DEC 3000 Model 500/500S AXP

Owner's Guide

Order Number: EK–FLAMI–OG. C01

Contents

3 Installing a Workstation System

4 Installing a Server System

5 Connecting the System to a Network

6 Starting Up the System

7 Turning Off the System

8 Maintaining the System

Part II   Advanced Operations

9 Using Console Commands

10 Changing Environment Variables

11 Using the Password Security Feature

12 Using an Alternate Console

Part III Handling Problems

13 Identifying a Problem

14 Running Diagnostic Tests

Part IV   Appendixes

A   Hardware Specifications

B   Port Pin-outs

C   European Economic Community (EEC) Considerations

D   Associated Documents

E Special Information for PTT Network Users

Glossary

Index

Figures

Tables

Preface

Purpose of This Guide

This guide is intended for all users of the DEC 3000 Model 500 /500S AXP system. It describes how to install and operate the DEC 3000 Model 500 AXP workstation and the DEC 3000 Model 500S AXP server. To install options in the DEC 3000 Model 500/500S AXP system, refer to the *DEC 3000 Model 500/500S AXP Options Guide*.

Structure of This Guide

This guide consists of 14 chapters, 5 appendices, a glossary of technical terms, and an index, and is organized into four 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 500/500S AXP system users.

(continued on next page)

Table 1 (Cont.) Parts Description

Part	Title	Description
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 advanced system operations.
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 is displaying error messages.
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.
⬚Return⬚	A key name in a box indicates that you press a named key on the keyboard.
⬚Ctrl/x⬚	A sequence such as ⬚Ctrl/x⬚ indicates that you must hold down the key labeled Ctrl while you press another key.
show config	Lowercase color type in this format indicates a command that you must enter exactly as shown. For example: `>>> show config` ⬚Return⬚
variable	Lowercase color italics indicate a variable value that you must provide. For example: `>>> set variable` ⬚Return⬚
CAUTION	Cautions provide information to prevent damage to equipment or software. Read these carefully.
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.

i

Information
This section contains important background information that will help you to perform the tasks listed and to operate your DEC 3000 Model 500/500S 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 500/500S
AXP system and its configurations. It also describes how to
install the system and how to perform basic operations. This
part includes the following chapters:

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

1

Introduction to Your System

Chapter Overview

Introduction

Congratulations on choosing a DEC 3000 Model 500 AXP workstation or DEC 3000 Model 500S AXP server. These high-performance, deskside or rackmount systems use Digital's DECchip 21064 RISC processor, part of the Alpha AXP architecture, making them the most powerful low-end systems ever designed.

The DEC 3000 Model 500/500S AXP system is based on the Digital Alpha AXP architecture, providing all the advantages of a 64-bit computing environment.

In This Chapter

This chapter covers the following topics:

- System Configurations
- An Overview of the DEC 3000 Model 500/500S AXP System
- Operating Systems
- Software Product Descriptions (SPD)
- Graphics Capabilities
- Integrated Services Digital Network (ISDN)
- Audio Capabilities
- Available Options
- System Enclosures

System Configurations

Two System Configurations
Your DEC 3000 Model 500/500S AXP system can be configured as a workstation or as a server system. This guide describes how to install and set up both configurations.

Workstation Configuration
Your DEC 3000 Model 500 AXP workstation includes 2D graphics capabilities integral to the system, and will be shipped with a monitor, mouse, and keyboard. Chapter 3 describes how to install a workstation system.

Server Configuration
Your DEC 3000 Model 500S AXP server also has 2D graphics capabilities integral to the system, but is not shipped with a monitor, mouse, or keyboard. Chapter 4 describes how to install a server system.

An Overview of the DEC 3000 Model 500/500S AXP System

System Components: Workstation

The DEC 3000 Model 500/500S AXP system can be configured as a workstation or a server. The 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 500 AXP Workstation

MLO-007581

**System
Components:
Server**

When configured as a server, the DEC 3000 Model 500S
AXP system does not include a monitor, keyboard, or mouse.
Figure 1–2 shows a typical DEC 3000 Model 500S AXP
configuration, with an optional terminal and keyboard.

Figure 1–2 The DEC 3000 Model 500S AXP Server
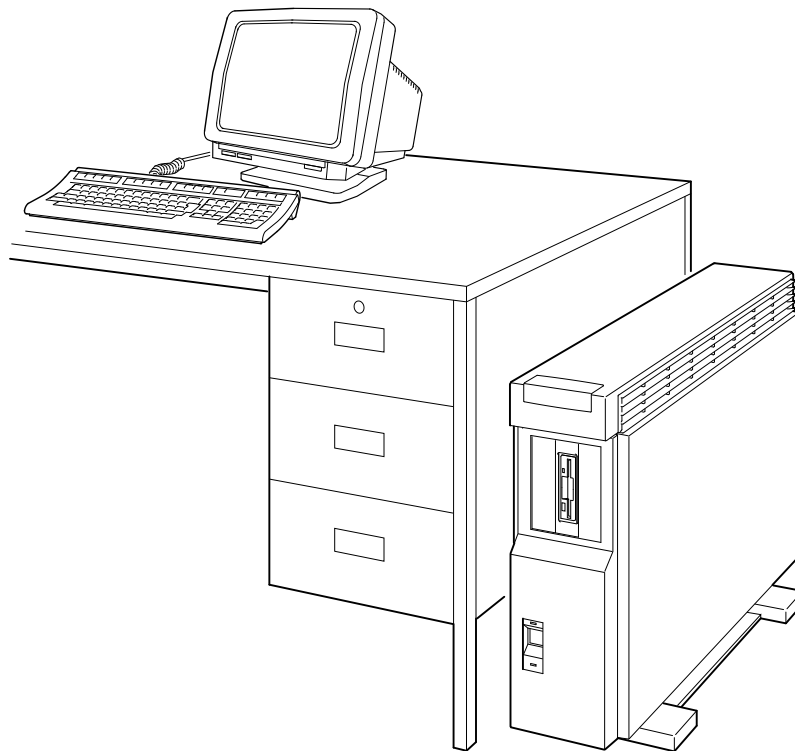
MLO-007569

System Highlights

The DEC 3000 Model 500/500S AXP system provides the following special features:

This system feature...	Provides...
Full 64-bit Alpha RISC architecture	Double the 32-bit memory address.
Up to 256 megabytes of memory	Expandable memory using 32- and 64-megabyte memory options.
Accelerated 2D graphics	8-plane, accelerated 2D graphics and windowing operations.
Multi-head graphic support	Support for multiple graphic heads. The number of graphics heads supported depends on the operating system.
Internal and external options	Increased storage capacity, graphics, communications, and other capabilities to your system.
An Attachment Unit Interface (AUI) Ethernet port	Connection to an AUI Ethernet network.
A 10BASE-T network port	Connection to a twisted-pair network
ISDN network ready	An industry-standard port for an ISDN network connection.
Six TURBOchannel slots	Access to high-performance module interconnect technology that allows a variety of options, including graphics, multimedia, communications, and other third-party options.
Audio technology	Built-in telephone-quality audio input and output capabilities.
Secure console mode feature	Limited access to core console functions for added system security.
A password security feature	Additional system security for privileged commands when the system is in secure console mode.
Two supported operating systems	Support for the OpenVMS AXP and the DEC OSF/1 AXP operating systems.

Operating Systems

A Choice of Operating Systems

Digital's Alpha AXP architecture allows you to choose from various operating systems for use on your DEC 3000 Model 500/500S AXP system. The operating system is the core software installed on your DEC 3000 Model 500/500S AXP system, which allows you to install and run applications.

Supported Operating Systems

Currently, both of the following operating systems are supported for use on your DEC 3000 Model 500/500S AXP system:

- OpenVMS AXP
- DEC OSF/1 AXP

These two are the operating systems supported with the first shipments of the DEC 3000 Model 500/500S AXP system. Other operating systems may be supported 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 it 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.

DEC OSF/1 AXP Operating System

DEC OSF/1 AXP 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 these 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.

You May Have Factory-Installed Software

If there is a yellow sticker over the system power connector on your DEC 3000 Model 500/500S AXP system, the operating system is factory-installed on an internal fixed disk drive, and you can start it on your system using either 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 if it has a factory-installed operating system.

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.

Graphics Capabilities

**Standard
and Optional
Graphics**

All DEC 3000 Model 500/500S AXP systems are shipped with
the HX 2D graphics capabilities integral to the system module.
This provides 8-plane, accelerated 2D graphics and windowing
operations for your system.

Additional graphics and multimedia capabilities are available via
a TURBOchannel graphics module that can be installed in your
system. Digital and third-party suppliers provide a wide variety
of TURBOchannel-based 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 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. The PXG+ option requires DEC Open3D software.
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.

[1]Requires 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 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.

[1]Requires DEC Open3D software

Multiple Graphic Devices

Your DEC 3000 Model 500/500S AXP system is capable of supporting multiple 2D graphics devices. For information about installing another graphics option in your system, see the *DEC 3000 Model 500/500S 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	*OpenVMS Alpha Version 1.0 Upgrade and Installation Manual*
DEC OSF/1 AXP	*X Window System Administrator's Guide*, vol. 8, available from O'Reilly and Associates, Inc.

Integrated Services Digital Network (ISDN)

Note: ISDN Not Yet Available

Though your DEC 3000 Model 500/500S AXP system can provide ISDN capabilities, they are not yet agency approved or available. 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 500/500S 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 500/500S AXP system pending license approval.

ISDN Capabilities

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

Your DEC 3000 Model 500/500S AXP system 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 and 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 Commiittee (CCITT) for setting up these connections. The D channel can also be used for low-speed packet transmission.

Audio Capabilities

Audio Overview   The DEC 3000 Model 500/500S AXP system features telephone-quality audio features, providing audio input and output capabilities. The audio ports are located on the front of the system unit, behind the front access door. Figure 1–3 shows the audio ports: the microphone input jack ❶, the speaker/headphone jack ❷, the telephone handset jack ❸, and the audio input jack ❹.

Figure 1–3 Audio Ports on the DEC 3000 Model 500/500S AXP
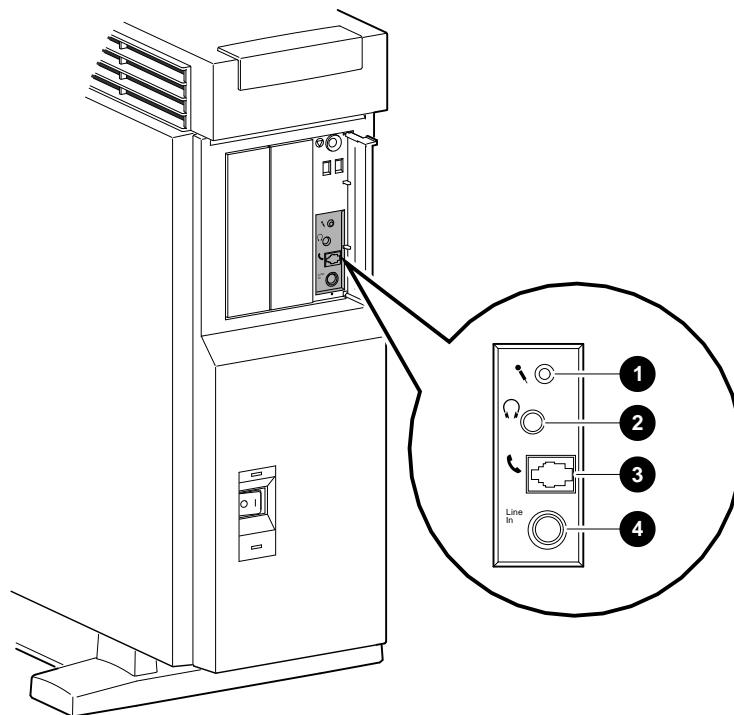
MLO-007498

Port pin-outs for the telephone handset jack on the system unit are provided in Appendix B.

DECsound Application

The DECsound application, shipped with your DEC 3000 Model 500 AXP workstation as part of the OpenVMS AXP DECwindows Motif layered product kit, 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 500/500S AXP system unit:

Option	Capabilities Provided
Four RZ2x-series 3½-inch fixed disk drives	Up to 4 gigabytes of additional storage capacity.
Two 5¼-inch removable media devices (RMD)	Additional data storage on any of several devices: the RX26 diskette drives, the RRD42 compact disc drive, the TZ30 tape drive, the TLZ06 tape drive, and the TZK10 quarter-inch cartridge tape drive.
Up to 256 megabytes of total memory	Increased performance.
Up to six TURBOchannel modules	A variety of TURBOchannel options, including 2D and 3D graphics options.

Available Options

TURBOchannel Options   There are a total of six TURBOchannel option slots on your system. Since your 2D graphics capabilities are integral to your system, you have all six TURBOchannel slots available for other options.

Installing Internal Options   For more information about adding TURBOchannel and other internal options to your system, see the *DEC 3000 Model 500 /500S AXP Options Guide*.

External Options   You can add one or more of the following external options to your system.

- A printer such as a PostScript laser printer.

- A modem

- A puck or stylus tablet

- A BA350 expansion box that can hold the following devices:

  - RZ2x-series fixed disk drives

  - RRD42 compact disc drive

  - TZK10 quarter-inch tape drive

  - TLZ06 DAT (digital audio tape) drive

Adding External Options   For more information about external options and how to add them to your DEC 3000 Model 500/500S AXP system, see the *DEC 3000 Model 500/500S AXP Options Guide*.

Ordering Options   Contact your Digital sales representative for more information about ordering DEC 3000 Model 500/500S AXP system options.

System Enclosures

Choice of Enclosures

The DEC 3000 Model 500/500S AXP system is supported in one of two enclosure styles:

- a deskside pedestal enclosure

- a rackmount enclosure

The deskside enclosure requires two people to move it, and can be positioned by the side of your desk, as shown in Figure 1–1.

Figure 1–4 shows a DEC 3000 Model 500/500S AXP system unit ❶ installed in an H9A00–AJ rack enclosure. Your Digital service representative must install the system unit into a rack enclosure.

Choice of Rack Enclosures

You can choose one of two rackmount kits for your DEC 3000 Model 500/500S AXP system:

- IEC–310 (RETMA)-compatible enclosure kit, for industry standard, third-party rack enclosures

- H9A00–xx kit, for a Digital corporate rack enclosure

Ordering Rackmount Systems

Contact your Digital sales representative for more information about ordering DEC 3000 Model 500S AXP server rackmount systems.

Figure 1–4 DEC 3000 Model 500S AXP server in H9A00-AJ Rack Enclosure
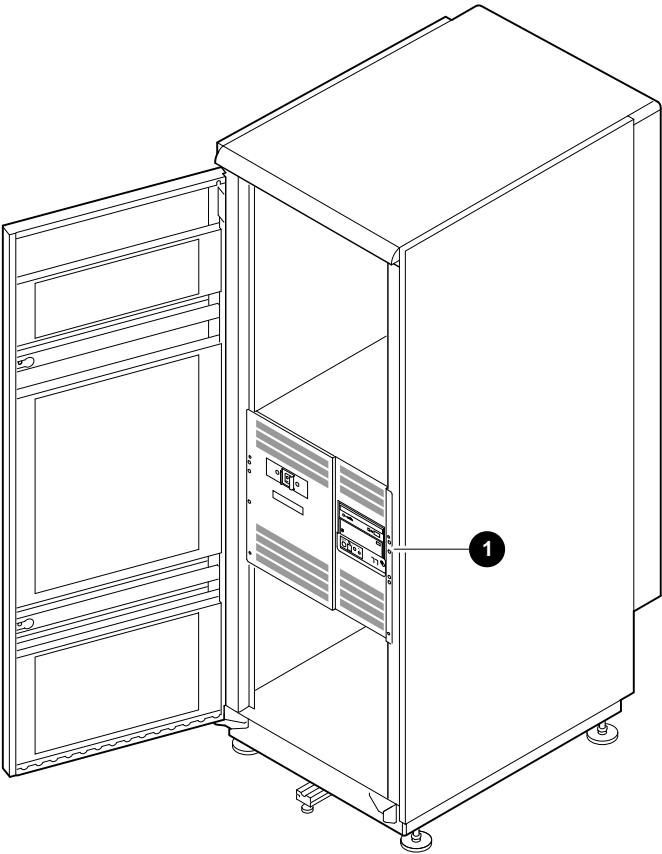
MLO-009396

2

Preparing to Install the System

Chapter Overview

Introduction   Before you install your DEC 3000 Model 500/500S 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

- Moving Your System

- Unpacking a Workstation System

- Unpacking a Server System

- A Closer Look at a Pedestal System

- A Closer Look at a Rackmount System

- System Unit Symbols

- Where to Go Next

Choosing a Location

●

Space Requirements

When choosing a location, consider the system measurements as shown in Figure 2–1, and allow 7.6 cm (3 inches) ventilation space between the system unit and the desk.

Figure 2–1   Dimensions of System
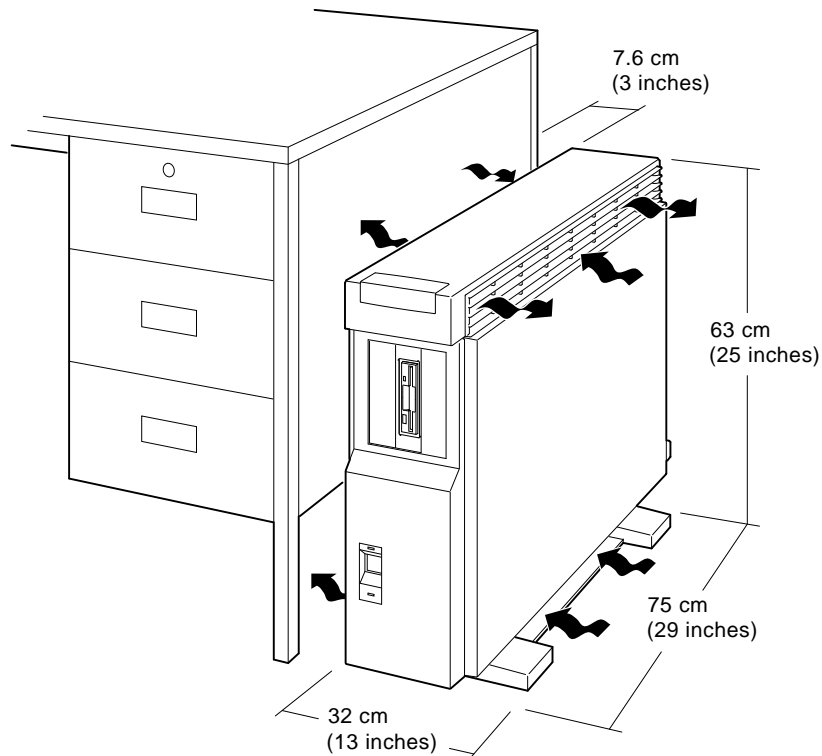
MLO-007592

Monitor Requirements

When allocating space for your new DEC 3000 Model 500 AXP workstation, consider also the size of your monitor and the length of your monitor video cable.

Location Requirements

Choose a location for your DEC 3000 Model 500/500S AXP system that meets the following requirements:

Requirement	Explanation
Appropriate dedicated power source with an isolated ground	Power source must be 110–120 volts alternating current (VAC) or 220–240 VAC, used solely for system unit and monitor.
Moderate temperature	Room temperature should remain between 15°C and 32°C (59°F and 90°F).
Relative humidity	Relative humidity should range between 30 percent and 70 percent.
Ample circulation	Provide a minimum of three inches of clearance all around the workstation. This allows air to circulate around the workstation to prevent excess heat buildup and to keep the system air vents clean.
Working room	Leave enough room on your desktop for your 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 following hazards:

Hazard	How to Avoid
Dust and dirt	Position the system unit in a clean, dust-free location. Dust and dirt damage system components.
Heat and sunlight	Do not place your DEC 3000 Model 500/500S AXP system in direct sunlight, close to a heater, or near a photocopier.

Customizing Your Work Area

Ergonomic Considerations

Considering the ergonomics of your working environment before installing your system can help you to perform your job more effectively once you begin using your DEC 3000 Model 500/500S AXP system.

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, as shown in Figure 2–2 and explained in Table 2–1.

Figure 2–2 Positioning Components
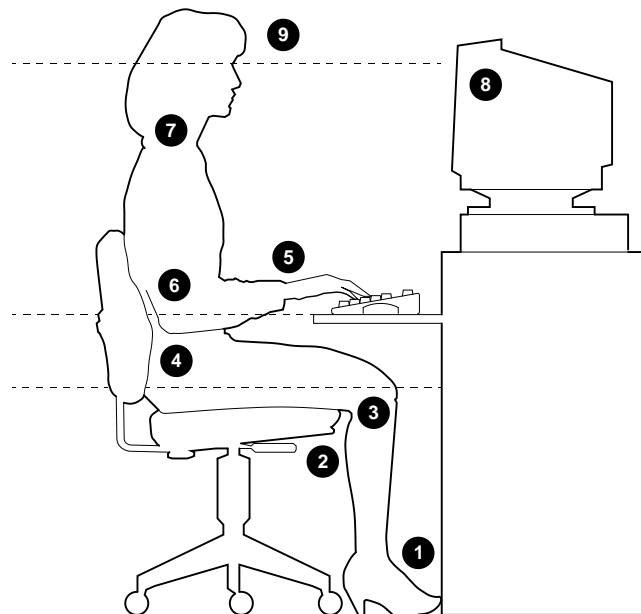
MLO-010354

Positioning Components

Table 2–1 explains the numbered elements in Figure 2–2.

