DEC 3000
Model 300 Series AXP

Service Guide

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Preface

About This Document

Purpose and Audience

This manual is a reference document for Digital
service personnel and Digital customers who perform
maintenance work on the DEC 3000 Model 300 Series
AXP systems.

How To Use This Guide

This *DEC 3000 Model 300 Series AXP Service Guide*
complements the *DEC 3000 Model 300 Series AXP
Hardware Reference Guide* that came with your
system.

For information on ...	Refer to ...
Adding, removing and replacing internal devices	*DEC 3000 Model 300 Series AXP Hardware Reference Guide*
Console commands with examples	*DEC 3000 Model 300 Series AXP Hardware Reference Guide*
Console commands at a glance	Chapter 2 in this guide
Password security	*DEC 3000 Model 300 Series AXP Hardware Reference Guide*
Alternate console device	*DEC 3000 Model 300 Series AXP Hardware Reference Guide*
Troubleshooting by visual inspection	*DEC 3000 Model 300 Series AXP Hardware Reference Guide*

For information on ...	Refer to ...
Advanced diagnostics, including:	*DEC 3000 Model 300 Series AXP Hardware Reference Guide*
Diagnostic display lights Power-up problems Error messages FRU codes Diagnostic tests	
Field replaceable units (FRUs)	Chapter 1 in this guide
System components (3-D view)	Chapter 1 in this guide
LED codes, error and status messages	Chapter 3 in this guide

Organization of This Guide

This manual is composed of three chapters and one appendix:

- Chapter 1 provides an overview illustration of the DEC 3000 Model 300 Series AXP system, and a list of replaceable units (FRUs) and part numbers.

- Chapter 2 briefly describes system console commands.

- Chapter 3 contains tables that list error codes and error and status information.

- Appendix A contains power supply information.

Conventions Used In This Guide

This document uses the following conventions:

Convention	Description
Return	A key name is shown enclosed to indicate that you press the named key on the keyboard.
UPPERCASE lowercase	The console program does not distinguish between uppercase and lowercase characters in typed user input. All examples in this guide show user input in lowercase. All system output is in uppercase.
show	A word in this typeface indicates a command that you must enter from the keyboard at the console prompt (>>>). For example, boot.

--- **Note** ---

There is an 80-character limit on the input line. Commands *cannot* be wrapped or continued to a new line. Use the abbreviated form of a command so the whole command can be entered on one line.

Because of space restrictions in this guide, command format examples show commands continued to a new line.

Convention	Description
variable	Lowercase italicized letters in commands indicate a variable value that you must provide. The value must be an actual option like a number or logical such as on/off. Example: >>> set language *3*
[ ]	The information contained within these brackets is optional. The brackets are not part of the command syntax and should not be typed.
{ }	The information contained within these braces is required. The braces are not part of the command syntax and should not be typed.

Convention	Description
" "	Quotation marks indicate a literal string. A command in lowercase surrounded by quotes will not convert to uppercase and will be put on the network as lowercase. For example, `>>> B esa0 -fi "test.sys"` will remain in lowercase letters.
-	Options/qualifiers are identified by a hyphen. The hyphen indicates that additional information can be, or in some cases must be, supplied on the command line. The hyphen must be typed.
Note	Notes provide general information.
WARNING:	Warnings contain information to prevent personal injury. Read these carefully.
CAUTION:	Cautions provide information to prevent damage to equipment or software. Read these carefully.
❶	A number like this that appears in text corresponds to a number in an illustration.

Related Documentation

The following documents provide additional information about the DEC 3000 Model 300 Series AXP systems.

Titles	Part Number
DEC 3000 Model 300 Series AXP Documentation Kit	EK–D3L00–DK
DEC 3000 Model 300 Series AXP Hardware Reference Guide	EK–PELCN–OG
DEC 3000 Model 300 Series AXP Setting Up Your System	EK–PELHW–IC
DEC 3000 Model 300 Series AXP Adding Memory	EK–PELAM–IC
DEC 3000 Model 300 Series AXP Adding an Internal Fixed Disk Drive	EK–PELAD–IC
DEC 3000 Model 300 Series AXP Adding a Removable-Media Drive	EK–PELAF–IC
DEC 3000 Model 300 Series AXP Service Kit	EK–PELSV-DK

Digital Support

Digital service representatives are available for on-site support for warranty and service contract customers. If you are not currently eligible to receive this support but would like to become eligible, please contact either a Digital Support Center listed in Table 1, or your local Digital office.

