

KZTSA SCSI Storage Adapter

Installation and User's Guide

Order Number: EK-KZTSA-UG .C01

First Printing, May, 1993
Revised, November, 1993
Revised, August, 1994

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Preface

Guide Overview

Purpose

This guide is for anyone seeking general information on the installation and verification of the KZTSA SCSI storage adapter. This information is independent of the host system.

For information pertaining to the installation and verification of your host system, or the installation and verification of specific hardware options supported by this adapter, consult the documentation shipped with the host system or hardware option.

This guide provides the following information:

- Description of the module
- Description of system configurations
- Installation procedures
- Verification procedures
- Firmware update procedures
- SCSI port designations

Contents

The *KZTSA SCSI Storage Adapter Installation and User's Guide* contains the following chapters and appendixes:

- Chapter 1, *KZTSA Adapter Overview*, provides an introduction and important background information.
- Chapter 2, *System Configurations*, describes various methods in which a host system can be configured to accommodate the KZTSA adapter and the possible combinations of SCSI devices that can be interfaced to the adapter through a storage subsystem.
- Chapter 3, *Installation and Verification*, contains step-by-step procedures for the installation and testing of the KZTSA adapter.
- Appendix A, *Hardware Specifications*, lists the hardware specifications for the KZTSA adapter.
- Appendix B, *Connector Pin-Out Assignments*, provides pin-out information for the differential SCSI port.
- Appendix C, *Associated Documentation*, provides a list of associated documentation.
- Appendix D, *Alpha AXP Based Systems*, summarizes the console's SHOW CONFIGURATION command.
- Appendix E, *Firmware Update Utility*, contains step-by-step procedures for updating KZTSA adapter firmware.
- Appendix F, *Device Parameter Disable Utility*, contains the procedures for enabling or disabling SCSI activities for each device on the SCSI bus.
- Appendix G, *Troubleshooting*, describes what to do in the event of a system problem with the KZTSA adapter.
- The Glossary defines technical and unfamiliar terms.
- The Index provides references to information within the guide.

Conventions

The following conventions are used in this guide:

Convention	Description
<code>Key</code>	A key name, such as <code>Return</code> , is shown enclosed to indicate that you press a named key on the keyboard.
Monospace text	Monospace text is used to indicate text displayed on the monitor screen.
<i>Italic type</i>	Italic text is used to indicate a command or command string that you must enter, exactly as shown. For example: <i>setid</i> . Italic type is also used for emphasis.
Boldface text	Boldface text is used to represent the name of a command.
Host system	Host system is used throughout this manual to imply your host workstation or host server.
Note	Notations provide information to help you understand how the adapter module interfaces with your system.
Important	Important notations provide crucial information pertaining to a KZTSA subsystem.
Caution	Cautions provide information to prevent physical damage to either the hardware or software. Read these carefully.
Warning	Warnings contain information to prevent personal injury. Read these carefully.

1

KZTSA Adapter Overview

Introduction

This chapter describes the KZTSA storage adapter and its features.

In This Chapter

This chapter includes the following sections:

- Module description
- General overview

Module Description

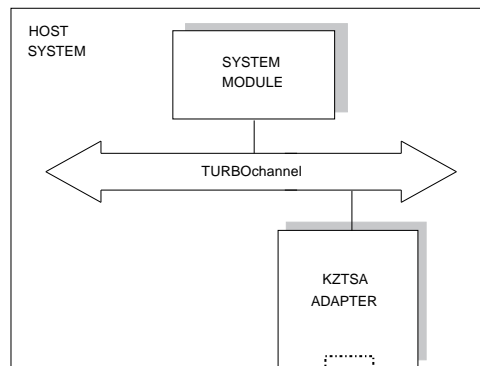
Purpose of the Module

The KZTSA storage adapter is a versatile, intelligent, high-performance TURBOchannel option module. It serves as a pathway between the system's TURBOchannel I/O bus and a single local 16-bit differential SCSI bus.

For versatility, the storage adapter's local 16-bit differential SCSI bus can be hardware configured, using appropriate cabling, to interconnect with either 16-bit or 8-bit differential SCSI devices that are grouped and housed within storage enclosures.

The system architecture of the KZTSA storage adapter is shown in Figure 1-1.

Figure 1-1 System Architecture Overview



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Features

The KZTSA storage adapter meets the most demanding workstation and server input/output requirements while supporting technology that focuses on user requirements for low-cost, high-data availability, and high-performance mass-storage media. For example: future generations of redundant arrays of independent disks (RAID) subsystems, high-performance disks, and streaming tapes.

The KZTSA adapter provides the following features:

- 16-bit wide differential SCSI bus
- Downline loadable firmware
- Onboard diagnostic testing capability
- CAM, SIMport, TURBOchannel and SCSI-2 interface compliant
- Supports warm swap of Digital supported SCSI devices
- Supports differential SCSI devices that are either internal or external to the host system unit

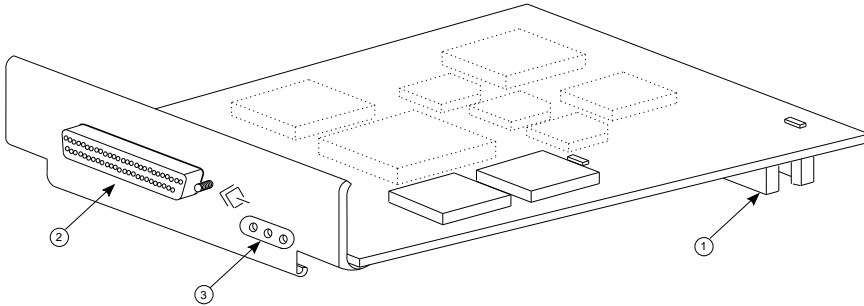
Module Description

Physical Characteristics

The KZTSA storage adapter is a standard single-width TURBOchannel module. The adapter, shown in Figure 1-2 and Figure 1-3 contains the following:

- Port connectors
- Status indicators
- User-configurable jumpers
- Onboard terminator packs

Figure 1-2 KZTSA Adapter



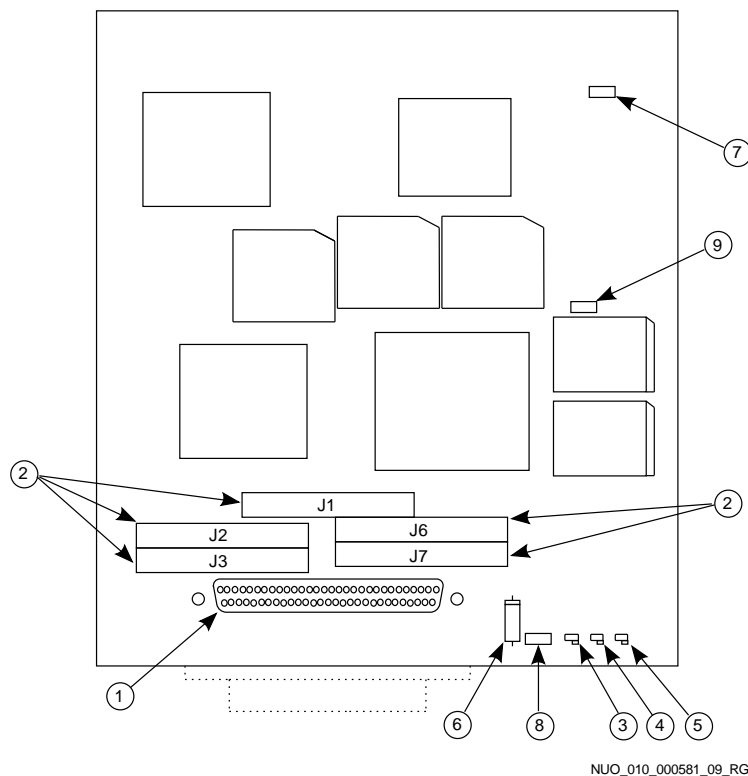
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Notes on Figure 1-2:

- ① TURBOchannel bus connector
- ② External SCSI p-connector
- ③ Status indicators

Figure 1-3 provides a more detailed placement of the SCSI connectors, configurable jumpers, status indicators, and terminator packs.

Figure 1-3 KZTSA Adapter — Module Layout



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Notes on Figure 1-3:

- ❶ Internal SCSI bus p-connector
- ❷ Onboard terminators

The KZTSA storage adapter contains five user-accessible onboard terminator packs that provide termination at the near-end of the SCSI bus. These terminator packs plug into connectors J1, J2, J3, J6, and J7.

Notes on Figure 1-3 (Cont.):

Status Indicators

The storage adapter has three light-emitting diodes (LEDs) through which you can monitor the status of the adapter. Table 1-1 describes their functional operation.

Table 1-1 LED Status Indicators

Color	Illuminated Indication
③ Yellow	Power-on self-test passed
④ Red	Power-on self-test failed
⑤ Green	SCSI bus terminator power is functional

Configurable Jumpers

Table 1-2 describes the configurable jumpers used to determine the functional operation of the adapter.

Table 1-2 Jumper Definitions

Jumper	Factory Setting	Function
⑥ W1	Installed	An in-line fuse that protects the onboard SCSI bus terminator power supply.
⑦ W2	Not installed	For manufacturing use only.
⑧ W3	Installed	Enables terminator power onto the SCSI bus. SCSI bus termination is discussed in Chapter 2.
⑨ W4	Not installed	For manufacturing use only.

General Overview

Open Systems

The KZTSA storage adapter can be used on many of the workstation or server platforms that incorporate a TURBOchannel bus as the system I/O bus.

Consult the appropriate Digital literature for a list and description of supported workstation or server platforms.

Open Operating Systems

The KZTSA storage adapter can be used on multiple operating systems. Consult the appropriate Digital system software product description (SPD) for a list and description of supported operating systems.

Open Storage Bus: SCSI

The KZTSA storage adapter uses the small computer system interface (SCSI) architecture for connection to SCSI devices. For example: SCSI devices include controllers, bus converters, or removable and nonremovable tapes and disks.

This architecture allows for the expansion of the host system's storage area. Many vendors manufacture SCSI devices, and connection of these devices is made easy through standardized connectors and cables.