Table 2–1 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 pan.
❹	The body weight rests on the spine with support at 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 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 at the correct distance for your vision.

Moving Your System

●

Locate the Handle

The handle by which to move your system unit is located on the front, at the top, under the product medallion ❶, as shown in Figure 2–3. Grasp this area firmly and pull the system unit towards you any time you wish to move it. The low-friction feet on the bottom of the pedestal allow the unit to be moved easily across the floor.

Figure 2–3 The DEC 3000 Model 500/500S AXP System Handle
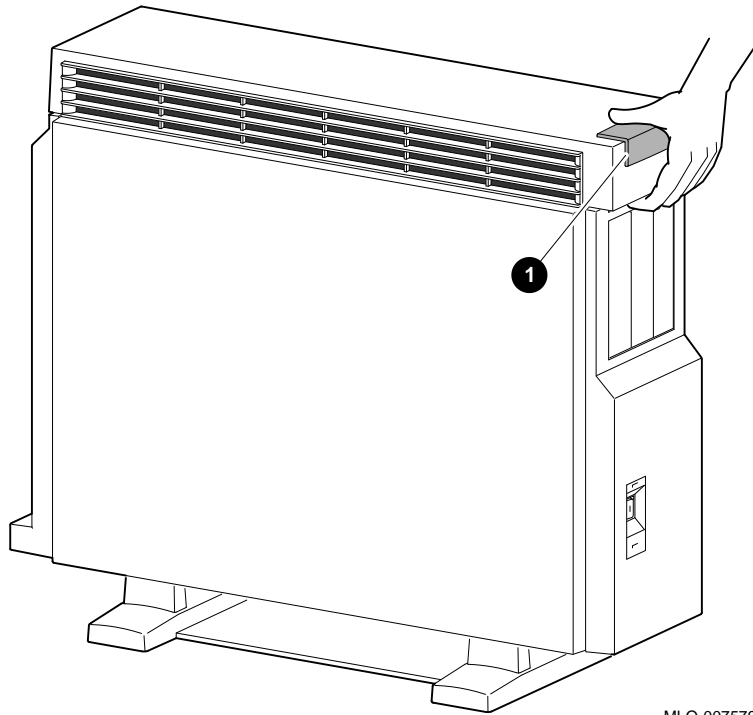
MLO-007579

CAUTION: Two People to Lift the System Unit

Two people are needed to lift the DEC 3000 Model 500/500S AXP system unit, which is quite heavy. The unit is designed to be lifted using the front handle ❶ and the rear of the system unit at the top ❷, as shown in Figure 2–4.

Do not attempt to lift the system unit from the bottom, as you may cause damage to the front or side panels, which are not designed to hold the weight of the system unit.

Figure 2–4   Lifting the DEC 3000 Model 500/500S AXP
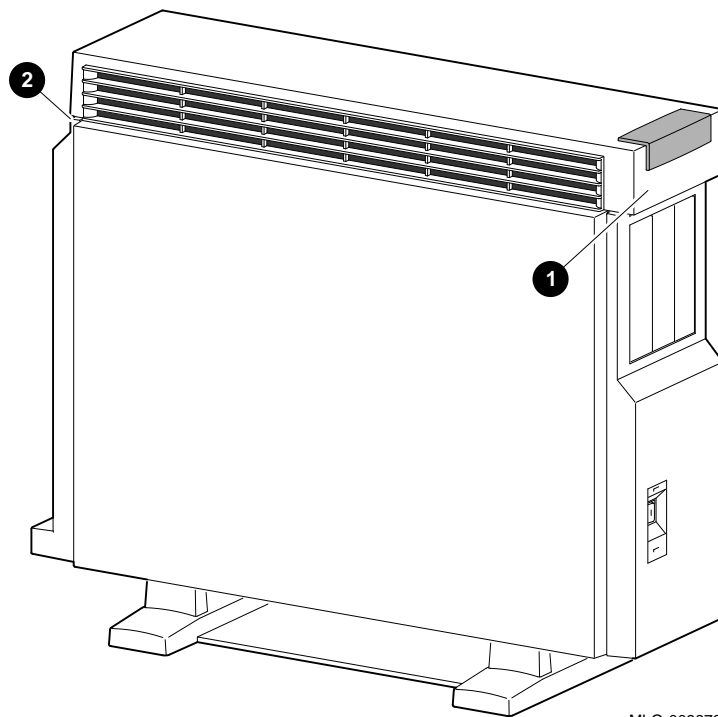
MLO-009873

Unpacking a Workstation System

●

Checking the Box Contents	Your workstation system 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 2–5. The contents shown are for preconfigured systems. If you did not order a preconfigured system, check your packing slip to make sure that whatever you ordered has arrived in your shipment.
If Parts Are Missing	If you are missing any parts for your DEC 3000 Model 500 AXP workstation, contact your Digital sales representative immediately.
WARNING: Two People Required	The DEC 3000 Model 500 AXP workstation and the monitor shipped with your system are both quite heavy. Have someone help you remove these items from the shipping boxes, as indicated on the packing cartons.

Parts Required for Installation

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

Figure 2–5 Required Workstation Components and Parts
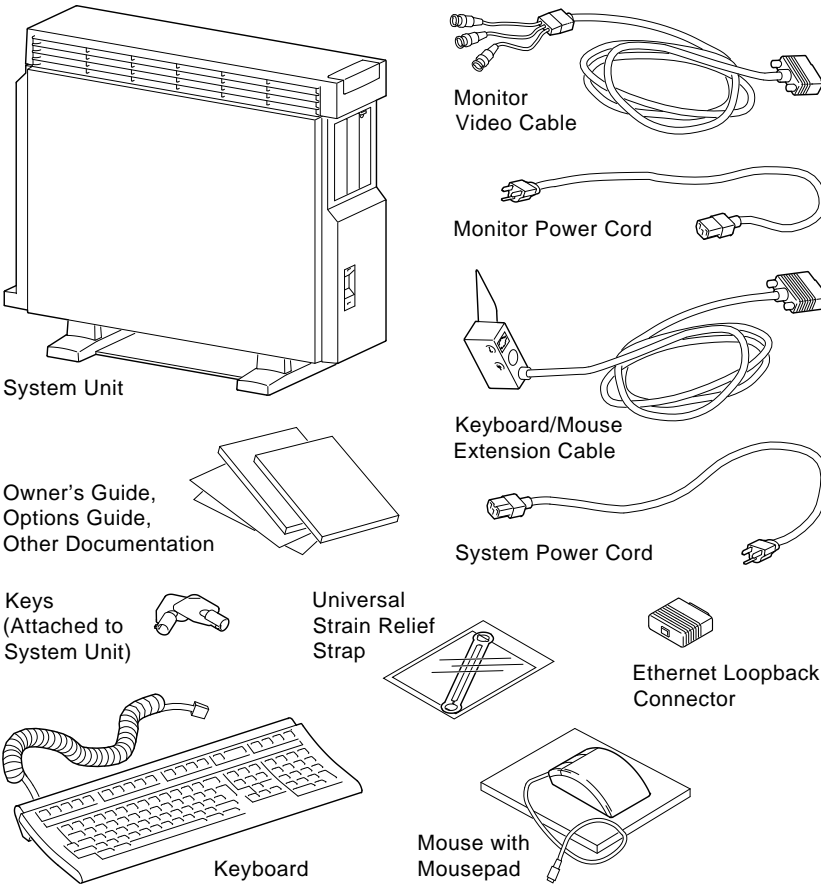
System Unit

Monitor Video Cable

Monitor Power Cord

Keyboard/Mouse Extension Cable

System Power Cord

Owner's Guide, Options Guide, Other Documentation

Keys (Attached to System Unit)

Universal Strain Relief Strap

Ethernet Loopback Connector

Keyboard

Mouse with Mousepad

MLO-010456

**Save These
Parts for Later**

The parts shown in Figure 2–6 can be stored for use later. You do not need them for system installation.

Figure 2–6 Components and Parts to Save
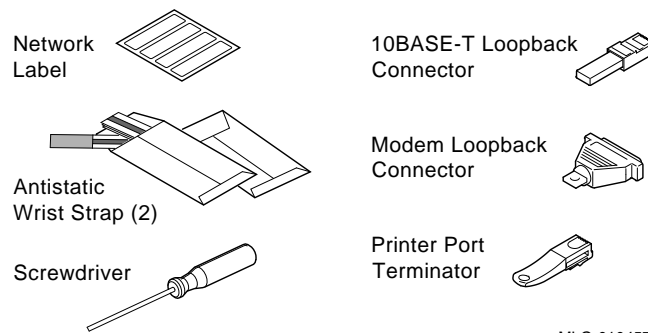
Network
Label

10BASE-T Loopback
Connector

Antistatic
Wrist Strap (2)

Modem Loopback
Connector

Screwdriver

Printer Port
Terminator

MLO-010457

**For Users in
Germany**

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

**For Users in
Australia**

The yellow Austel 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 server system, check to see that you have all of the parts shown in Figure 2–7. The contents shown are for preconfigured systems. If you did not order a preconfigured system, check your packing slip to make sure that whatever you ordered has arrived in your shipment.
If Parts Are Missing	If you are missing any parts for your DEC 3000 Model 500S AXP server, contact your Digital sales representative immediately.
WARNING: Two People Required	The DEC 3000 Model 500S AXP server system unit is quite heavy and requires two people to remove it from the shipping box, as indicated on the packing carton.

**Parts Required
for Installation**

The accessory kit for your system includes many parts, some of which you do not need during the system installation. See Figure 2–7 for the parts you need.

Figure 2–7 Required Server Components and Parts

Documentation

Keys
(Attached to System Unit)

Ethernet Loopback
Connector

System Power Cord

System Unit

MLO-010458
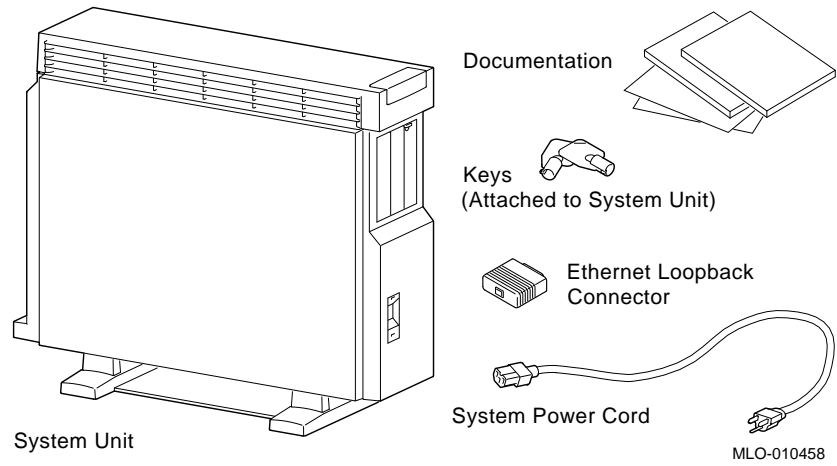
**Save These
Parts for Later**

The parts shown in Figure 2–8 can be stored for use later. You do not need them for system installation.

Figure 2–8 Components and Parts to Save
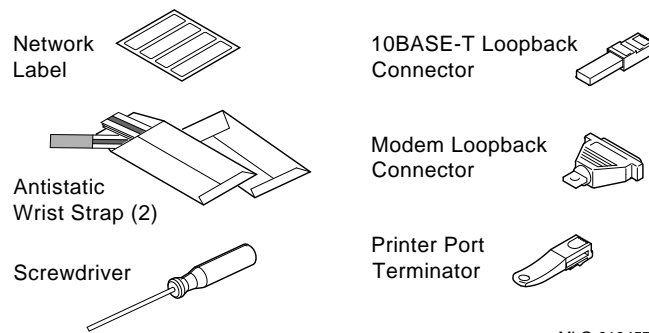
Network
Label

10BASE-T Loopback
Connector

Antistatic
Wrist Strap (2)

Modem Loopback
Connector

Screwdriver

Printer Port
Terminator

MLO-010457

**For Users in
Germany**

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

**For Users in
Australia**

The yellow Austel 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 a Pedestal System

Back of the System Unit

Familiarize yourself with the ports, switches, and indicators on the back of the system unit, shown in Figure 2–9, and explained in Table 2–2.

Figure 2–9   Back of System Unit
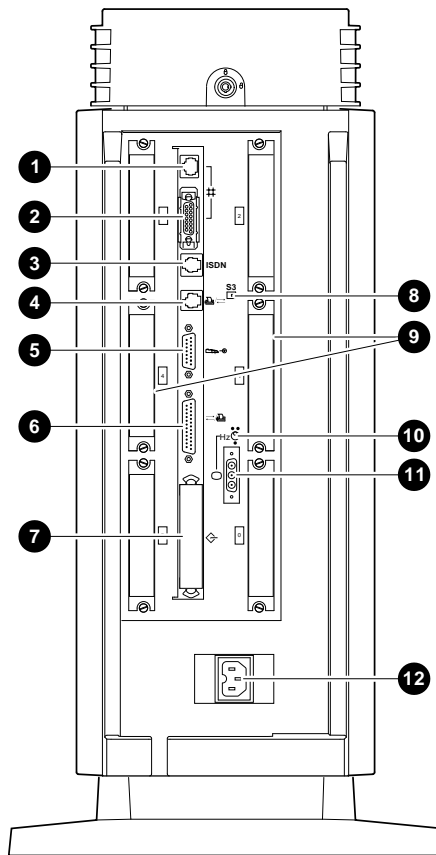
MLO-007554

Table 2–2   Back of the System Unit

Feature	Function
❶ 10BASE-T port	To connect a 10BASE-T Ethernet network cable.
❷ AUI port	To connect an AUI (Attachment Unit Interface) Ethernet network cable (sometimes referred to as standard or thickwire Ethernet).
❸ ISDN port	To connect an Integrated Services Digital Network (ISDN) cable.
❹ Alternate console/printer port	To connect a terminal as an alternate console, or a printer.
❺ Keyboard/mouse port	To connect the keyboard/mouse extension cable.
❻ Synchronous /asynchronous communications port	To connect a communications device such as a printer, plotter, modem, or console terminal.
❼ External SCSI port	To connect Small Computer System Interface (SCSI) peripheral devices. The SCSI port has the SCSI terminator shipped in place.
❽ Alternate console switch	Toggle switch to direct console output to a monitor (switch right) or to an alternate console such as a terminal (switch left).
❾ TURBOchannel slots	To connect TURBOchannel options, such as 2D or 3D graphics modules. There are a total of six slots.
❿ Video refresh switch	To choose the correct video refresh rate (66Hz or 72Hz) for your monitor.
⓫ Monitor video port	To connect the monitor video cable.
⓬ System power socket	To connect the system unit power cord.

Front of the System

Familiarize yourself with the front of the system unit, shown in Figure 2–10 and explained in Table 2–3.

Figure 2–10   Front of System Unit
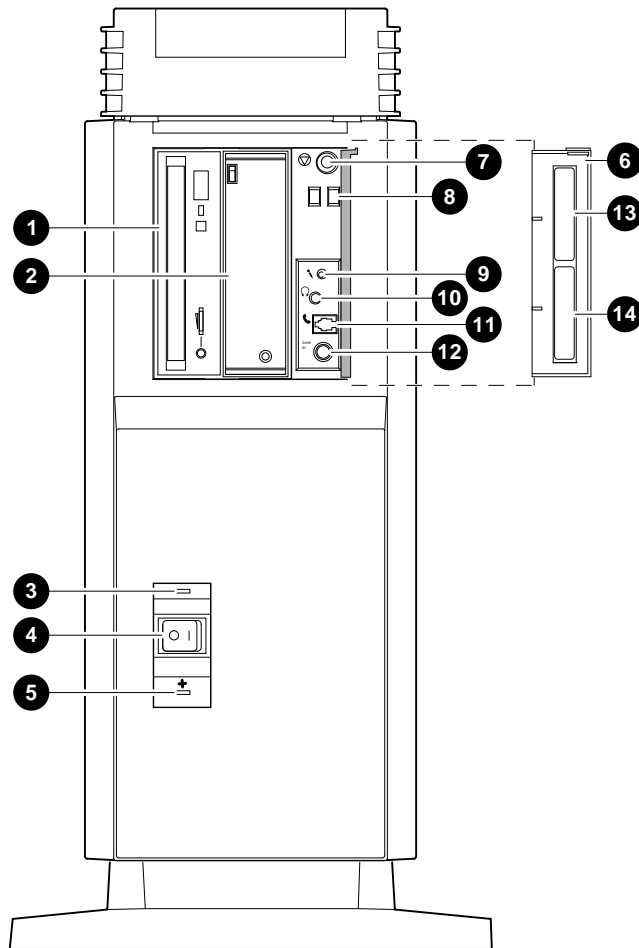
MLO-007553

Table 2–3 Front of the System Unit

Feature	Function
❶ and ❷ Removable media devices (Optional)	Devices that provide additional data storage on removable media, such as diskettes, compact discs, cassette tapes, or cartridge tapes.
❸ Power indicator light	When lit, indicates that the system unit is on.
❹ Power On/Off switch	To turn the system unit power on (|) and off (O).
❺ Fan failure light	When lit, indicates that a fan has failed and the power supply has been shut down.
Feature (Behind front access door ❻)	**Function**
❼ Halt button	To place the system in console mode.
❽ Diagnostic display	Used for diagnostic testing purposes.
❾ Microphone input jack	To connect a microphone to the system.
❿ Speaker output jack	To connect a speaker or headphone for audio output.
⓫ Telephone handset jack	To connect a telephone handset.
⓬ Audio input port	To connect an audio input line.
⓭ Model and serial number label	To find the model number and serial number of your system.
⓮ Network label position	Area to place optional network label that is included in the system's accessory kit.

A Closer Look at a Rackmount System

**Back of the
System Unit**

Familiarize yourself with the ports, switches, and indicators on
the back of the system unit, shown in Figure 2–11 and explained
in Table 2–4.

Figure 2–11   Back of System Unit
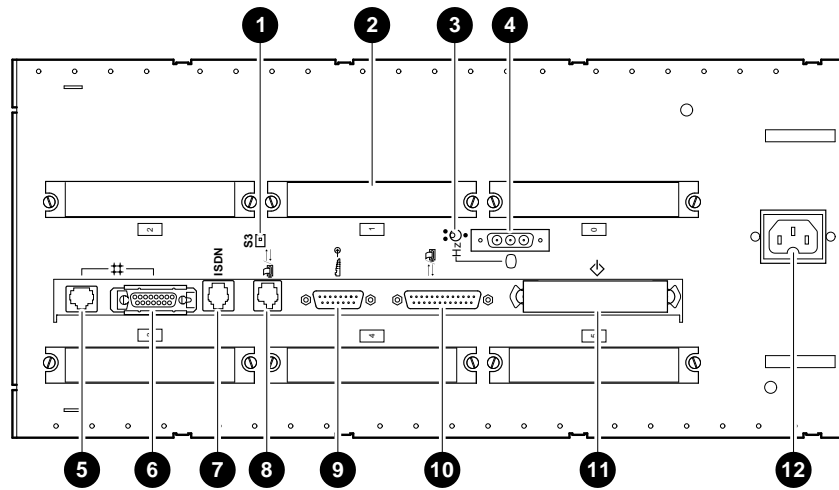
MLO-009804

Table 2–4   Back of the System Unit

Feature	Function
❶ Alternate console switch	Toggle switch to direct console output to a monitor (switch right) or to an alternate console such as a terminal (switch left).
❷ TURBOchannel slot	To connect TURBOchannel options, such as 2D or 3D graphics modules. There are a total of six slots.
❸ Video refresh switch	To choose the correct video refresh rate (66 Hz or 72 Hz) for your monitor.
❹ Monitor video port	To connect the monitor video cable.
❺ 10BASE-T port	To connect a 10BASE-T Ethernet network cable.
❻ AUI port	To connect an AUI (Attachment Unit Interface) Ethernet network cable (sometimes referred to as standard or thickwire Ethernet).
❼ ISDN port	To connect an Integrated Services Digital Network (ISDN) cable.
❽ Alternate console/printer port	To connect a terminal as an alternate console, or a printer.
❾ Keyboard/mouse port	To connect the keyboard/mouse extension cable.
❿ Synchronous /asynchronous communications port	To connect a communications device such as a printer, plotter, modem, or console terminal.
⓫ External SCSI port	To connect Small Computer System Interface (SCSI) peripheral devices. The SCSI port has the SCSI terminator shipped in place.
⓬ System power socket	To connect the system unit power cord.

**Front of the
System**

Familiarize yourself with the front of the system unit, shown in
Figure 2–12 and explained in Table 2–5.

