

Cleaning the Monitor

Cleaning the Monitor



Cleaning Procedure

To clean the monitor screen, follow these steps:

| Step | Action | Result or Comment |
|------|---|--|
| 1 | Turn the monitor power switch to the off position (O). | The monitor is powered off. |
| 2 | Using any reputable household glass cleaner, spray the cleaner onto a soft cloth and wipe the screen. | Do not spray the cleaner directly onto the monitor screen. |
| 3 | Remove dust and particles from the monitor casing with a soft, dry cloth. | - |

Cleaning the Mouse



When to Clean the Mouse

Clean the outside of the mouse with a soft damp cloth whenever necessary.

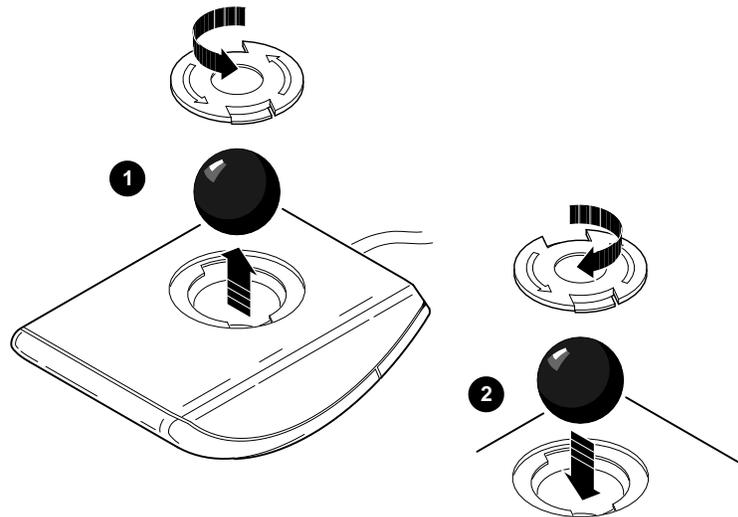
When to Clean the Rubber Ball

If the arrow or pointer on your screen does not move freely as you direct it with the mouse, you may need to clean the rubber ball inside the mouse as Table 8-1 describes.

Table 8-1 Steps for Cleaning the Mouse

| Step | Description |
|------|---|
| 1 | Turn the mouse upside down and remove the cover plate ❶ as shown in Figure 8-1. |

Figure 8-1 Removing/Replacing the Mouse Cover Plate



MLO-010355

- 2 Remove the rubber ball and clean it with lukewarm water. If necessary, use a mild soap. Do not use any kind of organic solvents to clean the rubber ball as they can damage the coating. Dry the rubber ball with a soft cloth.
- 3 Return the rubber ball to the mouse unit and replace the cover plate ❷ making sure that it is locked into position so that the rubber ball cannot fall out.

Part II

Advanced Operations

Part II describes how to perform advanced operations with the DEC 3000 Model 400/400S AXP system. This part includes the following chapters:

| Chapter | Title |
|---------|-------------------------------------|
| 9 | Using Console Commands |
| 10 | Changing Environment Variables |
| 11 | Using the Password Security Feature |
| 12 | Using an Alternate Console |

9

Using Console Commands

Chapter Overview

Introduction This chapter explains how to use the DEC 3000 Model 400/400S AXP system in console mode and describes some of the available console commands.

In This Chapter This chapter covers the following topics:

- Before You Begin
- Modes of System Operation
- Console Mode User Interface
- Console Commands
- The boot Command
- The continue Command
- The halt Command
- The help Command
- The help advanced Command
- The set or setenv Command
- The show or printenv Command
- The test Command

Before You Begin



What You Should Do First

Before using any console commands, you should complete these tasks:

- Put your system in console mode. If your system is not displaying the >>> prompt, refer to Chapter 7 to shut down your operating system and/or halt your system.
- Read this entire chapter before continuing.

What You Should Know Beforehand

Using console commands requires at least an intermediate, and sometimes advanced, knowledge of your system and its components, and the effect that console commands can have on your system.

CAUTION: Control of System Devices

Console commands control system devices and memory. Do not use console commands without fully understanding the effect that they can have on your DEC 3000 Model 400/400S AXP system.

For instance, some advanced-level commands, such as `deposit` and `set` let you manipulate nonvolatile and system memory. Using the `deposit` command to place a value in a location of memory containing the actual console firmware could either hang the system or prevent it from restarting after it was powered off.

If you are not sure about using console commands, ask your system manager for help.

Advanced Console Command Information

This document does not describe all console commands, especially those commands requiring extensive technical knowledge. For a complete description of all console commands and how to use them, see the *DEC 3000 Model 400/400S AXP Service Guide*.

Modes of System Operation

Two Modes of Operation

Your DEC 3000 Model 400/400S AXP can run in either of two modes:

1. Console mode
2. Program mode

Console Mode: Definition

In console mode, the system operates under the control of the console subsystem, rather than the operating system. All user input is passed directly to the console.

Console mode is in effect when the system is turned on and the operating system software has not been started, or has been interrupted, by pressing the halt button, for example.

Program Mode: Definition

In program mode, the system and console are under control of the operating system. All user input is passed to the operating system. You cannot issue console commands without returning to console mode.

Program mode is in effect when the system is turned on and the operating system software has started. In program mode, the user can manage the system, run software applications, and perform network tasks.

When Console Mode is Used

By definition, you will interact directly with the console subsystem under the following circumstances:

- Before booting the operating system software
- While setting environment variables (see Chapter 10)
- When using the Firmware Update Utility (see the *Alpha AXP Systems Firmware Release Notes* for more information)
- When trying to identify and resolve system problems or errors (see Chapter 13)

Console Mode User Interface

Console Interface Components

The console mode user interface is made up of the following elements:

- Console prompt
- Special keys and control characters
- Console commands

Console Prompt

The console mode prompt looks like this:

```
>>>
```

You can enter control characters and console commands at the console prompt.

Console Mode Keys and Control Characters

Control characters are entered by holding down the key labeled Ctrl while pressing another key, for example, **Ctrl/C**.

Table 9–1 lists the keys and control characters that you can use while operating in console mode.

Table 9–1 Supported Keys and Control Characters

| Key or Control Character | Function |
|--------------------------|--|
| Return | The Return key executes the command that you enter at the console prompt. |
| <x | The delete key deletes one character to the left of the current command line position. On video terminals, deleted characters will be erased from the screen. On hardcopy terminals, deleted characters display within a pair of backslash delimiters (\ \) as they are deleted. |
| Ctrl/C | This character aborts the current command. This command has no effect once control has been passed from console mode to another program, such as the operating system or a loadable diagnostic application. This command appears as ^C on the screen. |
| Ctrl/O | This character suppresses output to the console terminal until the Ctrl/O control character is pressed again. This command appears as ^O on the screen. |
| Ctrl/S | This character suspends output to the console terminal until you press Ctrl/Q. |
| Ctrl/Q | This character resumes the display that was previously suspended by pressing Ctrl/S. |

Console Commands



Levels of Commands

Console commands can be divided into two groups:

- Advanced
- Basic

Advanced Console Commands List

It should rarely be necessary for you to use the advanced console commands. Table 9–2 provides a brief explanation of the advanced commands and tells where to find information about using them.

Table 9–2 Advanced Console Commands

| Command | Function | See |
|------------|--|---------------------------|
| deposit | Writes to specific memory, I/O, and register locations from the console | The help advanced Command |
| examine | Displays contents of specific memory, I/O, and register locations from the console | The help advanced Command |
| initialize | Initializes the console, a device, or a specified processor | The help advanced Command |
| login | Accesses the system when the password security feature is in use | Chapter 11 |
| repeat | Executes diagnostic tests repeatedly | The help advanced Command |
| start | Starts program execution at a given address | The help advanced Command |

The remainder of this chapter describes the basic console commands.

Basic Console Commands List

All of the basic commands are described in this document. Table 9–3 lists the basic commands and where you can find information about using them.

Table 9–3 Basic Console Commands

| Command | Function | See |
|--------------------|---|---|
| boot | Starts the operating system or other loadable software | The boot Command |
| continue | Returns from console mode to operating system level | The continue Command |
| halt | Halts the system | The halt Command |
| help | Displays help for console commands | The help Command |
| help advanced | Displays help about comprehensive help commands | The help advanced Command |
| help mips_emulator | Displays help for various TURBOchannel device tests | The help Command |
| help set | Displays information about the set or setenv command | The help Command |
| help show | Displays information about the show or printenv command | The help Command |
| printenv | Shows environment variables | The show or printenv Command , Chapter 10, and Chapter 14 |
| set | Sets an environment variable | The set or setenv Command and Chapter 10 |
| setenv | Sets an environment variable | The set or setenv Command and Chapter 10 |
| show | Shows environment variables | The show or printenv Command , Chapter 10, and Chapter 14 |
| test | Executes diagnostic tests | The test Command and Chapter 14 |

The boot Command

Description The `boot` command initializes the system and starts the boot program, which loads and starts the operating system software.

Command Syntax Issue the `boot` command using the following syntax:
`>>> boot <-flags> <-filename> boot_device`

Command Description The `boot` command and its parameters are described in Table 9-4.

Table 9-4 Boot Command Parameters/Qualifiers

| Parameter | Specified as | Description |
|--------------------|-----------------------------------|---|
| <i>-flags</i> | <code>-fl <value></code> | ASCII string of up to 23 characters. |
| <i>-filename</i> | <code>-fi <filename></code> | A filename of up to 23 characters, used when booting across a network device to specify the name of a file to load into the system. |
| <i>boot_device</i> | Device name, such as DKA200 | A device from which the system attempts to boot. |

Default Boot Flags If you do not use the `-fl` and `-fi` parameters with the `boot` command, the system uses the default boot flag values (0, 0).

Information about using boot flags is provided in your operating system documentation:

| For the... | Refer to the... |
|--------------------------------|--|
| OpenVMS AXP operating system | <i>OpenVMS Alpha Version 1.0 Upgrade and Installation Manual</i> |
| DEC OSF/1 AXP operating system | <i>Guide to Installing DEC OSF/1</i> |

Overriding the Default Boot Flag Value

You can override any current default settings by specifying a parameter with the `boot` command, for example:

```
>>> boot -fi "myboot.com" 
```

The parameter you specify overrides any current default settings, but does not change the default values stored as environment variables. See Chapter 10 for information about changing environment variables.

Boot Device Naming Conventions

You can specify the boot device name in two ways, using either an OpenVMS- or a DEC OSF/1-style device name. Table 9–5 provides a list of the device naming conventions, which can be used in the boot command for either operating system. The command syntax is described in the example `boot` commands that follow Table 9–5.

Table 9–5 Device Naming Conventions

| OpenVMS AXP | DEC OSF/1 AXP | Device Type |
|-------------|---------------|--------------------------|
| DK | RZ | Fixed or removable disk |
| MK | TZ | Tape |
| ES | ES | Ethernet, MOP protocol |
| N/A | EZ | Ethernet, BOOTP protocol |

For operating system-specific information about how to use the `boot` command, see your operating system documentation. Refer to Table 6–5 for more information.

The boot Command

**Example:
OpenVMS AXP
boot Command**

The following example indicates the command to boot the OpenVMS AXP operating system without any flags from a fixed disk drive:

```
>>> boot dka100 
```

The device name elements in this boot command are defined as follows:

- dk—the device type, in this instance an internal fixed disk drive
- a—the SCSI device controller (could be a or b)
- 100—the SCSI ID number

**Example: DEC
OSF/1 AXP
boot Command**

The following example indicates the command to boot the DEC OSF/1 AXP operating system without any flags from an internal fixed disk drive:

```
>>> boot rz1a 
```

The device name elements of the OSF/1-style boot command are defined as follows:

- rz—the device type, in this instance an internal fixed disk drive
- 1—the SCSI ID number (unlike the OpenVMS-style command, only the single digit number is used, such as 1 rather than 100)
- a—the SCSI device controller (could be a or b)

The continue Command

| | |
|---------------------------------------|---|
| Description | The <code>continue</code> command returns the system to operating system level after console mode has been invoked. |
| DEC OSF/1 AXP Operating System | The <code>continue</code> command is not applicable for systems running the DEC OSF/1 AXP operating system. You can halt the system and return to program mode using the <code>continue</code> command only on systems running the OpenVMS AXP operating system. |
| Command Syntax | <p>Issue the <code>continue</code> command as follows:</p> <pre>>>> continue <input type="button" value="Return"/></pre> <p>Your operating system should resume execution after you enter this command, providing that the contents of memory used by the operating system have not been altered or corrupted. Commands that can corrupt or alter system memory include the <code>test</code>, <code>init</code>, and <code>deposit</code> commands.</p> |

The halt Command

| | |
|-----------------------|--|
| Description | The <code>halt</code> command halts the system. There are no parameters associated with this command. |
| Command Syntax | <p>Issue the <code>halt</code> command as follows:</p> <pre>>>> halt <input type="button" value="Return"/></pre> <p>The system halts and the following message displays:</p> <pre>?2E HLTD >>></pre> |

The help Command

Description The `help` command displays a brief list of console commands, parameters, and qualifiers. You can specify one of the following topics with the `help` command, to display specific information:

- `help mips_emulator`
- `help set`
- `help show`

Command Syntax Issue the `help` command as follows:

```
>>> help 
```

Your system displays a list of topics similar to the following:

```
BOOT
HELP ADVANCED
INITIALIZE
SET[ENV] <envar> <value>
SHOW | PRINTENV [<envar>]
TEST
>>>
```

The help Command

Command Example

The following command indicates how to obtain help on the show command:

```
>>> help show 
```

The system responds with the following display:

```
PRINTENV |
SHOW { AUTO_ACTION | BOOTDEF_DEV | BOOT_OSFLAGS |
      BOOT_RESET | CONFIG | DEVICE |
      DIAG_LOE | DIAG_QUICK | DIAG_SECTION |
      ENABLE_AUDIT | ETHERNET | ERROR |
      LANGUAGE | MEMORY | MOP |
      RADIX | SCSI_A | SCSI_B |
      SCSI_RESET | SECURE | SERVER |
      TRIGGER }
```

```
>>>
```

The help advanced Command

Description

The help advanced command displays a list of all help topics available, including advanced console commands, parameters, and qualifiers.

Command Syntax

Issue the help advanced command as follows:

```
>>> help advanced 
```

The help advanced Command

Command Example

When you issue the help advanced command, your system displays a list of topics similar to the following:

```
BOOT [- FL <bflg> ] [-FI <filnam> ] <devlist>
CONTINUE
DEPOSIT [{-B | -W | -L | -Q | -A }][{-PM | -VM }][{-G}[-U][-N:<n>]
        [{<addr> | <sym>| + | - | * | @ }] [<datum>]]
EXAMINE [{-B | -W | -L | -Q | -A }][{-PM | -VM }][{-G}[-U][-N:<n>]
        [{<addr> | <sym>| + | - | * | @ }]]
HALT
HELP [MIPS_EMULATOR | SET | SHOW]
INITIALIZE
LOGIN
REPEAT <cmd>
SET[ENV] <envar> <value>
SHOW | PRINTENV <envar>
START <addr>
TEST <devnam> [<tstnam>]
```

The set or setenv Command

Description

The `set` or `setenv` command lets you set an environment variable.

Command Syntax

Issue the `set` or `setenv` command as follows:

```
>>> setenv environment_variable Return
```

The *environment_variable* parameter can be any of the environment variables listed in Table 10–1. Setting the password environment variable is described in Chapter 11.

Command Example

See Chapter 10 to see how to use the `set` command to change environment variables.

The show or printenv Command

Description The `show` or `printenv` command provides information about the current setting for one or all environment variables. Entering the `show` or `printenv` without a parameter displays a list of all current environment variable settings.

Command Syntax Issue the `show` or `printenv` command as follows:

```
>>> show variable_name 
```

In the command above, *variable_name* can be any of the environment variables described in Chapter 10.

Command Example To show the current setting for the `auto_action` environment variable, enter the following command:

```
>>> show auto_action 
```

The system responds with the following information:

```
AUTO_ACTION=HALT
>>>
```

Information about the `show` command is also provided in Chapter 10.

The test Command

The test Command

Command Description

The `test` command lets you run diagnostic tests on the components listed in Table 9–6:

Table 9–6 Diagnostic Tests

| Test Name | Device Tested |
|-------------------|---|
| ASIC | Application-specific integrated circuit |
| MEM | Memory |
| NVR | Non-volatile RAM |
| SCC | Serial communications controller |
| NI | Network interface (Ethernet) |
| SCSI | SCSI device(s) |
| ISDN ¹ | 79C30A AMD chip |
| TC n | TURBOchannel options, where n is the number of the TURBOchannel device you wish to test |

¹Running ISDN diagnostic tests also tests the audio port

Command Syntax

Issue the `test` command as follows:

```
>>> test component 
```

where *component* is any of the components listed previously. If you issue the `test` command without specifying a component, the system will test all components. For more information about the `test` command, see Chapter 14.

10

Changing Environment Variables

Chapter Overview

Introduction

Environment variables are firmware parameters that can be changed to suit your specific system needs. You set environment variables while your system is in console mode. Your system is shipped with default values set for all available environment variables. The environment variable settings include the following startup information:

- The device from which your system boots
- The default startup action each time your system is turned on or a halt instruction is executed by software
- The language used in console mode

This chapter describes the available environment variables and how to display or change the current settings.

In This Chapter

This chapter includes the following topics:

- Before You Begin
- Available Environment Variables
- Displaying Current Environment Variables
- Changing the Default Startup Action (auto_action)
- Changing the Default Boot Device (bootdef_dev)
- Changing the Default Diagnostic Startup Mode (diag_quick)
- Changing the Default Keyboard Language (language)

Before You Begin



What You Should Do First

Before changing any environment variables, you should complete these tasks:

- Put your system in console mode. If your system is not displaying the >>> prompt, refer to Chapter 7 to shut down your operating system and/or halt your system.
- Read Chapter 9 and the rest of this chapter before continuing.

What You Should Know Beforehand

Changing environment variables requires an understanding of what each of the environment variables does, and how changing the defaults will affect your system. Do not change any environment variable without fully understanding the effect that the change may have on your DEC 3000 Model 400/400S AXP system.

If you are not sure about changing environment variables, ask your system manager for help.

Available Environment Variables

Description of Environment Variables

Table 10–1 describes the DEC 3000 Model 400/400S AXP system environment variables and their default values. Information about environment variables not documented in this chapter or in Chapter 11 can be obtained via the `help advanced` command, or in the *DEC 3000 Model 400/400S AXP Service Guide*.

Table 10–1 Environment Variables

| Variable | Description | Default |
|-----------------|---|--------------------------------|
| auto_action | Specifies the action the console should take any time the system is turned on. | BOOT |
| bootdef_dev | Sets the default boot device. | {null} |
| boot_osflags | Sets the boot flags. This environment variable is usually operating system-dependent. | 0, 0 |
| boot_reset | Determines whether the system should be reset before attempting to boot. | ON |
| diag_loe | Determines whether the diagnostic test loop-on-error flag is set. Available for loadable diagnostic only. | OFF |
| diag_quick | Sets the diagnostic startup mode to normal or fast startup testing. | OFF |
| diag_section | Sets the diagnostic operating environment. (Used by Digital Services.) | 1 |
| enable_audit | Sets whether console audit messages are displayed during the boot process. | ON |
| ethernet | Sets the Ethernet type for the system, either THICK or TENBT. | THICK |
| language | (Workstations only) Sets the console keyboard mapping to a supported language. | English (3) |
| mop | Sets the Ethernet network listener during console mode. | ON |
| password | Sets the password to enable the password security feature. | No password |
| radix | Sets the default input radix to a specified value. | 0 (Hexadecimal) |
| scsi_a | Sets the host ID number for the SCSI_A port. | 7 |
| scsi_b | Sets the host ID number for the SCSI_B port. | 7 |
| scsi_reset | Sets the time to wait to reset the SCSI device before booting. | 4 |
| secure | Sets the password security feature. | OFF |
| server | Sets the system to server status, thus determining which startup tests are performed. | ON for DEC 3000 Model 400S AXP |
| trigger | Sets the remote trigger to On or Off. | OFF |

Displaying Current Environment Variables



Using the show Command

You can use the `show` command to display one or all of the environment variables in Table 10–1.