Optional SCSI Devices

The KZTSA storage adapter directly supports up to 15 differential 16-bit (depending upon the operating system) or up to 7 differential 8-bit SCSI devices. For example, the SCSI device could consist of a:

- 16-bit differential disk array controller
- 16-bit differential to 8-bit single-ended bus converter
- 16-bit differential removable or nonremovable tape or disk
- 8-bit differential removable or nonremovable tape or disk

The storage adapter can also indirectly support single-ended, 8-bit or 16-bit SCSI removable or nonremovable tapes or disks.

Important

The KZTSA-AA storage adapter cannot *directly* support single-ended, 8-bit or 16-bit SCSI devices. For these devices, a differential 16-bit to single-ended 8-bit or 16-bit SCSI bus converter or disk array controller must be ordered separately.

By using the appropriate bus converters and cables, 8-bit or 16-bit single-ended and 8-bit or 16-bit differential devices can be mixed. See Table 2–3 for additional guidelines.

Utilizing the appropriate converter, up to 7 8-bit or 15 16-bit (depending upon the operating system) single-ended devices are supported.

2

System Configurations

Before you Install

Before you install the KZTSA storage adapter in your workstation or server, you need to familiarize yourself with the configuration guidelines of the adapter and its SCSI bus.

In This Chapter

This chapter includes the following sections:

- Installation guidelines
- Differential SCSI bus
- Sample configurations

Installation Guidelines

Configuration Constraints

The KZTSA storage adapter does not impose any restrictions in terms of the number of TURBOchannel options within the host system. However, the host system may impose certain configuration constraints that affect the number of TURBOchannel options and SCSI devices that you can install.

Consult the host system documentation (Appendix C) for information regarding the number of TURBOchannel options and SCSI devices that the host system can optimally support.

Workstations

For example, Table 2-1 lists the maximum number of adapters supported on a Digital host workstation.

Table 2-1 Digital Workstation — Maximum KZTSA Adapters

Type	Model	Maximum Adapters
DEC 3000 AXP	300	2
	400	2
	500	6
	600	2
	700	2
	800	6
	900	6

Servers

For example, Table 2–2 lists the maximum number of adapters supported on a Digital host server.

Table 2–2 Digital Server — Maximum KZTSA Adapters

Type	Model	Maximum Adapters
DEC 3000 AXP	400S	3
	500S	6
	600S	3
	700S	3
	800S	6
	900S	6

Additional Guidelines

Table 2–3 describes further configuration guidelines to which you should strictly adhere.

Table 2–3 Additional Configuration Guidelines

Rule	Constraint
1	Only differential SCSI devices can connect directly to a KZTSA adapter.
2	When interconnecting to single-ended SCSI devices through a bus converter, the KZTSA adapter must be assigned a SCSI address within the range of SCSI ID 0 to 7.

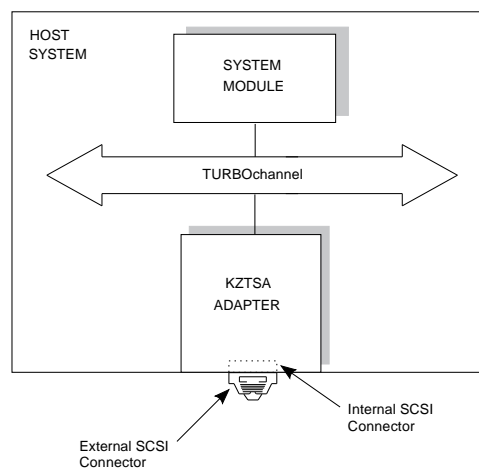
Differential SCSI Bus

Port Connectors

The KZTSA storage adapter contains two 68-pin, high-density p-connectors, as shown in Figure 2–1. The internal connector is used for SCSI bus connections housed internal to the host system enclosure. The external connector is used for SCSI bus connections housed external to the host system.

Differential SCSI Bus

Figure 2-1 SCSI Port Connectors



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Priority Arbitration

SCSI bus priority arbitration is based on the SCSI ID of the arbitrating device. Priority arbitration is established from highest to lowest.

For example, in the following priority arbitration scheme, SCSI ID 7 has highest priority and SCSI ID 8 has lowest priority:

SCSI ID 7-6-5-4-2-1-0-15-14-13-12-11-9-8

Configurations

The KZTSA adapter can be configured within the middle of the bus (mid-bus) or the end of the bus (end-bus) depending on the balancing scheme used on the bus; that is, the physical location of bus terminators on the bus in relation to the KZTSA adapter.

For a mid-bus configuration, the bus is not terminated on the KZTSA adapter (onboard terminators are removed). A "Y" cable or a tri-link connector is used to position the KZTSA adapter in the middle of the bus. The bus is terminated at the end SCSI device using a 68-pin p-connector terminator.

For an end-bus configuration, the bus is normally terminated on the KZTSA adapter using its onboard terminators, while the other end of the bus is terminated at the end SCSI device using a 68-pin p-connector terminator.

Note

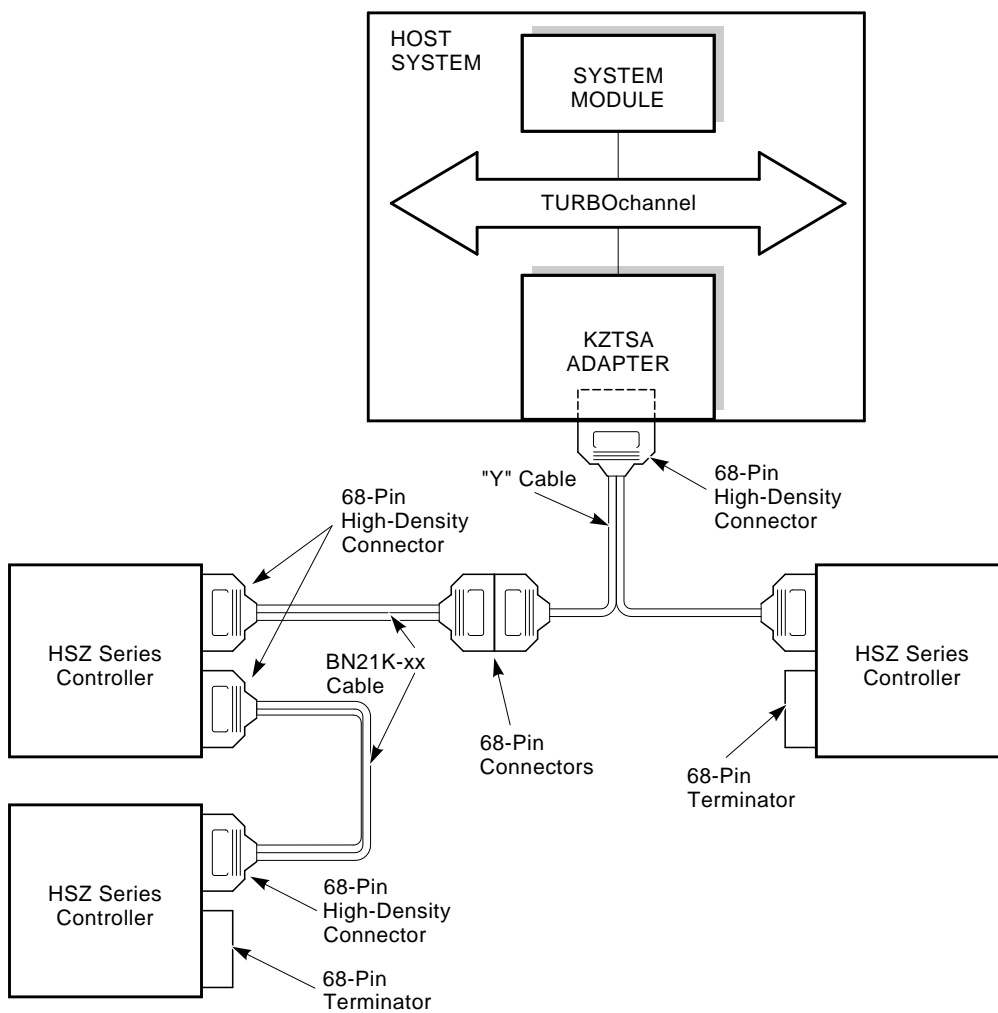
Refer to Table C-3 for the documents that contain the Digital part number for the "Y" cable and tri-link connector block.

"Y" Cable (BN21W-0B)

Figure 2-2 shows a "Y" cable configured for a mid-bus configuration. The "Y" cable directly interconnects the KZTSA storage adapter to a differential SCSI device.

Differential SCSI Bus

Figure 2-2 The "Y" Cable



xx = length in meters

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Tri-Link Connector Block (H885-AA)

The tri-link connector is a small metal block with two 68-pin, high-density, female p-connectors on one side and a single 68-pin, high-density, male p-connector on the other side.

Figure 2-3 and Figure 2-4 show a tri-link connector configured for a mid-bus and end-bus configuration.

Note

A 68-pin differential terminator is affixed to the unused p-connector on the SCSI devices (Figure 2-3) and to the unused 68-pin female p-connector of the tri-link connector (Figure 2-4).