Support Center Contact Numbers

Table 1 lists the Digital Support Center contact numbers. If a number for your area is not listed below, please contact your local Digital office for assistance.

Table 1   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]25659200
France	[33]92955111
Germany	[49]-(89)-95913218
Australia	009 252-277

———————— **Note** ————————

Any troubleshooting techniques described in this guide do not identify all possible problems, nor do the actions suggested correct all problems.

1
Spare Parts List and 3D View of System

Field Replaceable Units (FRU)

Table 1–1 (Modules), Table 1–2 (Cables and Power Cords), Table 1–3 (Accessories), Table 1–4 (Hardware), Table 1–5 (SCSI Devices), and Table 1–6 (Loopbacks and SCSI Terminators), list recommended spare parts and part numbers for Digital service representatives.

Table 1–1   Modules

Part Number	Description
54-21246-BA	16-megabyte memory module (MS16-BA)
54-21277-AA	32-megabyte memory module (MS16-DA)
54-22249-01	System module—Models 300/300X/300LX
54-22249-02	System module—Models 300L
54-22257-01	CPU module—Model 300
54-22257-02	CPU module—Model 300L
54-22257-03	CPU module—Model 300X
54-22257-04	CPU module—Model 300LX
H7887-AA	Power supply

Field Replaceable Units (FRU)

Table 1–2   Cables and Power Cords

Part Number	Description
17-00442-15	Auxiliary power cord, monitor to system unit
17-02640-01	Keyboard/mouse extender cable
17-02641-02	SCSI cable (50-pin Honda to 50-pin Champ connectors)
17-02906-01	Monitor video cable
17-03192-02	Twisted-pair cable
17-08339-01	External power cord
DETTR-AA/AB	10BASE-T to 10BASE2 (UTP to ThinWire) cable
DETTR-BA/BB	10BASE-T to AUI (UTP to thickwire) cable

Table 1–3   Accessories

Part Number	Description
VSXXX-GA	Mouse
VSXXX-JA	Audio headset
LK401-xx	Standard keyboard (country-specific)
12-36175-01	Grounding wrist strap

Table 1–4   Hardware

Part Number	Description
70-28353-02	Top cover assembly
70-30851-01	Front bezel

Table 1–5   SCSI Devices

Part Number	Description
RZ25-EP	426 MB, 3.5-in SCSI disk drive
RZ25L-DP	535 MB, 3.5-in SCSI disk drive
RZ26-EP	1050 MB, 3.5-in SCSI disk drive
RZ26L-EP	1.05-gigabyte, 3.5-in SCSI disk drive
RZ28-EP	2.1-gigabyte, 3.5-in SCSI disk drive
RX26-FB	Removable-media drive

Table 1–6   Loopbacks and SCSI Terminator

Part Number	Description
29-24795-02	N525 position loopback for RS232 port
12-33626-01	Micro D-sub male SCSI terminator
12-35619-01	MJ8 loopback for ISDN port

Removing System Components

To remove a TURBOchannel option, disconnect the power cord and the option.

To remove the CPU, a memory module, or the power supply, disconnect the power cable and the module.

Before you replace the system module, remember to swap the Ethernet ROM, that is, move the chip from the failing system module to the replacement system module. Detailed instructions for locating, removing and replacing the Ethernet ROM are available in the *DEC 3000 Model 300 Series AXP Hardware Reference Guide*, part number EK–PELCN–OG.

Removing System Components

Figure 1–1 shows a 3-dimensional view of the
components in a DEC 3000 Model 300 Series
AXP system. To remove the system module in a
DEC 3000 Model 300 Series AXP system, disconnect
and remove each of the components (see Figure 1–1)
in the following order:

❶ Power harness

❷ SCSI cable

❸ Removable-media device (or hard disk drive)

❹ Hard disk drive

❺ Memory

❻ CPU module

❼ TURBOchannel option slot filler panels

❽ Power supply

❾ System module

❿ Loose metal plate

⓫ Bottom system enclosure

To remove a removable-media device ❸ or a fixed
disk drive ❹, disconnect the power cord and SCSI
cable and then the device.