Displaying Current Environment Variable Values

To display a list of the current values for all environment variables, enter the `show` command as follows and press the Return key.

```
>>> show 
AUTO_ACTION = BOOT
BOOTDEF_DEV = {null}
BOOT_OSFLAGS = 0,0
ENABLE_AUDIT = ON
BOOT_RESET = ON
SCSI_RESET = 4
DIAG_LOE = OFF
DIAG_QUICK = OFF
DIAG_SECTION = 1
ETHERNET = 08-00-2B-10-07-29, THICK
LANGUAGE = 3
MOP = ON
SECURE = OFF
RADIX = 0
SCSI_A = 7
SCSI_B = 7
SERVER = OFF
TRIGGER = OFF
```

You can change any of the environment variables with the `set` or `setenv` command.

Changing the Default Startup Action (auto_action)



Description

The `auto_action` environment variable determines the default startup action—the action the console takes any time the system is halted by software (not by pressing the halt button) or turned on.

Available Settings for auto_action

Table 10–2 lists the three different startup actions you can specify for the `auto_action` environment variable and the command parameters to use for each. Note that the parameter can be either a word, such as *boot*, or a corresponding number, such as *2*.

Table 10–2 Parameters for Setting Startup Action

| Startup Action | Parameter |
|--|----------------------------|
| Restart. Boot automatically when system is turned on or following a software <code>halt</code> instruction. | <i>restart</i> or <i>1</i> |
| Boot. Boot automatically only when system is turned on. | <i>boot</i> or <i>2</i> |
| Halt. Halt at the console prompt (<code>>>></code>) when system is turned on or following a software <code>halt</code> instruction. | <i>halt</i> or <i>3</i> |

Changing the Default Startup Action (auto_action)

Default Setting

The default setting for the `auto_action` environment variable depends on whether your system is preconfigured at the factory with factory-installed software. All preconfigured systems, workstation and server configurations, are set to `BOOT`, all other systems are set to `HALT`.

Command Syntax

To set the `auto_action` environment variable, enter the following command:

```
>>> set auto_action parameter 
```

Enter the parameter of your choice from Table 10–2 to set the default startup action.

Command Example

This command sets the default startup action to halt at the console prompt each time your system is turned on. The system responds with a confirmation of the action you have chosen.

```
>>> set auto_action 3   
AUTO_ACTION = HALT  
>>>
```

Changing the Default Boot Device (bootdef_dev)



Description The `bootdef_dev` environment variable determines the default boot device, or devices, from which the system attempts to boot. The system boots from the default boot device each time it is turned on (if `auto_action` is set to `boot` or `restart`), or each time the user enters the `boot` command.

Available Settings You can set the `bootdef_dev` environment variable to any appropriate device or devices on your system.

Boot Device Naming Conventions You can specify the boot device name in two ways, using either an OpenVMS- or a DEC OSF/1-style device name. Table 10–3 provides a list of the device naming conventions, which can be used in the boot command for either operating system. For a description of the boot device name elements, see Chapter 9.

Table 10–3 Device Naming Conventions

| Device Naming Conventions | | |
|---------------------------|---------------|--------------------------|
| OpenVMS AXP | DEC OSF/1 AXP | Device Type |
| DK | RZ | Fixed or removable disk |
| MK | TZ | Tape |
| ES | ES | Ethernet, MOP protocol |
| N/A | EZ | Ethernet, BOOTP protocol |

Default Setting The default setting for the `bootdef_dev` environment variable is set at the factory to boot from the internal fixed disk drive that has been loaded with factory-installed software.

Changing the Default Boot Device (bootdef_dev)

Command Syntax

To set the `bootdef_dev` environment variable, enter the following command:

```
>>> set bootdef_dev device 
```

Enter the device from which you want your system to boot. If you do not know which devices your system contains, enter the `show device` command as the next section explains.

Listing Available Devices

To see a list of devices installed in your system, issue the `show device` command at the console prompt and press the Return key. The system responds with the display shown in Figure 10-1.

Figure 10-1 The show device Display

```
>>> show device 
```

| BOOTDEV | ADDR | DEVTYPE | NUMBYTES | RM/FX | WP | DEVNAM | REV |
|------------|-------------------|---------|----------|-------|----|--------|------|
| ----- | ---- | ----- | ----- | ----- | -- | ----- | --- |
| ESA0 | 08-00-2B-12-00-9C | | | | | | |
| DKA0 | A/0/0 | DISK | 426.25MB | FX | | RZ25 | 0700 |
| DKA100 | A/1/0 | DISK | 426.25MB | FX | | RZ25 | 0700 |
| DKA400 | A/4/0 | RODISK | | RM | WP | RRD42 | 4.3d |
| ..HostID.. | A/6 | INITR | | | | | |
| ..HostID.. | B/6 | INITR | | | | | |

Understanding the show device Display

The `show device` command displays several columns of information. The sample `show device` display indicates that there are two RZ25 devices installed in the system, with device names DKA0 and DKA100, as well as an RRD42 compact disc drive with device name DKA400. For a complete description of the `show device` command, see Chapter 14.

Changing the Default Boot Device (bootdef_dev)

Command Example Using a Device List

You can set the `bootdef_dev` environment variable so that the system tries to boot from a list of devices, rather than from a single device.

To set the `bootdef_dev` environment variable to a list of devices, enter a command similar to the following, substituting your system's boot device names:

```
>>> set bootdef_dev dka100,esa0 
```

In this instance, the system would first try to boot from the drive called `dka100`. If that drive was unavailable, or the boot failed, the system would then try to boot from a remote device across an Ethernet connection (`esa0`).

Changing the Default Diagnostic Startup Mode (diag_quick)



Description

The `diag_quick` environment variable determines the diagnostic test mode each time the system is turned on.

Available Settings

You can set the `diag_quick` environment variable to *on* or *off*:

- *on* to perform quick diagnostic tests of TURBOchannel device(s)
- *off* to perform normal diagnostic tests of TURBOchannel device(s)

Default Setting

The default setting for the `diag_quick` environment variable is *off*, so that normal diagnostic tests for TURBOchannel devices are performed at each system startup.

Changing the Default Diagnostic Startup Mode (diag_quick)

Command Syntax

To set the `diag_quick` environment variable, enter the following command. The system responds as shown.

```
>>> set diag_quick on   
DIAG_QUICK = ON  
>>>
```

Using the `on` parameter changes the default setting.

Changing the Default Keyboard Language (language)



Description

The `language` environment variable sets the console keyboard layout to one of sixteen available languages. This command is applicable only for a DEC 3000 Model 400 AXP workstation.

Available Settings for language

You can set the `language` environment variable to any of the supported languages.

Default Setting

The default setting for the `language` environment variable is English.

Command Syntax

To set the `language` environment variable, enter the following command:

```
>>> set language 
```

Changing the Default Keyboard Language (language)

Command Example

The system displays a list of languages, each with a designated number. To set the language environment variable to Svenska, for example, you would enter 14 as shown in the example.

```
>>> set language 
0) Dansk                      8) Francais (Suisse Romande)
1) Deutsch                    9) Italiano
2) Deutsch (Schweiz)         10) Nederlands
3) English                   11) Norsk
4) English (British/Irish)  12) Portugues
5) Espanol                   13) Suomi
6) Francais                  14) Svenska
7) Francais (Canadien)      15) Vlaams

3 >>>14 
LANGUAGE = 14
>>>
```

11

Using the Password Security Feature

Chapter Overview

Introduction The DEC 3000 Model 400/400S AXP system password security feature lets you prevent unauthorized personnel from accessing privileged console commands on your workstation or server.

In This Chapter This chapter covers the following topics:

- Before You Begin
- Task Overview
- Entering a Password
- Enabling System Security
- Moving the Secure System Jumper
- Using the login Command
- Forgetting the Password
- Disabling or Changing the Password

Before You Begin



When to Use the Security Feature

If the password security feature is not enabled, whenever a user enters console mode, he or she can use all of the privileged console commands, such as `halt`, `set`, `deposit`, and `boot`. Using the password security feature lets you restrict access to these key console mode functions.

Privileged Commands

Once you invoke the password security feature, and change the secure system jumper, privileged console commands become protected—you can access these commands only if you log in to the system with the `login` command at the console prompt.

In general, any commands that modify memory and registers, or that transfer CPU control from the console monitor to another program, such as `boot` (with parameters) or `start`, are considered privileged commands.

List of Commands

Table 11–1 lists both privileged and non-privileged console commands.

Table 11–1 Console Command Access

| Privileged Commands | Non-privileged Commands |
|----------------------------|---|
| boot (with parameters) | boot (without parameters) |
| deposit | login (to allow password entry to the privileged state) |
| examine | continue (if you inadvertently push the halt button, this command lets you continue operations in a nonprivileged mode) |
| halt | ! (to enter comment text that the system does not act upon) |
| initialize | help |
| repeat | – |
| set | – |
| show | – |
| start | – |
| test | – |

Continuing Privileged Access

Access to privileged console commands continues until you leave the console mode by using the `boot`, `continue`, `halt`, or `start` commands. You can then enter the privileged mode only by using the 16-character password.

Before You Begin

What You Should Do First

Before making your system secure, determine who will have access to privileged commands once you enable the security feature. Whoever requires privileged access to the system will need to know the password that you enter.

If your operating system is running, use the shutdown procedures in your operating system documentation to shut it down (see Table 7–3 for available documentation).

Place your system in console mode by pressing the halt button after the operating system is shut down.

Task Overview



Steps to Making the System Secure

Making your DEC 3000 Model 400/400S AXP system secure requires software and hardware tasks. Table 11–2 describes the steps required to secure your system.

Table 11–2 Steps to Making the System Secure

| Step | Description |
|------|-------------------------------|
| 1 | Enter a password |
| 2 | Enable security |
| 3 | Move the secure system jumper |
| 4 | Log in to the system |

Each of these tasks is described in this chapter.

Entering a Password



Enter a New Password

Your system arrives from the factory without a password. The password you enter must be a character string of exactly 16 hexadecimal characters (0 through 9, A through F). To enter a password on your system, enter the commands shown in Table 11–3 starting at the console mode prompt.

Table 11–3 Entering a Password

| Enter this command: | System responds: |
|--|------------------|
| >>> set password | PSWD1> |
| PSWD1> <i>new_password</i> <input type="text" value="Return"/> | PSWD2> |
| PSWD2> <i>new_password</i> <input type="text" value="Return"/> | >>> |

As you enter the password, what you type does not display on the screen. If the two passwords you entered match, your password is preserved in nonvolatile memory, which means that the system saves your password value even when the system unit is turned off.

If You Make an Error

If the two passwords you enter do not match, the console displays the following error message:

```
? 30 ILL PSWD
```

Enter the set password command again as described above.

Note Your Password

Be sure to make a note of your password and store it in a secure place. If you forget your console mode password, see the section, Forgetting the Password in this chapter or call your Digital service representative.

Enabling System Security



Enable Secure Environment Variable

Once you have entered and confirmed your password, you must enable security by setting the secure environment variable to *on*, using the `set secure` command as Table 11–4 describes.

Table 11–4 Enabling the Secure Environment Variable

| Step | Description |
|------|--|
| 1 | <p>Check the current status of the password security feature by entering the <code>show secure</code> or <code>printenv secure</code> command at the console prompt as follows:</p> <pre>>>> show secure <input type="text" value="Return"/></pre> <p>SECURE = OFF</p> <p>This example indicates that the password security feature is not enabled.</p> |
| 2 | <p>Enable the password security feature with <code>set</code> or <code>setenv</code> command as follows:</p> <pre>>>> setenv secure on <input type="text" value="Return"/></pre> <p>SECURE = ON</p> |

Moving the Secure System Jumper



Secure System Jumper

After entering a password and enabling the secure environment variable, you must move the secure system jumper on the I/O board to complete the security feature on your system. This section describes the steps required to move the jumper.

Task Overview

Table 11–5 lists the steps required to move the secure system jumper.

Table 11–5 Steps to Moving Secure System Jumper

| Step | Description |
|------|---------------------------------------|
| 1 | Turn off the system |
| 2 | Remove system unit cover |
| 3 | Release driveplate |
| 4 | Move driveplate |
| 5 | Move secure system jumper |
| 6 | Replace driveplate |
| 7 | Reconnect drive cable and thumbscrews |
| 8 | Replace system unit cover |
| 9 | Turn on system |

Step 1: Turn Off the System

Your system must be shut down before you continue.

If the operating system software is running or if the console prompt (>>>) is displayed, see Chapter 7 for instructions on how to shut down the operating system and turn off the system.

CAUTION: Capacitor Discharge

After you turn off the system and *before* you open the system unit, wait about fifteen seconds to allow time for the supply capacitors to safely discharge.

Moving the Secure System Jumper

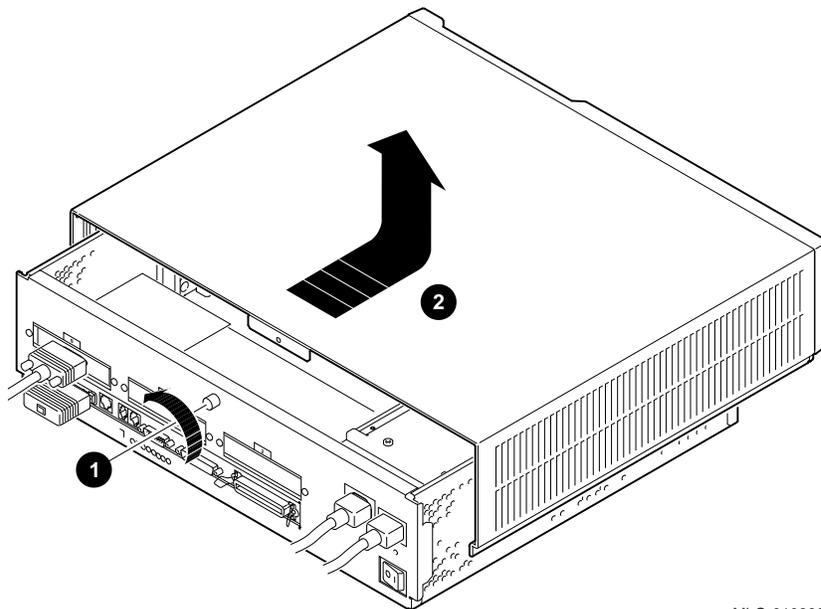
Step 2: Remove System Unit Cover

If you have a monitor or a terminal on top of the system unit, move it aside now.

Figure 11–1 shows how to remove the cover from the system unit as follows:

1. Loosen the thumbscrew located in the center of the rear of the system unit **1**.
2. Slide the cover forward and upward **2**, until it releases from the system unit.
3. Place the cover safely aside for use later.

Figure 11–1 Removing the System Unit Cover

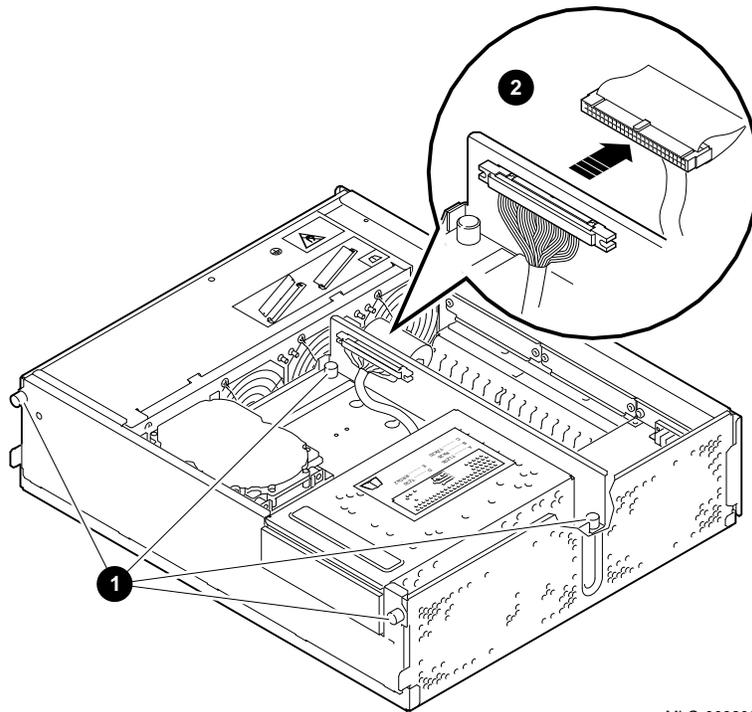


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Step 3: Release Driveplate

After removing the system unit cover, locate and loosen the four thumbscrews that hold the driveplate in place **1**. Remove the drive cable from the drive **2**, as shown in Figure 11-2 to release the driveplate.

Figure 11-2 Releasing the Driveplate



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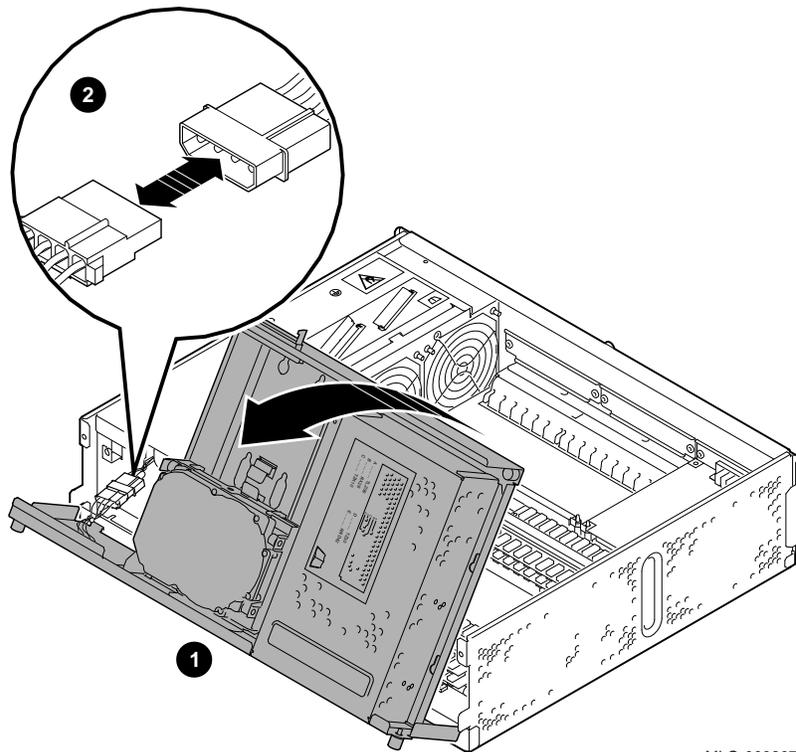
Moving the Secure System Jumper

Step 4: Move Driveplate

Make sure that the system unit is placed on the table or desk with enough room at the front of the unit to accommodate the driveplate as you remove it.

Grasp the rear of the driveplate and gently tilt the entire plate forward **1**, as shown in Figure 11-3. Disconnect the driveplate power connector **2**. Release the driveplate from the system unit and carefully place it aside.

Figure 11-3 Moving the Driveplate



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Moving the Secure System Jumper

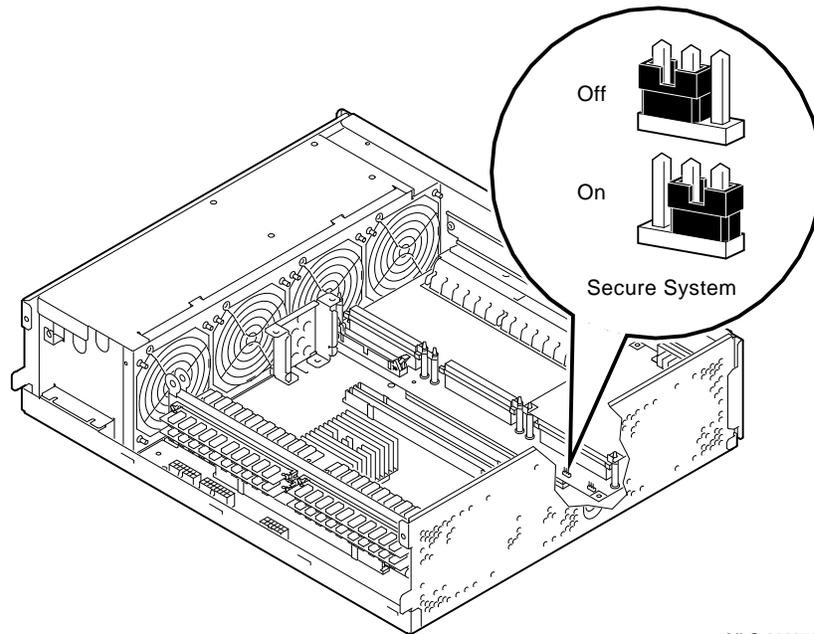
Step 5: Move Secure System Jumper

Figure 11–4 indicates the position of the secure system jumper on the system I/O board.