Differential SCSI Bus

Figure 2-3 The Tri-Link Connector — Mid-Bus Configuration

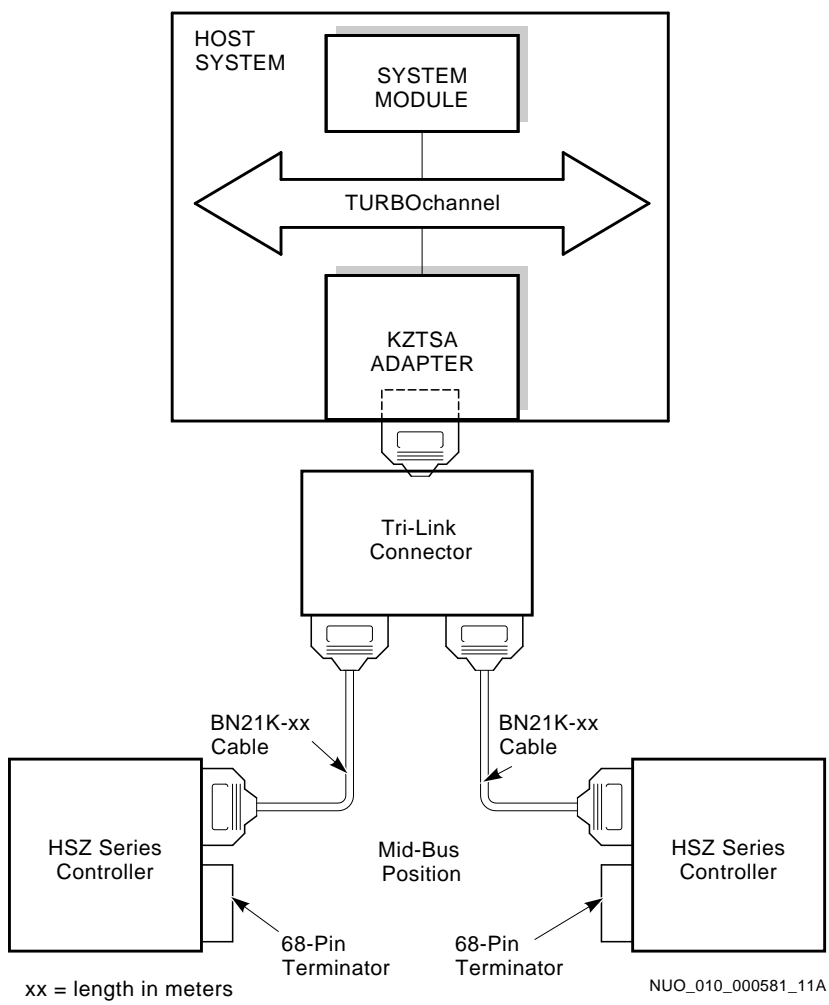
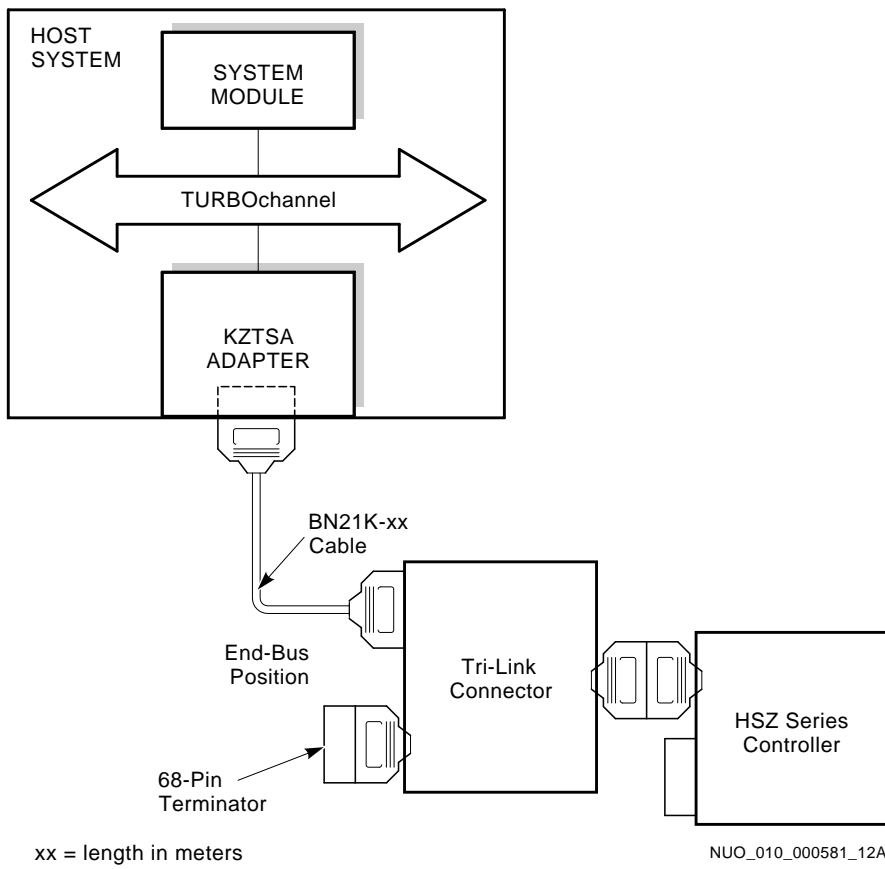


Figure 2-4 The Tri-Link Connector — End-Bus Configuration



Differential SCSI Bus

Termination

The integrity of the data written to or read from a differential SCSI device can be seriously compromised due to signal reflections derived from an unbalanced bus. An unbalanced bus is the result of an improperly or nonterminated bus. Therefore, failure to terminate the bus properly may result in data corruption or, worst yet, a system crash.

A balanced bus is determined by the physical location of bus terminators on the bus in relation to the KZTSA adapter and SCSI device.

In summary, to avoid bus reflections, the bus must be properly terminated at both ends to operate reliably.

Termination Options

Termination of the bus involves supplying terminator power onto the bus and the strategic placement of terminators on the bus.

Normally the KZTSA storage adapter provides active termination of the differential SCSI bus for either mid-bus or end-bus configurations by supplying terminator power onto the bus. However, a SCSI device could also provide this active termination, in which case jumper W3 on the KZTSA storage adapter would be removed.

The strategic placement of terminators on the bus in relation to the KZTSA storage adapter and the SCSI device is determined by the KZTSA storage adapter's placement on the bus; that is, whether it is a mid-bus or end-bus configuration. For example, the adapter's onboard terminators are removed for a mid-bus configuration and installed for an end-bus configuration. The end SCSI device is then terminated, using either onboard or external terminators; that is, onboard terminators if the device contains a single SCSI port p-connector, or external terminators if the device contains dual SCSI port connectors. The external terminator is simply a high-density, shielded differential terminator housed in a male p-connector.

Table 2–4 lists the onboard and p-connector terminators used in terminating the differential SCSI bus.

In summary, active termination simply implies whether the KZTSA storage adapter or the SCSI device supplies termination power onto the bus. This termination power is then used by a terminator(s) that contains a series of pull-up and pull-down resistors, which make up the termination process.

Table 2–4 Differential SCSI Bus Termination Options

Terminator Placement	Recommended Digital Terminator
KZTSA adapter	13-36034-01
SCSI device	H879-AA

Warm Swap of Devices

A Digital supported SCSI device can be warm swapped provided that a "Y" adapter is used and the bus is properly terminated. By using a "Y" adapter, a SCSI device could occupy either a mid-bus or end-bus position, yet remain removable for service.

A "Y" adapter, whether a cable or tri-link connector, provides the following capabilities:

- Mid-bus connection for single-connector SCSI devices
- Online removal of mid-bus SCSI devices without disrupting service to other SCSI devices
- Online removal of end-bus SCSI devices without disrupting service to other SCSI devices

Sample Configurations

Overview

This section describes three possible configurations in which differential and single-ended SCSI devices, housed within a storage enclosure and external to the host system, are interconnected by way of the KZTSA adapter's external SCSI port connector.

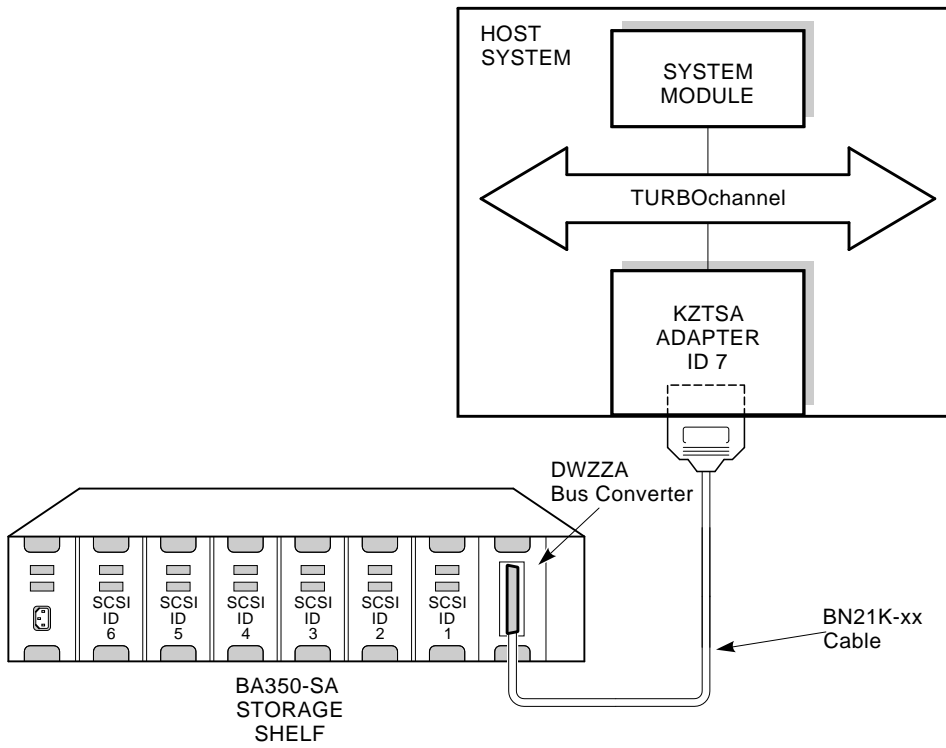
A summary of the three configurations follows:

- Configuration #1 Illustrates an end-bus configuration whereby the KZTSA adapter interconnects by way of a point-to-point cable connection to a bus converter housed within a Digital storage enclosure. The bus converter, in conjunction with the storage enclosure, provides a single-ended SCSI bus in which six 8-bit SCSI devices are attached.
- Configuration #2 Illustrates an end-bus configuration whereby the KZTSA adapter interconnects by way of a point-to-point cable connection to a RAID subsystem housed within a Digital storage enclosure. The storage enclosure provides five single-ended SCSI buses in which six 8-bit SCSI devices are attached to each bus.
- Configuration #3 Illustrates a dual host mid-bus configuration whereby two KZTSA adapters connect to a bus converter housed within a Digital storage enclosure. The bus converter, in conjunction with the storage enclosure, provides a single-ended SCSI bus in which six 8-bit SCSI devices are attached and shared between the two hosts.

Configuration #1: Bus Converter

Figure 2-5 shows a KZTSA adapter configured to indirectly communicate with six single-ended 8-bit SCSI devices.

Figure 2-5 8-Bit Single-Ended Configuration



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Sample Configurations

Physical Configuration

The SCSI device (bus converter) resides within the first (SCSI ID 0) storage shelf slot of the BA350-SA storage shelf. The storage adapter directly interconnects, by way of a point-to-point cable, to the bus converter.