Figure 2–12 Front of System Unit
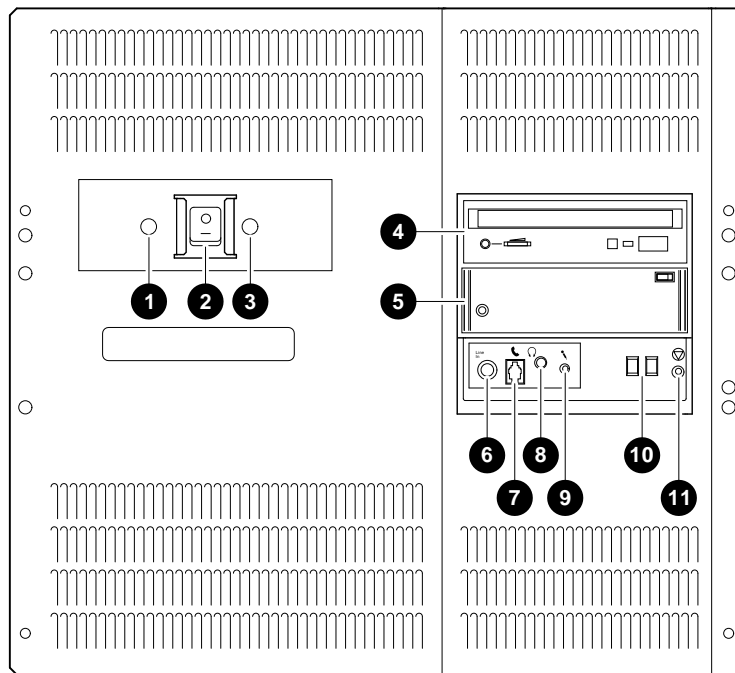
MLO-009736

Table 2–5   Front of the System Unit

Feature	Function
❶ Fan failure light	When lit, indicates that a fan has failed and the power supply has been shut down.
❷ Power On/Off switch	To turn the system unit power on (	) and off (O).
❸ Power indicator light	When lit, indicates that the system unit is on.
❹ and ❺ Removable media devices (Optional)	Devices that provide additional data storage on removable media, such as diskettes, compact discs, cassette tapes, or cartridge tapes.
❻ Audio input port	To connect an audio input line.
❼ Telephone handset jack	To connect a telephone handset.
❽ Speaker output jack	To connect a speaker or headphone for audio output.
❾ Microphone input jack	To connect a microphone to the system.
❿ Diagnostic display	Used for diagnostic testing purposes.
⓫ Halt button	To place the system in console mode.

System Unit Symbols

Explanation of Symbols

On the front and rear of your system unit symbols appear next to most of the controls and ports. The following list explains these symbols.

Halt Button
Press the halt button to halt the system and put the system into console mode.

Network Interface Port
Insert the cable for a network connection.

ISDN Interface Port
Insert the cable for an ISDN network connection.

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

Alternate Console Switch
Indicates the alternate console 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.
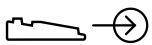
Keyboard/mouse Port
Attach the Keyboard/mouse extension cable to this port.
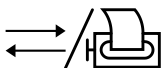
Communications/Printer Port
Connect a communications device, such as a modem, to this port. You can also connect a printer or terminal to this port.

SCSI Port
Attach a SCSI cable or terminator to this port.

Where to Go Next

Determine Your Next Step

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 *Setting Up Your Workstation* card or the *Setting Up Your Server* 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 configuration, see Chapter 4. Your DEC 3000 Model 500 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 500 AXP workstation 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 500 AXP Workstation

- System Unit Cover Lock

- 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
already completed the following tasks:

- Determined any ergonomic considerations you may have.

- Chosen a location for your DEC 3000 Model 500 AXP
  workstation.

- Unpacked your DEC 3000 Model 500 AXP 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 500 AXP workstation should take about 15
  minutes.

- This chapter covers connecting your DEC 3000 Model 500
  AXP 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 bag shipped with your workstation includes
  parts that you do not need during installation. Save any
  terminators and 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 Needed to Install Your Workstation

Monitor Video Cable

Monitor Power Cord

Keyboard/Mouse Extension Cable

System Power Cord

System Unit

Owner's Guide, Options Guide, Other Documentation

Keys (Attached to System Unit)

Universal Strain Relief Strap

Ethernet Loopback Connector

Keyboard

Mouse with Mousepad
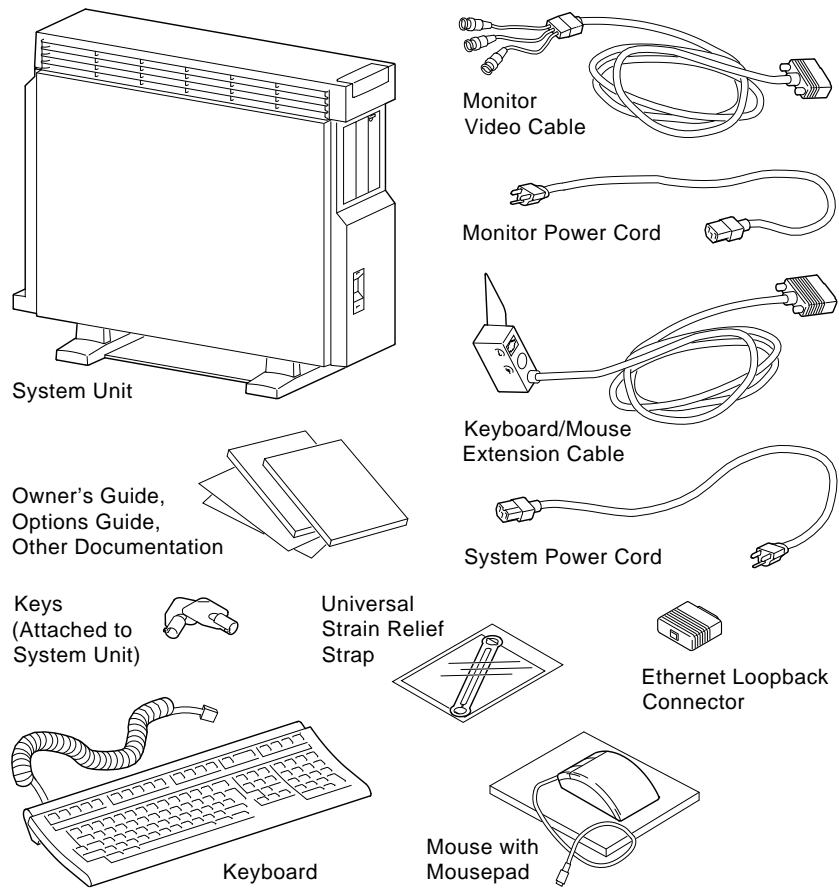
MLO-010456

Installation Steps

Table 3–1 gives an overview of the steps involved in installing your DEC 3000 Model 500 AXP workstation system components.

Table 3–1 Steps to Install Your DEC 3000 Model 500 AXP Workstation

Step	Connect or attach the...	To the...
1	Ethernet loopback connector	AUI Ethernet port
2	Keyboard/mouse extension cable	Keyboard/mouse port
3	Keyboard and mouse cables	Keyboard/mouse extension cable
4	Universal strain relief strap	Monitor video cable
5	Monitor cables	Rear of the monitor and an appropriate outlet
6	Monitor video cable	Monitor video cable port
7	System unit power cord	System unit power socket
8	System unit power cord	Appropriate outlet

Step	Check the...	On the...
9	Video refresh switch to make sure it is in the correct position	Rear of the system unit
10	Alternate console switch to make sure it is in the correct position	Rear of the system unit

Connecting the DEC 3000 Model 500 AXP Workstation

●

Step 1: Attach the Ethernet Loopback Connector

Attach the Ethernet loopback connector to the AUI Ethernet port on the system unit, as shown in Figure 3–2. If you plan to connect to an AUI Ethernet network or a ThinWire Ethernet network using a DECXM transceiver (or a DESTA unit), you may omit this step. After you have completed the connections in this chapter, see Chapter 5 for information about network connections.

Figure 3–2 Attaching the Ethernet Loopback Connector
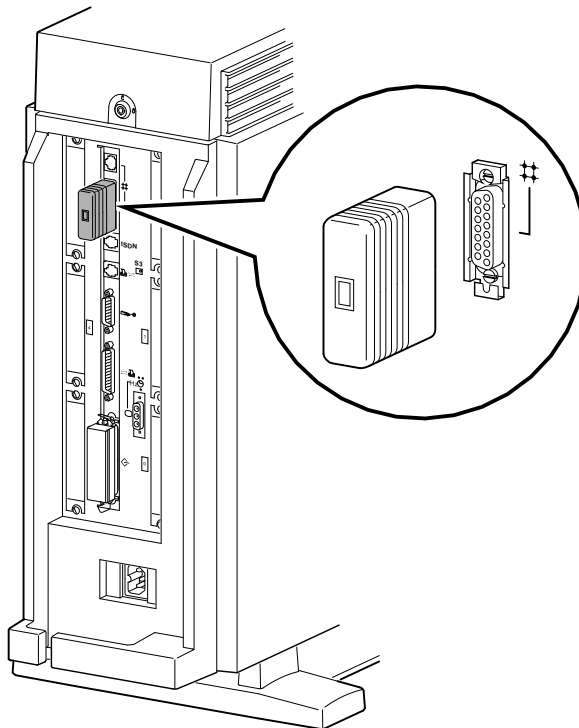
MLO-007543

**Step 2:
Connect the
Keyboard/Mouse
Extension
Cable**

Connect the keyboard/mouse extension cable to the keyboard/
mouse port on the system unit, as shown in Figure 3–3.

Figure 3–3   Connecting the Keyboard/Mouse Extension Cable
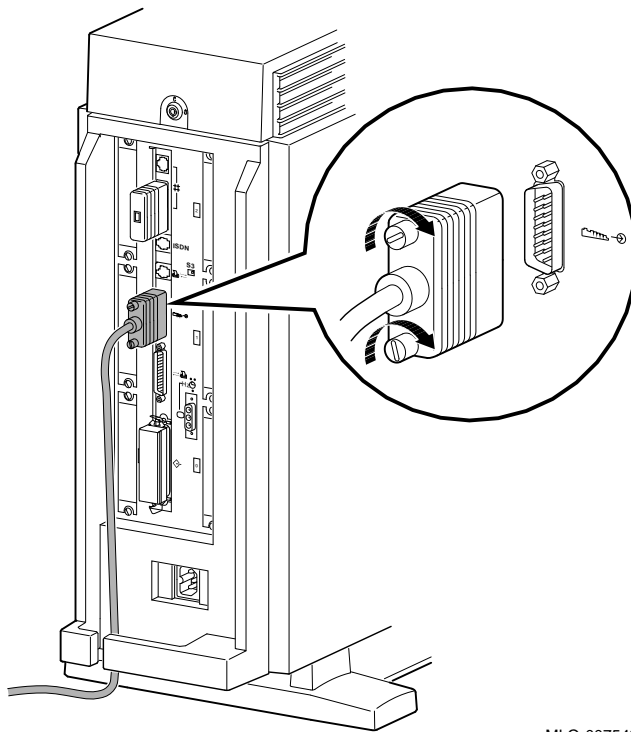
MLO-007542

**Step 3:
Connect the
Keyboard Cable
and Mouse
Cables**

Connect the keyboard cable and the mouse cable to the connector block on the keyboard/mouse extension cable ❶, as shown in Figure 3–4. The extension cable is provided so that the mouse and keyboard can be located away from the system unit.

Figure 3–4   Connecting the Keyboard and Mouse to the Keyboard/mouse Extension Cable
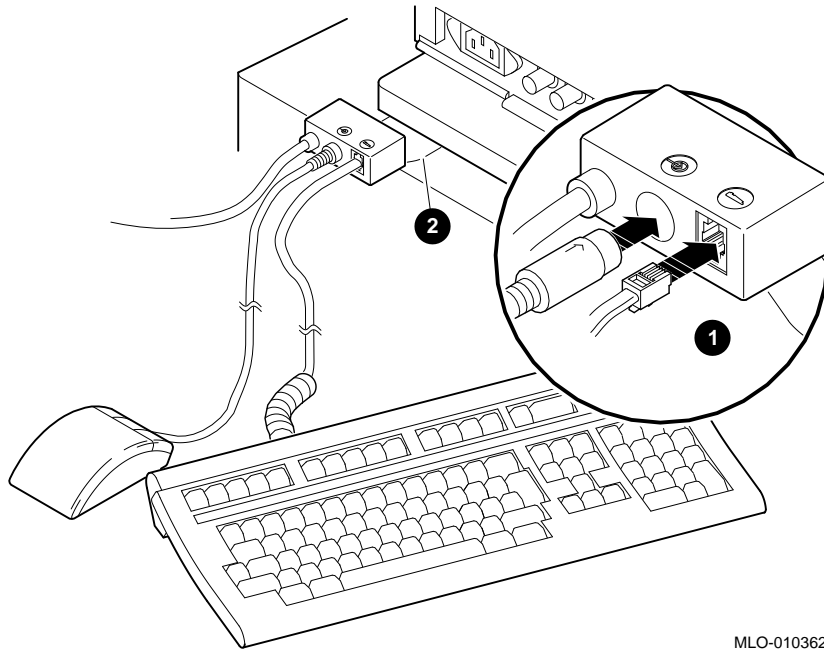
MLO-010362

**The Plastic
Mylar Tab**

To keep the keyboard/mouse extension cable in one location, you can place the plastic Mylar tab ❷ on the connector block of the keyboard/mouse extension cable under the base of your monitor.

Step 4: Attach the Universal Strain Relief Strap

Attaching the universal strain relief strap to your monitor video cable can prevent the weight of the cable's junction block from pulling the cables out of the connectors on the back of the monitor.

Attach the universal strain relief strap to the monitor video cable by performing the following tasks:

1. Insert the three BNC connectors ❶ and cable junction block ❷ of the video cable through the center slot of the universal strain relief strap ❸, making sure the strap is under the cable junction block.

2. Pull the video cable into the slotted hole at the bottom end of the universal strain relief strap. Bring the strap flush with the cable junction block.

3. Align the green (G) BNC connector with the two keyslots of the closed hole at the top end of the universal strain relief strap, and snap the BNC connector into the hole.

Figure 3–5 shows a universal strain relief strap properly attached.

Figure 3–5 Connecting the Universal Strain Relief Strap

MLO-008592

Connecting the DEC 3000 Model 500 AXP Workstation
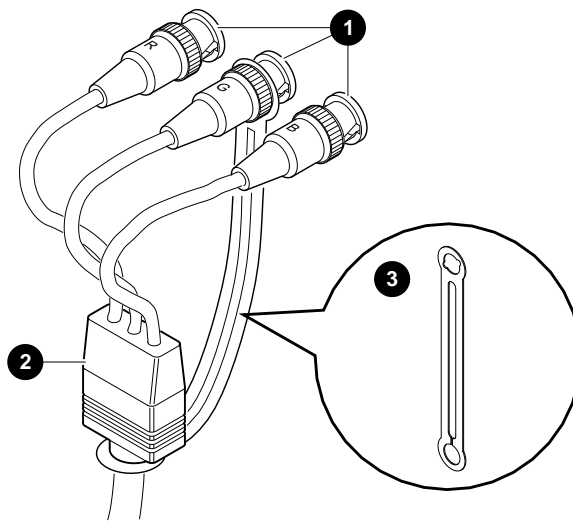
Step 5: Monitor Cables to Monitor

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 than the position shown here. Make sure the On/Off switch is in the Off (O) position, and then plug the other end of the monitor cord into an appropriate outlet.

Table 3–3 Connecting the Monitor Cords

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

MLO-010574
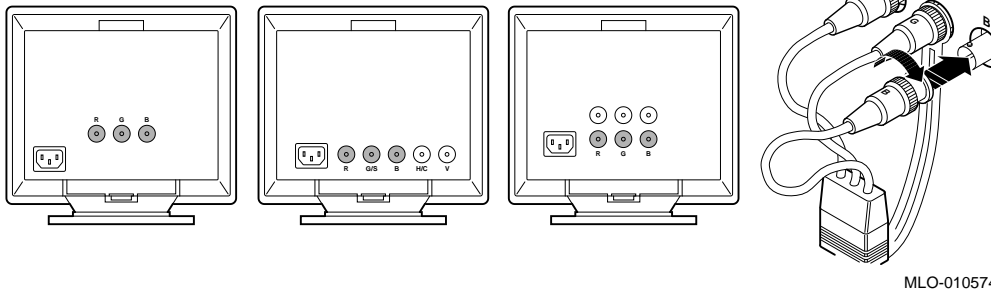
❷ **Connect the cable to a monochrome monitor...** **Like this...**

MLO-010662
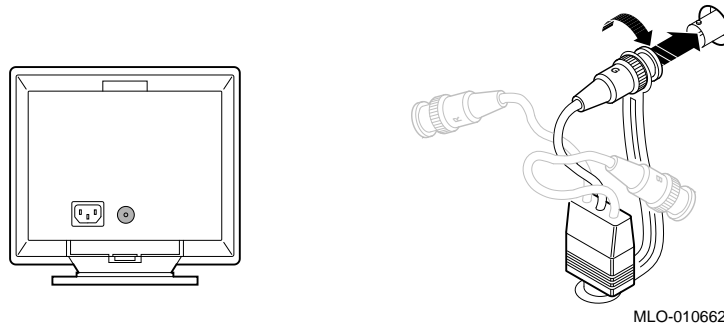
❸ **Connect the monitor power cord...** **Like this...**

MLO-009415
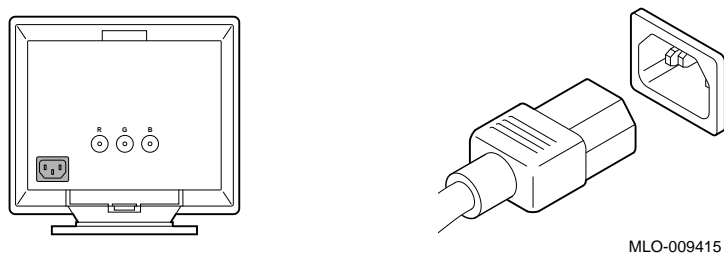
**Step 6:
Connect the
Monitor Video
Cable**

Connect the monitor video cable to the monitor port on the rear
of the system unit, as shown in Figure 3–6.

Figure 3–6 Connecting the Monitor Video Cable
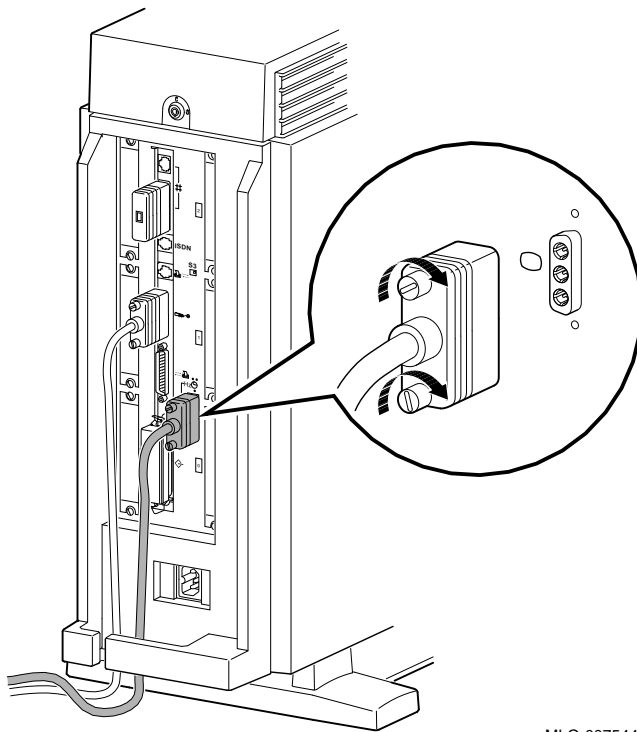
MLO-007544

Yellow Sticker on Power Socket

If there is a sticker similar to the one shown in Figure 3–7 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.

Figure 3–7 Factory-Installed Software Sticker
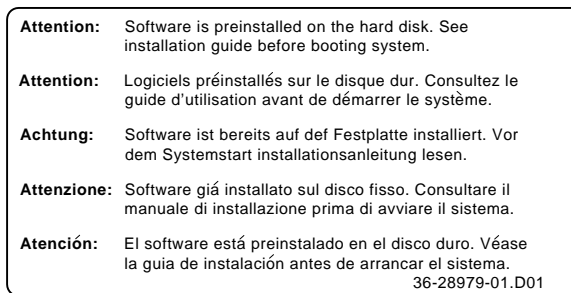
Attention:	Software is preinstalled on the hard disk. See installation guide before booting system.
Attention:	Logiciels préinstallés sur le disque dur. Consultez le guide d'utilisation avant de démarrer le système.
Achtung:	Software ist bereits auf def Festplatte installiert. Vor dem Systemstart installationsanleitung lesen.
Attenzione:	Software giá installato sul disco fisso. Consultare il manuale di installazione prima di avviare il sistema.
Atención:	El software está preinstalado en el disco duro. Véase la guia de instalación antes de arrancar el sistema.

36-28979-01.D01

MLO-007596

When you are ready to start your system, refer to the *OpenVMS AXP Factory Installed Software (FIS) User Information* to start your OpenVMS AXP operating system, or to the *DEC OSF/1 AXP Factory-Installed Software (FIS) User Information* to start your DEC OSF/1 AXP operating system. One of these documents will be shipped with your system, depending on which operating system you have ordered.

**Step 7:
Connect the
System Power
Cord**

Connect the system power cord to the DEC 3000 Model 500/500S
AXP unit, as shown in Figure 3–8. The system power cord is the
thicker of the two power cords shipped with your system, and is
specially keyed to fit in the system power socket.