The secure system jumper is labeled on the I/O board, and the Off and On positions indicated. Figure 11–4 shows the jumper in the default Off position.

To make your system secure, remove the jumper from the Off position and replace it in the On position.

Figure 11–4 Moving the Secure System Jumper



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Moving the Secure System Jumper

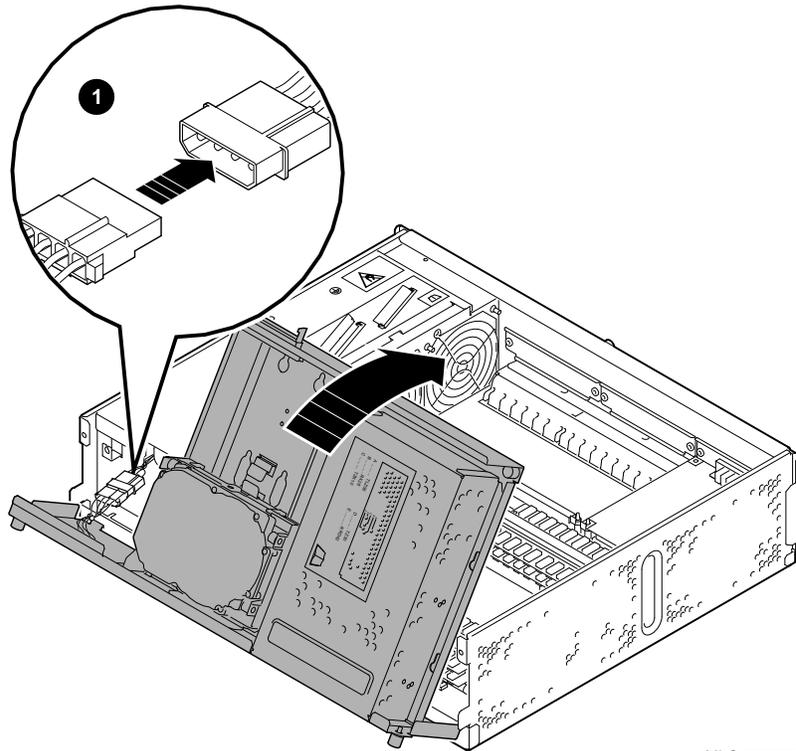
Step 6: Replace Driveplate

Holding the driveplate vertically, align the metal extension tabs on the base of the driveplate with the corresponding slots along the front of the system unit.

Reconnect the driveplate power connector **1**, and replace the driveplate.

Gently tilt the entire driveplate backward as shown in Figure 11–5 until it returns to its former horizontal position.

Figure 11–5 Replacing the Driveplate



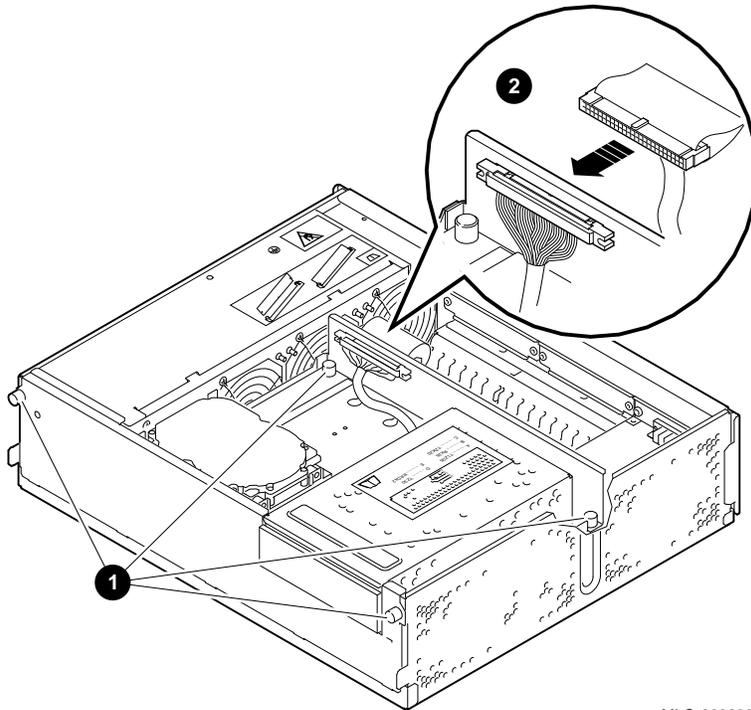
MLO-009208

Step 7: Replace Drive Cable and Thumbscrews

Tighten the driveplate thumbscrews **1**, and reconnect the drive cable **2**, as indicated in Figure 11-6.

Note that the drive cable connector on the driveplate has two extensions that snap into position on either side of the drive cable when it is reconnected.

Figure 11-6 Replacing the Drive Cable and Driveplate Thumbscrews



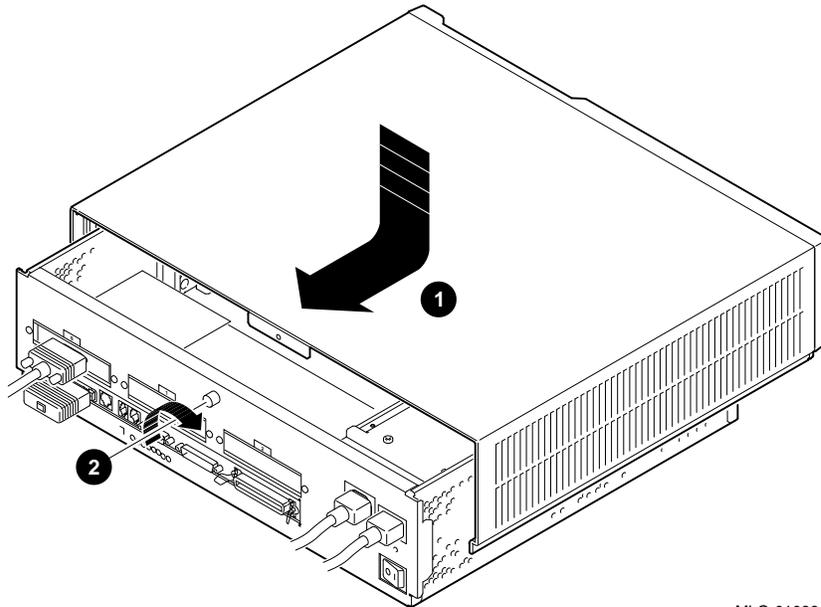
MLO-009209

Moving the Secure System Jumper

Step 8: Replace System Unit Cover

Position the system unit cover at the front of the system unit and push it down and backward **1**, as shown in Figure 11–7. Tighten the thumbscrew **2** on the rear of the system unit once the cover is securely in place.

Figure 11–7 Replacing the Cover



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Step 9: Turn On System

Turn on the system as described in Chapter 6. Note that the system cover must be replaced before you turn on the system power.

Press the halt button to display the console prompt (>>>) if your system does not halt automatically. From this point on, you will need to use the `login` command to access privileged console commands.

Using the login Command



The login Command

After entering the password, enabling it, and then changing the secure system jumper on the I/O board, you must use the `login` command to access privileged console commands as Table 11–6 describes.

Table 11–6 Entering a Login Command

| Enter this command: | System responds: |
|--|------------------|
| >>> <code>login</code> <input type="text" value="Return"/> | PSWD0> |
| PSWD0> <code>password</code> <input type="text" value="Return"/> | >>> |

The variable *password* is the password you entered during the `set password` command. If you enter the password incorrectly, the system responds with this message:

```
? 30 ILL PSWD
```

Enter the `login` command again as described previously.

Forgetting the Password



Erase the Current Password

If you forget your password, you must complete the steps in Table 11-7 to erase the password and regain access to your system.

Table 11-7 Steps to Access System

| Step | Description |
|------|--|
| 1 | Move the secure system jumper to the Off position. Refer to the section Moving the Secure System Jumper earlier in this chapter to complete this task. |
| 2 | Enter the <code>deposit</code> command as explained in the next section. |

Entering the deposit Command

To erase the current password, enter the `deposit` command with the exact parameters shown. There is no system response to this `deposit` command.

```
>>> deposit -pm-u-n:2 1E0200088 0 
```

Once your password is erased, you can enter a new password as explained in the section Entering a Password earlier in this chapter.

Disabling or Changing the Password



Disabling the Password

To disable the password security feature, enter the `login` command and your password. Then enter the following command at the console prompt:

```
>>> set secure 0 
SECURE = OFF
```

Changing the Password

To change the password, complete the steps listed in Table 11–8. Note that passwords must be exactly 16 hexadecimal digits long. Valid characters to use are 0-9, and A-F. Alphanumeric passwords are not accepted as console passwords.

Table 11–8 Changing a Password

| Enter this command: | System responds |
|--|-----------------|
| >>> <i>set password</i> | PSWD0> |
| PSWD0> <i>old_password</i> <input type="text" value="Return"/> | PSWD1> |
| PSWD1> <i>new_password</i> <input type="text" value="Return"/> | PSWD2> |
| PSWD2> <i>new_password</i> <input type="text" value="Return"/> | >>> |

Disabling or Changing the Password

If the passwords you enter are the same, your password is changed.

If You Make an Error

If the two passwords you enter do not match, the console displays the following error message:

```
? 30 ILL PSWD
```

12

Using an Alternate Console

Chapter Overview

Introduction The alternate console feature of your system lets you direct console input and output from a monitor to another device, such as a terminal.

In This Chapter This chapter covers the following topics:

- Before You Begin
- Using the Alternate Console Feature

Before You Begin



What You Should Know Beforehand

If you do not understand the alternate console feature, read the next section, *Using the Alternate Console Feature*, and then return to Table 12–1 to determine the status of your system and where to go next.

Table 12–1 Current System Status

| If your system is... | Refer to... |
|------------------------------|---|
| Running the operating system | Chapter 7 to get to the console prompt (>>>). |
| At the console prompt (>>>) | Step 1: <i>Connect a Terminal or Printer</i> , in this chapter. |

Alternate Console/Printer Port Information

The alternate console/printer port is set to the parameter settings listed in Table 12–2. These settings cannot be changed.

Table 12–2 Alternate Console/Printer Port Parameters

| Parameter | Setting |
|--------------------|---------|
| Baud rate | 9600 |
| Parity | None |
| Stop bit | 1 |
| Bits per character | 8 |

Using the Alternate Console Feature



When to Use an Alternate Console

The alternate console feature lets you direct console output to an output device such as a terminal or a printer. Possible reasons for using an alternate console are these:

- You cannot display output on your monitor because it is not working properly.
- You want to save a hard copy of screen display output. For example, when installing the OpenVMS AXP operating system, you can connect a printer to the alternate console port and direct screen output to that printer to create a printed copy of the installation screens.
- You want to display screen output on a server system that does not include a monitor.

Task Overview

Table 12–3 describes the steps to complete to use the alternate console feature.

Table 12–3 Using the Alternate Console

| Step | Procedure |
|------|---|
| 1 | Connect a terminal or printer. |
| 2 | Set the alternate console switch to the correct position. |
| 3 | Redirect output to an alternate console if you started by displaying console output on a monitor. |

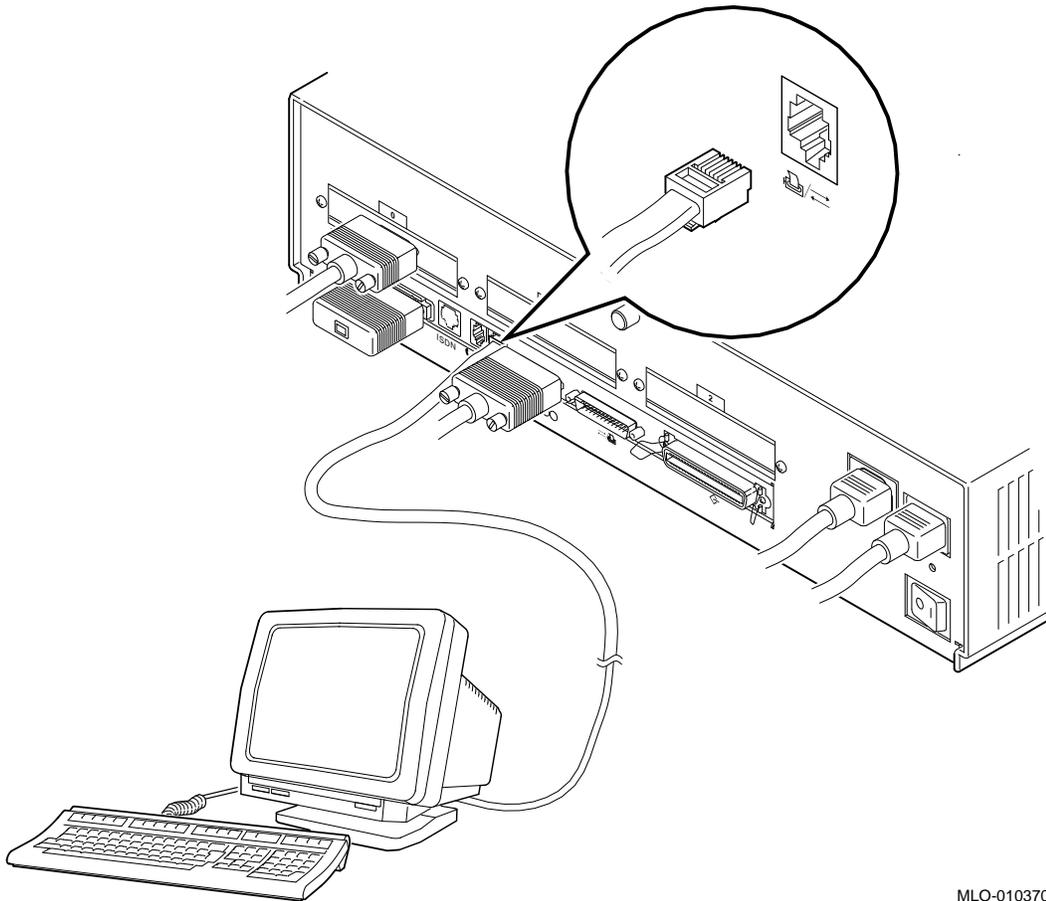
The following sections describe these steps in detail.

Using the Alternate Console Feature

Step 1: Connect a Terminal or Printer

To connect a terminal or printer as an alternate console device, connect the terminal or printer cable to the alternate console/printer port on the system unit as shown in Figure 12-1.

Figure 12-1 Attaching a Device to the Alternate Console/Printer Port



MLO-010370

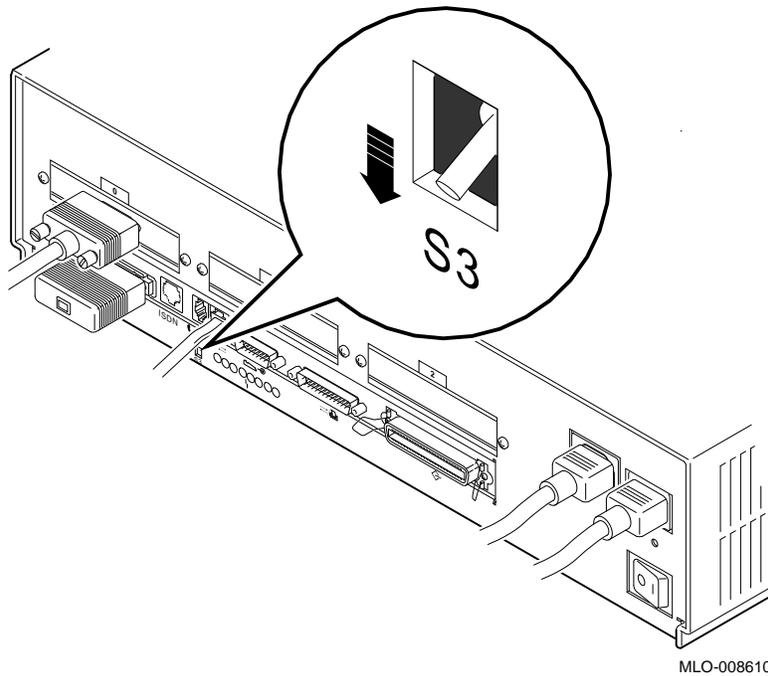
Using the Alternate Console Feature

Step 2: Change the Alternate Console Switch

The alternate console switch on the rear of the system unit directs console output to one of two destinations: a monitor or an alternate console device, such as a terminal or a printer.

To direct console output to a console device, the alternate console switch should be in the down position as shown in Figure 12–2.

Figure 12–2 Changing the Alternate Console Switch



Using the Alternate Console Feature

Step 3: Redirect Console Output

If you were using a monitor to display console output before you connected an alternate console device, you must restart your system to redirect console output. (Restarting the system is sometimes referred to as power cycling the system.) If you do not restart your system, the console output will not display on the terminal or printer you connected.

Restarting the System

To change console output from the monitor to the alternate console, restart your system as follows:

1. Turn off your system following the instructions provided in Chapter 7.
2. Wait 10 to 15 seconds.
3. Turn on the system unit (by switching the power switch to the on (|) position).

Look for Display

Console output should now be displayed on the alternate console device.

Part III

Handling Problems

Part III describes how to handle problems with the DEC 3000 Model 400/400S AXP system. This section includes the following chapters:

| Chapter | Title |
|---------|--------------------------|
| 13 | Identifying a Problem |
| 14 | Running Diagnostic Tests |

13

Identifying a Problem

Chapter Overview

Introduction

Though your DEC 3000 Model 400/400S AXP system is a high-quality, thoroughly tested product, it is also an electrical device that may exhibit problems on occasion. If you are experiencing problems with your system, this chapter will help you identify and possibly fix the problem.

In This Chapter

This chapter covers the following topics:

- Before You Begin
- Task Overview
- Determining Type of Problem
- Startup Problems
- Interpreting the show Command Displays
- Display Problems
- Daily Operations Problems
- SCSI Device Problems
- Network Problems
- Where to Go Next

Before You Begin



Two Ways to Solve System Problems

There are two ways to solve problems with the DEC 3000 Model 400/400S AXP system:

1. Use the chapters in Part III of this manual to help identify and possibly fix the problem yourself.
2. Contact your Digital service representative to diagnose and fix the problem for you.

Methods to Identify Problems

Table 13–1 lists ways to identify problems, and indicates where each method is described:

Table 13–1 How to Identify a Problem

| To identify a problem this way... | Refer to... |
|-----------------------------------|--------------|
| Use the troubleshooting tables | This chapter |
| Run diagnostic tests | Chapter 14 |

Using the troubleshooting tables in this chapter is the easiest and most direct approach to identifying and correcting a problem with your DEC 3000 Model 400/400S AXP system. Therefore, this is the method with which you should begin.

The diagnostic tests described in Chapter 14 let you test specific devices and provide information on the source of your problem.

Task Overview



Steps to Identifying a Problem

Table 13–2 describes the steps required to identify and possibly fix system problems.

Table 13–2 Steps to Resolving Problems

| Step | Description |
|------|---|
| 1 | Determine type of problem. |
| 2 | Locate problem in troubleshooting tables. |
| 3 | Follow suggested actions to resolve problem. |
| 4 | If unable to resolve problem, see Chapter 14. |

The next sections describe these steps.

Determining Type of Problem



Types of System Problems

The following sections describe various problems and their possible causes, as well as some corrective actions that you can take.

If you cannot isolate the problem, or if the corrective actions do not resolve the problem, see the section [Reporting Problems to Digital Services](#) .

Table 13–3 lists the problems described in the following sections.