Refer to the *DEC 3000 Model 300 Series
AXP Hardware Reference Guide*, part number
EK–PELCN–OG, for detailed component installation
and removal instructions.

Removing System Components

Figure 1–1   3D View of System Components
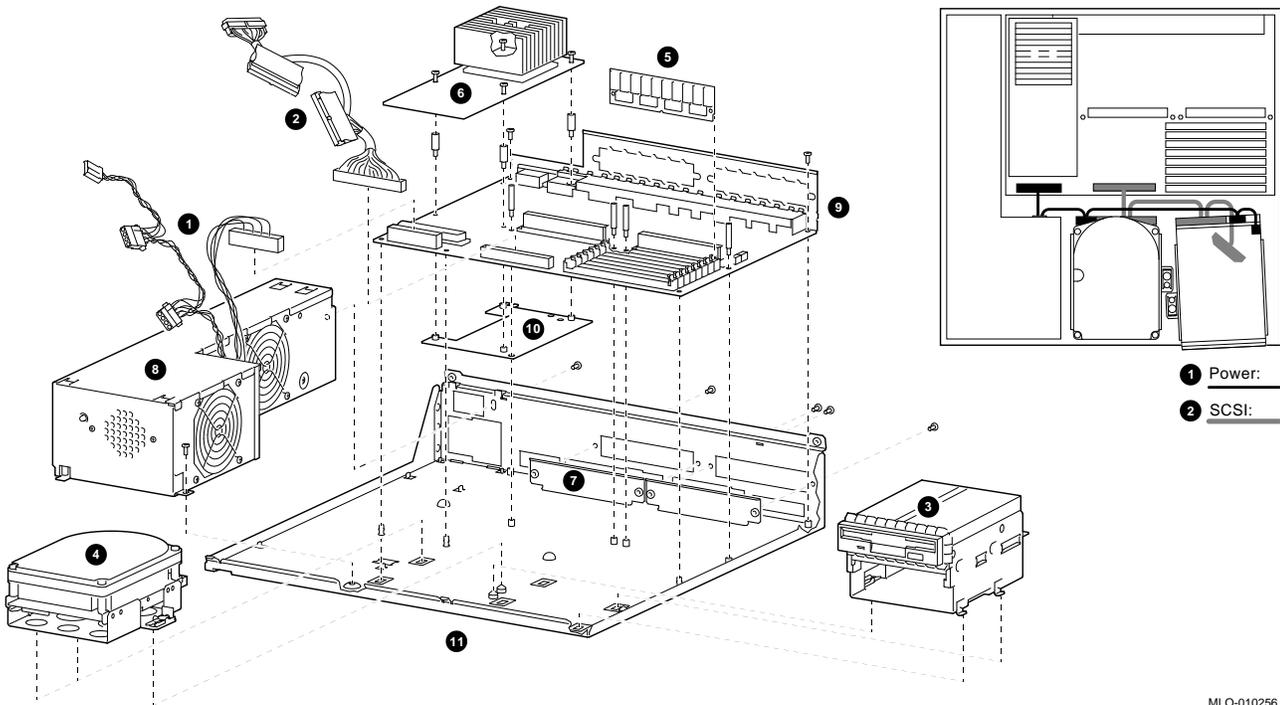
MLO-010256

Removing System Components

Opening and Closing the System

Refer to Figure 1–2 and follow these steps to open
and close a DEC 3000 Model 300 Series AXP system.

❶ To open the system:

   a. Remove the two Phillips screws on the right
      and left back corners of the system unit
      cover.

   b. Place the system unit so that the back edge
      extends over the edge of your table or desk.

   c. Place your thumbs on the two black caps (see
      Figure 1–2) on the back of the system unit,
      and at the same time, place your fingers
      under the cover's bottom edge. Press down
      with your thumbs while you press up against
      the cover's edge with your fingers.