Figure 3–8 Connecting the System Power Cord to System
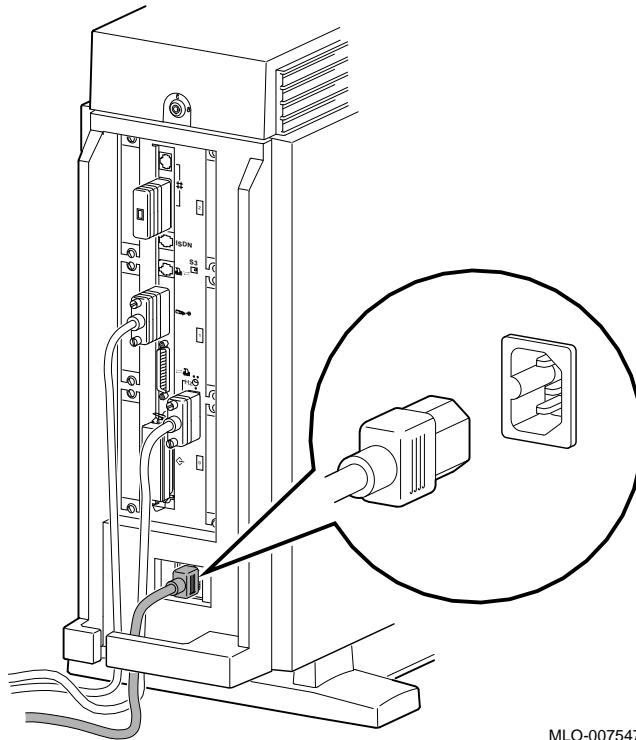
MLO-007547

Step 8: Plug Cord Into Power Outlet

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

Step 9: Check the Video Refresh Switch

Check to make sure the video refresh switch on the system unit is set to the correct position, according to your monitor documentation's frequency refresh rate. For monitors that run at 72 Hz, the switch should be in the up, or two-dot position, as shown in Figure 3–9. For monitors that run at 66 Hz, the switch should be in the down, or one-dot position.

Figure 3–9 Checking the Video Refresh Switch
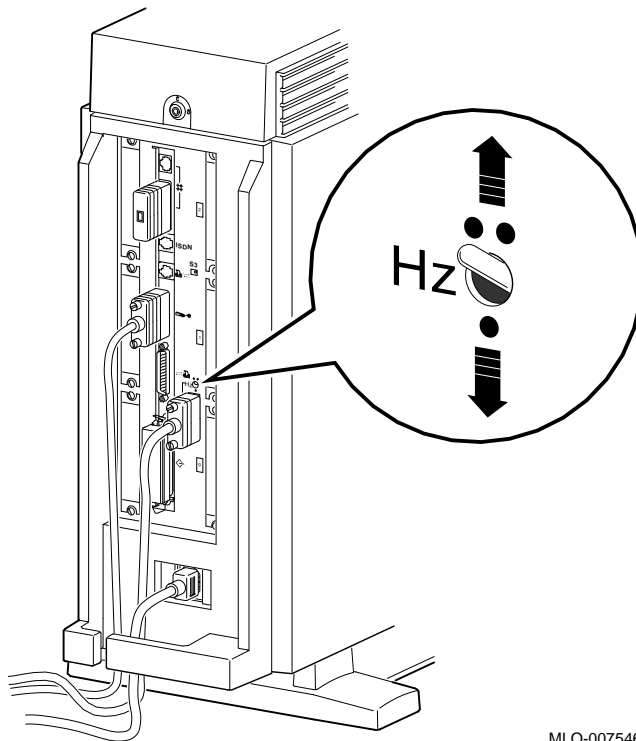
MLO-007546

**Step 10: Check
the Alternate
Console Switch**

Check to make sure the alternate console switch on the system
unit is set to the correct position, which is to the right when you
are using a monitor, as shown in Figure 3–10.

Figure 3–10   Checking the Alternate Console Switch
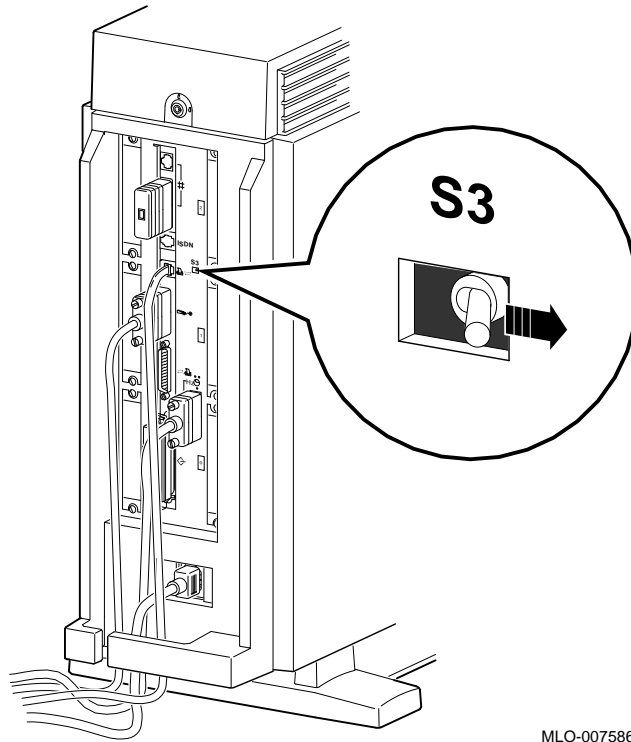
MLO-007586

System Unit Cover Lock

**Additional
System Unit
Security**

Your DEC 3000 Model 500 AXP workstation comes with a cover
lock on the system unit to provide additional security. The
system is shipped with a set of two keys attached to the top
cover of the system unit, as shown in Figure 3–11.

Figure 3–11   System Unit Cover Keys
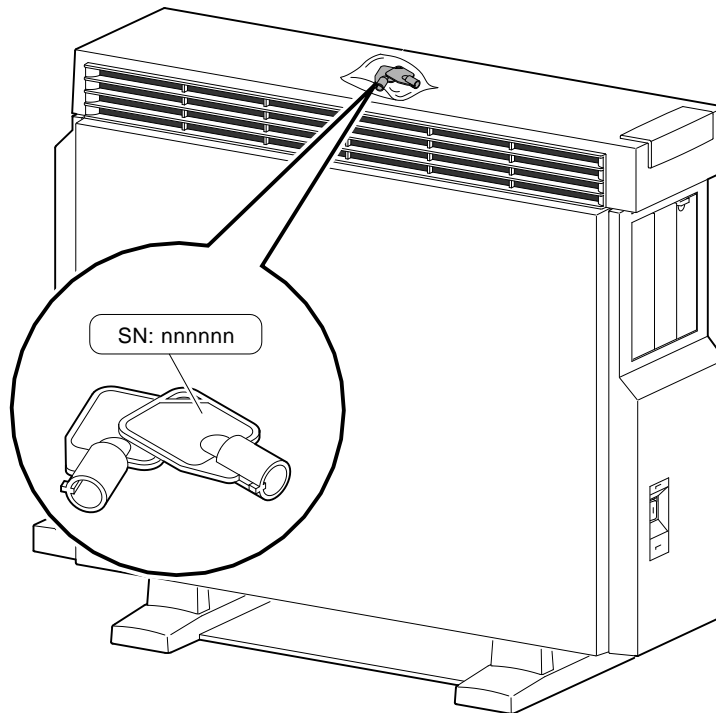
SN: nnnnnn

MLO-008595

Recording the Serial Number of the Keys

If there is a serial number engraved on the system unit keys, record the number in case you lose the keys in the future. (See Figure 3–11.)

Record the serial number of the cover lock keys here:

————————————————————————————–

What to Do if You Lose the Keys

If you lose the keys to your sytem unit cover lock, you will need to call your Digital service representative, as described in Chapter 14. Make sure that you have the keys' serial number. If there were no serial numbers on the keys, provide this information to your Digital service representative.

Locking the Cover

To lock the DEC 3000 Model 500/500S AXP unit, insert the key and turn it clockwise, as shown in Figure 3–12.

Figure 3–12 Locking the System Unit Cover
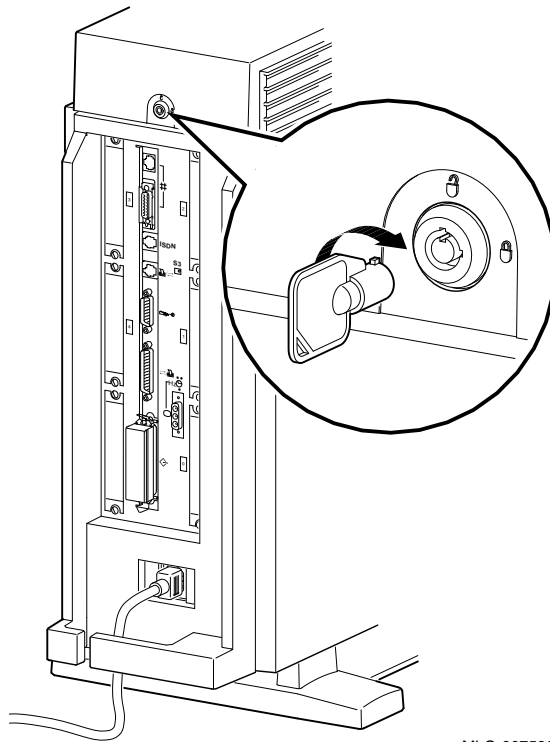
MLO-007590

Checking Your Installation

An Installed Workstation

Check your system against the diagram in Figure 3–13 to make sure that you have connected everything correctly.

Figure 3–13 A Connected Workstation

MLO-010459
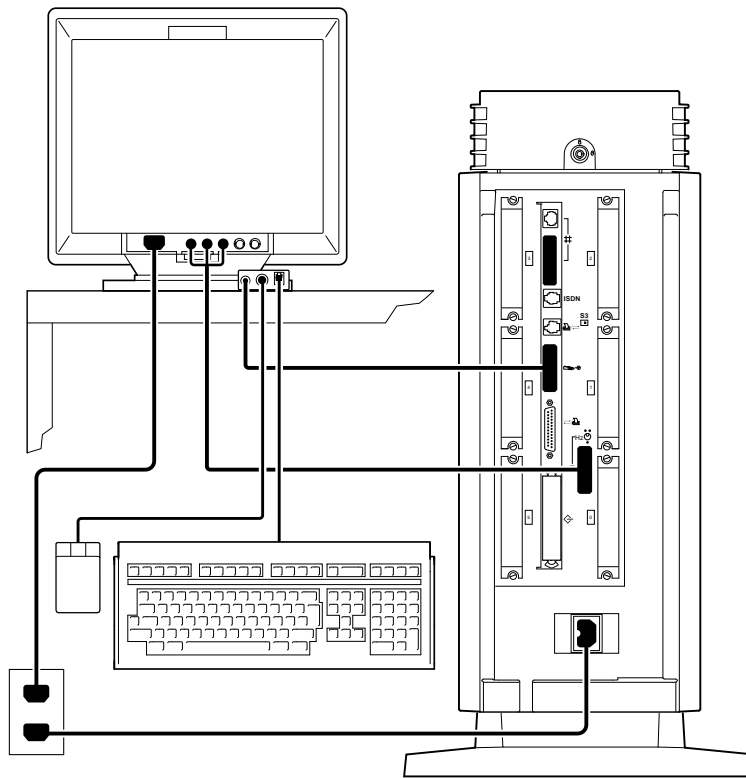
Where to Go Next

Determine Your Next Step

After you have completed the tasks in this chapter, refer to Table 3–4 for information on where to go next.

Table 3–4 Where to Go Next

If you want to...	Go to...
Connect your system to a network	Chapter 5
Start up 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 configuration, see Chapter 3. Your DEC 3000 Model 500S AXP server is designed to be installed quickly and easily. The information in this chapter explains how to install the server system and how to 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 500S AXP Server
- System Unit Cover Lock
- 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 500S AXP
  server.

- Unpacked your DEC 3000 Model 500S AXP server.

- Familiarized yourself with the ports and controls on the rear
  of the system unit.

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

**What You
Should Know**

Note that:

- Installing your system requires little or no previous
  knowledge of computer systems. Connecting your DEC
  3000 Model 500S AXP server should take about 15 minutes.

- This chapter covers connecting your DEC 3000 Model 500S
  AXP server 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 and
additional parts in case you need them later.

Figure 4–1 Parts Needed to Install Your Server

Documentation

Keys
(Attached to System Unit)

Ethernet Loopback
Connector

System Power Cord

System Unit

MLO-010458
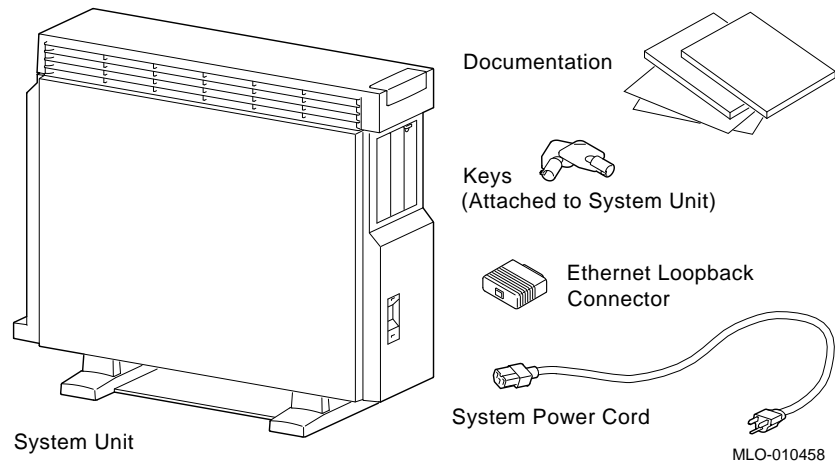
**Installation
Steps**

Table 4–1 gives an overview of the steps involved in installing
your DEC 3000 Model 500S AXP server system components.

**Table 4–1 Steps to Install Your DEC 3000 Model 500S AXP
Server**

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

Step	Check the...	On the...
5	Alternate console switch to make sure it is in the correct position	Rear of the system unit

Connecting the DEC 3000 Model 500S AXP Server

●

**Step 1: Attach
the Ethernet
Loopback
Connector**

Attach 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 (or a DESTA unit), 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
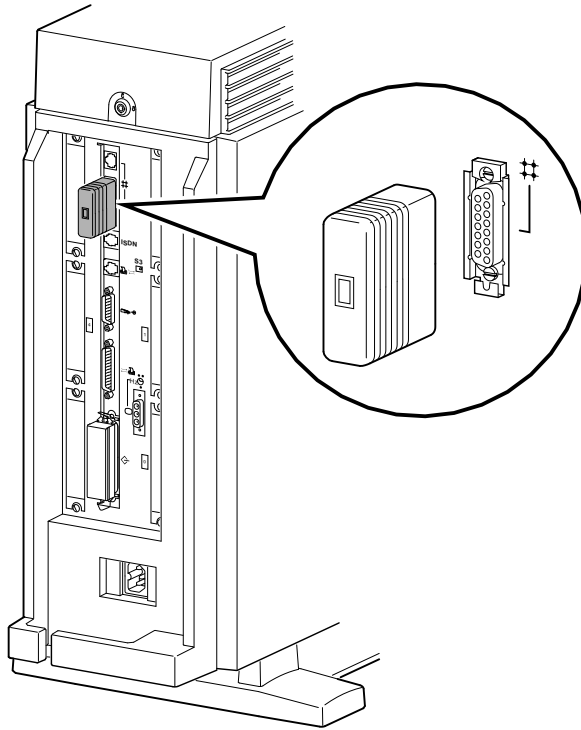
MLO-007543

**Step 2:
Connect
a Console
Terminal to the
System Unit**

Connect a terminal to the alternate console/printer port on
the rear of the system unit as shown in Figure 4–3 in order to
display console and startup information. See Chapter 12 for
more information on using an alternate console device.

Figure 4–3   Connecting a Terminal to the Server
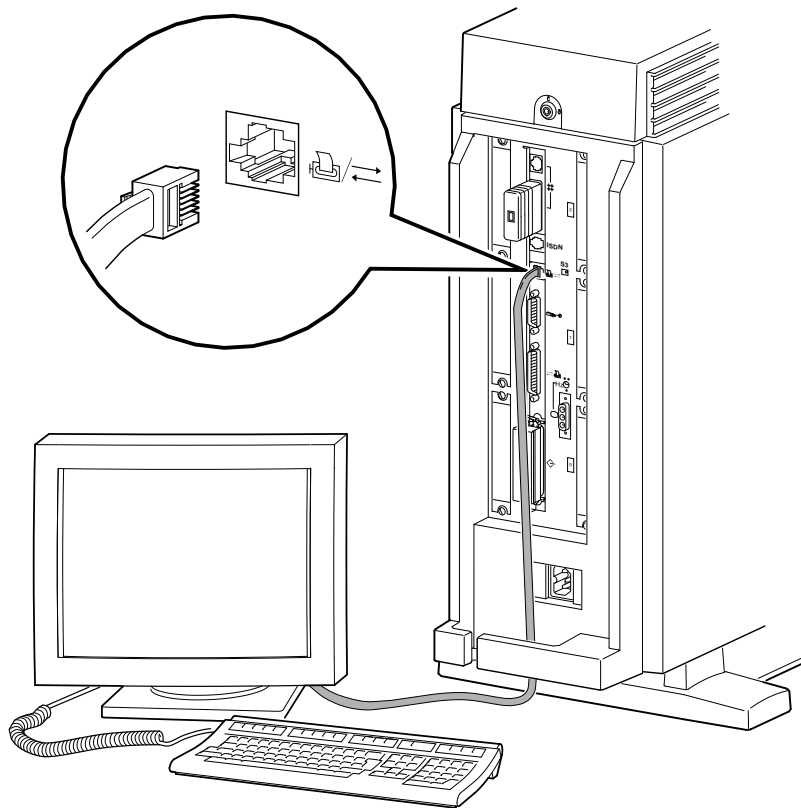
MLO-007552

Yellow Sticker on Power Socket

If there is a sticker similar to the one shown in Figure 4–4 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 4–4   Factory Installed Software Sticker
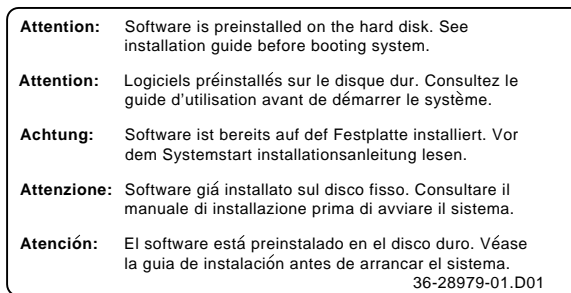
Attention:	Software is preinstalled on the hard disk. See installation guide before booting system.
Attention:	Logiciels préinstallés sur le disque dur. Consultez le guide d'utilisation avant de démarrer le système.
Achtung:	Software ist bereits auf def Festplatte installiert. Vor dem Systemstart installationsanleitung lesen.
Attenzione:	Software giá installato sul disco fisso. Consultare il manuale di installazione prima di avviare il sistema.
Atención:	El software está preinstalado en el disco duro. Véase la guia de instalación antes de arrancar el sistema.

36-28979-01.D01

MLO-007596

When you are ready to start your system, refer to the *OpenVMS AXP Factory Installed Software (FIS) User Information* to start your OpenVMS AXP operating system, or to the *DEC OSF/1 AXP Factory-Installed Software (FIS) User Information* to start your DEC OSF/1 AXP operating system. One of these documents will be shipped with your system, depending on which operating system you have ordered.

**Step 3:
Connect the
System Power
Cord**

Connect the system power cord to the DEC 3000 Model 500/500S
AXP unit, as shown in Figure 4–5. The system power cord is
specially keyed to fit in the system power socket.

Figure 4–5   Connecting Power Cord to System Unit
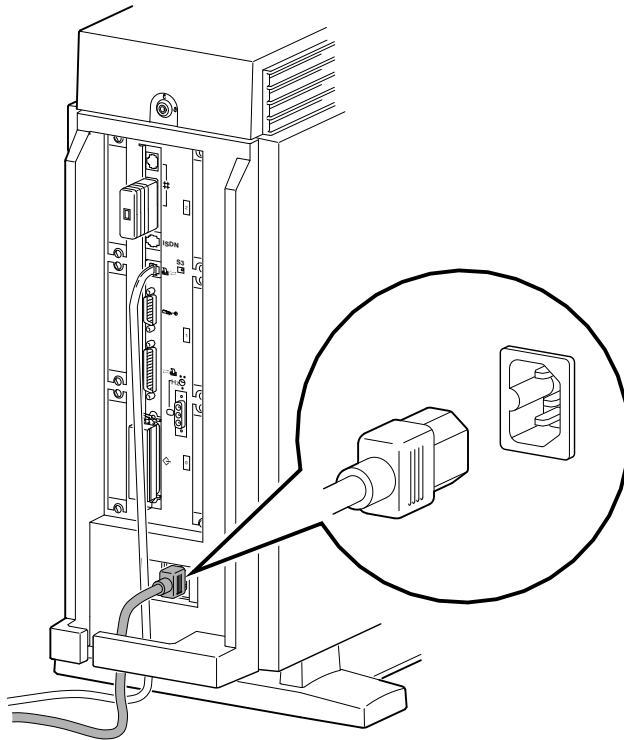
MLO-008582

Step 4: Plug Cord Into Power Outlet

Make sure that the power On/Off switch is in the Off (O) position, and then plug the other end of the power cord into an appropriate outlet.

Step 5: Check 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.

If you have connected a terminal to display console information, the switch should be in the left position as shown in Figure 4–6.