Table 13–3 Type of Problem

| This section... | Describes these problems... |
|--|---|
| Startup Problems | Power indicator light off No startup display Error message in startup display Boot failure |
| Interpreting the show Command Displays | Error in show config Command The show device Command Error in show error Command The show memory Command |
| Display Problems | Cursor in corner of screen Distorted display on monitor No display on monitor |
| Daily Operations Problems | Pointer missing from screen Keyboard keys not working |
| SCSI Device Problems | Internal device not working Software does not boot Diskette device problems |
| Network Problems | NI error message Unable to boot from network |

Startup Problems



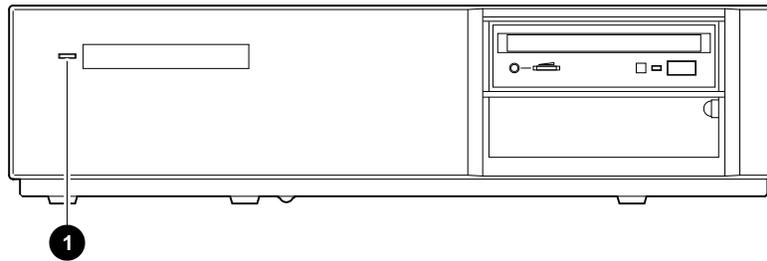
Overview

There are many different causes of system startup problems. Locate the problem you are having in the following sections.

Power Indicator Light Off

If the power indicator light does not come on when you turn on your system, see Table 13–4. The indicator light ❶ is shown in Figure 13–1.

Figure 13–1 Power Indicator Light



MLO-009416

Table 13–4 Power Indicator Light Failure

| Possible Cause | Corrective Action |
|------------------------------|--|
| Power cord is not connected. | Check the power cord connections at both ends. |
| Wall socket is inoperative. | Try a different wall socket, or try an electrical device that you know works in the wall socket. |
| Defective power supply. | Contact your Digital service representative. |

No Startup Display

If there is no startup display after one minute when you turn on your system, see the possible causes in Table 13–5.

Table 13–5 Missing Startup Display

| Possible Cause | Corrective Action |
|--|--|
| Wall socket may not be operative. | Try a different wall socket, or try an electrical device that you know works in the wall socket. |
| Monitor is not plugged in. | Plug in the monitor to the auxiliary power socket on the rear of the system unit. See Figure 3–4. |
| Monitor is not turned on. | Turn on the monitor. |
| Monitor brightness and contrast controls are too dark to see the screen display. | Adjust the monitor brightness and contrast controls. Verify that the monitor power switch is on. |
| Monitor cable or video cable is not connected. | Check that the monitor cable and video cable are plugged in at both ends. (See Chapter 3 for installation instructions.) |
| Monitor fuse is blown. | See the monitor guide for fuse replacement instructions. |

Startup Problems

Error in Startup Display

After the system startup messages, you may see an error message rather than the System power up OK message. Figure 13-2 shows a startup display similar to one you may see with an error message.

Figure 13-2 Startup Display with Error

```
DEC 3000 - M400
Digital Equipment Corporation
System conducting power up tests.
-----
Devnam   Devstat
-----
CPU      OK KN15-BA - V2.1-S080-IO60 - DECchip 21064
ASIC     OK
MEM      OK 128MB
NVR      OK
SCC      ?? 003 0050 ptr(0) = Not Present keybd(2)= Not Present
NI       OK Ethernet Address: 08-00-2B-1D-1E-EF
SCSI     OK
ISDN     OK
TC0      OK
-----
System power up tests detected error(s).
See your system documentation for more information.
>>>
```

Whenever errors are detected, a line on the system startup display begins with two question marks, followed by a message.

Common Startup Errors

There are many reasons for startup errors. When you first install your system, one of the most common causes of startup errors is loose cable connections. Table 13-6 provides the device components likely to have loose connections.

Table 13–6 Startup Error Codes

| If ?? appears next to this component... | This item may be loose or missing... |
|---|---|
| NI | Ethernet loopback connector or cable |
| SCC | Keyboard/mouse cable to keyboard/mouse port |
| SCC | Keyboard or mouse to keyboard/mouse extension cable |

If an error indicator appears next to one of the Devnam items listed above, check the appropriate cable or connector to make sure it is connected securely. Instructions on how to complete workstation and server connections are described in Chapter 3 and Chapter 4, respectively.

If the cables or connectors are not loose, or an error indicator appears next to other items in the Devnam column, refer to Chapter 14, which explains how to run diagnostic tests.

Startup Problems

Boot Failure

If your system does not boot the operating system after completing system startup tests, see Table 13–7.

Table 13–7 Startup Without Booting

| Possible Cause | Corrective Action |
|--|---|
| The default startup action environment variable is set to halt at the console. | Change default startup action as Chapter 10 describes. |
| Software is not installed. | Install the system software. Refer to the software documentation for installation instructions. |
| Incorrect boot device was specified. | Change the default boot device (bootdef_dev) environment variable, explained in Chapter 10. |
| Boot device is not properly configured. | Enter a show device command as Chapter 14 describes and check to see that all devices are configured properly. If not, check the SCSI ID numbers and SCSI cables, also described in that chapter. (See <i>DEC 3000 Model 400/400S AXP Options Guide</i> for information on setting SCSI IDs.) |
| Software problem. | Check your operating system documentation for information or call your Digital service representative. |

Interpreting the show Command Displays



Overview

Your system includes many elements: components, memory modules, and optional devices. The `show console` commands test your system and display the status of these elements. Table 13–8 lists some of the `show console` commands and the information each provides:

Table 13–8 Information Provided by the show Console Commands

| This command... | Lists the status of... |
|--------------------------|--|
| <code>show config</code> | System components |
| <code>show device</code> | The Ethernet interface and any optional devices, such as SCSI internal disk drives |
| <code>show error</code> | Any errors detected on your system |
| <code>show memory</code> | All memory modules |

Each of these commands is described in the following sections.

Error in show config Display

The `show config` command tests and displays information about system components and memory modules. The command also indicates whether errors were detected during the diagnostic test.

Interpreting the show Command Displays

show config Error Display

Figure 13–3 shows a show config command display similar to one that includes an error.

Figure 13–3 Configuration Display with Error

```
>>>show config Return

DEC 3000 - M400/400S
Digital Equipment Corporation
VPP PAL X4.18-82000101 - Built on 10-MAR-1993 00:00:00.00 by XXXX

TCINFO      DEVNAM      DEVSTAT
-----      -
              CPU      OK KN15-BA-V2.1-S086-IO62-DECchip 21064
              ASIC      OK
              MEM      OK
8
7
              NVR      OK
              SCC      ? 60
              NI      OK
              ISDN     OK
6
              SCSI     OK
1-PMAGB-BA   TC1        OK

>>>
```

Elements in the show config Display

The show config command displays three columns of information described in Table 13–9.

Table 13–9 The show config Display Described

| Display Heading | Description |
|-----------------|--|
| TCINFO | TURBOchannel device information. Information next to the TCx component indicates which TURBOchannel option is installed and the slot number it occupies. |
| DEVNAM | Name of system component or module. |
| DEVSTAT | Status of system component or module. |

Interpreting the show config Display

If no errors are detected when you enter a show config command, you will see the message OK next to each device name. If an error is detected, a question mark (?) error indicator will be displayed in the DEVSTAT column next to the corresponding device name.

If you see an error indicator next to any device name, as shown in Figure 13-3, note the error number and the DEVNAM on the Handling Problems worksheet at the end of Chapter 14. If you wish, you can test the device that shows an error in the show config display by following the instructions in Chapter 14.

The show device Display

The show device command provides a list of all installed devices on your system, including information about the type of device, its write/read capabilities, its capacity, the device name, and firmware revision.

Figure 13-4 shows an example of a show device command display.

Figure 13-4 The show device Display

```
>>>show device Return
BOOTDEV  ADDR      DEVTYPE      NUMBYTES      RM/FX  WP  DEVNAM  REV
-----  -
ESA0     08-00-2B-12-00-9C
DKA0     A/0/0     DISK         426.25MB     FX           RZ25  0700
DKA100   A/1/0     DISK         426.25MB     FX           RZ25  0700
DKA400   A/4/0     RODISK       .....       RM          WP  RRD42  4.3d
..HostID.. A/6     INTR
..HostID.. B/6     INTR
```

While the show device display does not indicate the status of a device, it can be used for troubleshooting problems that may occur due to duplicate SCSI device ID numbers. (See *DEC 3000 Model 400/400S AXP Options Guide* for information on setting SCSI IDs.)

Interpreting the show Command Displays

Elements in the show device Display

The `show device` command displays eight columns of information described in Table 13–10.

Table 13–10 The show device Display Described

| Display Heading | Description |
|-----------------|--|
| BOOTDEV | The boot device name. In this example, the boot device name of the RRD42 compact disc drive is DKA400. Boot device names for disk drives also indicate the SCSI bus and ID number—DKA400 indicates that the RRD42 disc drive is connected to the SCSI_A bus, and that the SCSI ID number is 4. |
| ADDR | The internal address of the device. For SCSI devices, indicates the SCSI bus and SCSI ID number. |
| DEVTYPE | The type of device. DISK indicates a disk drive, and RO indicates a Read-Only device, such as an RRD42 compact disc drive. |
| NUMBYTES | The disk drive capacity in megabytes. |
| RM/FX | Type of drive—RM indicates removable, and FX indicates fixed. |
| WP | Write protection indicator—if WP appears, the drive is write-protected. |
| DEVNAM | Device name. This column usually lists the Digital product name of the drive, such as the RZ25 disk drive. |
| REV | The revision number of the disk drive's firmware. |

Interpreting the show device Display

The information presented in the `show device` display should correspond to the devices that are installed in your system. For instance, if you install a new drive in your system, that drive should be listed on the `show device` display after you complete the installation instructions. If you inadvertently used a SCSI ID number for the new drive that was already in use, the new drive would not be listed when you issue the `show device` command.

For more information about SCSI ID numbers, see the next section, *Understanding SCSI ID Numbers*.

You can also use the `show device` command to determine device names when setting the `bootdef_dev` environment variable. Chapter 10 describes how to set and change environment variables.

Understanding SCSI ID Numbers

Your DEC 3000 Model 400/400S AXP system contains SCSI devices, and allows you to add SCSI devices. Each SCSI device has an ID number (from 0 to 7) that must be unique within your system.

A common error is to add a SCSI device with an ID number that is already being used by another device in your system. Since this error does not produce an error message, you must determine whether there are duplicate numbers yourself.

Determining Duplicate SCSI ID Numbers

To see whether two SCSI devices have the same ID number, perform the following steps:

1. Use the `show device` command to see which devices are installed in your system. See Figure 13-4.
2. Record which SCSI ID number is assigned to each device.
3. See if the list of devices that your system displays matches the number of devices that are actually installed or attached to your system.

If the system list does not correspond with the number of devices actually installed, one of the devices may have a duplicate SCSI ID. If none of the SCSI ID numbers are duplicated, and the drive is not defective, you will see the new device with a new SCSI ID number on the `show device` display. (See *DEC 3000 Model 400/400S AXP Options Guide* for information on setting SCSI IDs.)

Interpreting the show Command Displays

The show error Command

The `show error` command displays specific information about any error that is occurring within your DEC 3000 Model 400/400S AXP system.

Table 13–11 lists the devices that the `show error` command provides information about:

Table 13–11 System Device Errors

| Test Name | Device Tested |
|-------------------|---|
| ASIC | Application-specific integrated circuit |
| MEM | Memory |
| NVR | Non-volatile RAM |
| SCC | Serial communications controller |
| NI | Network interface (Ethernet) |
| SCSI | SCSI device(s) |
| ISDN ¹ | 79C30A AMD chip |

¹Running ISDN diagnostic tests also tests the audio port

Error information about TURBOchannel devices will not be displayed with the `show error` command. Refer to the *DEC 3000 Model 400/400S AXP Service Guide* for error information on TURBOchannel devices.

The show error Display

Figure 13–5 shows an example of a `show error` command indicating a device that is failing.

Figure 13–5 The show error Display

```
>>>show error 
? 003   SCC  0x0050
  ? T-ERR-SCC-LK401 - 0 char rcvd
    T-STC-SCC-LK401 - char = 700
```

Elements in the show error Display

If any errors are detected, the `show error` command displays an error message, described in Table 13–12.

Table 13–12 Error Message Elements

| Error Message Element | Description |
|-----------------------|---|
| ? | Error message indicator. |
| 003 | Field Replaceable Unit (FRU) number. The FRU is a Digital number allocated to a component or module in your system. |
| SCC | The name of the diagnostic test that detected an error. |
| 0x0050 | The error number in hexadecimal notation. |

For a complete list of FRU numbers and diagnostic test error numbers, see the *DEC 3000 Model 400/400S AXP Service Guide*.

Interpreting the show error Display

In addition to displaying an error message, the `show error` display also indicates test status messages, such as the message T-ERR-SCC-LK401 shown in Figure 13–5. Information about interpreting these messages is beyond the scope of this document. If you are contacting Digital Services, record the test status message(s) on the Handling Problems Worksheet at the end of Chapter 14.

Interpreting the show Command Displays

The show memory Display

The `show memory` command displays information about all of the memory in your system. This command lists a line of information about each memory bank. Note that the display will not indicate an error found in memory. You can only display memory errors using the `show error` or the `test memory` command. The test commands are described in Chapter 14.

The show memory Display

Figure 13–6 shows an example of a `show mem` command display.

Figure 13–6 The show memory Display

```
>>> show memory

DEC 3000 - M400 Memory: 64 Mbytes
-----
BANK #      MEMORY_SIZE      START_ADDRESS
-----
  0         032 Mbytes      0x00000000
  1         032 Mbytes      0x02000000
  2         000 Mbytes      0x00000000
  3         000 Mbytes      0x00000000

>>>
```

Elements in the show memory Display

Figure 13–6 indicates that memory banks 0 and 1 each have 32 megabytes of memory. Memory banks 2 and 3 are not in use on this system.

Display Problems



Overview

If there appears to be some problem with your monitor display, try to locate the problem in this section.

Cursor in Corner of Screen

If your monitor displays diagnostic startup tests when you turn on your system, but then displays only the cursor in the lower left-hand corner of the screen (rather than displaying the system startup test information), the alternate console switch is in the wrong position.

To Correct the Problem

Locate the alternate console switch, on the rear of the system unit. Refer to Figure 12–2 to see the switch position. If the switch is in the down position, it is incorrect for a workstation. Complete these steps to change the switch position:

1. Turn off your system and any peripheral devices as described in Chapter 7.
2. Move the alternate console switch to the up position. Use a small pointed object to set the switch, but do not use a pencil; the graphite will damage the switch. See Chapter 12 for more information.
3. Turn on the system unit (power switch to the | position).

Display Problems

Distorted Display on Monitor

If your monitor is displaying information but appears distorted or unclear, see the possible causes in Table 13–13.

Table 13–13 Monitor Display Problems

| Possible Cause | Corrective Action |
|--|---|
| If your monitor has a total of six connectors, marked Video In and Video Out, the monitor video cable may be connected to the Video Out ports. | Turn the monitor power switch to the off (O) position. Unscrew the video monitor cable from the Video Out ports and connect them instead to the Video In ports. See Table 3–3 for more information. Turn the monitor power switch to the on () position. |
| If multiple graphics devices are in use, monitors may be too close together. | Make sure monitors are spaced at least 18 inches apart. |
| Refresh rate may be set to wrong position on TURBOchannel graphics card. | Refer to the separate documentation shipped with the TURBOchannel option for instructions on how to change the refresh rate setting. |

No Display on Monitor

If your monitor does not display information after system startup, see Table 13–14.

Table 13–14 Monitor Display Problems

| Possible Cause | Corrective Action |
|--|---|
| Monitor is not plugged in. | Plug the monitor power cord into the auxiliary power socket on the rear of the system unit. See Figure 3–4. |
| Monitor is not turned on. | Check the monitor on/off switch. Check that the monitor power cord is connected at both ends. |
| Contrast and brightness controls are too dark to see the screen display. | Adjust the contrast and brightness controls. Refer to the monitor guide for more information. |
| System board or graphics board failure. | Refer to Chapter 14 for information on running diagnostic tests. |
| Monitor cable or video cable is not connected. | Check that the monitor cable and video cable are connected at both ends. |
| Monitor fuse is blown. | See your monitor guide for fuse replacement instructions. |
| Defective monitor. | Contact your Digital service representative. |

Daily Operations Problems



Overview

The problems described in the next sections can occur during normal day-to-day operations.

Pointer Missing from Screen

If the mouse or optional tablet pointer does not appear on the screen, or if the monitor does not respond to your pointing device commands, see Table 13–15.

Table 13–15 Mouse Problems

| Possible Cause | Corrective Action |
|--|--|
| <code>Ctrl/F3</code> was pressed by mistake, and system pointer mode is off. | Press <code>Ctrl/F3</code> again to restart the pointer mode. |
| Pointing device cable is installed incorrectly or is loose. | Turn off the system unit. Unplug and then replug the keyboard/mouse extension cable as Chapter 3 describes. Turn on the system unit again. |
| The system is in console mode. No pointer appears on the screen. | Change the system to operating system level by entering <code>boot</code> at the console prompt (<code>>>></code>). |
| Faulty pointing device. | Contact your Digital service representative to replace the pointing device. |

Keyboard Keys Not Working

If you are having trouble with the keys on your keyboard, see Table 13–16.

Table 13–16 Keyboard Problems

| Possible Cause | Corrective Action |
|---|---|
| Hold Screen key is active. | If the Hold screen light is on, press the Hold Screen key to release hold on screen. |
| Keyboard cable is loose or not connected. | Check the keyboard cable at both ends. |
| Keyboard has failed. | Replace the keyboard. If the problem persists, contact your Digital service representative. |

SCSI Device Problems



Overview

If you are having trouble with a SCSI device, such as an internal disk drive, or a tape drive in an expansion box, locate the problem in the next sections. For specific information about your SCSI device, refer to the documentation that was shipped with your system, or in the case of an option, with the option kit.

Internal Disk Drive Not Working

If you are having problems with an installed disk drive, see Table 13–17. Do not set any of the SCSI device ID numbers to 7. This number is used for the SCSI controller on the system.

SCSI Device Problems

Table 13–17 Installed Disk Drive Problems

| Possible Cause | Corrective Action |
|--|--|
| Two SCSI identifiers are set to the same number. | Enter the show device command as described earlier in this chapter. If a drive is not recognized, reset each SCSI ID to a unique number. (See the <i>DEC 3000 Model 400/400S AXP Options Guide</i> for more information on setting SCSI IDs for optional devices.) |
| Loose cables. | Check to make sure all cables are connected. |
| Defective drive. | Refer to Chapter 14 for information on running diagnostic tests. |

Software on Disk Drive Does Not Boot

If you know that the operating system is installed on the installed disk drive, but you cannot boot the operating system software, see Table 13–18.

Table 13–18 Installed Software Problems

| Possible Cause | Corrective Action |
|---|---|
| Default boot device is set incorrectly. | See Chapter 10 to set or change the default boot device. |
| Default startup action may be set to halt. | See Chapter 10 to change the default startup action. |
| System startup command procedure was modified incorrectly. | Refer to your operating system documentation for help. |
| A problem exists with the fixed disk. | Refer to Chapter 14 for information on running diagnostic tests. |
| A problem exists with the operating system software (if installed) on the fixed disk. | Refer to your operating system software documentation for help. |
| Incorrect SYSGEN parameters for OpenVMS AXP operating system. | Perform conversational or minimum boot. Refer to your OpenVMS AXP operating system documentation listed in Table 6–5. |
| Incorrect settings for <code>scsi_reset</code> and <code>boot_reset</code> environment variables. | Set <code>scsi_reset</code> to 4 and <code>boot_reset</code> to on. |

SCSI Device Problems

Unable to Access Diskette Drive

If you are having problems with software installed on a diskette, or the system is displaying disk read or write errors, see Table 13–19.

Table 13–19 Software on Diskette Problems

| Possible Cause | Corrective Action |
|---|---|
| No diskette is in the diskette drive. | Insert a software diskette. Use the instructions in your software documentation. |
| Diskette was inserted incorrectly. | Check that the write-protect notch on the diskette is to your left when you insert the diskette and that the label is up. |
| Diskette is damaged or does not contain software. | Try another diskette that contains software. |
| Two SCSI identifiers are set to the same number. | Reset each SCSI ID to a unique number. Refer to the section called Understanding SCSI ID Numbers earlier in this chapter. (See <i>DEC 3000 Model 400/400S AXP Options Guide</i> for information on setting SCSI IDs.) |

Network Problems



Overview

If you are having trouble with your network, locate the problem in this section.

DEVNAM NI Error Message

If an error message is displayed next to the identifier NI in the DEVNAM column of the system startup display or in the `show device display`, see Table 13–20.