Important

Refer to Table C-3 for documents that pertain to general or specific information on how to configure a Digital BA350-SA storage shelf and the installation and replacement of its components.

Single-Ended SCSI Bus Configuration

The storage shelf that contains two single-ended SCSI buses is internally configured as a single bus. Six 3.5-inch half-height 8-bit SCSI devices are attached to the bus.

SCSI ID Selection

The KZTSA adapter is assigned SCSI ID 7. For the SCSI devices, the device address is selected by its physical location within the storage shelf, with the slot number equating to the SCSI ID number.

SCSI Bus Termination

The differential bus is terminated at one end by the KZTSA storage adapter (internally) and at the other end by the bus converter (internally).

The single-ended bus is terminated at one end by the bus converter (internally) and at the other end by a terminator board located behind slot 1 on the backplane.

Configuration #2: RAID Subsystem

Figure 2–6 shows a host system configured to communicate with a Digital HSZ10-based RAID subsystem containing a large array of single-ended 3.5-inch half-height SCSI devices.

Physical Configuration

The storage adapter interconnects, by way of a point-to-point cable, to a disk array controller that resides within the first (top) controller shelf slot of the BA350-EA controller shelf.

Important

Refer to Table C–3 for documents that pertain to general or specific information on how to configure a Digital BA350-SA storage shelf and the installation and replacement of its components.

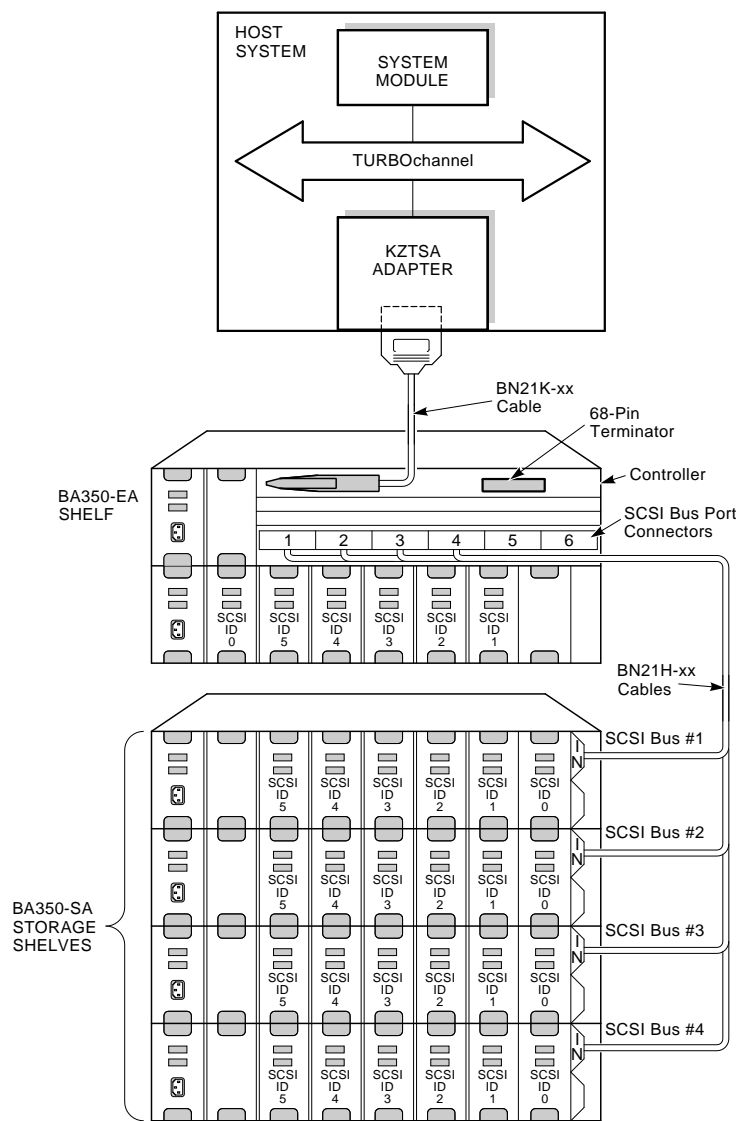
Single-Ended SCSI Bus Configuration

The controller shelf is physically configured for a 5x6 bus arrangement. An array of 30 3.5-inch half-height devices are attached across five single-ended SCSI buses.

SCSI Bus #5 is internally interconnected to a BA350-EA storage shelf that contains six SCSI devices. SCSI bus #1 through SCSI bus #4 are accessed through their respective SCSI connectors, mounted at the bottom of the controller shelf. Cables for these connectors exit through the front of the controller shelf and interconnect to a BA350-SA storage shelf containing the SCSI devices.

Sample Configurations

Figure 2-6 RAID Subsystem Configuration



xx = length in meters

NUO_010_000581_01A

SCSI ID Selection

As shown in Figure 2–6, the KZTSA adapter is assigned SCSI ID 7. The RAID controller is assigned SCSI ID 6. For the SCSI devices, the device address is selected by its physical location within the storage shelf, with the slot number equating to the SCSI ID number.

SCSI Bus Termination

The differential bus is terminated at one end by the KZTSA storage adapter (internally) and at the other end by attaching a differential terminator to the unused 68-pin p-connector on the disk array controller.

The single-ended buses are terminated on the backplane behind slot 1 for SCSI bus #1 through SCSI bus #4 using a terminator board. SCSI bus #5 is terminated behind slot 7 on the backplane, using a terminator board.

Sample Configurations

Configuration #3: DECsafe Available Server Environment (ASE)

Figure 2-7 shows two KZTSA adapters configured in a DECsafe available server environment (ASE) to communicate with six single-ended 8-bit SCSI devices.

A DECsafe ASE provides multihost access to SCSI devices and a generic failover mechanism for network-based applications and system services using a shared SCSI bus.

The DECsafe software monitors the network and the status of the systems and devices in the DECsafe ASE and includes an infrastructure that automatically moves applications from one system to another if a hardware or software failure occurs. Refer to Table C-4 for documents that provide more information on the DECsafe ASE.

Physical Configuration

As shown in Figure 2-7, a KZTSA adapter is installed in a TURBOchannel slot in each host system.

"Y" cables are connected to the KZTSA adapter in both systems. One end of both "Y" cables is terminated to terminate the bus. A standard SCSI cable is connected to the unterminated end of both "Y" cables.

The SCSI device (bus converter) is installed in the first storage shelf slot of the BA350-SA storage shelf. The KZTSA adapters directly interconnect, by way of the standard SCSI cables, to the bus converter through a tri-link connector block.

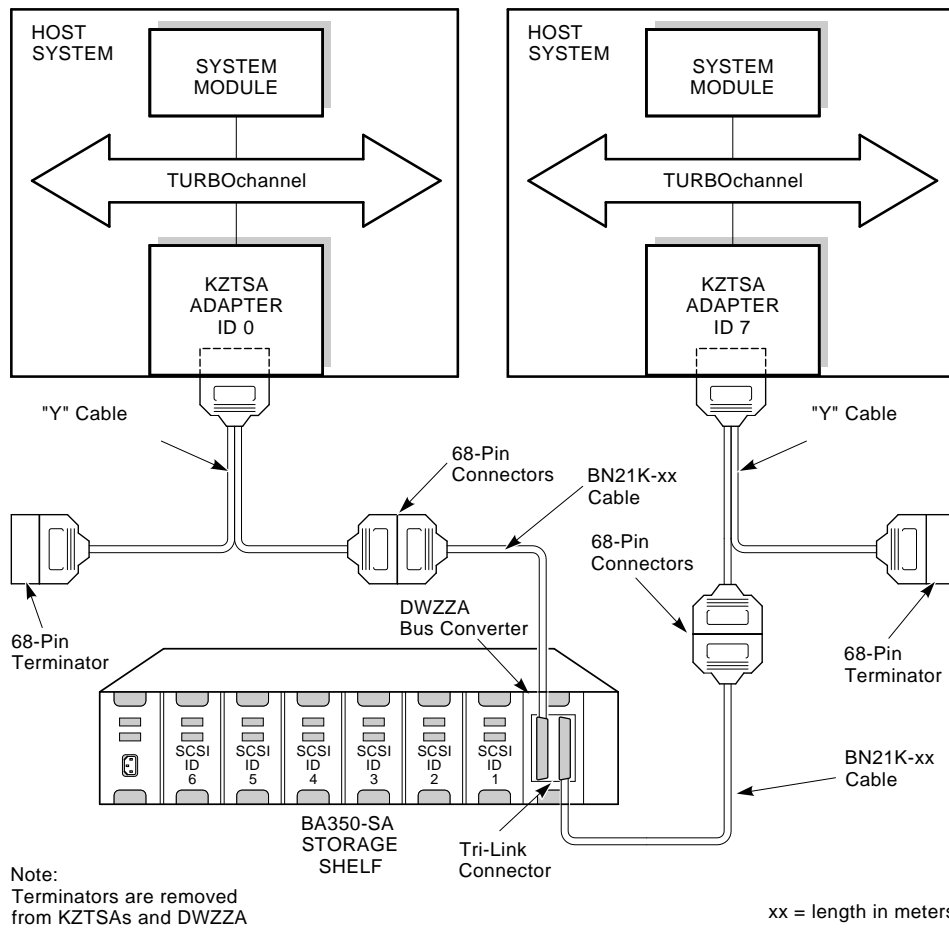
Important

For this configuration, the internal termination must be removed from the KZTSA adapters and the bus converter in the BA350-SA storage shelf.

Refer to Table C-3 for documents that pertain to general or specific information on how to configure a Digital BA350-SA storage shelf and the installation and replacement of its components.

Sample Configurations

Figure 2-7 DECsafe Available Server Environment Configuration



NUO_010_000581_03B

Sample Configurations

Single-Ended SCSI Bus Configuration

The storage shelf that contains two single-ended SCSI buses is internally configured as a single bus. Six 3.5-inch half-height 8-bit SCSI devices are attached to the bus.

SCSI ID Selection

One KZTSA adapter is assigned SCSI ID 7 and the other KZTSA adapter is assigned SCSI ID 0. For the SCSI devices, the device address is selected by its physical location within the storage shelf, with the slot number equating to the SCSI ID number.