Figure 4–6 Checking the Alternate Console Switch
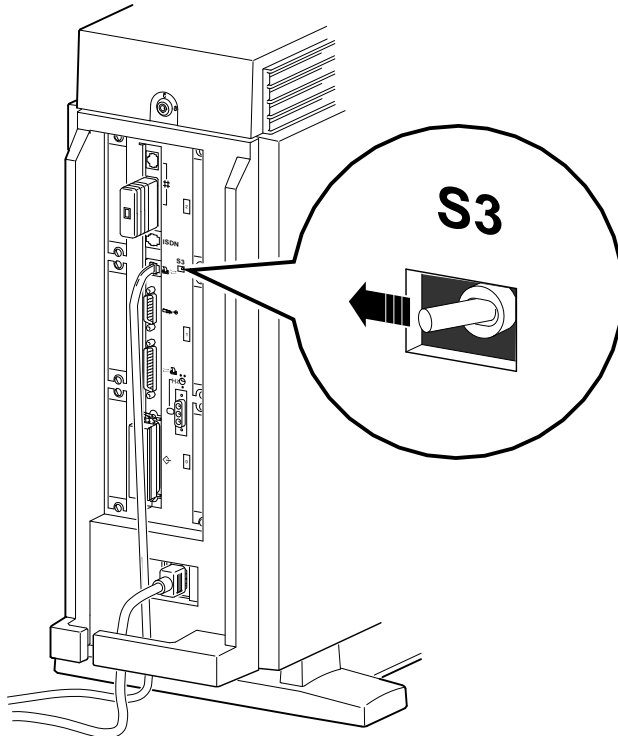
MLO-008573

System Unit Cover Lock

**Additional
System Unit
Security**

Your DEC 3000 Model 500S AXP server comes with a cover lock
on the system unit to provide additional security. The system is
shipped with a set of two keys attached to the top cover of the
system unit, as shown in Figure 4–7.

Figure 4–7   System Unit Cover Keys
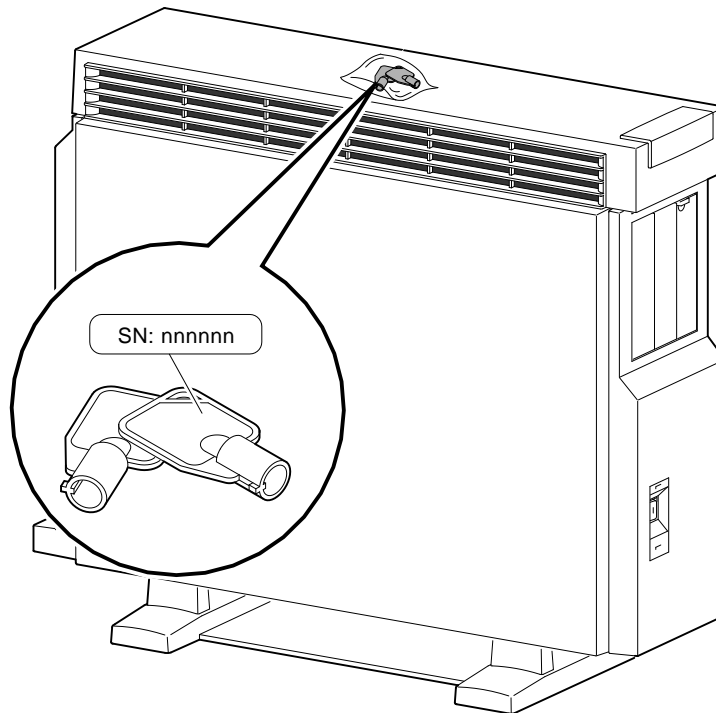
SN: nnnnnn

MLO-008595

Recording the Serial Number of the Keys

If there is a serial number engraved on the system unit keys, record the number in case you lose the keys in the future. The (See Figure 4–7.)

Record the cover lock keys serial number here:

————————————————————————————————

What to Do if You Lose the Keys

If you lose the keys to your sytem unit cover lock, you will need to call your Digital service representative, as described in Chapter 14. Make sure that you have the keys' serial number. If there were no serial numbers on the keys, provide this information to your Digital service representative.

Locking the Cover

To lock the DEC 3000 Model 500/500S AXP unit, insert the key and turn it clockwise, as shown in Figure 4–8.

Figure 4–8 Locking the System Unit Cover
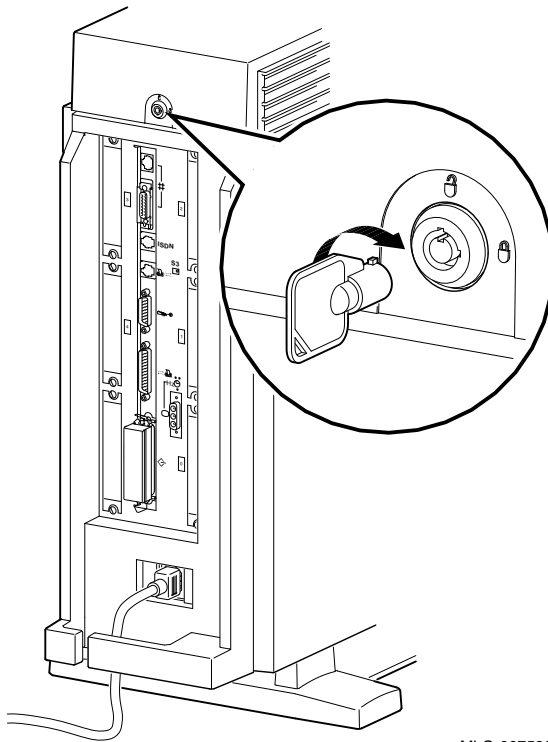
MLO-007590

Checking Your Installation

●

**An Installed
Server**

Check your system against the diagram in Figure 4–9 to make
sure you have connected everything correctly.

Figure 4–9   A Connected Server
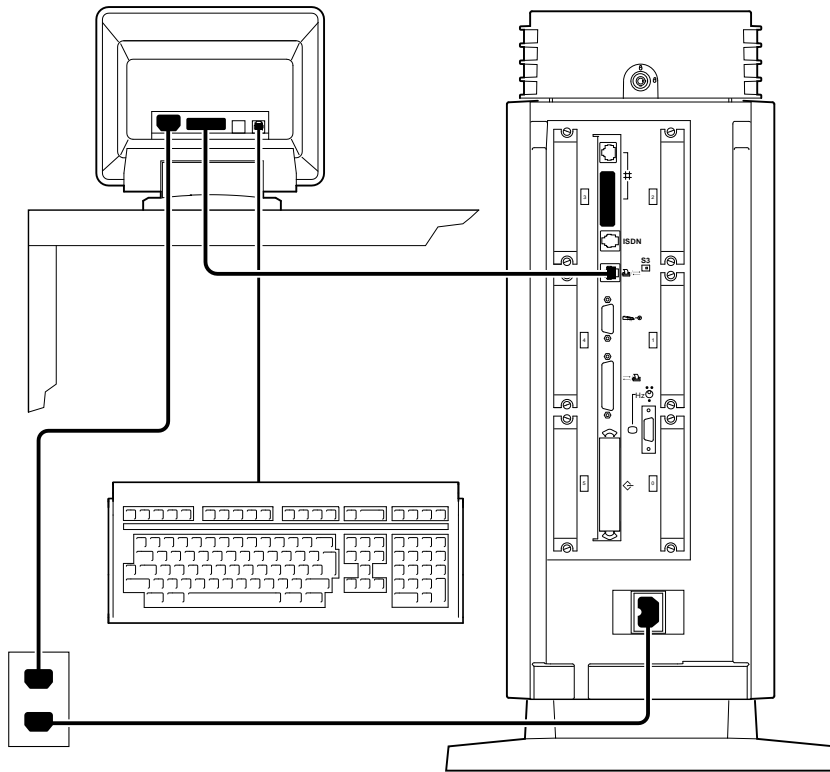
MLO-010460

Where to Go Next

**Determining
Your Next Step**

After you have completed the tasks in this chapter, refer to
Table 4–2 for information on where to go next.

Table 4–2   Where to Go Next

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

5

Connecting the System to a Network

Chapter Overview

Introduction

At some point, you may want to connect your DEC 3000 Model 500/500S AXP system to a network at your site. There are two parts to the task: making the hardware connections and establishing the networking 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 500/500S 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. 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 front access door on the front of the system. (See
Figure 2–10 for the location of the front access door.)

Available Networks

You can connect three different types of networking cables to your DEC 3000 Model 500/500S 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.

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]

[1]Terminator required only if DEC 3000 Model 500/500S AXP system is the last one on a ThinWire cable

Registering Network Information

All networks require you to register network information, such as a node name and number. You must complete this task before you can 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 500/500S 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	Move the sliding lock.

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.

Figure 5–1 Connecting to an AUI Ethernet Network
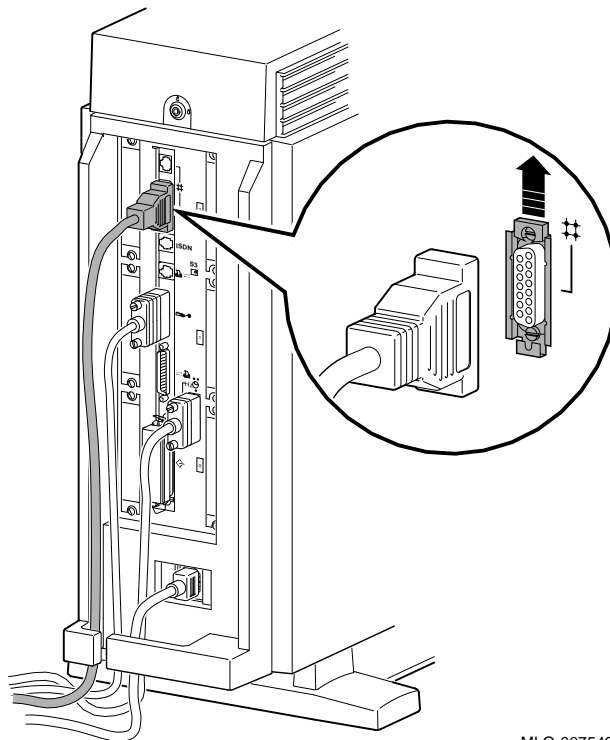
MLO-007549

Step 3: Sliding Lock

Push the sliding lock on the AUI Ethernet cable connector up, 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 500/500S 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.

Figure 5–2   Connecting a 10BASE-T Network Cable
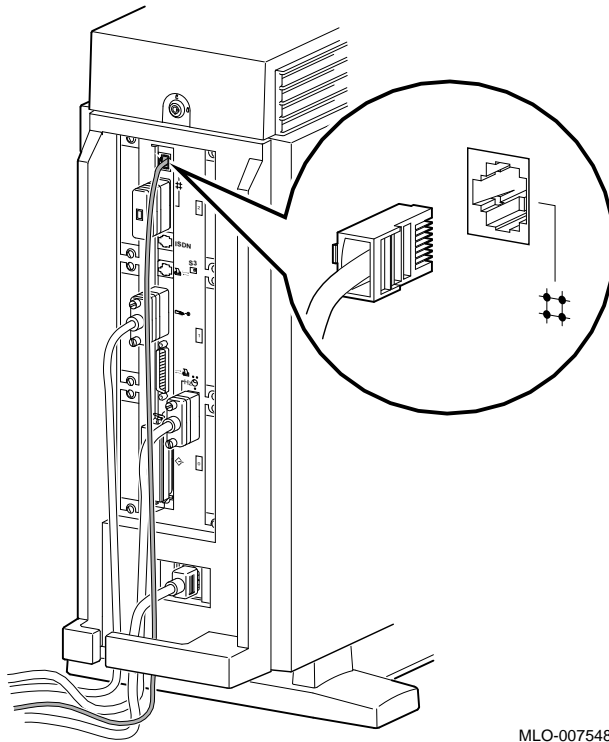
MLO-007548

Connecting to a ThinWire Network

ThinWire Ethernet Connection Procedure

You can connect your DEC 3000 Model 500/500S AXP system to a ThinWire Ethernet network by attaching an Ethernet cable (BNE4C–xx) to the AUI Ethernet port on the system unit, and then attaching a a DECXM transceiver (or a DESTA unit) to the cable.

To connect your DEC 3000 Model 500/500S 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.

**Step 2:
Ethernet Cable**

Connect an AUI Ethernet cable to the AUI port on the rear of
the system unit, shown in Figure 5–1 of this chapter.

**Step 3:
DECXM
Transceiver or
a 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**

MLO-010365
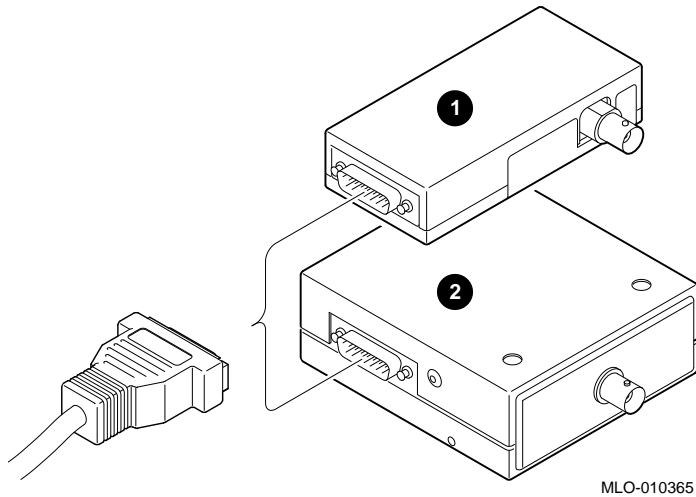
**Step 4:
ThinWire
Cables and
T-Connector**

Connect the ThinWire network cables to the T-Connector and then the T-connector to the DECXM transceiver ❶, or a DESTA unit ❷ unit, as shown in Figure 5–4.

Figure 5–4 Connecting the ThinWire Cables and T-Connector to the DECXM Transceiver or a DESTA Unit
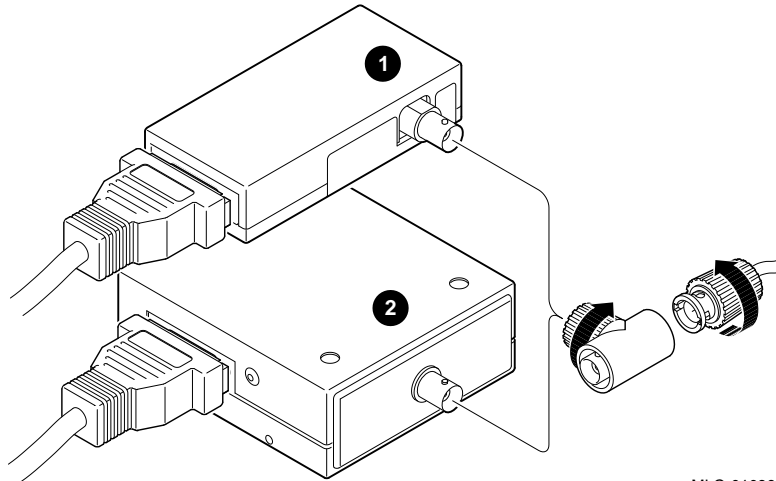
MLO-010368

**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 on the DECXM transceiver ❶, or a DESTA unit ❷, as shown in Figure 5–5.

Figure 5–5   Terminating the Ethernet Connection
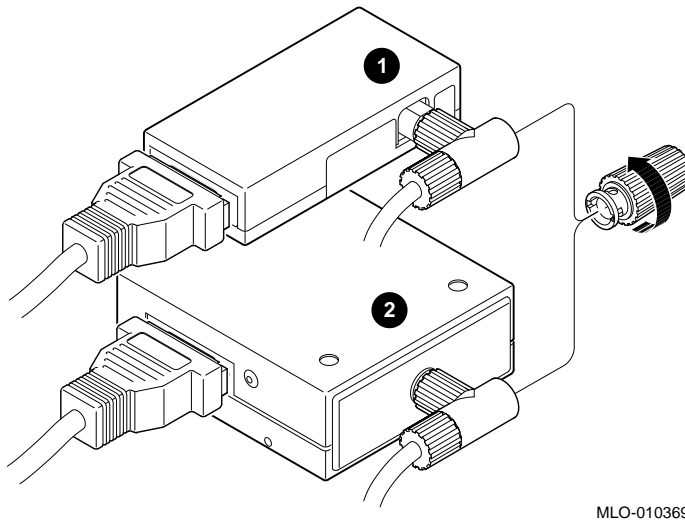
MLO-010369

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	*DECXM–AA Transceiver Installation*, Part Number EK–DECXM–IC.
DESTA unit	*Digital ThinWire Ethernet Station Adapter (DESTA–BA) Installation Card*, Part Number EK–DEST1–IN.

Setting and Verifying the Network Connection

After Cable Connections

After completing the hardware network connections to your DEC 3000 Model 500/500S 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 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 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 front of your system unit to display the console prompt (>>>). See Figure 2–10 for the location of the halt button.

3. Enter the following command and press the Return key:

    ```
    >>> set ethernet network_type  Return
    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  Return
```

Successful Result of test ni

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

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

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 [Return]

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 500/500S 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 the System

Chapter Overview

Introduction   Once you have installed your DEC 3000 Model 500/500S 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 500/500S 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 turning on the power switch, 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 500/500S 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. Expansion box

3. System unit

By turning on your system components in the correct order, your DEC 3000 Model 500/500S 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. It is important that the system unit cover and side panels be in place while the system is operating to insure proper cooling of the system components and devices.

**Workstation
Startup
Procedure**

To start up the DEC 3000 Model 500 AXP workstation 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 BA350 expansion box.
3	Turn the On/Off switch ❶ on the front of the system unit to the On (	) position, as shown in Figure 6–1.

**Server Startup
Procedure**

To start up the DEC 3000 Model 500S AXP server system,
perform the steps in Table 6–2.

Table 6–2 Steps for Starting a Server

Step	Description
1	Turn the terminal power switch to the On position (	).
2	Turn on the power switch to any other devices, such as a BA350 expansion box.
3	Turn the On/Off switch ❶ on the front of the system unit to the on (	) position, as shown in Figure 6–1.

Figure 6–1 Turning On the DEC 3000 Model 500/500S AXP System
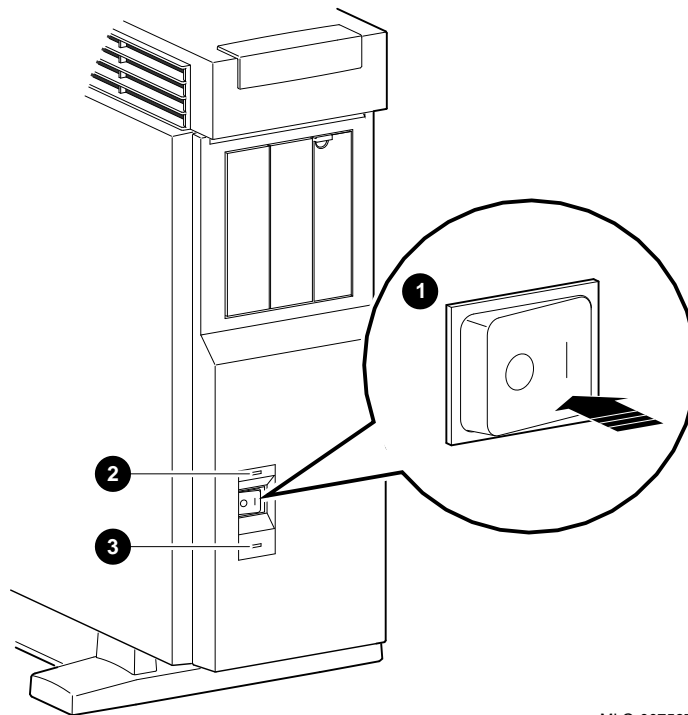
MLO-007597

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

If the power light does not come on, or the fan failure light ❸ comes on, see Chapter 13.

What You Should See on a Workstation	When you turn on your workstation monitor and then the system unit, you should see the graphics option diagnostic startup tests displayed on the monitor screen. During this time the monitor display will flash colors (if you have a color monitor), and/or change patterns for a few seconds.
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 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 - M500
Digital Equipment Corporation
System conducting power up tests.
-----------------------------------------------------

Devnam          Devstat
--------        ----------
    CPU         OK KN15-AA - V2.x-S080-IO60 - DECchip 21064 P3.0
   ASIC         OK
    MEM         OK  128MB
    NVR         OK
    CXT         OK
    SCC         OK  ptr(0) = Present keybd(2) = Present
     NI         OK  Ethernet Address: 08-00-2B-1D-1E-EF , THICK
   SCSI         OK
   ISDN         OK
    TC0         OK
-----------------------------------------------------
System power up OK.
Enter B to boot software from DKA300

    >>>
```

Understanding   The startup display provides the status of hardware components
the Startup   in your system. The two columns provide the following
Display   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.
CXT	Status of the integral two-dimensional graphics.
SCC	Status of the Serial Communication Controller, which includes the keyboard and mouse tests.
NI	Status of the Ethernet network interface(NI).
SCSI	Status of SCSI bus.
ISDN	Status of ISDN/Audio chip.
TC0	Status of TURBOchannel device(s). There are six TURBOchannel slots available, 0, 1, 2, 3, 4, and 5. 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 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	*OpenVMS AXP Factory Installed Software (FIS) User Information* shipped with your system.
DEC OSF/1 AXP operating system	*DEC OSF/1 AXP Factory-Installed Software (FIS) User Information* shipped with your system.

OpenVMS AXP Initial Startup Screen

If your system has the OpenVMS AXP operating system factory-installed, you will see a display similar to the one shown in Figure 6–3 when you first turn on your system and after the system startup messages are completed.