❷ To close the system:

   a. Align the lip on the front inside edge of the
      cover with the four tabs along the front edge
      of the system unit (see Figure 1–2). Position
      the cover so that the lip fits over the tabs.

   b. Maintain a slight pressure on the front of the
      cover as you lower it. Be sure the sides of
      the cover fit over the outside of the bottom
      enclosure.

   c. Replace the two Phillips screws on the right
      and left back corners of the system unit
      cover.

Opening and Closing the System

Figure 1–2   Opening and Closing the System
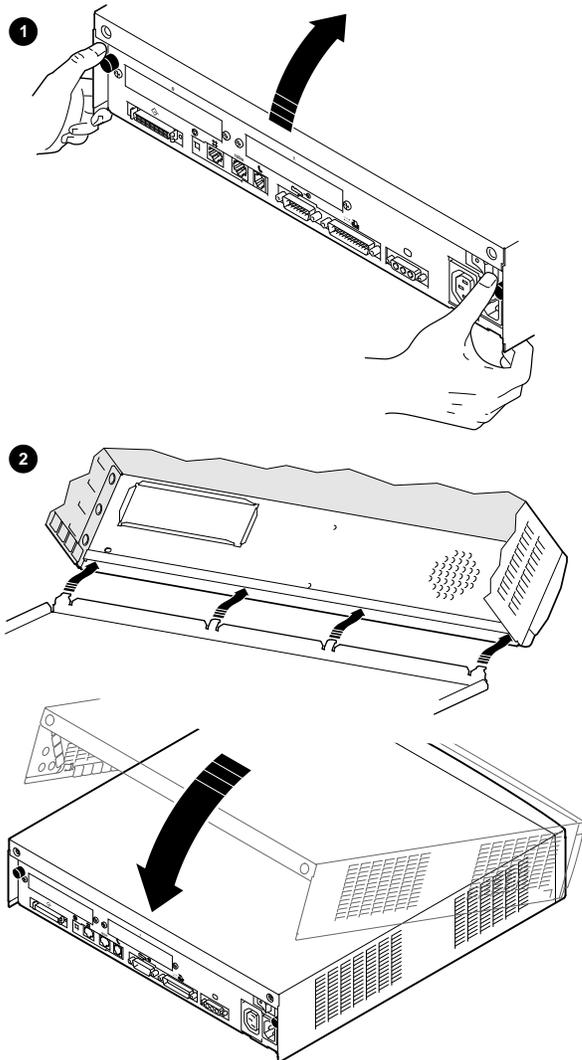
MLO-010734

2
Using Console Commands

Overview

This chapter lists the DEC 3000 Model 300 Series AXP console commands and explains the use of each command.

The following console commands are covered in this chapter:

```
boot                login
continue            repeat
deposit             set
examine             show
halt                start
help                test
initialize
```

Additionally, this chapter covers these topics:

• Definitions of console and program mode

• Three diagnostic environments

• Diagnostic examples associated with the test command

Overview

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 to and interpreted by the console subsystem.

Console mode is in effect when the system is turned on and the operating system software has not been started, or when the operating system has been shut down.

When Console Mode Is Used

You interact directly with the console subsystem under the following circumstances:

• Before booting the operating system software

• While setting environment variables

• When using the Firmware Update Utility

• When trying to identify and resolve system problems or errors

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.

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 2–1 lists the keys and control characters that
you can use while operating in console mode.

Table 2–1   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.

___ **CAUTION: Control of System Devices** ___

Some console commands control system
devices and memory. Do not use console
commands without fully understanding the
effect they can have on your DEC 3000
Model 300 Series 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 is turned off.

Diagnostic Environments

You can access three different diagnostic
environments:

1. Power-up diagnostic environment

   This mode applies only when power is first
   applied to the system, and before the system
   reaches console level.

   ─────────────── **Note** ───────────────

   The term *startup*, as used in text, describes
   the starting up of your system from console
   mode.