SCSI Bus Termination

The differential bus is terminated at each end by the terminators installed on one end of both "Y" cables.

The single-ended bus is terminated at one end by the bus converter (internally) and at the other end by a terminator board located behind slot 1 on the backplane.

3

Installation and Verification

Introduction

Overview

Your KZTSA storage adapter is designed to be installed quickly and easily. The information in this chapter summarizes how to install the adapter in your workstation or server, and to verify its functional operation including the functional operation of any attached SCSI device or SCSI storage device.

In This Chapter

This chapter covers the following topics:

- Unpacking the KZTSA option
- Installing the KZTSA option
- Confirming proper installation
- Running diagnostic self-tests
- The CNFG command
- The DEVSELF command
- The SETID utility
- The BOOT command
- The INIT command
- The RESET command

Unpacking the KZTSA Option

Checking the Box Contents

Before you install the adapter, check to see that you have all of the required parts. If any parts are missing, contact your Digital sales representative.

Other Required Tools

To install this adapter option, use the screwdriver and the antistatic wrist strap that were shipped with the host system.

Installing the KZTSA Adapter

Preparing the Host System

Before you install the KZTSA adapter, refer to the documentation set that came with the host system (workstation or server) for mandatory system shutdown instructions.

Installation Overview

Table 3-1 and Figure 3-1 summarize the KZTSA adapter installation procedure.

Caution

Always attach an antistatic wrist strap when handling any module within the host system or any other static-sensitive material. Using the antistatic wrist strap protects the modules from static discharge.

Table 3–1 Installation Procedure

Step	Action
❶	Perform an orderly shutdown of the host system. Consult Table C–1 for detailed shutdown procedures covering the operating system and the system hardware including all peripheral devices.
❷	Determine your specific configuration and cable requirements. Consult Chapter 2, System Configurations, of this manual.
❸	Assign and document the SCSI ID for each SCSI device. Consult the device documentation to change SCSI address settings.
❹	Insert the KZTSA TURBOchannel option, as shown in Figure 3–1, into the system unit as follows: <ol style="list-style-type: none"> <li data-bbox="542 1079 1230 1129">a. Select an unused single-width TURBOchannel module slot. <li data-bbox="542 1150 1230 1234">b. Remove the metal filler plate from the back of the system unit by removing the two screws that hold the plate in place over the appropriate slot, and remove the plate. <li data-bbox="542 1255 1230 1339">c. Orient the adapter module inside the system unit so that the module port faces the slot opening at the back of the system unit. <li data-bbox="542 1360 1230 1411">d. Insert the adapter module port into the open slot at the back of the system unit. <li data-bbox="542 1432 1230 1537">e. Firmly press on the back corners of the adapter module so that the module's TURBOchannel connector seats tightly into the TURBOchannel slot connector on the system board or TURBOchannel extender board. <li data-bbox="542 1558 1230 1631">f. Secure the adapter module to the back of the system unit using two Phillips head screws that held the metal filler plate.

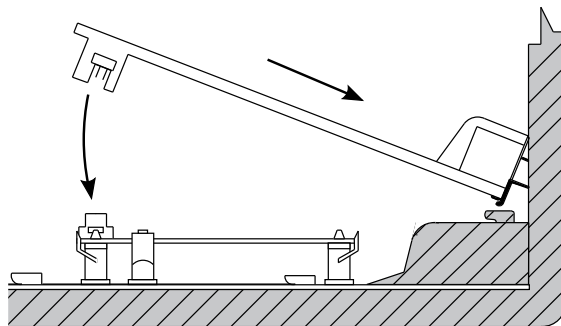
(continued on next page)

Installing the KZTSA Adapter

Table 3–1 (Cont.) Installation Procedure

Step	Action
5	Fasten one end of the SCSI cable to the adapter's external SCSI port connector. <ol style="list-style-type: none">If mid-bus connection, use a "Y" adapter (cable or tri-link connector) and transition cables.If end-bus connection, use a point-to-point cable connection or a "Y" adapter (cable or tri-link connector).
6	Properly route and dress the SCSI cable.
7	Fasten the other end of the SCSI cable to the appropriate SCSI device or storage enclosure.

Figure 3–1 Installing the KZTSA Adapter



NUO_010_000581_10_RGS

Confirming Proper Installation

Procedure

To confirm that the adapter is installed properly, do the following:

Step	Action
❶	Turn on the monitor and peripheral devices connected to the host system.
❷	Turn on your workstation or server.
❸	Visually determine the functional operation of the adapter by checking the LED status indicators to the right of the KZTSA adapter's external SCSI port connector.
LED Color	Illuminated Indication
Yellow	Power-on self-test passed
Red	Power-on self-test failed
Green	SCSI bus terminator power is functional

Note

During normal adapter I/O operations, the three LEDs (yellow, red, and green) are all lit.

-
- ❹ Verify that the KZTSA-AA subsystem appears in the configuration display and that no errors are reported. If the host system's CPU contains the Alpha AXP architecture, refer to Appendix D.
 - a. If the adapter does not appear in the configuration display, move the adapter to another TURBOchannel slot.
 - b. If the adapter still does not appear in the configuration display, contact your Digital service representative.
-

Confirming Proper Installation

Startup Display As the host system starts up, it performs a series of self-tests, including the KZTSA-AA adapter. A display appears on the screen monitor before a console prompt (>>>) appears.

Note

Depending upon the option configuration of the host system, power-up diagnostic testing may take several minutes. Power-up diagnostic testing for this adapter is less than 10 seconds.

Running Diagnostic Self-Tests

Alpha AXP Based Systems For Alpha AXP based workstations or servers, the format of the self-test command is:

```
>>> t tc# testname
```

Example For example, for a module residing at TURBOchannel slot 2, to invoke the power-on self-test *post*, type the following at the prompt:

```
>>> t tc2 post
```

Available Test Scripts Test scripts are a collection of tests. They provide a convenient way to invoke related tests consecutively. They are invoked using the same format as the individual tests.

Test scripts include:

- *pst-q* — for quick testing (usually under 10 seconds)
- *pst-t* — for thorough in-depth testing of the adapter and its attached SCSI devices (usually several minutes)

CNFG Command

Description The CNFG command provides information about the KZTSA adapter and displays any devices connected to the KZTSA's SCSI port. Use this command to verify that your configuration is recognized by the host.

Alpha AXP Based Systems For Alpha AXP based workstations or servers, the command format for displaying the subsystem configuration information is:

```
>>> t tc# cnfg
```

The symbol # is the TURBOchannel slot number where the KZTSA adapter resides.

Example The following display appears when you request the subsystem configuration information on a KZTSA adapter that resides at TURBOchannel slot 1:

```
>>> t tc1 cnfg
```

```
DEC KZTSA-AA A02 (SCSI = 7)
```

```
-----
DEV      PID          VID      REV      SCSI DEV
-----
mka0000  TZ86      (C) DEC  DEC      430B  SEQ
dka0100  RZ26      (C) DEC  DEC      T386  DIR
dka0200  RZ26      (C) DEC  DEC      T386  DIR
dka0300  RZ26      (C) DEC  DEC      T386  DIR
dka0400  RZ26      (C) DEC  DEC      T386  DIR
dka0500  RZ26      (C) DEC  DEC      T386  DIR
dka0600  RZ26      (C) DEC  DEC      T386  DIR
```

The information pertaining to the KZTSA indicates that its firmware revision is A02 and its SCSI ID is 7.

The information pertaining to the devices connected to the KZTSA's SCSI port indicates the following:

- DEV—SCSI ID Number/Logical Unit Combination
- PID—Product Identification
- VID—Vendor Identification
- REV—Device Firmware Revision

CNFG Command

- SCSI DEV—Device Type Sequential/Direct Access

DEVSELF Command

Description

The DEVSELF command invokes resident tests of any devices qualified by Digital connected to the KZTSA's SCSI port. Use this command to verify that the SCSI devices attached to the KZTSA pass their internal self-test.

Alpha AXP Based Systems

For Alpha AXP based workstations or servers, the command format for invoking the self-tests on those devices attached to the KZTSA is:

```
>>> t tc# devself
```

The symbol # is the TURBOchannel slot number where the KZTSA adapter resides.

Example

The following display appears when you invoke the resident self-tests of the SCSI devices attached to a KZTSA adapter that resides at TURBOchannel slot 1:

```
>>> t tc1 devself
```

```
DEC KZTSA-AA A02 (SCSI = 7)
```

```
-----  
DEV      PID          VID      REV      Self-test status  
-----  
mka0000  TZ86      (C) DEC  DEC      430B     Passed  
dka0100  RZ26      (C) DEC  DEC      T386     Passed  
dka0200  RZ26      (C) DEC  DEC      T386     Passed  
dka0300  RZ26      (C) DEC  DEC      T386     Passed  
dka0400  RZ26      (C) DEC  DEC      T386     Passed  
dka0500  RZ26      (C) DEC  DEC      T386     Passed  
dka0600  RZ26      (C) DEC  DEC      T386     Passed
```

The information pertaining to the KZTSA indicates that its firmware revision is A02 and its SCSI ID is 7.

DEVSELF Command

The information pertaining to the devices connected to the KZTSA's SCSI port indicates the following:

- DEV—SCSI ID Number/Logical Unit Combination
- PID—Product Identification
- VID—Vendor Identification
- REV—Device Firmware Revision
- Self-test status—Passed/**FAILED**/Skip

Note

A self-test status of "Skip" indicates that your device is not from Digital and therefore no self-test is supported.

SETID Utility

Description

The SETID utility allows you to set the SCSI ID (address) for the KZTSA adapter's SCSI port. The default SCSI ID is 7. You must change this *only* if another SCSI device uses that ID.

Alpha AXP Based Systems

For Alpha AXP based workstations or servers, the format of the command for setting IDs is:

```
>>> t tc# setid ID
```

Example

For example, to set the SCSI controller to SCSI ID 5 for a KZTSA adapter residing in TURBOchannel slot 2, type the following at the prompt:

```
>>> t tc2 setid 5
```

BOOT Command

Description

The BOOT command initializes the host system and starts the bootstrap program, which loads and starts the operating system software.

The boot sequence is the procedure used by the host system firmware to begin operation. When power is first applied, the firmware is activated and begins operation. This firmware prepares the host system for operation, and then begins the boot sequence.