Figure 6–3 OpenVMS AXP Initial Startup Display

```
+----------------------------------------------------------------------+
|                       OpenVMS Operating System                       |
|                                                                      |
|                  Factory Installed Software Procedure                 |
+----------------------------------------------------------------------+

Welcome to the OpenVMS Factory Installed Software (FIS) procedure.

Please wait while the FIS procedure initializes the system.  This will
take between one and five minutes, depending on the type of computer.

System initialization continuing,  please wait...
System initialization continuing,  please wait...
System initialization continuing,  please wait...
```

OpenVMS AXP Startup Dialog

The OpenVMS AXP Factory Installed Software (FIS) procedure that runs when you first start your system prompts you to answer some questions, and then restarts your system. To get help on any question, press ? and press the Return key at any of the prompts. Follow the instructions on the screen to complete the dialog.

Log In to Your System

After the OpenVMS AXP Factory Installed Software (FIS) procedure is complete, 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 6–4 will be displayed.

**Figure 6–4 OpenVMS AXP DECwindows Motif Start Session
Screen**
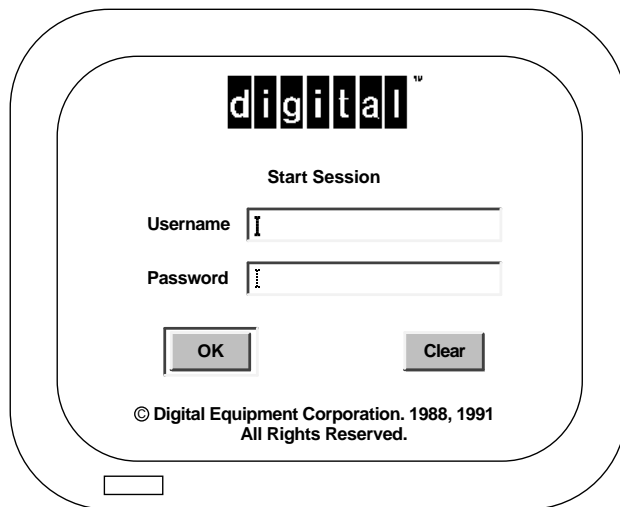
ZK–3620A–GE

- 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.

**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 system and after the system startup messages are completed.

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.

**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**
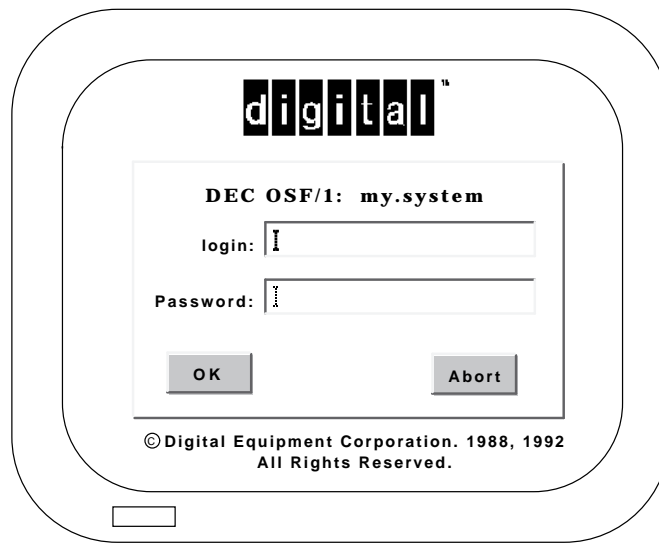
ZK–0766U–R

- 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.
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	*OpenVMS Alpha Version 1.0 Upgrade and Installation Manual*
DEC OSF/1 AXP	*Guide to Installing DEC/OSF1 Alpha*

Note: OpenVMS AXP Conversational Boot	If your system hangs or fails to boot completely, you may need to perform a conversational boot, also known as a minimum boot. Information on this procedure is described in detail in the document listed in Table 6–5.

Where to Go Next

**After Your
System Starts**

Once your DEC 3000 Model 500/500S 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 the 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 500/500S 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	*OpenVMS Alpha Version 1.0 Upgrade and Installation Manual* or the *OpenVMS System Manager's Manual*
DEC OSF/1 AXP	*System Management, Vol 2, Guide to System Shutdown and Startup.*

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
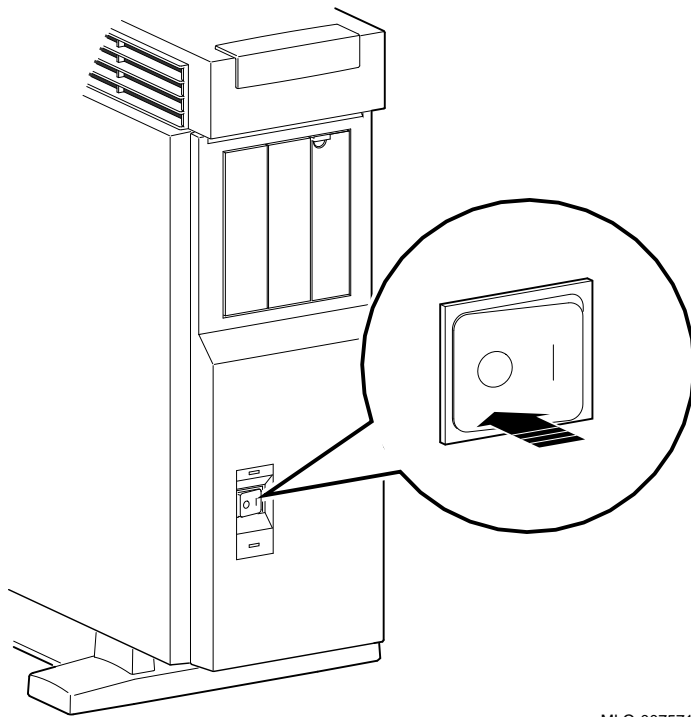
MLO-007571

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.

**Pressing the
Halt Button**

To halt the system, locate the halt button on the front of the
system unit, press it once and release it, as shown in Figure 7–2.

Figure 7–2 Pressing the Halt Button
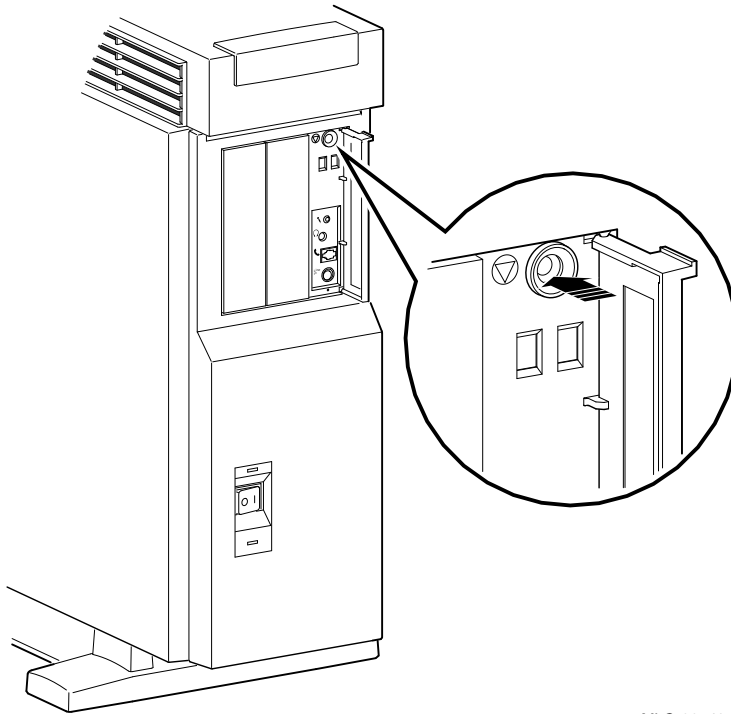
MLO-007497

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.

Returning to Program Mode

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

```
>>>continue  Return
```

Press the Ctrl and F2 keys to remove the console display area from the top of your screen and return to a full DECwindows Motif display.

8

Maintaining the System

Chapter Overview

Introduction   While your DEC 3000 Model 500/500S 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 500/500S 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
- Removing the Front Access Door

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 500/500S 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 500/500S 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. Unplug the keyboard from the system unit.

2. Wipe up the excess water immediately.

3. Turn your keyboard over to drain any remaining water.

4. 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 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
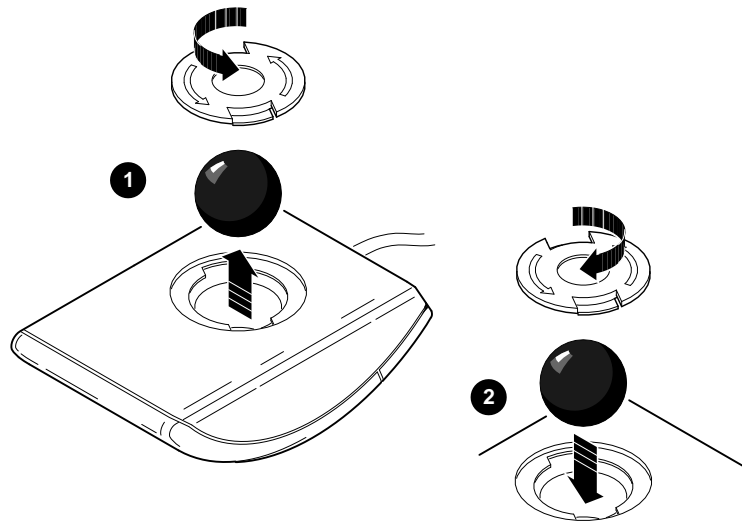
MLO-010355

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.

Removing the Front Access Door

●

Procedure to Remove Front Access Door

If you wish to remove the front access door to have improved access to the audio ports, halt switch and indicator lights, follow the steps listed in Table 8–2 and see Figure 8–2.

Table 8–2 Steps to Remove the Front Access Door

Step	Procedure
1	Place thumbs in center of front access door
2	Place index fingers on either end of door
3	Gently apply pressure to middle of door with thumbs
4	As door is bent inward, slide door free of hinge

Figure 8–2   Removing the Front Access Door
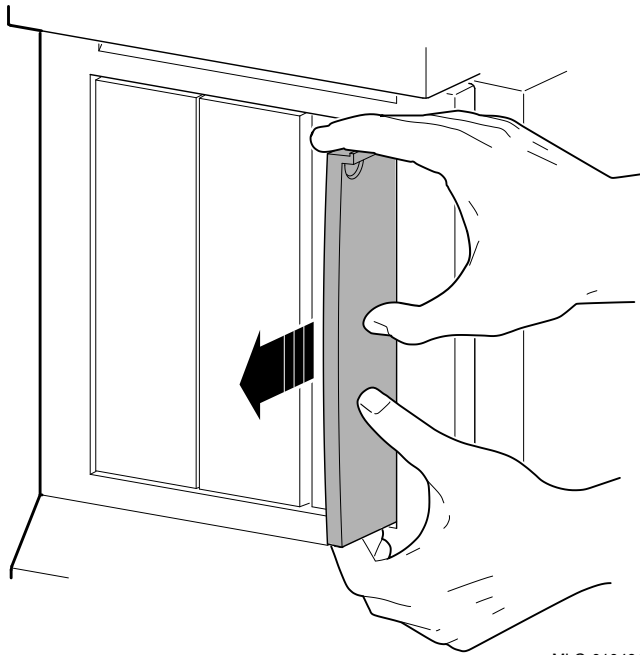
MLO-010461

Part II
Advanced Operations

Part II describes how to perform advanced operations with the
DEC 3000 Model 500/500S 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 500/500S 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 500/500S 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 500/500S AXP Service Guide*.

Modes of System Operation

Two Modes of Operation

Your DEC 3000 Model 500/500S 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 *DEC 3000 and DEC 4000 AXP 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 Return
```

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
-flags	`-fl` *<value>*	ASCII string of up to 23 characters.
-filename	`-fi` *<filename>*	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.
boot_device	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	*OpenVMS Alpha Version 1.0 Upgrade and Installation Manual*
DEC OSF/1 AXP operating system	*Guide to Installing DEC/OSF1 Alpha*

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" Return
```

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 for the boot command in 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.

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 `Return`

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 `Return`

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 `continue` command returns the system to operating system level after console mode has been invoked.

DEC OSF/1 AXP Operating System This command is not applicable for systems running the DEC OSF/1 AXP operating system. You can halt the system, enter console commands, and then return to program mode using the `continue` command only on systems running the OpenVMS AXP operating system.

Command Syntax Issue the `continue` command as follows:

>>> continue [Return]

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 `test`, `init`, and `deposit` commands.

The halt Command

Description The `halt` command halts the system. There are no parameters associated with this command.

Command Syntax

Issue the `halt` command as follows:

>>> halt `Return`

The system halts and the following message displays:

```
   ?2E HLTD

 >>>
```

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 `Return`

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

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

Command Example

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

```
>>> help show  Return
```

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  Return
```

**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* [Return]

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 [Return]

The system responds with the following information:

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

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

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
CXT	Integral two-dimensional graphics
SCC	Serial communications controller
NI	Network interface (Ethernet)
SCSI	SCSI device(s)
ISDN[1]	79C30A AMD chip
TCn	TURBOchannel options, where n is the number of the TURBOchannel device you wish to test

[1]Running ISDN diagnostic tests also tests the audio port

Command Syntax	Issue the test command as follows:

```
>>> test component Return
```

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 500/500S 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 500/500S 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 500/500S 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. This is available for loadable diagnostics 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	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 500S AXP server
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  Return

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 `halt` instruction.	*restart* or *1*
Boot. Boot automatically only when system is turned on.	*boot* or *2*
Halt. Halt at the console prompt (>>>) when system is turned on or following a software `halt` instruction.	*halt* or *3*

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

                          >>> set auto_action *parameter*
                          Return

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

Command   This command sets the default startup action to halt at the
Example   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 Return
                          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 for the boot command in 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.

Command Syntax

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

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

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 a display similar to the one shown in Figure 10–1.

Figure 10–1 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          1.05GB    FX          RZ26     T368
 DKA100     A/1/0      DISK        426.25MB    FX          RZ25     0700
 DKA200     A/2/0      DISK        426.25MB    FX          RZ25     0700
 DKA300     A/3/0      DISK        426.25MB    FX          RZ25     0700
 DKA400     A/4/0      RODISK        .....     RM      WP  RRD42    4.3d
 ..HostID.. A/7        INITR
 ..HostID.. B/7        INITR
```

Understanding the show device Display

The `show device` command displays several columns of information. The sample `show device` display indicates that there is one RZ26 with device name DKA0 and three RZ25 devices with device names DKA100, DKA200, and DKA300 installed in the system. For a complete description of the `show device` command, see Chapter 14.

Command Example Using a Device List

You can set the `bootdef_dev` environment variable so that the systems 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  Return
```

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. The system enters the diagnostic test mode each time the system is powered on.

Available Settings

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

• *on* to perform quick diagnostic tests of TURBOchannel devices

• *off* to perform normal diagnostic tests of TURBOchannel devices

Default Setting

The default setting for the `diag_quick` environment variable is *off*, so that normal diagnostic tests of 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  [Return]
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 500 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   [Return]
```

**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  Return

 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  Return

LANGUAGE = 14
>>>
```

11

Using the Password Security Feature

Chapter Overview

Introduction   The DEC 3000 Model 500/500S 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 Can Use This Chapter
- Before You Begin
- Task Overview
- Entering a Password
- Enabling System Security
- Forgetting the Password
- Disabling or Changing the Password

Before You Can Use This Chapter

Important: Secure Console Mode	In order to use the password security feature, your system must be in secure console mode, with the secure system jumper inside the system unit enabled. Your DEC 3000 Model 500/500S AXP system is shipped from the factory with this secure system jumper disabled. You must contact your Digital service representative to have the jumper enabled. See Chapter 14 for information on how to contact your Digital service representative.
Note: No Functionality	Please note that none of the functionality of the password security feature will be available until your system is set to secure console mode. Once your system has been set to secure console mode by your Digital service representative, you can proceed with this chapter.

Before You Begin

**What You
Should Do First**

Before using the password security feature, you should complete
the following tasks:

- Put your system in console mode. If your system is not
  displaying the >>> prompt, refer to Chapter 7 to halt your
  system.

- Read Chapter 9 and this chapter before continuing.

**What You
Should Know**

Using the password security feature requires an intermediate
knowledge of your system, and it is advised that you have some
level of software experience. Do not use the password security
feature without fully understanding the effect that the change
may have on your DEC 3000 Model 500/500S AXP system. Using
console commands incorrectly could lock you out of your system.
Make sure that you note your password once you have set it.

If you are not sure about using the password security feature,
ask your system manager for help.

**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 the privileged
console commands, such as `halt`, `set`, `deposit`, and `boot`. By
using the password security feature, you can restrict access to
these key console mode functions.

**Privileged
Commands**

Once you invoke the password security feature, certain console
commands become privileged—you can issue these commands
only if you use the password when you enter 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` or `start`, are considered privileged
commands.

List of Privileged Commands

Table 11–1 lists both privileged and nonprivileged console commands.

Table 11–1 Console Command Access

Privileged Commands	Nonprivileged Commands
boot (with parameters)	boot (with no 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	help
initialize	! (to enter comment text that the system does not act upon)
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.

Task Overview

●

Steps to Making the System Secure

Making your DEC 3000 Model 500/500S 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
4	Log in to the system

Each of these tasks is described in this chapter.

Entering a Password

●

Enter a New Password

When your system arrives from the factory, the password security feature is not enabled and no password has been entered in the system. 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 prompt.

Table 11–3 Entering a Password

Enter this command:	System responds...
>>> set password	PSWD1>
PSWD1> *new_password* Return	PSWD2>
PSWD2> *new_password* 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 aborts
the password command and displays the following error message:

```
? 30 ILL PSWD
```

**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 Forgetting
the Password later in this chapter, or call your Digital service
representative to regain access to the privileged console mode.

Enabling System Security

**Enable Secure
Environment
Variables**

Once you have entered and confirmed your password, you must
enable the password security feature by following the steps listed
in Table 11–4.

Table 11–4 Enabling System Security

Step	Description
1	Check the current status of the password security feature by entering the show secure command at the console prompt as follows:
	>>> show secure Return
	SECURE = OFF
	A zero response indicates that the password security feature is not enabled.
2	Enable the password security feature with the following command:
	>>> set secure on Return
	The system responds with the following display:
	SECURE = ON

Forgetting the Password

**Erase the
Current
Password**

If you forget your password, you must complete the steps in
Table 11–5 to erase your password and regain access to your
system.

Table 11–5 Steps to Access System

Step	Description
1	Make sure the secure system jumper is in the disabled position. See Chapter 14 for information on how to contact your Digital service representative to have him perform this task.
2	Enter the `deposit` 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 /u/q-n:2 1E0200088 0  Return
```

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 off
```

The system responds with the following display:

```
SECURE = OFF
```

Changing the Password

To change the password, enter the commands listed in Table 11–6. Note that passwords must be exactly 16 digits in length and use the values 0 through 9 or A through F. Alphanumeric passwords are not accepted as console passwords.

Table 11–6 Entering a Password

Enter this command:	System responds...
`>>> set password`	PSWD0>
PSWD0> *old_password* `Return`	PSWD1>
PSWD1> *new_password* `Return`	PSWD2>
PSWD2> *new_password* `Return`	>>>

If the two passwords you entered match, your password is changed.

If You Make an Error

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

```
? 34 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: Connect a Terminal or Printer, 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	Change the alternate console switch.
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.

**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**
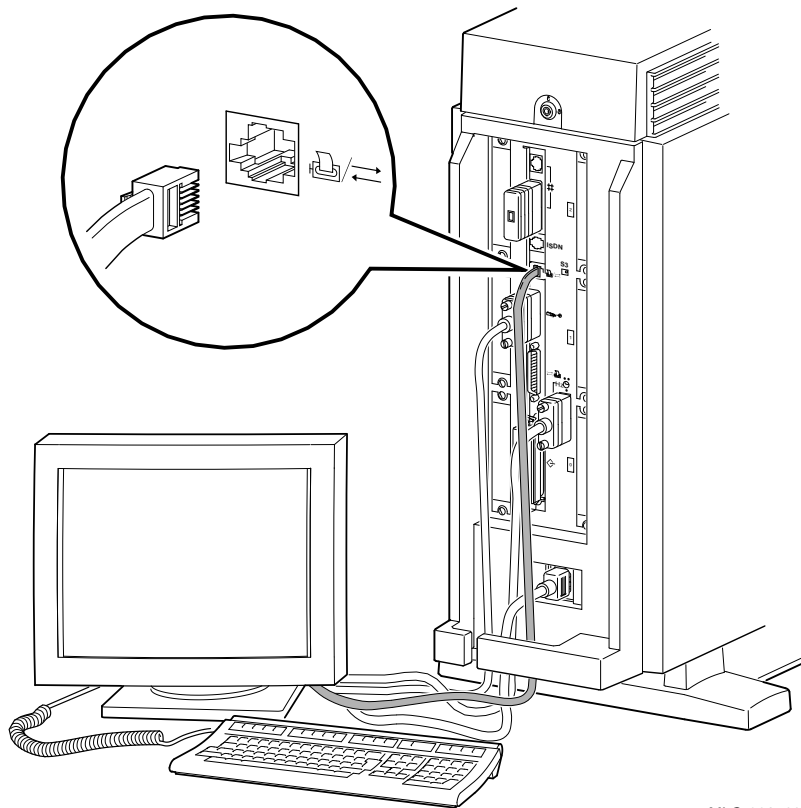
MLO-008593

**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 set to the left as shown in Figure 12–2.

Figure 12–2   Changing the Alternate Console Switch
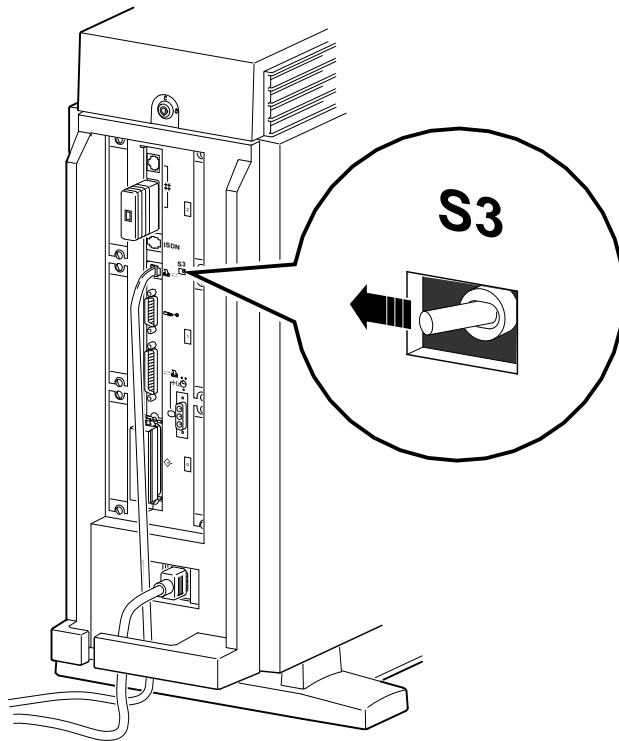
MLO-008573

**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 unit by switching the power On/Off switch to the off (O) position. See Figure 7–1 for the location of the power switch.