Table 13–20 Resolving NI Network Errors

| Possible Cause | Corrective Action |
|--|--|
| No Ethernet loopback connector or cable was installed. | Attach the Ethernet loopback terminator shipped with your system. See Figure 3–5 or Figure 4–2. |
| Terminator is missing from network. | Check to see if a ThinWire cable was removed. If so, replace the cable with a terminator. |
| Ethernet cable connection is loose. | Check that all connections on the Ethernet segment are secure. |
| Incorrect network type. | Use the <code>set ethernet</code> command described in Chapter 5 to make sure that the Ethernet type is set correctly. |

Unable to Boot from Network

If you are unable to boot from the network, but there is no error message on the system startup display, see Table 13–21.

Table 13–21 Problems When Booting from the Network

| Possible Cause | Corrective Action |
|------------------------------|---|
| Local network problem. | Problem is most likely caused by the customer server system or the network. |
| Defective network interface. | Refer to Chapter 14 for information on running diagnostic tests. |

Network Problems

After Solving a Network Problem

After solving a network problem, type `test ni` and press the Return key to run the Ethernet test again. This either clears the error or displays a message to let you know the problem still exists.

Where to Go Next

Determine Your Next Task

If you were unable to resolve your problem using the information in this chapter, contact Digital Services (instructions are provided in Chapter 14), or run system tests, also described in that chapter.

Running Diagnostic Tests

Chapter Overview

Introduction This chapter contains information about running diagnostic tests and contacting Digital Services. Diagnostic tests can help you identify the specific part or module that is causing errors in your system.

In This Chapter This chapter covers the following topics:

- Before You Begin
- Task Overview
- Running Diagnostic Tests
- Recording the Diagnostic Display Light Pattern
- Reporting Problems to Digital Services
- Handling Problems Worksheet

Before You Begin



Purpose of Tests

If you cannot locate and/or resolve the system problem using the troubleshooting tables in Chapter 13, you can run diagnostic tests. Diagnostic tests can help to identify the source of a problem and provide specific information to present to your Digital service representative over the telephone.

Your Digital service representative may also request that you run diagnostic tests.

What You Should Have Done Already

Before running diagnostic tests on your system to identify a defective component or module, you should have already completed these tasks:

- Shut down your operating system (if running) as described in Chapter 7.
- Put your DEC 3000 Model 400/400S AXP system into console mode.
- Tried to locate and resolve the problem with the information in Chapter 13.
- Used the `show` commands to determine the system component or device with an error. See Chapter 13.

If you have not completed these tasks, please refer to the relevant sections earlier in this guide.

Task Overview



Steps to Running Diagnostic Tests

Table 14–1 summarizes the steps to perform when running diagnostic tests in order to identify or resolve a system problem.

Table 14–1 Steps to Diagnostic Tests

| Step | Procedure |
|------|--|
| 1 | Run the diagnostic test on the component, module or device that is causing an error. |
| 2 | Note the diagnostic test results. |
| 3 | Record the diagnostic display lights pattern. |
| 4 | Contact your Digital service representative. |
| 5 | Connect loopback connectors if necessary. |

These steps are described in detail in the following sections.

Running Diagnostic Tests



Diagnostic Tests

If an error message is displayed next to a device name when you issue one of the `show` commands described in Chapter 13, you can test the device listed in the error message by using the `test` command.

Using this command, you can run a number of diagnostic tests to help you determine the status of a system module or device.

List of Device Tests

Table 14–2 provides a list of the available diagnostic tests and indicates whether the tests require a loopback connector. The tests are listed by the name of the device they test. Refer to Figure 3–5 to see how to connect the Ethernet loopback connector.

Table 14–2 Diagnostic Tests

| Device Name | Device Tested | Loopback Required |
|-------------------|---|-------------------|
| ASIC | Application-specific integrated circuit | No |
| MEM | Memory | No |
| NVR | Non-volatile RAM | No |
| SCC | Serial communications controller | No |
| NI | Network interface (Ethernet) | Yes |
| SCSI | SCSI device(s) | No |
| ISDN ¹ | 79C30A AMD chip | No |
| TC n | TURBOchannel options, where n is the number of the TURBOchannel device you wish to test | No |

¹Running ISDN diagnostic tests also tests the audio port

Using the test Command

Depending on the way you enter the test command, you can run a single test or multiple tests on a component.

Single Test Syntax

Use the following syntax to run a single test:

```
>>> test device_name 
```

where *device_name* is one of the device names listed in Table 14-2.

Multiple Test Syntax

Use the following syntax to run multiple tests:

```
>>> test device_name1:device_name2 
```

where *device_name1* is the device you want to start with, and *device_name2* is the last device you want to test. The diagnostic tests are run in the same order as the list of device tests in Table 14-2.

Example Diagnostic Test

One diagnostic test is the SCC test, which tests the communication devices attached to your system unit, such as the keyboard and mouse. Figure 14-1 shows an example of the SCC test display.

Figure 14-1 SCC Diagnostic Test Display

```
>>> test scc   
T-ST5-SCC-OK  
>>>
```

Running Diagnostic Tests

Example Diagnostic Test with Error

If a diagnostic test fails, a display similar to the one shown in Figure 14–2 appears, containing information important to helping you determine the source of the problem.

Figure 14–2 SCC Test Display with Error

```
>>> test scc
? T-ERR-SCC-MOUSE - 0 char rcvd
?? 004          SCC 0x0060

    84 FAIL
>>>
```

Understanding the test Command Display

In the previous example, the SCC test failed during testing of the mouse line. This means that the mouse is not being seen by the system. Check the mouse connector to make sure that it is properly connected to the mouse/keyboard connector. If it is properly seated, you may have a defective mouse. Contact your Digital service representative, as described in Chapter 13.

Initializing Your System

After you have run a test, you should use the following command to initialize your system to clear the error log from the system register. Figure 14–3 shows an example of the `init` command.

Figure 14–3 Initializing Your System

```
>>> init 
INIT-S-CPU...
INIT-S-RESET_TC...
INIT-S-ASIC...
INIT-S-MEM...
INIT-S-NVR...
INIT-S-SCC...
INIT-S-NI...
INIT-S-SCSI...
INIT-S-ISDN...

>>>
```

Running Diagnostic Tests

If the problem with your system has been fixed, after you initialize your system, you should be able to issue the `show config` command and not see any errors. If the problem is not fixed, contact Digital Services as described later in section [Reporting Problems to Digital Services](#) .

Note: Another Way to Initialize Your System

You can also initialize your system after running diagnostic tests by running the same test again. If the problem has been fixed, the test, which failed before, will complete successfully.

Figure 14–4 shows a sample display of a successful SCC test.

Figure 14–4 Initializing the System with the SCC Test

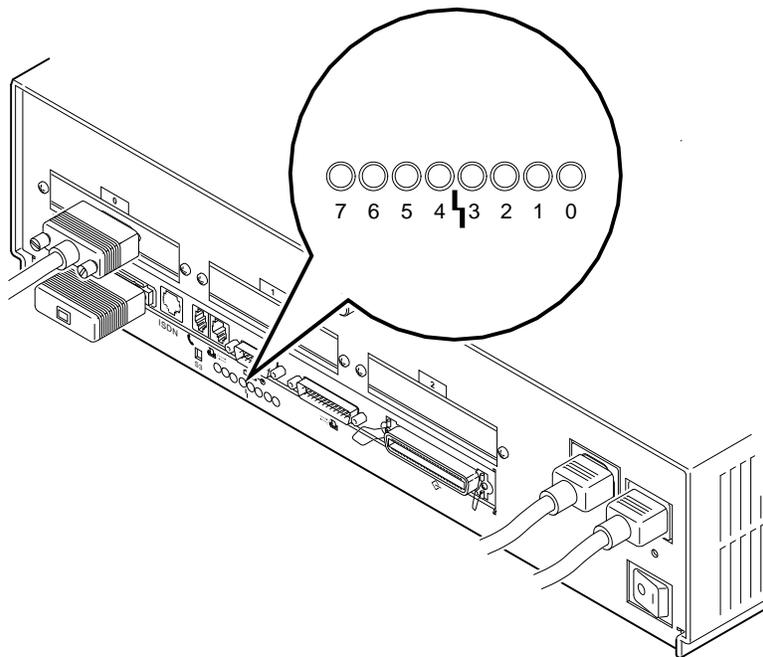
```
>>> test scc
T-ST5-SCC-OK
>>>
```

Recording the Diagnostic Display Light Pattern

Diagnostic Display Lights Location

On the rear of the system unit, there are eight recessed amber-colored lights, as shown in Figure 14–5.

Figure 14–5 Position of Diagnostic Display Lights



MLO-008618

The diagnostic display lights can provide your Digital service representative with important information in determining the source of a problem.

Recording the Diagnostic Display Light Pattern

Understanding the Diagnostic Lights

During system startup, the diagnostic display lights flash on and off in different patterns as the system startup tests are performed. The light patterns are not random. They represent the hexadecimal number of a test action or result, in binary format—when a light is on, it represents a 1; off, it represents a 0.

For instance, when the startup tests are completed successfully and your system is in console mode, the diagnostic display lights display the hexadecimal number DD, the binary representation for which is displayed in Table 14–3.

Table 14–3 Console Mode Diagnostic Lights

| Diagnostic Display Lights | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|
| • | • | ○ | • | • | • | ○ | • |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

When your system is in program mode, the diagnostic display lights are not lit.

When to Record the Diagnostic Display Lights

If a problem is detected during system startup or when you run diagnostic tests, you should record the diagnostic display light pattern on the appropriate section of the Handling Problems Worksheet at the end of this chapter. Notice that the diagnostic display light numbers read 7 to 0, from left to right.

Be sure to note also when the display occurred, for instance, during startup or after entering the `show config` command.

Reporting Problems to Digital Services



How to Continue

If you are able to locate the source of the system problem, run a test, and initialize the system, but are still having problems with your DEC 3000 Model 400/400S AXP system, you should contact your Digital service representative.

Digital Support Centers

Digital service representatives are available at Digital support centers for on-site warranty and service contract customers. If you are not currently eligible to receive this support, but wish to, please contact either a Digital support center listed in Table 14-4, or your local Digital office.

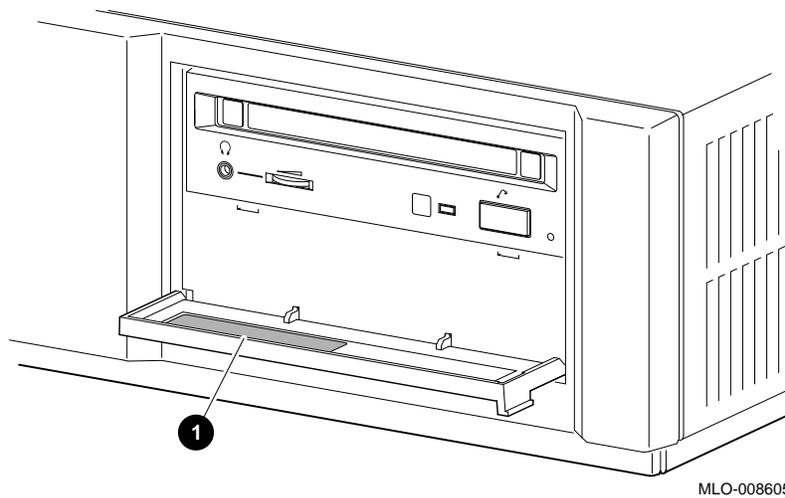
How to Report Problems

If you are unable to locate the problem from the descriptions in the previous sections of this chapter, or the corrective actions suggested could not resolve the problem, you need to contact your Digital service representative. Before calling your Digital service representative to report a problem, complete these steps. See Figure 14-6.

1. Write down the the model and serial number **❶** of your system on the Handling Problems Worksheet at the end of this chapter.

Both of these numbers are located on a label on the front door of the system unit, as indicated in Figure 14-6. Your Digital service representative will need this information when you call.

Figure 14–6 Serial and Model Numbers



2. Fill in the status checklist on the Handling Problems Worksheet at the end of this chapter.
3. Note the problem, possible causes if you know them, and solutions suggested in the previous sections. Also indicate what actions (if any) you have already taken to try to correct the problem.
4. Be prepared to read information from the screen and to enter commands at the keyboard while you talk to your Digital service representative on the telephone.

Digital Support Center Contact Numbers

Table 14–4 lists the telephone numbers for contacting a Digital service representative at your Digital support center. If a Digital support center for your area is not listed below, please contact your local Digital office for assistance.

Reporting Problems to Digital Services

Table 14–4 Telephone Numbers of Digital Support Centers

| Country | Telephone Number |
|-----------------|-------------------------|
| United States | 1-800-354-9000 |
| Canada | 1-800-267-5251 |
| Canada (Quebec) | 1-800-267-2603 |
| United Kingdom | [44]256 59200 |
| France | [33]92955111 |
| Germany | [49]-(89)-95913218 |

Installing Loopback Connectors and Terminators

Your Digital service representative may ask you to install one or more of the following loopback connectors or terminators that were shipped with your system:

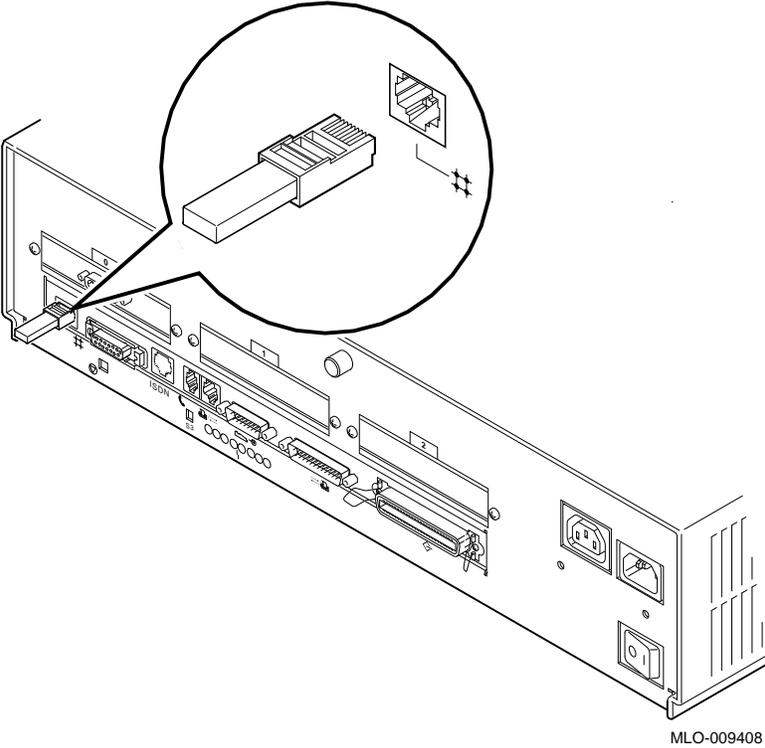
- 10BASE-T loopback connector
- Alternate console/printer port loopback connector
- Modem loopback connector
- SCSI terminator

While your Digital service representative will provide verbal instructions, the following diagrams indicate where these loopback connectors and terminators connect to your system unit.

**10BASE-T
Loopback
Connector**

If your Digital service representative requests that you connect the 10BASE-T loopback connector, connect it as shown in Figure 14-7.

Figure 14-7 Connecting the 10BASE-T Loopback Connector



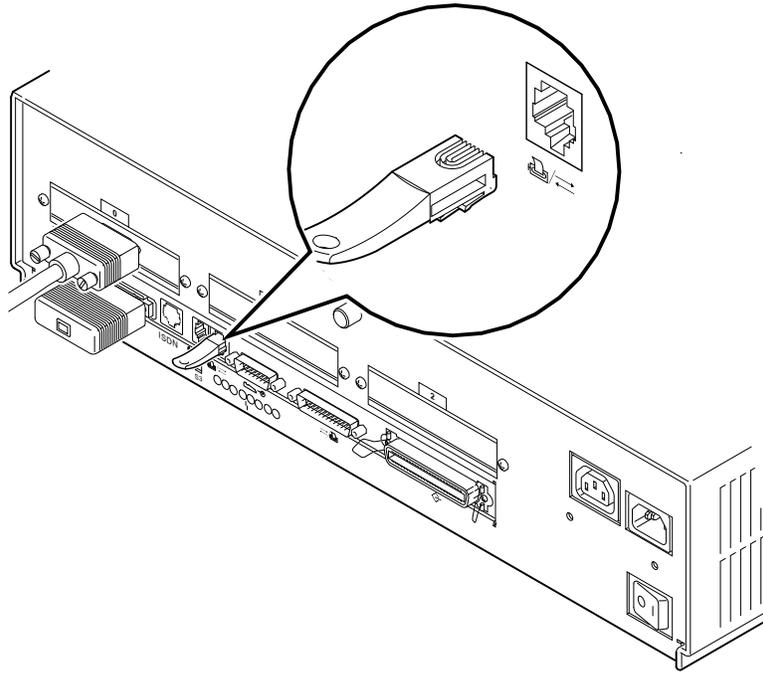
MLO-009408

Reporting Problems to Digital Services

Alternate Console/Printer Loopback Connector

If your Digital service representative requests that you connect the alternate console/printer loopback connector, connect it as shown in Figure 14-8.

Figure 14-8 Connecting the Alternate Console/Printer Loopback Connector

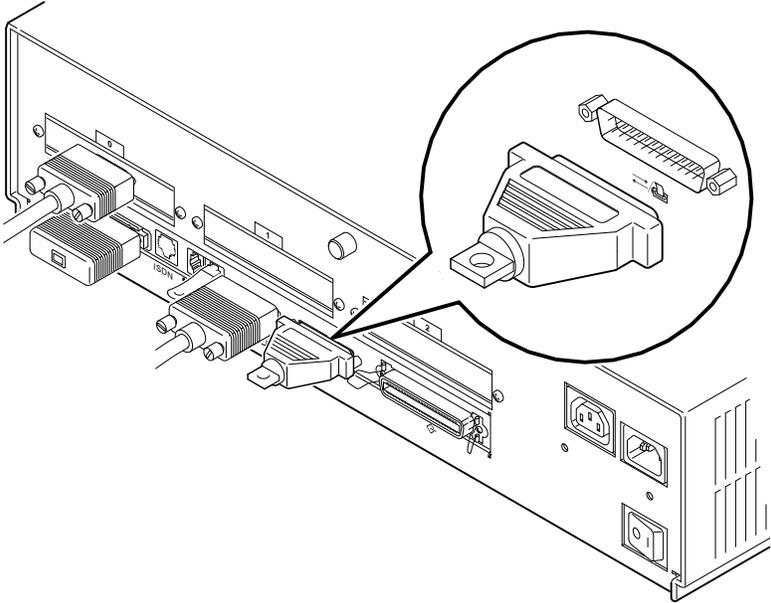


MLO-009410

Modem Loopback Connector

If your Digital service representative requests that you connect the modem loopback connector, connect it as shown in Figure 14-9.

Figure 14-9 Connecting the Modem Loopback Connector

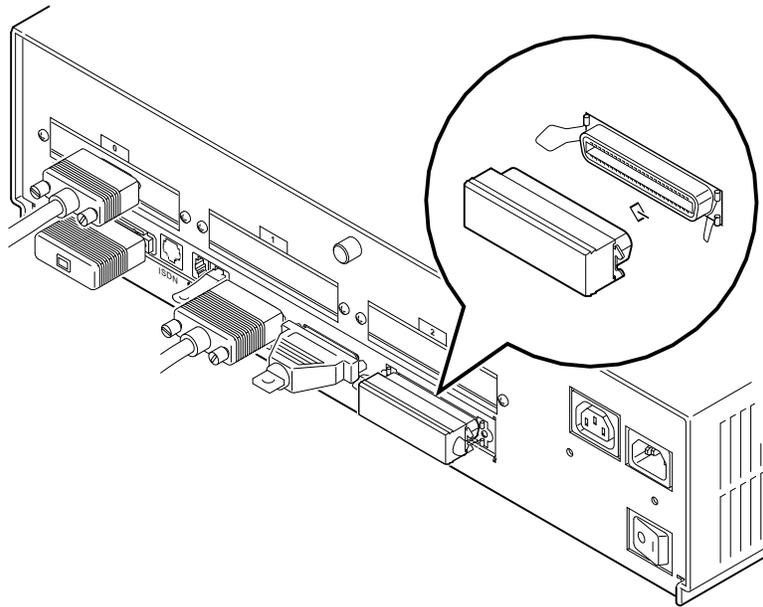


MLO-009412

SCSI Terminator

If your Digital service representative requests that you connect the SCSI terminator, connect it as shown in Figure 14–10.