Refer to the documentation that came with your workstation or server for the command (such as SHOW DEVICE) that informs you which device(s) (or drives) are available.

Alpha AXP Based Systems

For Alpha AXP based workstations or servers, the format of the command (which is not case sensitive) is:

```
>>> boot [[options] #/path [argument...]]
```

Example

For example, to boot to device dka0 which is connected directly to a KZTSA adapter that resides in TURBOchannel slot 2, type the following at the prompt:

```
>>> boot "2/dka000"
```

INIT Command

Description The INIT command provides a means of initializing the KZTSA adapter from the console. This command performs a complete hardware reset of the adapter.

Alpha AXP Based Systems For Alpha AXP based workstations or servers, the command format for initializing the KZTSA adapter is:

```
>>> t tc# init
```

The symbol # is the TURBOchannel slot number where the KZTSA adapter resides.

Example For example, to initialize a KZTSA adapter that resides at TURBOchannel slot 1, type the following at the prompt:

```
>>> t tc1 init
```

RESET Command

Description The RESET command provides a means of resetting the KZTSA SCSI bus from the console. This command may be issued from the console at any time, but *must* be issued to clear a hung bus prior to booting the operating system.

Alpha AXP Based Systems For Alpha AXP based workstations or servers, the command format for resetting the KZTSA SCSI bus is:

```
>>> t tc# reset
```

The symbol # is the TURBOchannel slot number where the KZTSA adapter resides.

Example For example, to reset the SCSI bus for the KZTSA adapter that resides at TURBOchannel slot 1, type the following at the prompt:

```
>>> t tc1 reset
```

A

Hardware Specifications

Description

This appendix lists the hardware specifications for the KZTSA storage adapter.

In This Appendix

This appendix covers the following topics:

- Functional specifications, Table A-1
- Environmental limitations, Table A-2

Description

Functional Specifications

Table A-1 provides KZTSA adapter specifications.

Table A-1 KZTSA Adapter Specifications

Characteristic	Specification
Power Requirements	
Input Voltage	+5.0 V dc, +12.0 V dc
Input Current: Electronics	4.0 amperes, 0.50 amperes
Terminators	0 to 2 amperes
Maximum Power	22.5 watts
Electrical Interface	TURBOchannel to differential SCSI; SCSI bus has 16-bit data plus parity
Connectors	
TURBOchannel	Single, 96-pin DIN connector
Differential	Internal and external 68-pin SCSI-3 connectors
SCSI Bus Termination	
End-bus use	Install or enable terminators
Mid-bus use	Remove or disable terminators
Architecture	
Local CPU	Intel 80960CA, a 32-bit embedded microprocessor with an integral 1 KB data cache, 1 KB instruction cache, interrupt controller, four DMA channels, and 63 general-purpose registers
SCSI CPU	NCR 53C720, a 16-bit protocol processor
TURBOchannel bus clock	12.5/25 MHz
Flash ROM	256K x 8 ROM for storing the operational firmware, diagnostic and option ROM programs

(continued on next page)

Table A–1 (Cont.) KZTSA Adapter Specifications

Characteristic	Specification
EEPROM	2K x 8 ROM for storing configuration parameters information
Performance	
Throughput	Greater than 1000 single-sectored I/Os per second
Short Burst Transfer Rate	20 MB per second (synchronous)
Single Sector I/O Latency	Less than 0.40 milliseconds

Environmental Limitations

The adapter requires an airflow of at least 50 LFM below the module and 150 LFM above the module.

Table A–2 provides information about the environmental conditions in which the KZTSA adapter can operate. The term “operating conditions” refers to a host system that is plugged in, turned on, and running. The term “nonoperating conditions” refers to a host system that is not plugged in, not turned on, and not running.

Table A–2 KZTSA Adapter Environmental Specifications

Operating Conditions	
Temperature range	10°C to 40°C (50°F to 104°F)
Relative humidity	10% to 90% noncondensing
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)
Maximum altitude	2 kilometers (6,562 feet)
Nonoperating Conditions	
Temperature range	-40°C to +66°C (-40°F to +150°F)
Relative humidity	8% to 80% noncondensing
Maximum altitude	3.6 kilometers (12,000 feet)

B

Connector Pin-Out Assignments

Description

This appendix is for users who want to interconnect differential SCSI devices to the KZTSA storage adapter. Table B-1 lists the pin assignments for the internal and external port connectors on the adapter.

In This Appendix

This appendix covers the following topics:

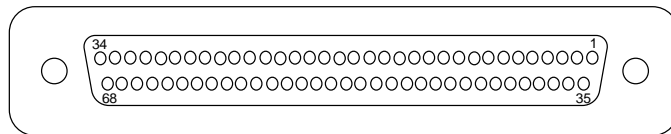
- Internal SCSI port pin-outs, Table B-1
- External SCSI port pin-outs, Table B-1

Description

**SCSI Port
Pin-Outs**

Figure B-1 and Table B-1 describe pin assignments for both the internal and external port connectors on the adapter.

Figure B-1 SCSI Port Designation



NUO_010_000581_15_RGS

Table B-1 SCSI Port Designations

Pin	Description	Pin	Description
1	SCSI bus data [12]+	35	SCSI bus data [12]-
2	SCSI bus data [13]+	36	SCSI bus data [13]-
3	SCSI bus data [14]+	37	SCSI bus data [14]-
4	SCSI bus data [15]+	38	SCSI bus data [15]-
5	SCSI bus data parity [1]+	39	SCSI bus data parity [1]-
6	Ground+	40	Ground-
7	SCSI bus data [00]+	41	SCSI bus data [00]-
8	SCSI bus data [01]+	42	SCSI bus data [01]-
9	SCSI bus data [02]+	43	SCSI bus data [02]-
10	SCSI bus data [03]+	44	SCSI bus data [03]-
11	SCSI bus data [04]+	45	SCSI bus data [04]-
12	SCSI bus data [05]+	46	SCSI bus data [05]-
13	SCSI bus data [06]+	47	SCSI bus data [06]-
14	SCSI bus data [07]+	48	SCSI bus data [07]-
15	SCSI bus data parity [0]+	49	SCSI bus data parity [0]-

(continued on next page)

Description

Table B-1 (Cont.) SCSI Port Designations

Pin	Description	Pin	Description
16	Differential sense	50	Ground
17	Terminator power	51	Terminator power
18	Terminator power	52	Terminator power
19	NC	53	NC
20	SCSI bus ATN+	54	SCSI bus ATN-
21	Ground+	55	Ground-
22	SCSI bus BSY+	56	SCSI bus BSY-
23	SCSI bus ACT+	57	SCSI bus ACT-
24	SCSI bus RST+	58	SCSI bus RST-
25	SCSI bus MSG+	59	SCSI bus MSG-
26	SCSI bus SEL+	60	SCSI bus SEL-
27	SCSI bus CD+	61	SCSI bus CD-
28	SCSI bus REQ+	62	SCSI bus REQ-
29	SCSI bus I/O+	63	SCSI bus I/O-
30	Ground+	64	Ground-
31	SCSI bus data [08]+	65	SCSI bus data [08]-
32	SCSI bus data [09]+	66	SCSI bus data [09]-
33	SCSI bus data [10]+	67	SCSI bus data [10]-
34	SCSI bus data [11]+	68	SCSI bus data [11]-

C

Associated Documentation

Introduction

Description

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

The following documents are not available in every country. Consult your Digital sales representative for availability.

In This Appendix

This appendix covers the following topics:

- Workstation/server documents, Table C-1
- SCSI documents, Table C-2
- StorageWorks enclosure documents, Table C-3
- DECsafe Available Server documents, Table C-4

Associated Printed Documents

Workstation/ Server Documents

Table C-1 lists the associated workstation and server documents available in printed form.

Table C-1 Host System Documents

Title	Order Number
<i>DEC 3000 AXP Model 300/300L Owner's Guide</i>	EK-PELCN-OG
<i>DEC 3000 AXP Model 400/400S Owner's Guide</i>	EK-SNDPR-OG
<i>DEC 3000 AXP Model 400/400S Setting Up Your Workstation</i>	EK-SNDPR-QC
<i>DEC 3000 AXP Model 400/400S Setting Up Your Server</i>	EK-SNDSV-QC
<i>DEC 3000 AXP Model 400/400S Service Information</i>	EK-SNDPR-SV
<i>DEC 3000 AXP Model 400/400S Options Guide</i>	EK-SNDPR-OP
<i>DEC 3000 AXP Model 500/500S Owner's Guide</i>	EK-FLAMI-OG
<i>DEC 3000 AXP Model 500/500S Options Guide</i>	EK-FLAMI-1G
<i>DEC 3000 AXP Model 600/600S/700 Owner's Guide</i>	EK-SNDPL-OG
<i>DEC 3000 AXP Model 600/600S/700 Options Guide</i>	EK-SNDPL-OP
<i>DEC 3000 AXP Model 600/700 Setting Up Your Workstation</i>	EK-SNDWS-QC
<i>DEC 3000 AXP Model 600S Setting Up Your Server</i>	EK-SNDSR-QC
<i>DEC 3000 AXP Model 800/800S/900 Owner's Guide</i>	EK-FLMUL-OG
<i>DEC 3000 AXP Model 800/800S/900 Options Guide</i>	EK-FLMUL-OP
<i>DEC 3000 AXP Model 800/900 Setting Up Your Workstation</i>	EK-FLMUL-QC
<i>DEC 3000 AXP Model 800S Setting Up Your Server</i>	EK-FLMSR-QC

Associated Printed Documents

SCSI Documents

Table C-2 lists the SCSI documentation.

Table C-2 SCSI Documents

Title	Order Number
<i>Small Computer System Interface: An Overview</i>	EK-SCSIS-OV
<i>Small Computer System Interface: A Developer's Guide</i>	EK-SCSIS-SP

Storage Enclosure Documents

Table C-3 lists the documentation associated with the Digital BA350-EA and -SA storage enclosures.

Table C-3 Digital Storage Enclosure Documents

Title	Order Number
<i>BA350 StorageWorks Modular Storage Shelf Subsystem User's Guide</i>	EK-BA350-UG
<i>BA350 StorageWorks Modular Storage Shelf System Configuration Guide</i>	EK-BA350-CG
<i>BA350-EA StorageWorks Modular Storage Shelf User's Guide</i>	EK-350EA-UG
<i>BA350-SA StorageWorks Modular Storage Shelf User's Guide</i>	EK-350SA-UG

ASE Documents

Table C-4 lists the DECsafe Available Server documentation.