   ───

2. Customer (console) diagnostic environment

   For customer-run (console) diagnostics, first shut
   down the operating system. If the console is not
   displaying the >>>, then press the halt button on
   the back of the system unit. Type the following
   command:

   ```
   >>> set diag_s[ection] 1 Return
   ```

From the customer (console) environment you can run a single diagnostic test using, for example, the `test` command and then specifying a device name. The following example tests the NVR:

>>> t[est] *nvr* Return

3. Service diagnostic environment

To run multiple tests with one command, and for a thorough testing of your system, first shut down the operating system, then press the halt button on the back of the system unit, and type:

>>> set *diag_s[ection]* 2 Return

Note that there may be special requirements in order to execute a certain test; for example, loopback connectors, a handset, or a specific device may be required. See the description of the `test` command.

You can run multiple diagnostic tests using, for example, the `test` *device_name,device_name* or `test` *device_name:device_name* commands. The `test` command is described at the end of this chapter.

The following command tests the network interconnect (NI) and nonvolatile random-access memory (NVR):

>>> t[est] *ni,nvr* Return

BOOT

The `boot` command initializes the system and starts the boot program, which loads and starts the operating system. There is an 80-character limit on the input line, and there is no command line wrap feature.

Format

Issue the `boot` command with the following syntax:

```
>>> b[oot] [-fl value][-fi filename]
          ["slot_number/device_name"][-ns] Return
```

CONTINUE

The `continue` command returns the system to program mode (operating system level), after console mode has been invoked.

––––––––––– **Note** –––––––––––

The `continue` command is supported only on the OpenVMS operating system.

–––––––––––––––––––––––––––––––––

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. The processor begins instruction execution at the address contained in the program counter. Commands that can corrupt or alter system memory include the `test` and `deposit` commands. This command does not initialize the processor.

The following function is *not* supported on a graphics console:

Ctrl/P`/continue`

This function works only on the alternate console.

Format

To execute the `continue` command, use the following syntax:

`>>> c[ontinue]` Return

DEPOSIT

The `deposit` command is used to write to memory
locations from the console. If no address space or
data size options are specified, the defaults are
the last address space and the data size used in a
`deposit` or `examine` command.

There is an 80-character limit on the input line, and
there is no command line wrap feature.

Format

To execute the `deposit` command, use the following
syntax:

```
>>> d[eposit] [-{size_option}] [-{address_option}]
              [-{miscellaneous-options}] {address}
              {data} Return
```

The {address} qualifier specifies the address (or
first address) to be written. Data values must be in
hexadecimal form.

EXAMINE

The `examine` command examines and displays the
contents of the specified memory location. The
displayed line consists of a single character address
specifier, the hexadecimal physical address to be
examined.

After initialization, the default address space is
physical memory, the default data size is a longword
and the default address is zero. If conflicting address
space or data sizes are specified, the console ignores
the command and issues an error response.

There is an 80-character limit on the input line, and
there is no command line wrap feature.

Format

To execute the `examine` command, use the following
syntax:

```
>>> e[xamine] [-{size_option}][-{address_option}]
             [-{miscellaneous_options}]
             [{address}] Return
```

The {address} qualifier specifies the address (or first
address) to be read.

Use caution when examining registers 0 - 200000,
as they contain the console code, hardware restart
parameter block, console routine block, console
terminal block, memory descriptors and page tables.
Be aware that the `-u` qualifier gives you unprotected
access to these registers.

HALT

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

Format

Issue the `halt` command as follows:

```
>>> h[alt] Return
```

HELP

The `help` command displays a brief list of commands, parameters, and qualifiers. If you specify `set`, `show`, or `mips_[emulator]`, you will receive further information for that topic only. The `help` command is not intended to provide a complete description of each command. For a more complete list of commands, use the `help advanced` command.

There is an 80-character limit on the input line, and there is no command line wrap feature.

Format

To execute the `help` command, use the following syntax:

```
>>> he[lp] [advanced][set][show]
           [mips_emulator] RETURN
```

INITIALIZE

The `initialize` command initializes the processor, console, and any devices connected to the system by default values. In order to guarantee the state of the system, the console program will also initialize r0 through r30 to 0 and the ISO and OC to 20000000.

Format

To execute the `initialize` command, use the following syntax:

```
>>> i[nitialize]   Return
```

LOGIN

The `login` command enables restricted console commands, such as those used in the Set Password Utility, when:

- the secure jumper is installed on the system module

- the password has been set and *secure* is set to *on*

After `set` *secure* is set to *on*, type `login` at the >>> prompt. Type your password at the PSWD0>>> prompt. See Chapter 5 in *DEC 3000 Model 300 Series AXP Hardware Reference Guide* for additional information.