Figure 14–10 Connecting the SCSI Terminator



MLO-009417

Handling Problems Worksheet



Taking Notes

Use the worksheet on the next page to record system information. After you have recorded all system information indicated on the worksheet, have the sheet available when you call your Digital service representative.

Part IV

Appendixes

Part IV provides technical and other information about your system. This section includes the following appendixes:

| Appendix | Title |
|-----------------|---|
| A | Hardware Specifications |
| B | Port Pin-outs |
| C | Associated Documents |
| D | Special Information for PTT Network Users |

A

Hardware Specifications

Appendix Overview

Introduction This appendix lists the hardware specifications for your DEC 3000 Model 400/400S AXP system.

In This Appendix This appendix covers the following topics:

- System Dimensions
- Electrical Specifications
- General Specifications
- Environmental Limitations

System Specifications

System Dimensions

Table A-1 provides the system unit dimensions.

Table A-1 System Unit Dimensions - Desktop

| Weight | Height | Width | Depth |
|------------------|---------------------|-----------------------|-----------------------|
| 20 kg (45 lb) | 12.7 cm (5.0 in) | 51.0 cm (20.09 in) | 44.5 cm (17.50 in) |

Electrical Specifications

Table A-2 provides electrical specifications for the DEC 3000 Model 400/400S AXP system.

Table A-2 System Electrical Specifications

| | |
|-----------------|---|
| Input voltage | Automatically adjusting AC input from 100–120 VAC to 220–240 VAC |
| Frequency range | 47 to 63 Hz |
| Power | System only: 229 watts input typical, System and VRT19-HA monitor: 378 watts input typical, 478 watts maximum, power factor >0.5 typical. |

General Specifications

Table A-3 provides various information about the system and its components and options.

Table A-3 System Specifications

| | |
|------------------------------|---|
| Processor | DECchip 21064 Alpha AXP microprocessor, with 8 KB data cache, 8 KB instruction cache and floating point unit, running at 133.33 MHz. |
| Secondary cache | 512 KB |
| SIMM memory | 32 MB minimum |
| Optional SIMM | 128 MB current maximum for system, 256 MB maximum planned |
| ROM memory | 512 KB |
| Optional fixed disk | Two 3½-inch fixed disks |
| Optional RX26 diskette drive | 2.88-MB, 3½-inch, half-height diskette drive |
| Optional RRD42 compact disc | 600-MB 5¼-inch, half-height compact disc drive |
| Optional TLZ06 tape | 2 to 4-GB, 5¼-inch, half-height tape drive |
| Optional TZK10 | 525-MB, 5¼-inch, half-height, quarter-inch cartridge (QIC) tape drive |
| Optional TZ30 | 95-MB, 5¼-inch, half-height cartridge tape drive |
| Optional expansion box | BA353 Expansion Box; PMTCE-AA TURBOchannel Extender box |
| Interfaces | Two single-channel SCSI-II compliant controllers (one internal and one external), that support both synchronous and asynchronous devices, one 10BASE-T Ethernet port, one AUI Ethernet port, one ISDN port, one synchronous/asynchronous communications port, one printer port, one MMJ alternate console port, one audio handset port. |

System Specifications

Environmental Limitations

Table A–4 provides information about the environmental conditions in which the DEC 3000 Model 400/400S AXP system can operate.

Table A–4 System Environmental Specifications

Nonoperating Conditions, Packaged

| | |
|------------------------------|--------------------------------|
| Temperature range | –40°C to 66°C (–40°F to 151°F) |
| Relative humidity | 10% to 95% (noncondensing) |
| Altitude | 0 to 3600 m (0 to 12,000 ft) |
| Maximum wet bulb temperature | 46°C (115°F) |
| Minimum dew point | N/A |
| Temperature rate of change | 20°C per hour (36°F per hour) |

Storage Conditions, Unpackaged

| | |
|------------------------------|-------------------------------|
| Temperature range | 5°C to 50°C (41°F to 122°F) |
| Relative humidity | 10% to 95% (noncondensing) |
| Altitude | 0 to 3600 m (0 to 12,000 ft) |
| Maximum wet bulb temperature | 32°C (90°F) |
| Minimum dew point | 2°C (36° F) |
| Temperature rate of change | 20°C per hour (36°F per hour) |

(continued on next page)

System Specifications

Table A-4 (Cont.) System Environmental Specifications

| Operating Conditions | |
|---------------------------------|--|
| Temperature range | 10°C to 35°C (50°F to 95°F) |
| Temperature change rate | 11°C per hour (20°F per hour) maximum |
| Relative humidity | 10% to 90% (noncondensing, no diskette) |
| Maximum altitude | 2000 m (6562 ft) |
| Maximum wet bulb temperature | 28°C (82°F) |
| Minimum dew point | 2°C (36°F) |

B

Port Pin-outs

Appendix Overview

Introduction

This appendix is for users who want to connect communications devices to their system. The tables in this appendix explain the functions of the pins on the system unit ports.

In This Appendix

This appendix covers the following topics:

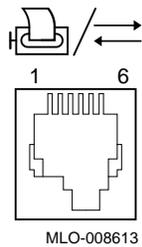
- Alternate Console/Printer Port
- Synchronous/Asynchronous Communications Port
- External SCSI Port
- Keyboard/Mouse or Tablet Port
- AUI Ethernet Port
- ISDN Port
- 10BASE-T Port
- Audio Port

Alternate Console/Printer Port

Alternate Console/Printer Port Diagram

Figure B-1 shows the pin layout for the alternate console/printer port.

Figure B-1 Alternate Console/Printer Port



Alternate Console/Printer Port Pin-outs

Table B-1 describes pin usage for the alternate console/printer port.

Table B-1 Alternate Console/Printer Port Pin-outs

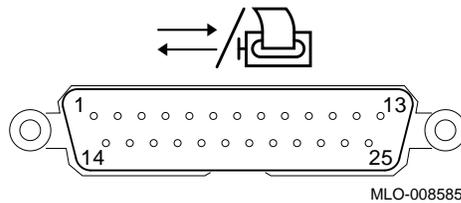
| Pin | Description |
|-----|---------------------|
| 1 | Data terminal ready |
| 2 | Transmit data |
| 3 | Chassis ground |
| 4 | Receive return |
| 5 | Receive data |
| 6 | Data set ready |

Synchronous/Asynchronous Communications Port

Synchronous/ Asynchronous Communication Port Diagram

Figure B-2 shows the pin layout for the synchronous/asynchronous communications port.

Figure B-2 Synchronous/Asynchronous Communications Port



Synchronous/ Asynchronous Communications Port Pin-outs

Table B-2 describes pin usage for the synchronous/asynchronous communications port.

Table B-2 Synchronous/Asynchronous Communications Port Pin-outs

| Pin | Source | Signal | CCITT ¹ | EIA ² | Description |
|-----|---------------|--------|--------------------|------------------|------------------------|
| 1 | | GND | 102 | AB | Signal ground |
| 2 | KN15 | TX | 103 | BA | Modem transmitted data |
| 3 | Modem/printer | RX | 104 | BB | Modem received data |
| 4 | KN15 | RTS | 105 | CA | Request to send |
| 5 | Modem/printer | CTS | 106 | CB | Clear to send |
| 6 | Modem/printer | DSR | 107 | CC | Data set ready |
| 7 | | GND | 102 | AB | Signal ground |
| 8 | Modem/printer | CD | 109 | CF | Carrier detector |

¹International Telegraph and Telephone Consultative Committee (CCITT), an international committee that sets international communications standards.

²Electronic Industries Association

(continued on next page)

Synchronous/Asynchronous Communications Port

Table B-2 (Cont.) Synchronous/Asynchronous Communications Port Pin-outs

| Pin | Source | Signal | CCITT ¹ | EIA ² | Description |
|-----|---------------|--------|--------------------|------------------|---------------------|
| 9 | | | | | Not used |
| 10 | | | | | Not used |
| 11 | | | | | Not used |
| 12 | | | | | Not used |
| 13 | | | | | Not used |
| 14 | | | | | Not used |
| 15 | | | | | Not used |
| 16 | | | | | Not used |
| 17 | | | | | Not used |
| 18 | | | | | Not used |
| 19 | | | | | Not used |
| 20 | KN15 | DTR | 108.2 | CD | Data terminal ready |
| 21 | | | | | Not used |
| 22 | Modem/printer | RI | 125 | CE | Ring indicator |
| 23 | | | | | Not used |
| 24 | | | | | Not used |
| 25 | | | | | Not used |

¹International Telegraph and Telephone Consultative Committee (CCITT), an international committee that sets international communications standards.

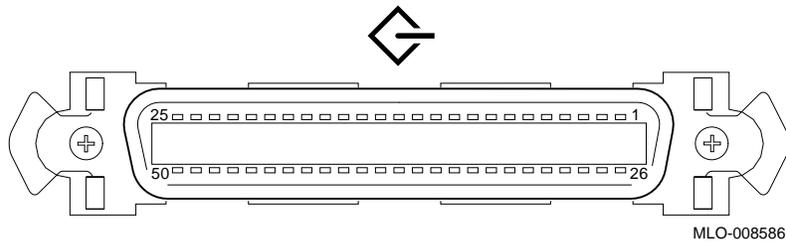
²Electronic Industries Association

External SCSI Port

External SCSI Port Diagram

Figure B-3 shows the pin layout for the external SCSI port.

Figure B-3 External SCSI Port



External SCSI Port Pin-outs

Table B-3 describes pin usage for the external SCSI port.

Table B-3 External SCSI Port Pin-outs

| Pin | Description | Pin | Description |
|-----|----------------|-----|----------------------|
| 1 | Chassis ground | 26 | SCSI bus data [0] |
| 2 | Chassis ground | 27 | SCSI bus data [1] |
| 3 | Chassis ground | 28 | SCSI bus data [2] |
| 4 | Chassis ground | 29 | SCSI bus data [3] |
| 5 | Chassis ground | 30 | SCSI bus data [4] |
| 6 | Chassis ground | 31 | SCSI bus data [5] |
| 7 | Chassis ground | 32 | SCSI bus data [6] |
| 8 | Chassis ground | 33 | SCSI bus data [7] |
| 9 | Chassis ground | 34 | SCSI bus data parity |
| 10 | Chassis ground | 35 | Chassis ground |
| 11 | Chassis ground | 36 | Chassis ground |

(continued on next page)

External SCSI Port

Table B-3 (Cont.) External SCSI Port Pin-outs

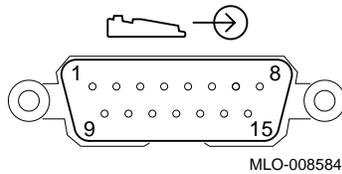
| Pin | Description | Pin | Description |
|------------|--------------------|------------|--------------------|
| 12 | Chassis ground | 37 | Chassis ground |
| 13 | Not used | 38 | Terminal power |
| 14 | Chassis ground | 39 | Chassis ground |
| 15 | Chassis ground | 40 | Chassis ground |
| 16 | Chassis ground | 41 | SCSI bus ATN |
| 17 | Chassis ground | 42 | Chassis ground |
| 18 | Chassis ground | 43 | SCSI bus BSY |
| 19 | Chassis ground | 44 | SCSI bus ACK |
| 20 | Chassis ground | 45 | SCSI bus RST |
| 21 | Chassis ground | 46 | SCSI bus MSG |
| 22 | Chassis ground | 47 | SCSI bus SEL |
| 23 | Chassis ground | 48 | SCSI bus CD |
| 24 | Chassis ground | 49 | SCSI bus REQ |
| 25 | Chassis ground | 50 | SCSI bus I/O |

Keyboard/Mouse or Tablet Port

Keyboard/Mouse or Tablet Port Diagram

Figure B-4 shows the pin layout for the keyboard/mouse port.

Figure B-4 Keyboard/Mouse or Tablet Port



Keyboard/Mouse or Tablet Port Pin-outs

Table B-4 describes pin usage for the keyboard/mouse port.

Table B-4 Keyboard/Mouse or Tablet Port Pin-outs

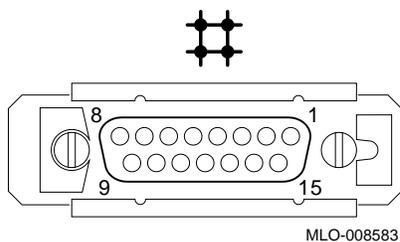
| Pin | Source | Signal | Description |
|-----|--------------|--------|---------------------------|
| 1 | | GND | Chassis ground |
| 2 | | KEY.TX | Keyboard transmitted data |
| 3 | Keyboard | KEY.RX | Keyboard received data |
| 4 | | +12V | Keyboard/tablet power |
| 5 | | GND | Chassis ground |
| 6 | Mouse/tablet | MSE.RX | Mouse received data |
| 7 | | MSE.TX | Mouse transmitted data |
| 8 | | GND | Chassis ground |
| 9 | | GND | Chassis ground |
| 10 | | NC | Not used |
| 11 | | NC | Not used |
| 12 | | NC | Not used |
| 13 | | +5V | Mouse power |
| 14 | | -12V | Mouse power |
| 15 | | GND | Chassis ground |

AUI Ethernet Port

AUI Ethernet Port Diagram

Figure B-5 shows the pin layout for the AUI Ethernet port.

Figure B-5 AUI Ethernet Port



AUI Ethernet Port Pin-outs

Table B-5 describes pin usage for the AUI Ethernet port.

AUI Ethernet Port

Table B-5 AUI Ethernet Port Pin-outs

| Pin | Source | Signal | Description |
|-----|--------|--------|-----------------------|
| 1 | | | Chassis ground |
| 2 | XCVR | ACOL+ | Collision presence |
| 3 | KN15 | ATX+ | Transmit |
| 4 | | GND | Chassis ground |
| 5 | XCVR | ARX+ | Receive |
| 6 | XCVR | GND | Power return |
| 7 | | CTL+ | Not used |
| 8 | | GND | Chassis ground |
| 9 | XCVR | ACOL- | Collision, active low |
| 10 | KN15 | ATX- | Transmit, active low |
| 11 | | GND | Chassis ground |
| 12 | XCVR | ARX- | Receive, active low |
| 13 | KN15 | +12V | Power |
| 14 | | GND | Chassis ground |
| 15 | | CTL- | Control output |

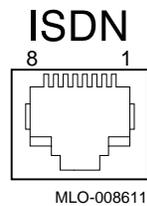
ISDN Port

ISDN Port

ISDN Port Diagram

Figure B-6 shows the pin layout for the ISDN port.

Figure B-6 ISDN Port



ISDN Port Pin-outs

Table B-6 describes pin usage for the ISDN port.

Table B-6 ISDN Port Pin-outs

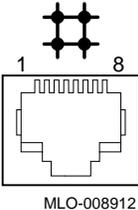
| Pin | Description |
|-----|-------------|
| 1 | Not used |
| 2 | Not used |
| 3 | Transmit- |
| 4 | Receive+ |
| 5 | Receive- |
| 6 | Transmit+ |
| 7 | Not used |
| 8 | Not used |

10BASE-T Port

10BASE-T Port Diagram

Figure B-7 shows the pin layout for the 10BASE-T port.

Figure B-7 10BASE-T Port



10BASE-T Port Pin-outs

Table B-7 describes pin usage for the 10BASE-T port.

Table B-7 10BASE-T Port Pin-outs

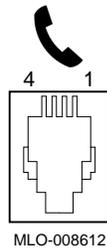
| Pin | Description |
|-----|----------------------|
| 1 | Transmit |
| 2 | Transmit, active low |
| 3 | Receive |
| 4 | Not used |
| 5 | Not used |
| 6 | Receive, active low |
| 7 | Not used |
| 8 | Not used |

Audio Port

Audio Port Diagram

Figure B-8 shows the pin layout for the audio port.

Figure B-8 Audio Port



Audio Port Pin-outs

Table B-8 describes pin usage for the audio port.

Table B-8 Audio Port Pin-outs

| Pin | Description |
|-----|--------------------------|
| 1 | Audio in |
| 2 | Audio out |
| 3 | Audio out return |
| 4 | Audio in return (ground) |

This adapter is pin-compatible with a telephone handset.

C

Associated Documents

Appendix Overview

Introduction

This appendix provides information about available documentation. For option and system hardware part numbers, consult your Digital sales representative.

Not all of the following documents are available in every country. Check with your Digital sales representative for availability.

In This Appendix

This appendix covers the following topics:

- Associated Printed Documents
- OpenVMS AXP Documentation
- DEC OSF/1 AXP Documentation

Associated Printed Documents

Related Printed Books

Table C-1 lists the associated DEC 3000 Model 400/400S AXP documents available in printed form.

Table C-1 Associated Printed Documents

| TITLE | ORDER NUMBER |
|--|---------------------|
| DEC 3000 Model 400/400S AXP Server Kit | EK-SNPSV-DK |
| DEC 3000 Model 400/400S AXP Workstation Kit | EK-SNDPR-DK |
| <i>DEC 3000 Model 400/400S AXP Service Guide</i> | EK-SNDPR-SV |
| <i>DEC 3000 Model 400/400S AXP Technical Summary</i> | EK-SNDPR-TM |
| <i>OpenVMS AXP Factory Installed Software (FIS) User Information</i> | EK-A0377-UG |
| <i>DEC OSF/1 AXP Factory-Installed Software User Information</i> | EK-SFFIS-UG |
| <i>BA47X-AA Vertical Floor Stand: Installing Your System</i> | EK-SNDPR-IC |

Associated Printed Documents

Drive Documents

Table C-2 lists the documentation for drives available with the DEC 3000 Model 400/400S AXP system.

Table C-2 Drives

| TITLE | ORDER NUMBER |
|--|---------------------|
| <i>RRD42 Compact Disc Drive Owner's Manual</i> | EK-RRD42-OM |
| <i>RX26 Owner's Reference Card</i> | EK-RX26D-RC |
| <i>TZK10 Cartridge Tape Drive Owner's Guide</i> | EK-TZK10-OG |
| <i>TLZ06 Cassette Tape Drive Owner's Guide</i> | EK-TLZ06-OM |
| <i>TZ30 Cartridge Tape Drive Owner's Guide</i> | EK-OTZ30-OM |
| <i>TZ30 Cartridge Tape Drive Subsystem Service Manual</i> | EK-OTZ30-SV |
| <i>RZ Series Disk Drive Subsystem Pocket Service Guide</i> | EK-RZXXD-PS |
| <i>RZ Series Reference Manual</i> | EK-RZXXD-RM |

Workstation Handbook

Table C-3 lists the associated workstation handbook documentation.

Table C-3 Handbook Series

| TITLE | ORDER NUMBER |
|---|---------------------|
| <i>Workstation Family Technical Summary</i> | EC-H0742-51 |

Associated Printed Documents

TURBOchannel Documents

Table C-4 lists the TURBOchannel documentation.

Table C-4 TURBOchannel-Related Documents

| TITLE | ORDER NUMBER |
|---|---------------------|
| <i>Smart Frame Buffer TURBOchannel Module</i> | EK-SFBOM-TC |
| <i>The High Three-Dimensional (3D) Graphics TURBOchannel Module</i> | EK-H3DOM-TC |
| <i>The Low Three-Dimensional (3D) Graphics TURBOchannel Module</i> | EK-L3DOM-TC |
| <i>The ThickWire Ethernet TURBOchannel Module</i> | EK-TWETH-TC |
| <i>TURBOchannel Extender Operator's Guide</i> | EK-PM32X-EX |
| <i>TURBOchannel Extender (TCE) Option Module</i> | EK-TCEIM-TC |
| <i>SCSI TURBOchannel Options Installation Kit</i> | EK-PMAZA-UG |
| <i>FDDIcontroller 700-C Installation</i> | EK-DEFZA-CI |
| <i>FDDIcontroller 700 Software Product Description</i> | AE-PE9MD-TE |
| <i>FDDIcontroller 700 Release Notes</i> | AA-PJKWA-TE |

SCSI Documents

Table C-5 lists the available SCSI documentation.