Table C-4 DECsafe Available Server Documents

Title	Order Number
<i>Guide to the DECsafe Available Server</i>	AA-PUAAA-TE

D

Alpha AXP Based Systems

Introduction

Description

This appendix provides reference information pertaining to the console `SHOW` command that is supported on Alpha AXP based workstations and servers.

In This Appendix

This appendix covers the `SHOW CONFIGURE` command.

Using the Console SHOW Commands

The SHOW Commands

Using a series of SHOW commands while in console mode, you can run simple tests that will give you the status of the components and options inside (or attached to) your host system.

The SHOW CONFIGURE Command

The SHOW CONFIGURE command tests and displays information about system modules. The command also indicates if errors were detected during the diagnostic test. The SHOW CONFIGURE command is:

```
SHOW CONFIGURE
```

Using the Console SHOW Commands

Successful SHOW CONFIGURE Display

Example D-1 shows the display resulting from the `SHOW CONFIGURE` command when the test reveals no error.

Example D-1 Typical SHOW CONFIGURE Display

```
>>> show config
DEC 3000 --- M500/500S
Digital Equipment Corporation
VPP PAL X5.12-82000101 --- Built on

TCINFO    DEVNAM    DEVSTAT
-----    -
          CPU    OK KN15-AA V1.0-QZ-003AA-sV1.0 ---
          ASIC   OK
          MEM    OK
8
          CXT    OK
7
          NVR    OK
          SCC    OK
          NI     OK
          ISDN   OK
6
          SCSI   OK
3-KZTSA-AA TC3
>>>
```

What To Look For

You should see the message `OK` next to each device name except the `KZTSA` adapter, as shown in Example D-1.

A question mark (?) next to a device name indicates an error. If you see an error indicator next to any device name as shown in Example D-2, note the error number.

Refer to the *Running Diagnostic Tests* section earlier in this document to test the device that is producing an error during the `SHOW CONFIGURE` command.

Using the Console SHOW Commands

Error in SHOW CONFIGURE Display

Example D-2 shows a SHOW CONFIGURE command display that includes an error.

Example D-2 Typical SHOW CONFIGURE Error Display

```
>>> show config
DEC 3000 --- M500/500S
Digital Equipment Corporation
VPP PAL X5.12-82000101 --- Built on

TCINFO      DEVNAM      DEVSTAT
-----      -
              CPU   OK KN15-AA V1.0-QZ-003AA-sV1.0 ---
              ASIC  OK
              MEM   OK

8
              CXT   OK

7
              NVR   OK
              SCC   ? 60
              NI    OK
              ISDN  OK

6
              SCSI  OK
3-KZTSA-AA   TC3

>>>
```

E

Firmware Update Utility

Description

This appendix provides information about updating the KZTSA adapter firmware. Digital Equipment Corporation distributes updated versions of the firmware for the Flash read-only memory (Flash ROM) within the KZTSA adapter whenever necessary. The Flash ROM firmware provides a number of basic functions including diagnostic testing capabilities. The Firmware Update utility lets you update the adapter's Flash ROM with new firmware whenever it is available from Digital.

In This Appendix

This appendix covers the following topics:

- Starting the Firmware Update utility
- Updating the KZTSA adapter firmware

Starting the Firmware Update Utility

What You Should Do First

Before using the Firmware Update utility, you should:

1. Possess a Firmware Update utility compact disk.
2. Shut down the host system operating system.
3. Enter console mode by halting the host system to display the console prompt (>>>).
4. Insert the Firmware Update utility disc caddy into the compact disk drive.

Consult the host system documentation for instructions to properly shut down the operating system and to halt the host system.

Important

The Firmware Update utility requires use of a privileged console command. Therefore, to use the Firmware Update utility, the host system must either be in nonsecure mode or secure mode. If the console is in secure mode, you must have password security access.

For more information on privileged console commands, secure console mode, or password security, consult the host system documentation set.

Obtaining the Device Number

To run the Firmware Update utility, you need to boot the host system from an RRD42 compact disc drive that contains the Firmware Update utility. To do this, you will need the device number for the compact disc drive.

If you do not know the device number of the RRD42 drive, you can display it by entering a *show device* command at the console prompt and pressing the Return key. A list of all device numbers on the host system is displayed in the BOOTDEV column of the display. Check the DEVNAM column for the device names.

Starting the Firmware Update Utility

Booting from the Compact Disc

To start the Firmware Update utility, enter the BOOT command followed by the device number for the compact disc drive, and press the Return key. You will observe a display similar to this one as the host system starts the boot process:

```
>>> boot DKA100  
  
INIT-S-SCC  
INIT-S-NI  
INIT-S-SCSI  
INIT-S-ISDN  
AUDIT_CHECKSUM GOOD  
AUDIT_LOAD_BEGINS  
AUDIT_LOAD_DONE
```

Note

The file name of the Firmware Update utility will change with each new release. Refer to the documentation that came with the Firmware Update utility compact disc for the file name that you should use.

Starting the Firmware Update Utility

The Firmware Update Utility Menu

After the boot process completes, a Firmware Update utility menu is displayed as follows:

```
*** TURBOchannel Firmware Update Utility V1.2 ***
UPDATE n
REPAIR n
VERIFY n
SHOW n
LIST
HELP
SET
EXIT/QUIT

TC_UPD->
```

Table E-1 describes the functions available from the menu. However, only the UPDATE function is described in this version of the documentation.

Table E-1 The Update Utility Menu

Function	Description
UPDATE	Update the current firmware ROM to the new version on the TURBOchannel slot number specified.
REPAIR	Update the current firmware ROM on modules with corrupted names.
VERIFY	Not supported on the KZTSA adapter.
SHOW	Show the current version of the firmware installed on the host system on the TURBOchannel slot number specified.
LIST	List the devices that the Update utility can update.
HELP	Provide help on each of the Update utility functions.
EXIT/QUIT	Terminate the Update utility session.

Updating the KZTSA Adapter Firmware

Enter Update Option

Updating the KZTSA adapter firmware, assuming that the adapter resides in TURBOchannel slot #3, will require you to enter a couple of commands. First, examine the current version of the installed firmware by entering the SHOW command at the Update utility prompt (TC_UPD->) and pressing the Return key. Next, update the installed firmware by entering the UPDATE command at the Update utility prompt (TC_UPD->) and pressing the Return key. The Update utility displays messages similar to those shown here:

```
TC_UPD-> UPDATE 3
        UPDATE TURBOchannel slot 3 ROM

KZTSA>> Code Update Utility - Version V1.0
KZTSA>> Current Image - KZTSA-AA A01
KZTSA>> Updated Image - KZTSA-AA A02
KZTSA>> Do You want to continue? (Yes/[No])?
```

Enter Y

If you are ready to update the KZTSA adapter firmware, enter *Y* at the prompt and press the Return key. The Update utility continues, with the following display:

```
KZTSA>> Update Started
KZTSA>> . . . . . Backup Flash Erased
KZTSA>> . . . . . Backup Flash Updated
KZTSA>> . . . . . Backup Flash Verified
KZTSA>> . . . . . Vital Flash Erased
KZTSA>> . . . . . Vital Flash Updated
KZTSA>> . . . . . Vital Flash Verified
KZTSA>> . . . . . Nonvital Flash Erased
KZTSA>> . . . . . Nonvital Flash Updated
KZTSA>> . . . . . Nonvital Flash Verified

KZTSA>> Update Completed

TC_UPD-I> *** Slot 3 ROM update successful ***
```

Updating the KZTSA Adapter Firmware

Ending the Session

When the Update utility is complete, enter the EXIT command at the prompt and press the Return key. Remove the firmware Update utility disc caddy from the compact disc drive, if installed and used.

```
TC_UPD-> exit 
```

```
TC_UPD-I> System will be halted. POWER CYCLE the machine.
```

F

Device Parameter Disable Utility

Description

This appendix provides information about using the Device Parameter Disable utility to enable or disable the following SCSI activities for each device on the SCSI bus:

- Synchronous data transfer negotiation
- Wide (16-bit) data transfer negotiation
- Device disconnect privilege
- Device tag command queuing

Using the Device Parameter Disable Utility

Invoking the Utility

Before invoking the Device Parameter Disable utility, enter console mode by halting the host operating system to display the console prompt (>>>).

For Alpha AXP based workstations or servers, the command format for invoking the Device Parameter Disable utility to enable or disable activities for the devices on the KZTSA SCSI bus is:

```
>>> t tc# devparams 
```

The symbol # is the TURBOchannel slot number where the KZTSA adapter resides.

Using the Device Parameter Disable Utility

The following display is an example of invoking the Device Parameter Disable utility to enable or disable activities for SCSI devices that are connected directly to a KZTSA adapter that resides at TURBOchannel slot 1:

```
>>> t tcl devparams Return
KZTSA Device Parameter Disable Utility 1.0
SET          disable the specified parameter for a device
             syntax for SET is:
             SET [device_id|ALL] [SYNC|WIDE|DISCON|TAGQ] [ENABLE|DISABLE]
             or SET [device_id|ALL] DEFAULT
SHOW         displays the current device configurations
HELP        displays help information
EXIT or QUIT exits the DevParams utility

DevParams>
```

Using the *DEFAULT* qualifier with the SET command enables the four activities on the specified device or on all devices on the SCSI bus.

Available Utility Commands

Table F-1 describes the commands that are available for the Device Parameter Disable utility.

Table F-1 The Device Parameter Disable Utility Commands

Function	Description
SHOW	Displays the current device settings for all devices. The KZTSA adapter's SCSI ID is indicated by a row of asterisks in each of the four columns.
SET	Allows enabling or disabling one of the specified activities for a device.
HELP	Displays a brief description of all commands along with the expected syntax.
EXIT/QUIT	Terminates the Device Parameter Disable utility session and allows any changes to be saved.

Using the Device Parameter Disable Utility

SHOW Command

The SHOW command displays the current device settings for all devices on the selected KZTSA adapter. The KZTSA adapter's SCSI ID is indicated by a row of asterisks in each of the four columns.