Format

To execute the `login` command, use the following syntax:

```
>>> lo[gin]  Return
PSWD0>>> console_password   Return
```

REPEAT

The `repeat` command causes the console program to repeatedly execute any specified tests. It is terminated by pressing `Ctrl/C` or by pressing the Halt button. There are no defaults for this command.

Format

To execute the `repeat` command, use the following syntax:

```
>>> r[epeat] command {qualifier_list},... Return
```

Note that the format of the `repeat` command does not require a *qualifier_list*, it is optional. The following are acceptable command strings:

```
>>> r test
>>> r test scc mouse
>>> r test scc:ni)
```

SET

The `set[env]` command:

- Sets an environment variable to a value or setting

- Displays the value specified

- Defines a command qualifier

- Defines the console password

Format

To execute the `set` command, use the following syntax:

```
>>> set[env] environment [value] Return
```

SHOW

Your system is shipped with default values set for all available parameters. The show console command displays the following information:

- Environment variables

- Console options

- Hardware configuration

Format

To display the current values for a specified environment variable, type:

>>> show *{variable}* Return

To display the current value for all variables, type:

>>> show Return

START

The start command is used to set the program counter (PC) and start the CPU. The command causes the system to exit console mode and enter program mode.

Format

To execute the start command, use the following syntax:

>>> start *{address}* Return

TEST

The `test` command lets you test the entire system, a portion of the system (or subsystem), or a specific device. If you do not specify a parameter, the system will test all components.

Format

To execute the `test` command, use the following syntax:

```
>>> t[est] [test_device] [optional_parameters] Return
```

3

LED Codes and Error and Status Messages

This chapter contains information that will help you to run diagnostic tests on the DEC 3000 Model 300 Series AXP systems. It includes the following power-up information:

- Serial ROM LED codes, messages, and output screen displays

- Console LED codes and error and halt messages

This chapter also includes LED codes and diagnostic status and error information for the following devices and components:

- TURBOchannel ASIC and CORE I/O ASIC

- CXT

- ISDN

- Memory

- MIPS Emulator

- NI

- SCC

- SCSI

- TOY/NVR

Serial ROM Information

The serial read-only memory (SROM) code provides minimal diagnostics for memory sizing, I/O tests and cache tests. The primary function of the SROM is to load console firmware from the flash ROM into memory, after which main console code can be executed. If the system stops executing because of a fatal error before it reaches main console mode, messages will not be displayed on the screen.

If the unit fails during the system power-up sequence, follow these steps:

1. Ensure that the system and CPU modules are firmly seated in the system unit.

2. Ensure that all memory modules are properly installed. It may be necessary to reseat the memory modules.

3. Ensure that the TURBOchannel modules are properly installed.

4. Ensure that the power cables are plugged into the appropriate outlet, and that the power switches are on.

5. Initiate the power-up sequence. If a failure occurs, then replace the system or CPU module, or both.

Serial ROM LED Codes

You may be able to determine the problem by examining the diagnostic display lights (light-emitting diodes or LEDs), which are visible through the air vents on the right side of the system unit. The LEDs are displayed when power is first supplied to the system and it is running the SROM code. If all eight LEDs are lit, then the CPU is good; if no LEDs are lit, then the CPU may be the defective component. Throughout this chapter, LED codes are explained in tables in which the codes are shown as two hexadecimal numbers.

Serial ROM Information

Table 3–1 lists the LED codes that are displayed when power is first supplied to the system and it is running the SROM code.

Table 3–1   Power-up LED Codes

LED Code	Description	Failing Description
FF	Power is on. Loading SROM code into the CPU.	The CPU clock, power, DC OK, reset, IRQ, ICMODE may be faulty; the SROM may be blank or unprogrammed.
FD	Memory sizing complete.	No memory detected or memory failure at address 0 (fatal error).
FB	Initializes the 2 MB test range of memory to zero. Executing the first of three memory tests. Backup cache references OFF; data cache OFF.	
FA	First of three memory tests complete. Executing the second of three tests. Backup cache references ON; data cache OFF.	Memory test failure (fatal error).
F9	Second of three memory tests complete. Executing the third of three tests. Backup cache references OFF; data cache ON.	Memory test failure (fatal error).
F8	Third of three memory tests complete. Executing system register test.	Memory test failure (fatal error).