Table C-5 SCSI Documents

| TITLE | ORDER NUMBER |
|---|---------------------|
| <i>Small Computer System Interface: An Overview</i> | EK-SCSIS-OV |
| <i>Small Computer System Interface: A Developer's Guide</i> | EK-SCSIS-SP |

OpenVMS AXP Documentation

Available Documentation

The following sections list some of the OpenVMS AXP operating system documentation.

- General Documentation
- DECconnect Documents

General Documentation

Table C-6 lists general OpenVMS AXP operating system associated documents.

Table C-6 General OpenVMS AXP Operating System Documents

| TITLE | ORDER NUMBER |
|---|--------------|
| <i>OpenVMS Alpha Version 1.0 Upgrade and Installation Manual</i> | AA-PV6XA-TE |
| <i>OpenVMS System Manager's Manual: Essentials</i> | AA-PV5MA-TK |
| <i>OpenVMS System Manager's Manual: Tuning, Monitoring, and Complex Systems</i> | AA-PV5NA-TK |
| <i>OpenVMS Alpha Layered Products Disc User's Guide</i> | AA-PSQVC-RE |
| <i>OpenVMS AXP Release Notes</i> | AA-PV72A-TE |
| <i>Overview of OpenVMS Documentation</i> | AA-PV6YA-TK |

DECconnect Documents

Table C-7 lists available DECconnect documentation.

Table C-7 DECconnect System

| TITLE | ORDER NUMBER |
|---|---------------------|
| <i>OPEN DECconnect Building Wiring Components and Applications Catalog</i> | EC-I1834-29 |
| <i>DECconnect System General Description</i> | EK-DECSY-GD |
| <i>DECconnect System Requirements Evaluation Workbook</i> | EK-DECSY-EG |
| <i>DECconnect System Installation and Verification Guide</i> | EK-DECSY-SR |
| <i>DECconnect System Stand-alone ThinWire Networks: Planning and Installation Guide</i> | EK-DECSY-TG |
| <i>DECconnect System Planning and Configuration Guide</i> | EK-DECSY-CG |

DEC OSF/1 AXP Documentation

Available Documentation

The following sections list the DEC OSF/1 AXP operating system documentation kits and their contents:

- User Documentation
- Server Documentation

User Documentation

Table C-8 lists available subkits of the DEC OSF/1 AXP operating system documentation.

Table C-8 User Documentation, QA-MT4AB-GZ

| TITLE | ORDER NUMBER |
|--|--------------------|
| <i>Startup Documentation Subkit</i> | QA-MT4AC-GZ |
| <i>Guide to Installing DEC OSF/1</i> | AA-PS2DA-TE |
| <i>Quick Reference (card)</i> | AV-PS3KA-TE |
| <i>Read This First Letter</i> | AV-PS3JA-TE |
| <i>Release Notes</i> | AA-PS2BA-TE |
| <i>General User Documentation Subkit</i> | QA-MT4AD-GZ |
| <i>DEC OSF/1 User's Guide</i> | AA-PS2HA-TE |
| <i>Network and Communications Overview</i> | AA-PS2MA-TE |
| <i>Reader's Guide</i> | AA-PS2JA-TE |

(continued on next page)

Table C-8 (Cont.) User Documentation, QA-MT4AB-GZ

| TITLE | ORDER NUMBER |
|--|---------------------|
| <i>System and Network Management Documentation Subkit</i> | QA-MT4AE-GZ |
| <i>DEC Verifier and Exerciser Tool User's Guide</i> | AA-PTTMA-TE |
| <i>Guide to Kernel Debugging</i> | AA-PS2TA-TE |
| <i>Network Administration and Problem Solving</i> | AA-PS2SA-TE |
| <i>Configuring Your Network Software</i> | AA-PS2GA-TE |
| <i>Guide to Prestoserve</i> | AA-PQT0A-TE |
| <i>Guide to Software License Management</i> | AA-PS2EA-TE |
| <i>Guide to System Administration</i> | AA-PS2RA-TE |
| <i>Migration Documentation Subkit</i> | QA-MT4AF-GZ |
| <i>System V to DEC OSF/1 Migration Guide</i> | AA-PS3DA-TE |
| <i>ULTRIX to DEC OSF/1 Migration Guide</i> | AA-PS3EA-TE |

Server Documentation

Table C-9 lists the available documentation about servers.

Table C-9 Server Documentation Kit, QA-MT4AL-GZ

| TITLE | ORDER NUMBER |
|--|---------------------|
| <i>Guide to Sharing Software on a Local Area Network</i> | AA-PS3LA-TE |

D

Special Information for PTT Network Users

Appendix Overview

Introduction

The United Kingdom and other countries require that certain installation information be provided about the communications 54-21813 module, which is hosted within the DEC 3000 Model 400/400S AXP system.

In This Appendix

This appendix describes the appropriate installation information for the 54-21813 module and provides the following information:

- Service Categories
- Host Power Rating
- Module Isolation
- Safety Warnings for UK Installations Only
- Cable Approval
- Supported Cables
- Equipment Between the Approved Module and a Digital Circuit (PTT)

Service Categories

Service Categories

Overview Table D-1 describes the services specifications for the 54-21813 module.

Table D-1 BABT-Approved Service Specifications for the 54-21813 Module for UK Compliance

| Service Category | Interface Type (CCITT recommendation) | Service Requirements (Electrical) (Physical) | | Data Rate | Public Telecommunications Operators ¹ | | |
|---|---------------------------------------|--|--------------|-----------|--|------|-----|
| | | | | | BT | Hull | MCL |
| 1 | X.21bis | V.24/ | ISO 2110, | 2400 bps | Yes | Yes | Yes |
| | | V.28 | BS.6623: | 4800 bps | Yes | Yes | Yes |
| | | | part1, 1985. | 9600 bps | Yes | Yes | Yes |
| | | | | 19200 bps | No | No | Yes |
| Approved extension cables ² : BC22F-25 (25 feet) and BC22F-10 (10 feet) | | | | | | | |

¹BT — British Telecommunications plc.
Hull — Kingston Communications (Hull) plc.
MCL — Mercury Communications Limited.

²The total length of cable used must not exceed 27 feet.

Host Power Rating

Correct Power Rating

You must ensure that the total power drawn by the 54-21813 module, the host, and other auxiliary equipment drawing power from the host, is within the rating of the host power supply.

Digital has designed all permutations of the host configuration (including the DEC 3000 Model 400/400S AXP system) to operate within the limits of the host power rating, as shown in Table D-2.

Table D-2 Module Power

| Nominal Voltage | Minimum Voltage (Volts) | Maximum Voltage (Volts) | Maximum Input Current (Amperage) ¹ | Maximum Input Current (Amperage) ² |
|-----------------|-------------------------|-------------------------|---|---|
| +5.1V | +4.896 | +5.304 | 5.0 | 17.0 |
| +12.1V | +11.616 | +12.584 | 0.3 | 1.8 |
| -12.0V | -11.4 | -12.6 | 0.1 | 0.1 |

¹Without TURBOchannel option slots populated.

²With three TURBOchannel option slots populated. This is a worst-case current situation as specified in TURBOchannel hardware specification.

Module Isolation

Clearance and Creepage Defined

Clearance and creepage distances must be maintained on your 54-21813 module. Clearance is the shortest distance in air between two points. Creepage is the shortest distance along a continuous surface between those same two points.

Creepage distances apply when the 54-21813 module system is installed in a controlled environment. You can check creepage distances by measuring the distance between adjacent parts.

If in doubt, you should seek the advice of a telecoms safety engineer. Failure to install the 54-21813 module in accordance with these instructions will invalidate the approval.

Clearance and Creepage Distances

Except at the connector that plugs into the host, clearance and creepage distances of Xmm and Ymm, as listed in Table D-3, must be maintained between the approved module and other parts of the host, including expansion cards. Digital has ensured that when the 54-21813 module is installed within the DEC 3000 Model 400/400S AXP system, the creepage and clearance distances to the host are met.

Table D-3 Clearance and Creepage Distances

| Clearance (Xmm) | Creepage (Ymm) ¹ | Voltage Used or Generated by Other Parts of the Host or Expansion Card (Vrms or Vdc) |
|-----------------|-----------------------------|--|
| 2.0 | 2.4 (3.8) | Up to 50 |
| 2.6 | 3.0 (4.8) | Up to 125 |
| 4.0 | 5.0 (8.0) | Up to 250 |
| 4.0 | 6.4 (10.0) | Up to 300 |

¹The distances shown in parentheses apply in an uncontrolled environment where heat, humidity, and temperature may fluctuate.

Safety Warnings for UK Installations Only

Safety Labels on Ports

Ports indicated by the safety warning label do not provide sufficient isolation to satisfy the requirements of the relevant parts of standard BS6301. Therefore, any product connected to this port must meet one of the following conditions:

- Be covered by OFTEL's General Approval NS/G/1234/J/100003
(All products supplied by Digital comply with this General Approval.)
- Have been approved to the relevant parts of standard BS6301
- Have previously been evaluated against British Telecom (Post Office) Technical Guide 2 or 26 and given permission to attach

Any other use of this product invalidates approval.

Safety Warnings for UK Installations Only

**Caution:
Hazardous
Conditions on
the Network**

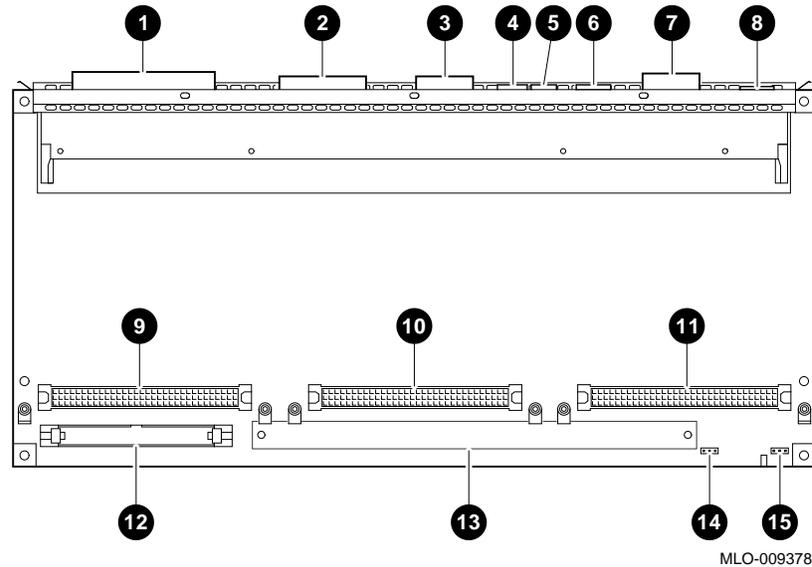
If a port has the following label, direct or indirect interconnection of that port, whether the port is marked or not, may produce hazardous conditions on the network:

SAFETY WARNING - See Instructions for Use Before Making Any Connection to This Module

**Applicable
Ports for Safety
Label**

The "SAFETY WARNING" label applies to all ports listed with callout numbers ❶ through ❷ shown in Figure D-1.

Figure D-1 Front View



MLO-009378

Obtain advice from a competent engineer before making such a connection.

Cable Approval

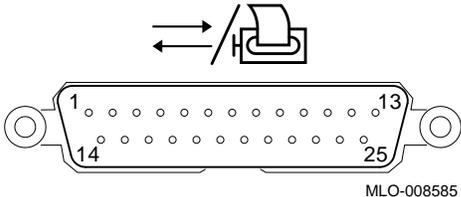
Cable Connection to Digital Circuits

The 54-21813 module is approved for direct connection to a particular digital circuit. This approval includes an interconnecting cable with mating connectors that conform to the British standard BS6623, parts 1 and 4. If the module is connected to the service with anything other than its own approved cables, those cables must benefit from relevant general approval NS/G/1235/100009 and/or conform to any other applicable requirements.

Connector Diagram

Figure D-2 shows the pin layout for the connector.

Figure D-2 Connector Pin Layout



Connector Pin-Outs

Table D-4 describes pin usage for the connector.

Table D-4 Connector Pin-Outs Described

| Pin | Description | Pin | Description |
|-----|-----------------|-----|----------------|
| 1 | Ground | 14 | Not used |
| 2 | Transmit data | 15 | Transmit clock |
| 3 | Receive data | 16 | Not used |
| 4 | Request to send | 17 | Receive clock |
| 5 | Clear to send | 18 | Not used |

(continued on next page)

Cable Approval

Table D-4 (Cont.) Connector Pin-Outs Described

| Pin | Description | Pin | Description |
|-----|----------------|-----|---------------------------|
| 6 | Data set ready | 19 | Not used |
| 7 | Ground | 20 | Date terminal ready |
| 8 | Carrier detect | 21 | Not used |
| 9 | Not used | 22 | Ring indicator |
| 10 | Not used | 23 | Data signal rate selector |
| 11 | Not used | 24 | Not used |
| 12 | Speed indicate | 25 | Not used |
| 13 | Not used | | |

Supported Cables

Cable Descriptions

Table D-5 lists the cables supported by the 54-21813 module.

Table D-5 Cables Supported by the 54-21813 Module

| Interface | Cable Type | Name | Molding | Pins |
|-----------|------------|----------|----------|-------|
| V.24 | Extension | BC22F-10 | Straight | 25-25 |
| V.24 | Extension | BC22F-25 | Straight | 25-25 |

Equipment Between the Approved Module and a Digital Circuit (PTT)

Equipment Requirements

If any other equipment, including cables or wiring, is to be connected between the 54-21813 module and the point of connection to any particular digital circuit, that equipment must conform as follows:

- The overall transmission characteristics of all other equipment must not have any material effect on the electrical conditions between the equipment and the digital circuit.
- All other equipment must comprise only the following:
 - Approved equipment, which may be subject to limitations on its use, for the purpose of connection between it and a particular digital circuit.
 - Cable or wiring that complies with a code of practice for the installation of equipment covered by this standard or other requirements that may be applicable.

Glossary

10BASE2 Ethernet network

See ThinWire Ethernet network.

10BASE-T Ethernet network

The IEEE standard 802.3-compliant Ethernet products used for local distribution of data. These networking products characteristically use a cable made by twisting together two insulated conductors with no common covering. (Commonly known as twisted-pair cable.) *Compare with* thickwire Ethernet network.

accelerator

A hardware graphics processor that produces faster images than a CPU and frees the CPU to do other work.

alternate console feature

A feature that allows you to receive system messages on an alternate console terminal and direct system activities from this terminal, if necessary, to diagnose problems with the monitor.

ANSI

Abbreviation for American National Standards Institute, an organization that develops and publishes standards for the computer industry.

antistatic wrist strap

A grounded strap you connect to your wrist and the system unit while handling internal devices that are sensitive to static. This strap prevents electrostatic discharge that could result in loss of data.

applications

Programs, such as a financial spreadsheet program, that perform end-user tasks.

Application-specific Integrated Circuit

An integrated circuit programmed to perform one specific task.

architecture

The internal configuration of a computer including its registers, instruction set, and input/output structure.

ASIC

See Application-specific Integrated Circuit.

asynchronous transmission

A type of communications in which data is transmitted at different time intervals. *Compare with* synchronous.

AUI (Attachment Unit Interface)

An IEEE standard 802.3-compliant Ethernet network made of standard Ethernet cable, as opposed to ThinWire Ethernet cable. Also called standard Ethernet. *Compare with* ThinWire Ethernet network. *See* standard Ethernet network or thickwire Ethernet network.)

autoboot

The process by which the system boots automatically.

availability

The amount of scheduled time that a computing system provides application service during the year. Availability is typically measured as either a percentage of uptime per year or as system unavailability: the number of hours or minutes of downtime per year.

backup copy

A copy of files or software made for safekeeping. Making a backup copy of the data stored on your disk allows you to recover that data after an accidental loss. You can make backup copies on tape cartridges, or over a network using the Remote System Manager.

baud rate

The speed at which signals are serially transmitted over a communications line. Baud rates can be measured in bits per second or characters per second. One baud equals one bit per second; eight bauds equals one character per second.

bit

A binary digit; the smallest unit of information in a binary system of notation, designated as a 0 or a 1.

BIU

See bus interface unit.

boot

Short for bootstrap, meaning to bring a device or system to a defined state where it can operate on its own.

boot (or bootstrap) device

The memory storage device that holds the software that carries out a system bootstrap procedure.

boot flag

An indicator bit, set by the system manager, that contains information that is read and used by the bootstrap software during a system bootstrap procedure. Default boot flags should already be set when you receive your system.

bootp

An Internet protocol used for network booting. It is based on UDP (the Internet User Datagram Protocol) which is a simple, reliable datagram protocol. The bootp protocol allows a diskless machine to find its Internet address, the address of a bootserver, and the name of a file to boot.

boot server

A system that provides boot services to remote devices such as network routers and VAXcluster satellite nodes.

buffer

An internal memory area used for temporary storage of data records during input or output operations.

bus

A group of signals consisting of transmission lines or wires to create a common channel or pathway. The bus interconnects either internal computer system components to provide communications paths for addresses, data, and control information or external terminals and systems in a communications network.

bus interface unit

Hardware designed to interface internal logic, a module, or a chip, to a bus.

byte

A group of eight contiguous binary digits (bits). Bits are numbered from right to left, 0 through 7, with bit 0 being the low-order bit. *See also* kilobyte and megabyte.

cable

A sheathed group of electrical conductors.

cable junction box

A small box attached to the monitor cable from which the BNC connectors emerge.

caddy

The holder for an RRD42 compact disc.

CD

See compact disc.

CD-ROM

See compact disc read-only memory.

central processing unit (CPU)

The unit of the computer that is responsible for interpreting and executing instructions.

channel

- A path along which digital information can flow in a computer.
- The main current path between the source and drain electrodes in a semiconductor device. *See also* bus.

client

A piece of hardware or software that obtains a specific set of services from a server.

client-server computing

An approach to computing that enables personal computer and workstation users—the “clients”—to work cooperatively with software programs stored on a mainframe or minicomputer—the “server.”

clock

A signal used to synchronize the circuits in a computer system.

cluster

A group of networked computers that communicate over a common interface to share disk storage, application programs, and other computer resources. *See also* VMScluster system.

command

A request made to the operating system to perform a specific function, for example, a request to run a program or show the configuration of a system.

communications

The transmission of digital data from one point (the source) to another (the receiver).

compact disc

A removable flat circular plate, used in the compact disc drive on which read-only optical data is stored. A laser optical reader retrieves this information.

component

A basic part, or element, of your system that can be either internal or external. *Compare with* device.

configuration

See system configuration.

console

A device through which an operator communicates with the computer.

console commands

Commands input when the system is in console mode.

console mode

The state in which the computer is controlled directly by user commands from the console terminal rather than indirectly through the operating system. Console mode is in effect when the system is turned on and the operating system software has not been started, or the operating system software has been interrupted by pressing the halt button on the system unit. Console mode is indicated by the console prompt (>>>) on the monitor screen. *Compare with* program mode.

console password

The password used to access privileged console commands.

console program

The code that the CPU executes during console mode.

console prompt

The prompt (>>>) that appears on the screen when the system is in console mode.

console subsystem

The subsystem that provides the user interface to the system when operating system software is not running. The console subsystem consists of the following components:

- console program
- console terminal
- console terminal port

remote access device
remote access port
Ethernet ports

console terminal

The video or hardcopy terminal used to start the system and direct activities between the computer operator and the console subsystem.

console terminal port

The connector to which the console terminal cable is attached.

controller

A system component, usually a printed circuit board, that regulates the operation of one or more devices.

CPU

See central processing unit.

CSR

See control and status register.

cursor

A blinking symbol on the screen that indicates where the next character you type will appear.

data

A formal representation of information suitable for communication, interpretation, and processing by humans or computers.

data bus

A pathway used to carry data signals between two or more components of the system.

data transmission

The movement of data in the form of electrical signals along a communications line.

database

A collection of interrelated data on one or more mass storage devices. The collection is organized to facilitate efficient and accurate inquiry and update.

DECconnect

Digital's cabling system for extending Ethernet and terminal interconnections into offices and work areas.

DECchip 21064

This CPU microprocessor chip is a CMOS-4 superscalar (dual instruction issue), super-pipelined implementation of the Alpha AXP architecture.

DECnet network

Digital networking software that runs on nodes in both local and wide area networks.

DEC OSF/1 AXP operating system

A general-purpose operating system based on the Open Software Foundation OSF/1 1.0 technology.