The following display is an example of using the SHOW command.

```
DevParams>show 
```

```
Device
  ID      Wide Negotiation   Disconnects   Sync Negotiation   Tag Queuing
  0      ENABLED                 ENABLED       ENABLED            ENABLED
  1      ENABLED                 DISABLED      ENABLED            ENABLED
  2      DISABLED               DISABLED      DISABLED           DISABLED
  3      ENABLED                 ENABLED       ENABLED            ENABLED
  4      ENABLED                 ENABLED       ENABLED            ENABLED
  5      ENABLED                 ENABLED       ENABLED            DISABLED
  6      ENABLED                 ENABLED       DISABLED           ENABLED
  7      *****                *****       *****            *****
  8      ENABLED                 ENABLED       ENABLED            ENABLED
  9      ENABLED                 ENABLED       ENABLED            ENABLED
  10     ENABLED                 ENABLED       ENABLED            ENABLED
  11     DISABLED              ENABLED       ENABLED            ENABLED
  12     ENABLED                 ENABLED       DISABLED           ENABLED
  13     ENABLED                 ENABLED       ENABLED            ENABLED
  14     ENABLED                 DISABLED      ENABLED            ENABLED
  15     ENABLED                 ENABLED       ENABLED            ENABLED
```

```
DevParams>
```

Using the Device Parameter Disable Utility

SET Command The SET command allows one of the four activities to be enabled or disabled for the specified device.

For Alpha AXP based workstations or servers, the format for the Device Parameter Disable utility SET command is:

```
DevParams>set [device_id|ALL] [SYNC|WIDE|DISCON|TAGQ] [ENABLE|DISABLE]
```

or

```
DevParams>set [device_id|ALL] DEFAULT
```

The `device_id` can be entered as a decimal or hexadecimal number, for example, as 11 decimal or as 0xb hexadecimal. Using the *DEFAULT* qualifier with the SET command enables the four activities on the specified device or on all devices on the SCSI bus.

The following display is an example of using the SET command to disable wide negotiation on the device that has a SCSI ID of 10:

```
DevParams>set 10 wide disable 
```

```
?DevParams: Adapter must be reinitialized for changes to take effect
```

```
DevParams>
```

After using the SET command, the SHOW command can be used to verify that the desired activity was enabled or disabled on the selected device.

**HELP
Command**

The HELP command displays a description of all commands along with the expected syntax.

The following display is an example of using the HELP command.

```
DevParams>help 
KZTSA Device Parameter Disable Utility 1.0
SET          disable the specified parameter for a device
             syntax for SET is:
             SET [device_id|ALL] [SYNC|WIDE|DISCON|TAGQ] [ENABLE|DISABLE]
             or SET [device_id|ALL] DEFAULT
SHOW         displays the current device configurations
HELP        displays help information
EXIT or QUIT exits the DevParams utility

DevParams>
```

**EXIT/QUIT
Command**

The EXIT or QUIT command is used to terminate the Device Parameter Disable utility.

For Alpha AXP based workstations or servers, the format for the EXIT or QUIT command is:

```
DevParams>exit 
Parameters are not saved! Do you want to save them? [Y/N]
```

When you exit or quit the Device Parameter Disable utility, you are asked if you want to save the changes that have been made. Enter a Y and press to save the changes and exit the utility. Enter a N and press to exit the utility without saving the changes. After answering the question with a Y or N and pressing , you will be returned to the console prompt (>>>).

After exiting the Device Parameter Disable utility, you must reinitialize the adapter for your changes to take effect by typing the following command at the console prompt:

```
>>> t tc# init
```

The symbol # is the TURBOchannel slot number where the KZTSA adapter resides.

G

Troubleshooting

Description

Troubleshooting is the process of isolating and diagnosing problems. This appendix provides solutions to problems that can occur in the installation of the KZTSA adapter. If you experience difficulty in installing or verifying the KZTSA adapter, use the information in this appendix to isolate and diagnose the problem.

The troubleshooting techniques described in this appendix *do not* identify all possible problems with your KZTSA adapter, nor do the actions suggested remedy all problems. If a problem is not described in the appendix, or if the actions suggested *do not* solve the problem, call your Digital services representative. For problems that may be host system related, refer to your host system documentation.

Description

Power-Up Phase

After you turn on your host system, the CPU either performs a series of self-tests and startup routines or enters the console mode.

Table G–1 describes possible problems during self-tests, specifies their probable cause, and provides corrective action.

Table G–1 Problems During Self-Tests

Symptom	Probable Cause	Corrective Action
No response when power switch is turned on.	System is not plugged in.	Set the power switch to O (off). Plug in the system. Set the power switch to (on).
	No power at wall outlet.	Use a different wall outlet, or check the circuit breaker that controls power to the wall outlet.
	Circuit breaker is tripped.	Reset the circuit breaker. If it trips again, call your Digital service representative.
No display on console terminal.	Power cable is incorrectly installed.	Set the power switch to O (off). Check that the power cable is fully seated in the wall outlet. Set the power switch to (on).
	Console terminal is not turned on.	Check the console terminal's on/off (/O) switch. Check that the console terminal's power cord is connected at both ends.
Self-tests halt with error message or error summary displayed on console terminal.	System module failure.	Consult your host system documentation for information on running diagnostic tests.
	System detected an error while running its self-tests.	Record the number following the question mark in the error message or error summary and call your Digital service representative.
SCSI device does not appear in the <i>cnfg</i> display.	Duplicate SCSI IDs.	Ensure that each SCSI device has a unique SCSI ID.
	KZTSA is in an unknown state.	Initialize the adapter as follows: >>> t tc# init The symbol # is the TURBOchannel slot.

(continued on next page)

Table G–1 (Cont.) Problems During Self-Tests

Symptom	Probable Cause	Corrective Action
	SCSI device is hung.	Reset the SCSI device as follows: >>> t tc# reset The symbol # is the TURBOchannel slot. Power cycle the storage enclosure.
	Cable is not connected to the SCSI device or media drive.	Check cable connections.
	SCSI bus not properly terminated.	Install a bus terminator on the last external drive on the bus.
	Defective SCSI device or media drive.	Replace SCSI device or media drive.

Boot Sequence Phase

After you turn on your host system, the CPU either performs a series of self-tests and startup routines or enters the console mode.

Table G–2 describes possible problems during boot sequence, specifies their probable cause, and provides corrective action.

Table G–2 Problems During Boot Sequence

Symptom	Probable Cause	Corrective Action
Boot failure.	The default startup action environment variable is set to <i>halt</i> in console mode.	Change the default startup action as described in your host system documentation.
	Software is not installed.	Install the operating system software; consult your host system documentation for instructions.
	Incorrect boot device was specified.	Change the boot device environment variable; consult your host system documentation for instructions.

(continued on next page)

Description

Table G-2 (Cont.) Problems During Boot Sequence

Symptom	Probable Cause	Corrective Action
	Boot device is not properly configured.	Enter a SHOW DEVICE command as described in your host system documentation. Check to see that all storage devices are configured properly. If not, check the SCSI ID numbers and SCSI cables as described in your host system documentation.
	Software problem.	Consult your host system operating system documentation for information or call your Digital service representative.
	KZTSA is in an unknown state.	Initialize the adapter as follows: >>> t tc# init The symbol # is the TURBOchannel slot.
t command fails to respond.	KZTSA is in an unknown state.	Initialize the adapter as follows: >>> t tc# init The symbol # is the TURBOchannel slot.

Glossary

ANSI

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

antistatic wrist strap

A grounded strap that connects to your wrist and the system while handling hardware devices that are sensitive to static electricity. Prevents electrostatic discharge that could result in physical damage to the hardware.

arbitrate

Process of selecting one device from several devices that are seeking access to the SCSI bus concurrently.

architecture

Internal configuration hardware including its registers, instruction set and input/output structure.

asynchronous transmission

Type of communication in which data is transmitted at different time intervals.

boot

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

boot device

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

bus

Flat or twisted-pair cable composed of individual identical circuits.

bus free

No SCSI device is actively using the bus; therefore, the bus is available for use.

connect

Function that occurs when an initiator selects a target to start an operation. A connection can only occur between an initiator and a target.

device

General name for any hardware unit connected to the system that is capable of receiving, storing, or transmitting data. See also *host adapter*.

firmware

Software that is stored in flash read-only memory that contains a set of instructions designed to help the KZTSA adapter hardware perform its assigned functions.

host adapter

Device that connects a host system to the SCSI bus. The device usually performs the lower layers of the SCSI protocol and normally operates as the initiator.

initiator

SCSI device that requests an operation to be performed by another SCSI device (the target).

port

Socket on the front or back of the system unit to which a terminal, printer, modem or other device is connected.

RAID

Redundant Array of Independent Disks. A methodology in which disks are viewed as a single virtual disk.

script

Collection of console commands that run in a set order.

SCSI

Interface designed for connecting disks and other peripheral devices to a computer system. SCSI, pronounced “skuh-zee,” is used by many computer and peripheral vendors throughout the computer industry.

SCSI is defined by the American National Standards Institute (ANSI) standard; in this guide, SCSI refers to either SCSI-1 or SCSI-2.

SCSI-1

Small Computer System Interface-1 compliant with ANSI standard X3.131-1986.

SCSI-2

Small Computer System Interface-2 compliant with ANSI standard X3.T9.2/86-109.

SCSI device ID

Bit-significant representation of the SCSI address referring to one of the address signal lines.

self-test

Program test that is invoked automatically when the system starts up.

target

SCSI device that performs an operation requested by an initiator.

terminator

Resistor array device used for terminating a SCSI bus. A SCSI bus must be terminated at its two physical ends. A peripheral device uses a terminator only if it is at the end of the bus.

TURBOchannel

System’s synchronous, asymmetrical I/O channel.

TURBOchannel module

High-performance interconnection hardware that allows you to use a variety of Digital and third-party options.

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KZTSA SCSI Storage Adapter
Installation and User's Guide
EK-KZTSA-UG. C01

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Thank you for your assistance.

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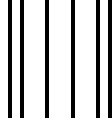
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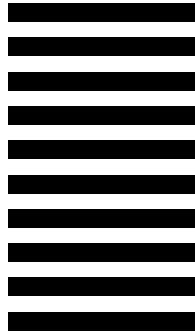
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