2. Wait 10 to 15 seconds.

3. Turn on the system unit (by switching the power On/Off 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 500/500S AXP system. This part 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 500/500S 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 Display

- 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 500/500S 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 500/500S 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
Errors in the show Command	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.

If the fan failure lights ❷ comes on, you will need to contact your Digital Services representative, as described in Chapter 14.

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.

Figure 13–1 Power Indicator Light
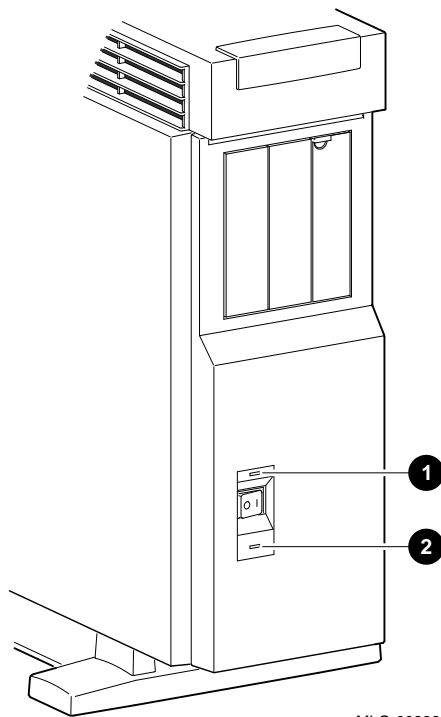
MLO-008922

**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
Monitor is not plugged in.	Plug the monitor power cord into a power outlet of the correct voltage.
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.
Wall socket may not be operative.	Try a different wall socket, or try an electrical device that you know works in the wall socket.

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 with an error message.

Figure 13–2 Startup Display with Error

```
DEC 3000 - M500
Digital Equipment Corporation
System conducting power up tests.
--------------------------------------------------
Devnam     Devstat
--------    ----------
    CPU     OK KN15-AA - V2.x-S080-IO60 - DECchip 21064 P3.0
   ASIC     OK
    MEM     OK  128MB
    NVR     OK
    CXT     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 connector block

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.

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 described in the next section, 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.
The scsi_reset variable is not properly set.	Set scsi_reset to 4 to allow the SCSI devices enough time to recover from a SCSI bus reset.
The boot_reset variable is not properly set.	Set boot_reset to ON so that firmware will initialize the kernel hardware and any TURBOchannel devices.
Software problem.	Check your operating system documentation for information or call your Digital service representative.

Interpreting the show Command Display

Overview

Your system includes various 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...
show config	System components
show device	The Ethernet interface and any optional devices, such as SCSI internal disk drives
show error	Any errors detected on your system
show memory	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.

**show config
Error Display**

Figure 13–3 shows a show config **command display that includes
an error.**

Figure 13–3 Configuration Display with Error

```
>>>show config  Return
```

```
DEC 3000 - M500
Digital Equipment Corporation
     VPP PAL X4.18-82000101 - Built on 10-MAR-1992 00:00:00.00
TCINFO      DEVNAM       DEVSTAT
------      --------     ---------
               CPU       OK KN15-AA-V1.x-SO86-IO62-DECchip 21064 P3.0
               ASIC      OK
               MEM       OK
8
               CXT       OK
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 for one or more system components, 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, and the device name.

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 , THICK
 DKA0       A/0/0     DISK          1.05GB     FX          RZ26      T368
 DKA100     A/1/0     DISK         426.25MB    FX          RZ25      0700
 DKA200     A/2/0     DISK         426.25MB    FX          RZ25      0700
 DKA300     A/3/0     DISK         426.25MB    FX          RZ25      0700
 DKA400     A/4/0     RODISK        .....      RM      WP  RRD42     4.3d
 ..HostID.. A/6       INITR
 ..HostID.. B/6       INITR
```

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.

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.

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 500/500S 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.

Do not set any of the SCSI device ID numbers to 7. This number is used for the SCSI controller on the system.

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.

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 no SCSI ID numbers are duplicated, you will see the new device with a new SCSI ID number on the show device display.

The show error Command

The show error command displays specific information about any error that is occurring within your DEC 3000 Model 500/500S 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
CXT	Integral two-dimensional graphics
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

[1]Running ISDN diagnostic tests also tests the audio port

Error information about TURBOchannel devices is not displayed by the show error command. Refer to the *DEC 3000 Model 500/500S 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  Return
? 003    SCC  0x0050
  ? T-ERR-SCC-LK401 - 0 char rcvd
     T-STS-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 format.

For a complete list of FRU numbers and diagnostic test error
numbers, see the *DEC 3000 Model 500/500S 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.

**The show
memory
Command**

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 mem 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 - M500 Memory: 128 Mbytes
------------------------------------------
BANK #        MEMORY_SIZE        START_ADDRESS
------        -----------        -------------
  0           032 Mbytes         0x00000000
  1           032 Mbytes         0x02000000
  2           032 Mbytes         0x04000000
  3           032 Mbytes         0x06000000
  4           000 Mbytes         0x00000000
  5           000 Mbytes         0x00000000
  6           000 Mbytes         0x00000000
  7           000 Mbytes         0x00000000

>>>
```

**Elements in the
show memory
Display**

Figure 13–6 indicates that memory banks 0, 1, 2, and 3 each
have 32 megabytes of memory. Memory banks 4, 5, 6, and 7 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.

Corrective Action

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 set to the left, it is incorrect for a workstation. Complete these steps to change the switch position:

1. Turn off the system unit (power switch to the O position).

2. Move the alternate console switch to the right. 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).

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.
Video refresh switch may be set to the wrong position.	Switch the video refresh switch to the up, or two-dot position for 72 Hz monitors, and to the down, or one-dot position for 66 Hz monitors. Refer to your monitor documenation for your monitor's Hz rating.

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 a power outlet of the correct voltage.
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
Pointing device cable is installed incorrectly or is loose.	Turn off the system unit. Unplug and then replug the keyboard/mouse connector block 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 boot at the console prompt (>>>).
Faulty pointing device.	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 Device 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.

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 previous section on Understanding SCSI ID Numbers, or refer to the *DEC 3000 Model 500/500S AXP Options Guide* 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.
The scsi_reset variable is not properly set.	Set scsi_reset to 4 to allow the SCSI devices enough time to recover from a SCSI bus reset.
The boot_reset variable is not properly set.	Set boot_reset to ON so that firmware will initialize the kernel hardware and any TURBOchannel devices.
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.

**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. (See the previous section on Understanding SCSI ID Numbers, or refer to *DEC 3000 Model 500/500S AXP Options Guide* for information on setting SCSI IDs.)

Network Problems

Overview

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

NI Error Message in Screen Displays

If an error message is displayed next to the identifier "NI" in the device name column in the startup display or when verifying or testing the Ethernet connection, see Table 13–20.

Table 13–20   Resolving NI Errors

Possible Cause	Corrective Action
No Ethernet loopback connector or cable was installed.	Attach the Ethernet loopback terminator shipped with your system. See Figure 3–2 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 set ethernet 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.

After Solving an NI 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.

14
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:

- Put your DEC 3000 Model 500/500S AXP system in console mode. (See Chapter 7.)

- 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 any of these tasks, please refer to the relevant section 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 3–2 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
CXT	Integral two-dimensional graphics	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

[1]Running 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   Return
```

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   Return
```

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 name 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 an SCC test display.

Figure 14–1   SCC Diagnostic Test Display

```
>>> test scc   Return
T-STS-SCC-OK
>>>
```

**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  Return
INIT-S-CPU...
INIT-S-RESET_TC...
INIT-S-ASIC...
INIT-S-MEMO...
INIT-S-NVR...
INIT-S-CXT...
INIT-S-SCC...
INIT-S-NI...
INIT-S-SCSI...
INIT-S-ISDN...

>>>
```

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 listed in the screen display.

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-STS-SCC-OK
>>>
```

Recording the Diagnostic Display Light Pattern

Diagnostic Display Lights Location

On the front of the system unit, there are two diagnostic display lights, as shown in Figure 14–5.

Figure 14–5   Position of Diagnostic Display Lights
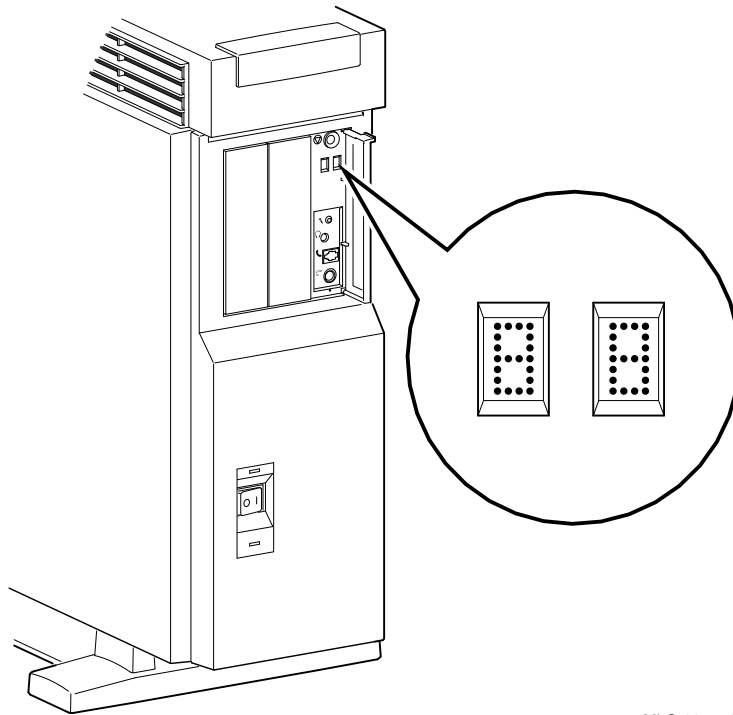
MLO-007570

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

Understanding the Diagnostic Lights

During system startup, the diagnostic display lights flash on an array of different numbers and letters as the system startup tests are performed. The numbers on the display are not random. They represent the hexadecimal number of a test action or result.

For instance, when the startup tests are completed successfully and your system is in console mode, the diagnostic display lights display the hexadecimal code DD, as shown in Figure 14–6.

Figure 14–6 Console Mode Diagnostic Lights

MLO-010467
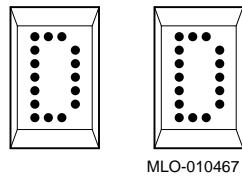
When your system is in program mode, the diagnostic display lights display the hexadecimal code 00.

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.

Be sure to note 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 500/500S 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 14–3, 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.

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 14–7. Your Digital service representative will need this information when you call.

Figure 14–7 Serial and Model Numbers
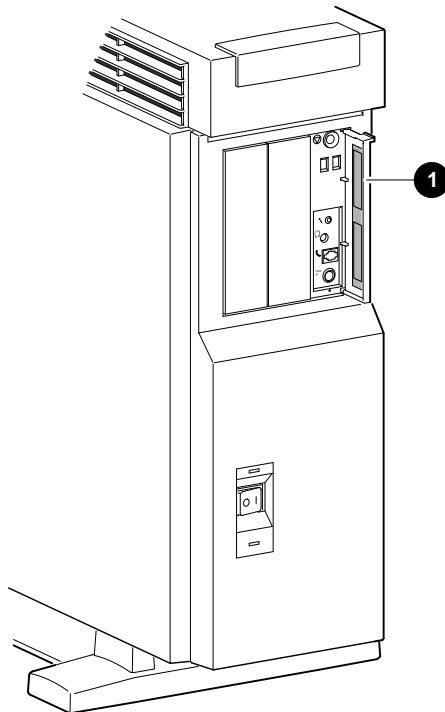
MLO-008571

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 14–3 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.

Table 14–3 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

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

- 10BASE-T loopback connector

- Alternate console/printer port loopback connector

- Modem loopback connector

While your Digital service representative will provide verbal instructions, the following diagrams indicate where these loopback connectors should be attached 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 14–8.

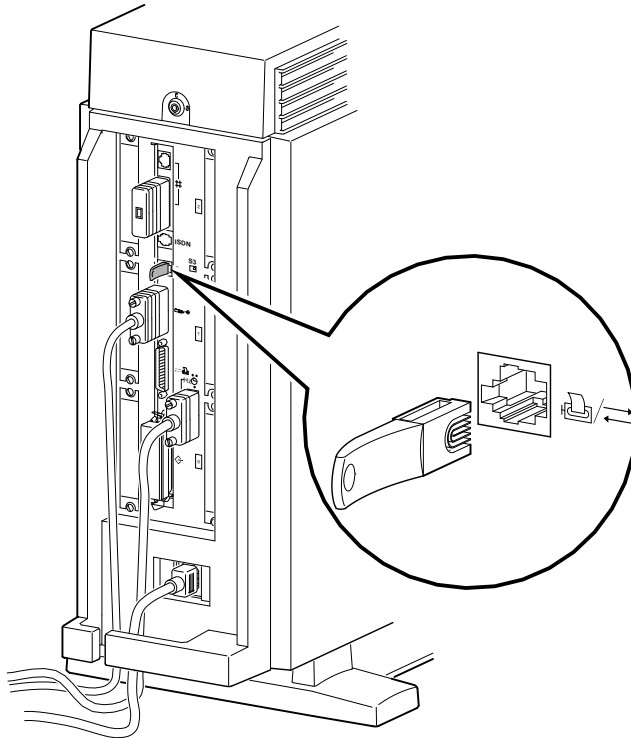**Figure 14–8   Connecting the 10BASE-T Loopback Connector**
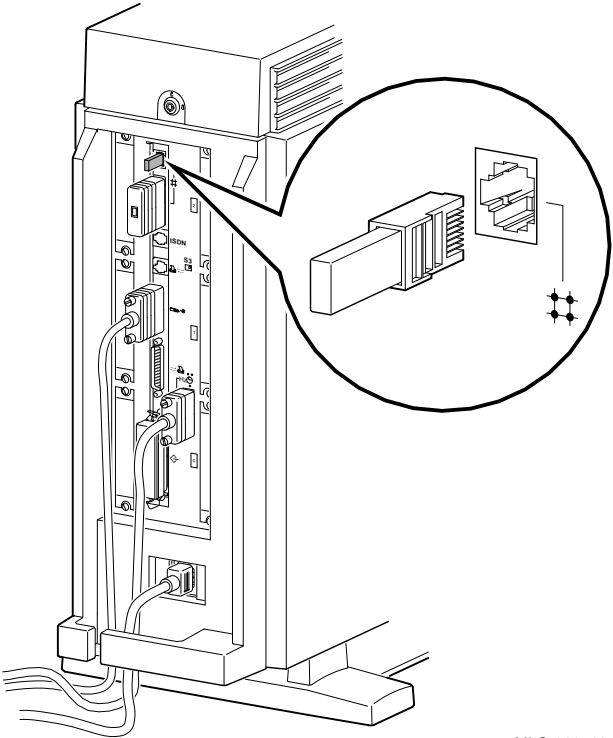
MLO-009713

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 14–9.

Figure 14–9   Connecting the Alternate Console/Printer Loopback Connector

MLO-009413

Modem Loopback Connector

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

Figure 14–10 Connecting the Modem Loopback Connector
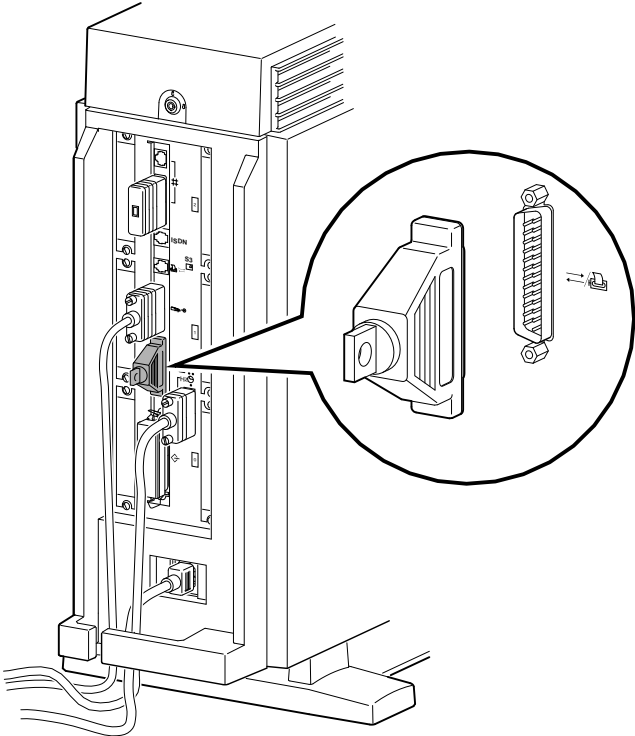
MLO-009418

Handling Problems Worksheet

●

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

DEC 3000 AXP
Handling Problems Worksheet

DEC service representative telephone number: _____

Model (circle one):   500   500S   **Serial #:** _____

System Status (indicate which applies)**:**

Item:	Yes	No
System plugged into outlet	____	____
Power indicator light lit	____	____
Diagnostic display lights lit*	____	____
Monitor power light lit	____	____
Keyboard working	____	____
Mouse working	____	____
Console prompt appears	____	____
Startup error message displayed	____	____
Operating system boots	____	____
Software is frozen	____	____

*Indicate diagnostic display lights here:

Diagnostic test screen display:

_____
_____
_____
_____

Actions taken so far:

_____
_____
_____

Additional notes:

_____
_____
_____

MLO-009875

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	European Economic Community (EEC) Considerations
D	Associated Documents
E	Special Information for PTT Network Users

A

Hardware Specifications

Appendix Overview

Introduction This appendix lists the hardware specifications for your DEC 3000 Model 500/500S AXP system.

In This Appendix This appendix covers the following topics:

- System Unit Dimensions: Pedestal, Table A–1.

- System Unit Dimensions: Rackmount, Table A–2.

- System Electrical Specifications, Table A–3.

- General System Specifications, Table A–4.

- Environmental Limitations, Table A–5.

System Specifications

System Unit Dimensions: Pedestal

Table A–1 lists the dimensions of the DEC 3000 Model 500/500S AXP pedestal system.

Table A–1 System Unit Dimensions: Pedestal

Weight	Height	Width	Depth
34.92–42.18 kg	62.74 cm	33.66 cm	75.44 cm
(77–93 lb)	(24.7 in)	(13.25 in)	(29.7 in)

System Unit Dimensions: Rackmount

Table A–2 lists the dimensions of the DEC 3000 Model 500/500S AXP rackmount system.

Table A–2 System Unit Dimensions: Rackmount

Weight	Height	Width	Depth
29.48 kg	44.45 cm	21.34 cm	68.58 cm
(65 lb)	(17.5 in)	(8.4 in)	(27 in)

System Electrical Specifications

Table A–3 lists the electrical specifications for the DEC 3000 Model 500/500S AXP system.

Table A–3 System Electrical Specifications

Input voltage	Automatically adjusting AC input from 100– 120 VAC to 220–240 VAC
Amperage	10/5 A
Frequency range	50 to 60 Hz
Power	400 $\approx$ 686 watts input maximum, system only, power factor 0.6 maximum

General System Specifications

Table A–4 lists specifications of the DEC 3000 Model 500/500S AXP system components.

Table A–4 General System Specifications

Processor	DECchip 21064 CMOS-4 KN15 Alpha microprocessor, with 8 KB data cache, 8 KB instruction cache and floating-point unit, running at 150 MHz.
Secondary cache	512 KB
SIMM memory	32 MB minimum
Optional SIMM	256 MB maximum for system
ROM memory	512 KB
Standard coprocessor	HX 2D graphics coprocessor
Optional fixed disk	Four 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 expansion box	BA350 Expansion 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, four audio ports.

Environmental Limitations

Table A–5 provides information about the environmental conditions in which the DEC 3000 Model 500/500S AXP system can operate.