DEC VET

A Digital trademark used to describe the Digital DEC Verifier and Exerciser Tool. DEC VET is a multipurpose system maintenance tool that performs exerciser-oriented maintenance testing. It consists of a manager and exercisers that test system hardware and the operating system. The manager controls the exercisers.

DECwindows Motif

An interface to the operating system that allows a workstation screen to be divided into windows where several application programs can appear simultaneously, and commands can be executed using menus and a mouse. This interface is fully compliant with the OSF/Motif Graphical User Interface standard from the Open Software Foundation. *See also* window.

default

A computer value or setting that is automatically in effect unless or until another value is specified. There are some default values that you cannot override.

default recovery action

The action that the system takes after a power or system failure.

desktop enclosure

A type of system cabinet that is small enough to sit on top of a desk. *Compare with* floorstand *and* rackmount enclosure.

device

The general name for any hardware unit connected to the system and capable of receiving, storing, or transmitting data. Examples of devices are drives and units that you can install into or externally connect to the system unit or an expansion box.

device name

The name by which a device or controller is identified in the system. The name that a particular operating system uses to access a particular store device. Also called the device mnemonic.

diagnostics

Programs, located in read-only memory, that detect and identify abnormal system hardware operation.

digital data

Information recorded and transmitted in binary coded form.

disc

See compact disc.

disk

A flat circular plate with a magnetic coating on which data is magnetically stored in concentric circles (tracks). A fixed disk resides permanently inside a disk drive, whereas a diskette is removable.

disk drive

A device that holds a disk. The drive contains mechanical components that spin the disk and move the read and write heads that store and read the information on the surface of the disks.

diskette

A flexible disk contained in a square jacket. Diskettes can be inserted and removed from diskette drives.

diskette drive

A disk drive that reads from or writes to a removable diskette, such as an RX26 diskette.

disk fragmentation

The writing of files in noncontiguous areas on a disk. Fragmentation can cause slower system performance because of repeated read or write operations on fragmented data.

diskless system

A system that has no storage capacity of its own.

DRAM

See dynamic random-access memory.

drive plate

A removable section of the system unit on which you can mount one removable-media drive, such as a compact disc, and two 3½-inch fixed drives, such as the RZ family of drives.

environment variable

A global data structure that can be accessed only from console mode. The setting of these data structures determines how a system starts up, boots operating system software, and operates.

error message number

A number that appears on the error line representing a particular system or component problem.

Ethernet

A local area network (LAN) or wide area network (WAN) that connects (by coaxial cable) multiple computers that are running a variety of network operating systems. Ethernet transmits 10 megabits per second and does not require switching logic or control by a central computer.

Ethernet controller

An interface unit that connects a system to the Ethernet.

Ethernet hardware address

The unique Ethernet physical address associated with a particular Ethernet communications controller.

Ethernet ports

The connectors on the system unit through which the Ethernet is connected to the system.

Ethernet subsystem

The Ethernet controller chip built into the system module.

expansion box

An attachable system option that holds one TURBOchannel option module, two hard disk drives, and one removable media drive.

Factory-Installed Software (FIS)

Operating system software that is loaded into an internal fixed disk and installed in the system unit during manufacture. On site, the FIS is bootstrapped through the system disk, prompting a predefined menu of questions on the final configuration.

FDDI

See Fiber Distributed Data Interface

Fiber Distributed Data Interface

An ANSI-standard high-speed network technology that uses fiber optics as the transmission medium. FDDI employs a ring topology and operates up to 100 km in total network length. It uses 1300 nm wavelengths, which optimize fiber bandwidth.

field replaceable unit

Any system component that can be replaced by your Digital service representative.

file

A collection of related information treated by the system as a unit.

firmware

Software code that is stored in a fixed way (wired in), usually in read-only memory. The firmware executes when the system is turned on, during operating system boot and restarts, and as a result of operator intervention or a fatal system error.

FIS

See Factory-Installed Software.

fixed disk

A disk that resides permanently inside a disk drive. *Compare with* diskette.

fixed disk drive

The disk drive that holds and reads from or writes to a fixed disk.

floating point

A number that may be positive or negative but that has a whole (integer) portion and a fractional (decimal) portion; an arithmetic operation in which the decimal point is not fixed, but placed automatically in a correct position in a computer word.

floor stand

A type of system cabinet that sits on the floor. *Compare with* desktop enclosure.

frame buffer

An area of memory that contains a pixel-level description of a displayed image. The frame buffer is also used to refresh the raster display.

FRU

See Field Replaceable Unit.

gigabyte (GB)

The measure used to refer to memory or secondary storage capacity, equal to 1,024 megabytes or 1,073,741,824 bytes.

GKS (Graphical Kernel System) application

An application that uses the GKS graphics system and language to create two-dimensional (2D), three-dimensional (3D), and raster images on the screen. A GKS application can be developed on one system and easily move to another system.

graphics

A computer output of drawings, charts, and graphs.

half-height disk

Any 1 5/8-inch fixed drive that is 3½ inches (9-centimeters) wide, such as those in the RZ family; or a 1 5/8-inch removable drive that is 5-inches (12.7-centimeters) wide, such as a compact disc.

halt

The action of stopping the CPU from processing, which involves console mode and brings the system under the control of the console program. A halt can occur when an internal system error is detected, when you enter the HALT command at the console terminal, or when you press the Halt button on the back of the system unit.

hardware

The physical equipment—mechanical and electrical—that makes up a system. *Compare with* software.

hexadecimal

A numbering system using the base 16 that is a shorthand method for representing binary numbers. Using this method, each four bits is converted into a single hexadecimal digit. For example, 1001 in binary is equal to 9 in hexadecimal.

icon

A graphical symbol on the system unit that identifies drives, ports, switches, and indicators.

IEEE

Abbreviation for Institute of Electrical and Electronics Engineers.

initialization

The sequence of steps that prepare the system to start. Initialization occurs automatically after a system has been turned on.

input/output (I/O) device

A piece of equipment that transmits data to (input) and from (output) the system. For example, a terminal or a mouse. *See* mouse.

Integrated Services Digital Network (ISDN)

An international telecommunications standard that allows a communications channel to simultaneously carry voice, video, and data.

interface

An electronic circuit board that links an external device to a computer. Also, a device or piece of software that allows a user to communicate with the system or allows the components of the system to communicate with each other.

ISDN

See Integrated Services Digital Network.

jack

A receptacle into which you insert a plug.

kilobyte (KB)

The measure used to refer to memory or secondary storage capacity, equal to 1,024 bytes.

LAN

See local area network.

light-emitting diode (LED)

A semiconductor device that glows when supplied with a specific voltage. The operator control panel contains LEDs that indicate the status of the modules in the computer.

local

In close proximity to the computer. *Compare with* remote.

local area network

A high-speed network communications system that connects a variety of multiple computers within a limited geographical area, such as one building or a group of buildings. It is a privately owned communication network whose speed is upward of one megabit per second. Using a LAN, multiple users can share devices and files at higher speeds, faster response times, and lower costs than with telephone lines.

local console mode

A mode in which you interact directly with the console subsystem without requiring the password security feature. *Compare with* privileged console mode.

local device

A disk drive, tape drive, or other device that is only available to the computer to which it is connected.

log in

To identify yourself to the operating system. When you log in, you type an account name and password. If the name and password match an account on the system, you are allowed access to that account.

logic

A sequence of hardware or software operations. Hardware logic consists of chips and circuits that compute and control computer operations. Software logic (also called program logic) is the sequence of program instructions.

login command

The command issued at the operating system prompt that allows access to and communication with the system.

loopback connector

An Ethernet or communications connector used on the back of the system unit when testing the Ethernet subsystem or the synchronous communications adapter.

loopback tests

Diagnostic tests used to isolate a failure by testing segments of a particular control or data path.

magnetic tape

A tape, made of plastic and coated with magnetic oxide, that is used to store data. Also called magtape.

Maintenance Operations Protocol (MOP)

The transport protocol for network bootstraps and other network operations.

mass storage device

An input/output device on which data is stored. Typical mass storage devices include fixed disks, compact discs, magnetic tapes, and diskettes.

Mb

See megabit.

MB

See megabyte.

media

The physical material on which data is recorded, for example, magnetic disks, diskettes, and compact discs.

megabit

A unit of measure equal to a million bits.

megabyte

A unit of measure equal to 1,024 kilobytes or 1,048,576 bytes.

memory

The area of the system that electrically stores instructions and data, often temporarily.

memory module

A single in-line memory module (SIMM) that contains memory for your system. Memory modules come in different sizes, each with a different amount of memory.

millions of instructions per second (MIPS)

A unit of measure for recording the execution rate of a computer, for example 0.5 MIPS is equal to 500,000 instructions per second.

MMB

See memory mother board.

modem

A device that converts computer signals to signals that can be sent over a telephone line.

module

An etched circuit board that contains electrical components and electrically conductive pathways between components on which logic devices (such as transistors, resistors, and memory chips) are mounted. A module stores data or memory or controls the functions of a device.

monitor

A video device that displays data.

monochrome frame buffer

A separate memory component for black and white graphics.

MOP

See Maintenance Operations Protocol.

mouse

A hand-held input device that is moved across the desktop to move the pointer or cursor on the monitor screen and to select menu options and draw graphics. The mouse is palm-sized and contains up to three buttons (function keys).

multiprocessing

A processing method that replicates the sequential computer and interconnects the collection so that each processor can execute the same or a different program at the same time.

multiprocessing system

A system that executes multiple tasks simultaneously.

network

Two or more computers linked by communication lines to share information and resources.

network coordinator

The person who manages the network, assigns unique node names and addresses for each system on the network, and provides administrative assistance to network users.

node

A device that has an address on, is connected to, and is able to communicate with other devices on the bus. In a computer network, an individual computer system connected to the network that can communicate with other systems on the network.

node name

A name that identifies a unique node.

nonvolatile random-access memory

Memory, such as magnetic tape or core memory, in which values are stored even when the system is turned off.

online documentation

Documents that can be read directly on your monitor screen. Online documentation is stored on a compact disc and includes all text and illustrations found in the printed manuals. Fast access time and cross-referencing are two advantages of online documentation.

Open Software Foundation (OSF)

A foundation formed to develop open design software based on the UNIX standard. Development to date includes the OSF/1 operating system, the Distributed Computing Environment (DCE), and the Distributed Management Environment (DME).

OpenVMS AXP operating system

Digital's open version of the OpenVMS AXP operating system, which runs on Alpha AXP machines.

operating system

An integrated collection of programs that controls the operation of the system and allows users access to data files, input/output devices, and application programs.

operating system mode

The state in which the system console terminal is under the control of the operating system software. Also called program mode.

PAL

See Privileged Architecture Library (software) and Programmable Array Logic (hardware).

PALcode

Privileged Architecture Library code, written to support Alpha AXP processors. PALcode implements architecturally defined behavior.

parameter

A variable given a specific value that is passed to a program before execution. The system console code uses many such parameters.

parity

A method for checking the accuracy of data by calculating the sum of the number of ones in a piece of binary data. Even parity requires the correct sum to be an even number, odd parity requires the correct sum to be an odd number.

password

A unique string of characters or numbers, or both that identifies you to the computer.

password security feature

The feature that restricts access to certain console commands. To use all console commands, users must enter a password.

pedestal

A system enclosure suitable in size and operating characteristics for an office environment. *See* floorstand.

peripheral device

An internal or external device that provides the central processing unit (CPU) with additional memory storage or communication capability. Examples are disk and diskette drives, video terminals, printers, and expansion boxes.

PEX-based application

An application that runs on Software PEX (software PEX server). Software PEX allows a three-dimensional (3D) application to run without specialized 3D hardware.

PHIGS (Programmer's Hierarchical Interactive Graphics System) application

An application that uses the PHIGS graphics system and language to create two-dimensional (2D) and three-dimensional (3D) images on the screen.

pointing device

A terminal input device that allows you to make a selection from a menu or to draw graphics. *See* mouse and tablet.

port

A socket on the front or back of the system unit to which a terminal, printer, modem or other device is connected.

port pin-outs

The description of the function of electronic signals transmitted through each pin in a port connector.

power up

To initiate the sequence of events that starts the flow of electrical current to a system or its components.

Privileged Architecture Library (PAL)

A software chip that has a series of logic gates (AND, OR, and NOT) that are not tied together.

privileged console commands

The commands allowed by the password security feature. *See also* password security feature.

privileged console mode

The state the system is in when the password security feature is enabled. When the system is in this mode, certain console commands can be issued only after a password is provided. *See also* password security feature.

process

A program currently using memory and running on the system.

program

The sequence of instructions the system uses to perform a task. *See also* software.

program mode

The state in which the computer is controlled by the operating system. After the operating system is invoked, the system always operates in program mode, unless you put it into console mode. In program mode, the user can manage the system, run software applications, and perform network tasks. *Compare with* console mode.

prompt

A symbol or message displayed by a program or an operating system, asking you to provide input.

puck

A palm-sized device that slides on a tablet's surface. The puck and tablet together function as a pointing device. *See also* pointing device and tablet.

rackmount enclosure

A type of system cabinet for which components are built to fit into a metal frame.

random access memory (RAM)

Memory that can be both read from and written to and that can randomly access any one location during normal operations. The type of memory the system uses to store the instructions of programs currently being run.

read-only memory (ROM)

Memory that cannot be modified. The system can use (read) the data contained in ROM but cannot change it.

Reduced Instruction Set Computer

A computer with an instruction set that is reduced in complexity, but not necessarily in the number of instructions. RISC architectures typically require more instructions than Complex Instruction Set Computer (CISC) architectures to perform given operations, because an individual RISC instruction performs less work than a CISC instruction.

register

A temporary storage location in hardware logic other than main memory.

remote

Physically distant from a computer, but linked to a computer by communication lines. *Compare with* local.

remote console port

The port that connects a remote access device to a system.

removable-media drive

A drive such as the RRD42, TZK10, TZ30, TLZ06, or RX26 from which the storage medium is removable.

restore

In software, to recover files or software that were backed up, copying the material from the backup medium (such as a tape or diskette) to the medium you normally use.

In hardware, to return the system to an operating condition.

RISC

See Reduced Instruction Set Computer.

ROM

See read-only memory.

satellite

A node that is booted remotely from the system disk on the boot node. Also, a computer system that obtains a specific set of services from a server system.

SCSI

See Small Computer System Interface.

SCSI bus

A communications pathway between the Small Computer System Interface (SCSI) and other internal devices. The SCSI bus consists of an address bus, which selects the location of the data, and a data bus, which transfers the data.

SCSI controller

The device that directs the operations of the Small Computer System Interface (SCSI) with synchronous and asynchronous capabilities.

SCSI jumpers

Removable electrical connectors on some of the drives, such as the RRD42, that determine the SCSI setting on a drive. Each installed drive must have a unique setting for proper communication between the system and all drives.

SCSI switches

Electrical switches on the side or back of some drives, such as the RX26, that determine the SCSI setting of the drive. Each installed drive must have a unique setting for proper communication between the system and all drives.

secondary cache

A random access mass storage area implemented on devices such as disks. *Compare with* main memory.

segment

A length of ThinWire Ethernet cable made up of one or more cable sections connected with barrel connectors or T-connectors.

self-test

A test that is invoked automatically when the system starts up.

serial port

A port dedicated to hookups with serial line devices such as terminals or printers. Serial devices transmit data one word after another (serially) along a single pair of lines from a sending device to a receiving device.

server

Hardware or software that provides a specific set of services to a satellite or client.

Small Computer System Interface (SCSI)

An ANSI-standard interface designed for connecting disks and other peripheral devices to computer systems. SCSI is used by many computer and peripheral vendors throughout the industry.

smart frame buffer

A separate memory component for graphics images.

software

Instructions executed by the system to perform a chosen or required function. *Compare with* hardware.

SPEC

See System Performance Evaluation Cooperative.

SPECmark

The geometric mean of the normalized results from the benchmarks defined by SPEC. *See also* System Performance Evaluation Cooperative (SPEC).

SROM

Serial read-only memory.

standalone network

A network that starts and operates alone, without being connected to another network.

standalone workstation

A workstation that starts and operates alone, without being connected to another computer.

standard Ethernet network

An Ethernet network connected with standard Ethernet cable. (Also known as thickwire Ethernet). *Compare with* ThinWire Ethernet network.

startup procedure

The sequence events that occur when you supply power by turning on the system or its components.

storage device

A device, such as a diskette or tape, capable of recording information.

storage expansion box

See expansion box.

strain relief strap

See universal strain relief strap.

stylus

A penlike device that draws on the surface of a tablet and functions as a pointing device.

synchronous communication

A type of communication in which data is transmitted at equal time intervals. This type of communication allows you to connect your system to others in one of two ways:

- Through a modem to a Wide Area Network (WAN)
- Directly to another system through a null modem

system

A combination of hardware, software, and peripheral devices that together perform specific processing operations.

system configuration

The combined layout of hardware and software that makes up a usable computer system.

system disk

The disk that stores the operating system and that starts the system and allows it to run properly.

system unit

The part of the system that contains the drives, memory, power supply, and the computer itself.

tablet

An absolute-positioning input device composed of a flat-surfaced digitizing tablet that functions as a drawing surface. Two pointing devices, a puck and a stylus, are used with the tablet to move the cursor on the monitor screen, draw graphics, and make selections from the menu.

tape cartridge

Housing for magnetic tape. The cartridge contains a reel of tape and a take-up reel. A cartridge is similar to a cassette, but of slightly different design.

tape drive

A device that contains mechanical components and holds, turns, reads, and writes on magnetic tape.

T-connector

A connector used to join ThinWire Ethernet cable sections.

terminal

A device for entering information into a computer system and displaying it on a screen. A typewriter-like keyboard, mouse, tablet or other pointing devices are used to enter information.

terminator

A connector used on one or both ends of an Ethernet segment that provides the 50-ohm termination resistance needed for the cable. A terminator is also required on unused ports and on the end of a SCSI bus to complete the bus.

thickwire Ethernet network

An IEEE Standard 802.3-compliant Ethernet network made of standard Ethernet cable. Also called standard Ethernet. *Contrast with ThinWire.*

ThinWire Ethernet network

A Digital trademark used to describe its 10BASE2 Ethernet products. *See also 10BASE2. Compare with thickwire Ethernet network.*

three-dimensional graphics

Images that are displayed on the screen in 3D. These graphics require the use of the PXG+ or the PXG Turbo+ option and Software PEX (software PEX server). Software PEX allows a 3D application to run without specialized 3D hardware.

timesharing

A system in which two or more programs are allotted, in turn, equal time or use of a computer or computer device.

turn off

The sequence of steps that stops the flow of electricity to a system or its components.

twisted-pair cable

A cable made by twisting together two insulated conductors.

twisted-pair Ethernet network

See 10BASE-T Ethernet network.

TURBOchannel module

High-performance interconnection hardware that allows you to use a variety of Digital and third-party graphics, multimedia, and communications options. The TURBOchannel module is a synchronous asymmetrical I/O channel that connects option modules to the system module. With this connection, the system module and an option module have read or write access to each other, but option modules have no access to other option modules.

TURBOchannel extender

See expansion box.

two-dimensional graphics

Images that are displayed on the screen in 2D. These graphics require the use of the HX 8-plane smart frame buffer TURBOchannel graphics option.

universal strain relief strap

A plastic strap used when connecting the monitor video cable to the back of the monitor. The strap prevents the weight of the cable junction box from pulling the cables out of the BNC connectors.

user interface

The style of interaction between the computer and the user of that computer.

video refresh rate

The speed at which the image on the screen is restored.

VMScluster system

A highly integrated organization of Digital's OpenVMS AXP systems that communicate over a high-speed communications path. VMScluster configurations have all the functions of single-node systems, plus the ability to share CPU resources, queues, and disk storage.

window

An area on your monitor screen in which you can start, run, and view a separate process. Windowing capability is supported by both OpenVMS AXP and DEC OSF/1 AXP workstation software.

work group

Several workstations, connected together on a network, that perform similar tasks and share information or databases.

workstation

A single-user system that offers high-performance, high-resolution graphics, and can function in a network environment.

wrist strap

See antistatic wrist strap.

write-enabled

The condition that enables a tape or diskette to be written to. *Compare with* write-protected.

write-protected

The condition that prevents a tape or diskette from being accidentally overwritten.

Z-buffering

An advanced graphics term for attaching a depth value to every pixel as a means of determining which parts of the objects in a scene must be discarded from the processing because they would be hidden from view by other opaque objects (hidden surface removal).

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