Table A–5   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)

Table A–5 (Cont.)   System Environmental Specifications

Operating Conditions	
Temperature range	10°C to 40°C (50°F to 104°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

MLO-008613
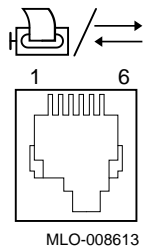
Alternate Console/Printer Port Pin-outs

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

MLO-008585
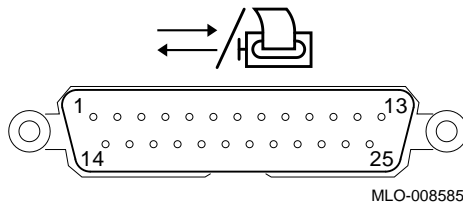
**Synchronous/
Asynchronous
Communications
Port Pin-outs**

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

[1]International Telegraph and Telephone Consultative Commiittee (CCITT), an international consultative committee that sets international communications standards.
[2]Electronic Industries Association

(continued on next page)

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

Pin	Source	Signal	CCITT[1]	EIA[2]	Description
8	Modem/printer	CD	109	CF	Carrier detector
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

[1]International Telegraph and Telephone Consultative Commiittee (CCITT), an international consultative committee that sets international communications standards.

[2]Electronic 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

MLO-008586
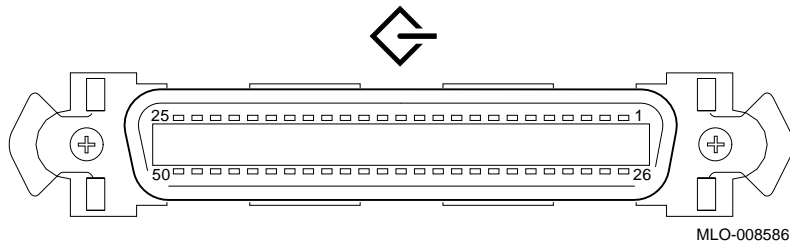
External SCSI Port Pin-outs

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

MLO-008584
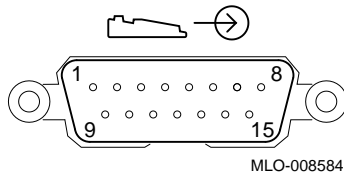
Keyboard/Mouse or Tablet Port Pin-outs

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

MLO-008583
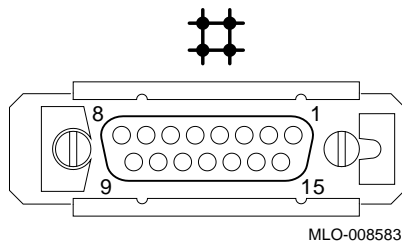
AUI Ethernet Port Pin-outs   Table B–5 describes pin usage for the AUI Ethernet port.

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-	Collsion, 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
Diagram**

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

Figure B–6 ISDN Port

MLO-008611
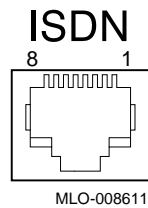
**ISDN Port
Pin-outs**

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

MLO-008912
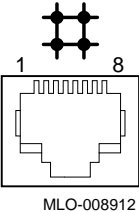
10BASE-T Port Pin-outs

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

MLO-008612
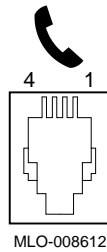
**Audio Port
Pin-outs**

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

European Economic Community (EEC) Considerations

Appendix Overview

Introduction This appendix is for users in the EEC who must attach nonshielded cables to their DEC 3000 Model 500/500S AXP system.

In This Appendix This appendix covers:

- EEC Installation Instructions for Nonshielded Cables

EEC Installation Instructions for Nonshielded Cables

Compliance With EEC Regulations

In order to comply with radio interference regulations in the European Economic Community (EEC), shielded data cables must be used. To meet this requirement, users of nonshielded cables must ground the following ports, which use MMJ connectors, by using a pigtail ground wire:

- ISDN port (❶ in Figure C–1)

- Alternate console/printer port (❷ in Figure C–1)

Attaching the Pigtail Grounding Wire

To attach the pigtail grounding wire, complete the following steps and refer to Figure C–1.

1. Unscrew a TURBOchannel slot screw nearest to the port you are grounding.

2. Align the hook of the pigtail grounding wire with the screw hole.

3. Tighten the screw of the TURBOchannel slot until the grounding wire is secure.

Figure C–1 Connecting a Pigtail Grounding Wire
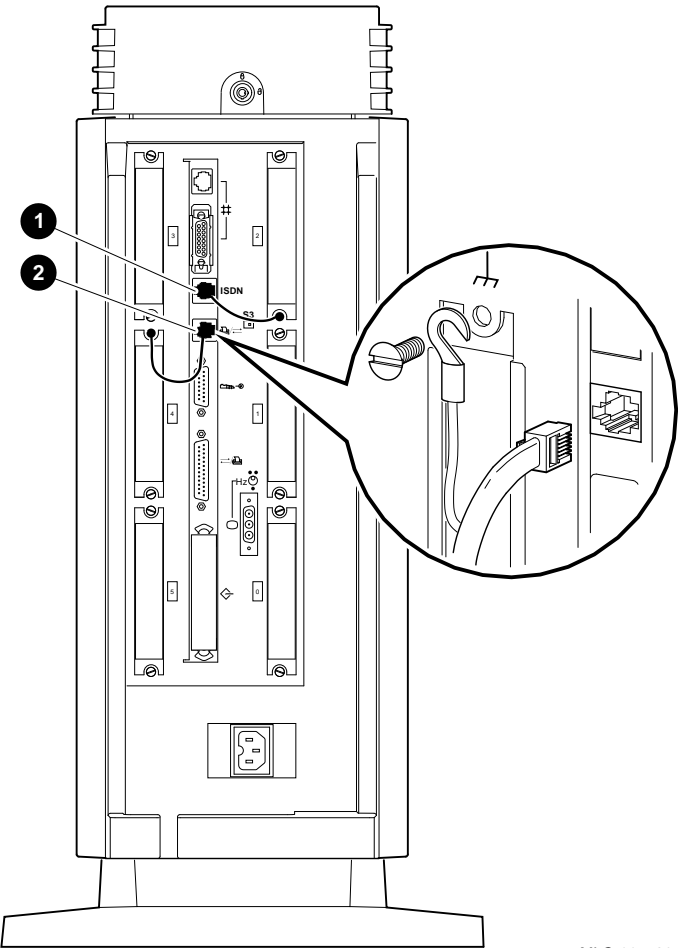
MLO-007589

D

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 D–1 lists the associated DEC 3000 Model 500/500S AXP documents available in printed form.

Table D–1 Associated Printed Documents

TITLE	ORDER NUMBER
DEC 3000 Model 500/500S AXP Server Kit	EK–FLAMI–DK
DEC 3000 Model 500/500S AXP Workstation Kit	EK–FLMNG–DK
DEC 3000 Model 500/500S AXP Service Guide	EK–FLAMI–SV
DEC 3000 Model 500/500S AXP Technical Summary	EK–FLMNG–TM
OpenVMS AXP Factory Installed Software (FIS) User Information	EK–A0377–UG
DEC OSF/1 AXP Factory-Installed Software (FIS) User Information	EK–SFFIS–UG
Alpha AXP Systems Firmware Release Notes	AA–PW8YA–TE

**Drive
Documents**

Table D–2 lists the documentation for drives available with the
DEC 3000 Model 500/500S AXP.

Table D–2   Drives

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

**Workstation
Handbook**

Table D–3 lists the associated workstation handbook
documentation.

Table D–3   Handbook Series

TITLE	ORDER NUMBER
Workstation Family Technical Summary	EC–H0742–51

TURBOchannel Documents

Table D–4 lists the TURBOchannel documentation.

Table D–4   TURBOchannel-Related Documents

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

SCSI Documents

Table D–5 lists the available SCSI documentation.

Table D–5   SCSI Documents

TITLE	ORDER NUMBER
Small Computer System Interface: An Overview	EK–SCSIS–OV
Small Computer System Interface: A Developer's Guide	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 D–6 lists general OpenVMS AXP operating system associated documents.

Table D–6 General OpenVMS AXP Operating System Documents

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

DECconnect Documents

Table D–7 lists available DECconnect documentation.

Table D–7   DECconnect System

TITLE	ORDER NUMBER
OPEN DECconnect Building Wiring Components and Applications Catalog	EC–I1834–29
DECconnect System General Description	EK–DECSY–GD
DECconnect System Requirements Evaluation Workbook	EK–DECSY–EG
DECconnect System Installation and Verification Guide	EK–DECSY–SR
DECconnect System Stand-alone ThinWire Networks: Planning and Installation Guide	EK–DECSY–TG
DECconnect System Planning and Configuration Guide	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 D–8 lists available subkits of the DEC OSF/1 AXP
operating system user documentation.

Table D–8   User Documentation, QA–MT4AB–GZ

TITLE	ORDER NUMBER
Startup Documentation Subkit	**QA–MT4AC–GZ**
Guide to Installing DEC OSF∕1	AA–PS2DA–TE
Quick Reference (card)	AV–PS3KA–TE
Read This First Letter	AV–PS3JA–TE
Release Notes	AA–PS2BA–TE
General User Documentation Subkit	**QA–MT4AD–GZ**
DEC OSF∕1 User's Guide	AA–PS2HA–TE
Network and Communications Overview	AA–PS2MA–TE
Reader's Guide	AA–PS2JA–TE
System and Network Management Documentation Subkit	**QA–MT4AE–GZ**
DEC Verifier and Exerciser Tool User's Guide	AA–PTTMA–TE
Guide to Kernel Debugging	AA–PS2TA–TE
Network Administration and Problem Solving	AA–PS2SA–TE
Configuring Your Network Software	AA–PS2GA–TE
Guide to Prestoserve	AA–PQT0A–TE
Guide to Software License Management	AA–PS2EA–TE
Guide to System Administration	AA–PS2RA–TE
Migration Documentation Subkit	**QA–MT4AF–GZ**
System V to DEC OSF∕1 Migration Guide	AA–PS3DA–TE
ULTRIX to DEC OSF∕1 Migration Guide	AA–PS3EA–TE

**Server
Documentation**

Table D–9 lists the available documentation about servers.

Table D–9 Server Documentation Kit, QA–MT4AL–GZ

TITLE	ORDER NUMBER
Guide to Sharing Software on a Local Area Network	AA–PS3LA–TE

E

Special Information for PTT Network Users

Appendix Overview

Introduction

The United Kingdom and other countries require that certain installation information be provided about the DEC 3000 Model 500/500S AXP system communications, which is hosted within the DEC 3000 Model 500/500S AXP system.

In This Appendix

This appendix describes the appropriate installation information for the 54-21147 module and includes the following topics:

- 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

Overview   Table E–1 describes the services specifications for the 54-21147 module.

Table E–1 BABT-Approved Service Specifications for the 54-21147 Module for UK Compliance

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

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

[2]The 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 54-21147 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 500/500S AXP system) to operate within the limits of the host power rating, as shown in Table E–2.

Table E–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

[1]Without TURBOchannel option slots populated.

[2]With 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
54-21147 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 54-21147 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 telecommunications
safety engineer. Failure to install the 54-21147 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 E–3,
must be maintained between the approved module and other
parts of the host, including expansion cards. Digital has ensured
that when the 54-21147 module is installed within the DEC
3000 Model 500/500S AXP system, the creepage and clearance
distances to the host are met.

Table E–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

[1]The 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.

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 shown by callouts ❶ through ⓭ in Figure E–1.

Figure E–1 Front View

MLO-009805
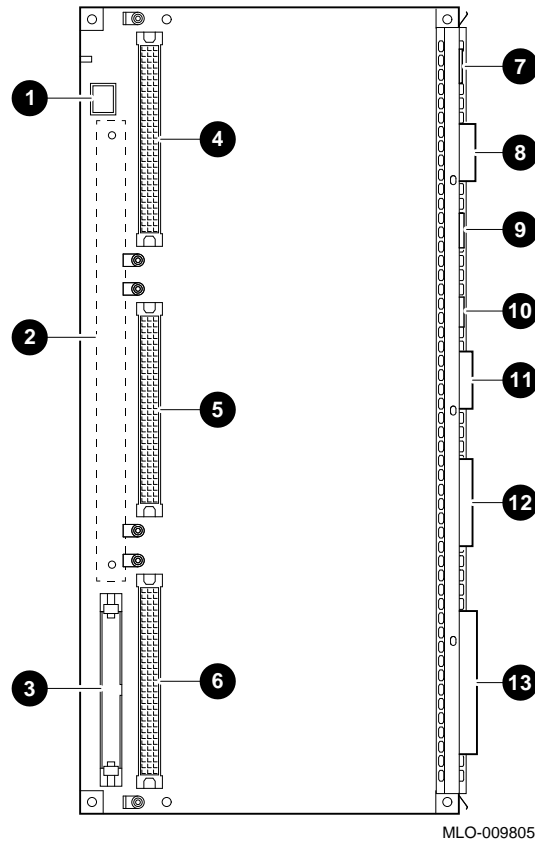
Obtain advice from a competent engineer before making such a connection.

Cable Approval

Cable Connection to Digital Circuits

The 54-21147 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 E–2 shows the pin layout for the connector.

Figure E–2 Connector Pin Layout

MLO-008585
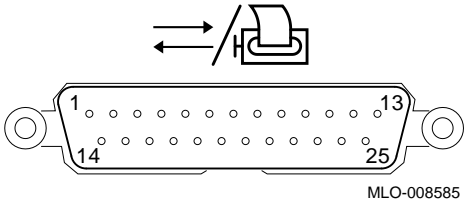
Connector Pin-Outs

Table E–4 describes pin usage for the connector.

Table E–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

Table E–4 (Cont.)   Connector Pin-Outs Described

Pin	Description	Pin	Description
5	Clear to send	18	Not used
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

The 54-21147 module supports the following cables.

Table E–5   Cables Supported by the 54-21147 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 54-21147 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

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.

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 to 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, that perform end-user tasks.

architecture

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

asynchronous communication

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

AUI (Attachment Unit Interface) Ethernet network

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.

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.

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.

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.

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.

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 block

A small box attached to the monitor cable from which the BNC connectors emerge.

cache

See cache memory.

cache memory

A small, high-speed area of memory placed between slower main memory and the processor. Cache memory increases memory transfer rates and processor speed. It contains copies of data recently used by the processor and fetches several bytes of data from memory in anticipation that the processor will access the next sequential series of bytes.

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. Also, the main current path between the source and drain electrodes in a semiconductor device. *See also* bus.

checksum

A sum of digits or bits that is used to verify the integrity of a piece of data.

CI

See computer interconnect.

CISC

Complex instruction set computer. A computer that uses an instruction set consisting of a large number of complex instructions that are managed by microcode. *Contrast with* RISC.

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.

CMOS

See Complementary metal-oxide semiconductor.

coaxial cable

A passive communications media.

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.

compact disc read-only memory (CD–ROM)

The removable disc used in the compact disc drive. Data can be stored on this disc and retrieved from it.

complementary metal-oxide semiconductor (CMOS)

A silicon device that requires very little power and can operate at very high speeds.

component

A basic part, or element, of your system that can be either internal or external. *Compare with* device.

computer interconnect (CI)

A high-speed, fault-tolerant, dual-path bus, which has a bandwidth of 70 megabits per second. With the CI, any combination of processor nodes and intelligent I/O subsystem nodes, up to 16 in number, can be coupled loosely in a computer-room environment.

configuration

See system configuration.

connector

Hardware that connects directly to a port on the system.

console

A device through which an operator communicates with the computer.

console commands

Commands that you 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 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.

cursor

A blinking symbol on the screen that indicates where the next character you type will appear.

cycle

One clock interval.

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.

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.

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* 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 for a storage device to access that particular 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.

direct memory access

A processor that transfers data directly from one memory to another without going through the main processor.

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 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.

diskless system

A system that has no storage capacity of its own.

distributed processing

A processing configuration in which each processor has its own autonomous operating environment. In a distributed processing environment, the processors are not tightly coupled and globally controlled as they are with multiprocessing. Instead, an application is distributed over more than one system. The application must have the ability to coordinate its activity over a dispersed operating environment.

DMA

See direct memory access.

DRAM

See dynamic random-access memory.

dynamic random-access memory (DRAM)

Read/write memory that must be refreshed (read from or written to) periodically to maintain the storage of information.

ECC error

Describes a memory error. There are two kinds of ECC errors. ECC correctable errors are errors that are successfully corrected by the error detection and correction process. ECC uncorrectable errors are not successfully corrected by this process.

environment variable

A global data structure that can be accessed only from console mode. The setting of these data structures determines how a system powers up, boots operating system software, and operates.

error correction code (ECC)

Code that carries out automatic error correction by performing an exclusive OR operation on the transferred data and applying a correction mask.

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

FEPROM (flash-erasable programmable read-only memory)

A memory device from which data can be erased in large amounts at a time. *Contrast with* EEPROM.

Fiber Distributed Data Interface (FDDI)

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 (FRU)

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.

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 Kernal 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 moved 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. This action 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.

hit

Indicates that a valid copy of a desired memory location is currently in cache.

icon

A graphical symbol on the system unit or window that identifies drives, ports, switches, indicators, and programs running in the background. Symbols displayed on a window represent an action the computer can take. The symbol replaces a command you would otherwise type.

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.

internal cache

See memory.

internal processor register (IPR)

A register internal to the CPU chip.

ISDN

See Integrated Services Digital Network.

jack

A receptacle into which you insert a plug, such as an audio jack.

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 area VMScluster system

A type of configuration in which cluster communication is carried out over the Ethernet by software that emulates certain computer interconnect (CI) port functions.

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.

logical

The design of a system rather than its implementation.

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/ asynchronous communications adapter, or when the Ethernet and communications ports are not in use.

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 one 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.

miss

Indicates that a copy of a desired memory location is not in a cache.

mnemonic

The abbreviation used by the system to identify a device or controller in the system. Also referred to as the device name.

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.

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.

multiplex

To transmit several messages or signals simultaneously on the same circuit or channel.

nanosecond

A unit of measure equal to one billionth of one second used to measure the speed of memory and logic chips.

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.

ns

See nanoseconds.

null modem

A connection box that replaces two modems and their connecting wires. This box allows two devices that are designed to interact through modems to be locally connected.

NVRAM

See nonvolatile random-access memory.

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 todate includes the OSF/1 operating system, the Distributed Computing Environment (DCE), and the Distributed Management Environment (DME).

open system

A system that implements open specifications for interfaces, services, and supporting formats so that applications software can:

- Be ported across a wide range of systems with minimal changes

- Interoperate with other applications on local and remote systems

- Interact with users in a style that facilitates user portability

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.

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.

pipeline

a CPU design technique whereby multiple instructions are simultaneously overlapped in execution.

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.

primary cache

The cache that is the fastest and closest to the processor. The DECchip 21064 CPU contains an instruction cache and a data cache.

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.

processor module

A module that contains the CPU chip.

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.

Programmable Array Logic (PAL)

A hardware device that can be programmed by a process that blows individual fuses to create a circuit.

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 (RISC)

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.

soft error

A recoverable error.

software

Instructions executed by the system to perform a chosen or required function. *Compare with* hardware.

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 of 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.

superpipelined

Describes a pipelined machine that has a larger number of pipe stages and more complex scheduling and control. *See also* pipeline.

superscalar

Describes a machine that issues multiple independent instructions per clock cycle.

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 device is 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

See AUI.

thickwire

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. 3D 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.

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.

two-dimensional graphics

Images that are displayed on the screen in 2D. 2D 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.

VMS operating system

Digital Equipment Corporation's proprietary operating system.

volatile memory

Memory from which values are lost when the system is turned off.

WAN

See wide-area network.

wide-area network

A high-speed public or private data communications system that connects multiple users in different geographical areas, such as different cities or states. In a WAN, transmissions are carried primarily over telephone lines.

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.

Index

Installation (cont'd)
    overview, server, 4–3
    overview, workstation, 3–4
    parts required, 2–9
    required components, 2–12
    tools needed, 3–2
International requirements, C–1, E–1
ISDN, 1–5, 1–11
    B channels, 1–11
    capabilities, 1–11
    D channels, 1–11
ISDN port
    pinouts, B–10

K

Keyboard
    accidental spills, 8–3
    language, 10–10
    problems, 13–24
Keyboard/mouse extension cable
    connecting, 3–6
Keyboard/mouse port
    connecting cable, 3–6
    icon, 2–22
    pinouts, B–7

L

Language
    default, 10–10
Locking
    system unit, 3–19, 4–12
Loopback connector
    connecting, 4–4
    connecting 10BASE-T, 14–13
    connecting alternate console/printer,
        14–14
    connecting modem, 14–15

M

Memory
    total megabytes, 1–5
Monitor
    connecting video cable, 3–10
    display problems, 13–8, 13–21, 13–23
Monitor video cable
    connecting, 3–12
MOP protocol, 9–9, 10–7
Mouse
    problems, 13–24

N

Network labels
    use of, 5–2
Network settings, 5–12
Networks
    booting from, 13–28
    connecting to 10BASE-T, 5–6
    connecting to AUI Ethernet, 5–4
    connecting to ThinWire, 5–8
    determining at site, 5–2
    ISDN, 1–11
    required cables and adapters, 5–3
    resolving errors, 13–28
    testing, 5–13
NI test, 5–13
Nonprivileged console commands
    list of, 11–4

O

Open Software Foundation, 1–7
OpenVMS AXP operating system, 1–6
    booting, 9–10
    conversational boot, 6–13
    features, 1–6
    login, 6–9
Operating system
    loading, 6–13
    shutdown procedure, 7–4
    startup procedures, 6–8, 6–13