(continued on next page)

3–3

Serial ROM Information

Table 3–1 (Cont.)   Power-up LED Codes

LED Code	Description	Failing Description
F6	Executing CORE I/O register test and initialization. (Occurs only when there is an error in the system interrupt register.)	
F5	CORE I/O register test and initialization complete. Initializing first 8 MB of memory to zeroes followed by fetch of SYSROM header data.	
F4	Fetched SYSROM manufacturing data. Loading contents of SYSROM into memory.	Read of SYSROM header (manufacturing data code) did not return data expected. I/O space access error or blank/ corrupted SYSROM (fatal error).
F3	Completed load of SYSROM into memory. Fetching I/O ROM header data.	
F2	Fetched I/O ROM header data. Loading contents of I/O ROM into memory.	Read of I/O ROM header did not return data expected (fatal error).
F1	Completed load of I/O ROM into memory.	
F0	SROM code execution completed normally. Executing PAL or console diagnostic code or awaiting user input at the SROM> prompt.	Cannot execute console code; NoBoot jumper is installed.

Table 3–1 (Cont.)   Power-up LED Codes

LED Code	Description	Failing Description
20	Machine check. Awaiting user input at the SROM> prompt.	Send machine check (MCHK) dump to SROM port. Parity error machine check occurred.

Serial ROM Output Screen Displays

The following example displays show successful completion of SROM code and error reports.

Successful Completion of SROM Initialization and Test Code

```
EV4 DEC 3000 - M300 SROM 6.0
Powerup Sequence
ff.fd.fb.fa.f9.f8.f5.f4.f3.f2.f1.
SYSROM  00000080.000000d0
IOROM   00000080.00000018
MCRstat 13131313.40404040
MEMSIZE 00000f00.02000000
```

Example Error Reports

There are three error reporting formats:

- Write/read discrepancy report

```
EV4 DEC 3000 - M300 SROM 6.0
Powerup Sequence
ff.fd.fb.fa.f9.f8.f5.f4.f3.
Seq/PC  f3000000.00001724
Addr    00000001.e20ffffc
DataExp 00000000.0000008b
DataRec 00000000.000000a9
XOR     00000000.00100022
MCRstat 11411111.11808080
Memsize 00400700.06800000
```

Serial ROM Information

- Machine check or parity error report

```
EV4 DEC 3000 - M300 SROM 6.0
Powerup Sequence
ff.fd.fb.fa.20.
MCHK
exc_addr  00000000.000012cc
biu_stat  00000000.00004640
dc_stat   00000000.000042b0
fill_adr  00000000.000d98c0
fill_syn  00000000.00000df4
DataExp   aaaaaaaa.aaaaaaaa
DataRec   aafeaaaa.aaaaaaaa
MCRstat   13131313.40404040
memSize   00000f00.02000000
SROM>
```

- No memory detected report

```
DEC 3000 - M30 SROM 6.0
Powerup Sequence
ff.dd.
Seq/PC    fd000000.000015ac
*** No usable memory detected***
MCRstat   11411111.11111141
memSize   00000000.00000000
SROM>
```

Console Information

Console LED Codes

The last LED code displayed during power-up should be DD for console entry.

If the LED display halts at any code between EF to DE, then reseat the system module and run the power-up sequence again.

Table 3–2 lists console LED codes in hexadecimal format.

Table 3–2   Console LED Codes

LED Code	Description
EF	Entry
EE	Power-up
ED	Power-up and saved state is 0x2 (x will be replaced with a hex number)
EC	System configuration determined
EB	Console data structures initialized
EA	Memory initialized
E9	Device drivers initialized
E8	Device driver initialization complete
E7	Call device driver; reset input
E6	Call NVR self-test
E5	NVR self-test done
E4	Console initialization of data structures complete
E3	Page tables initialized
E2	Hardware reset parameter block (HWRPB) initialized
E1	TURBOchannel sizing complete
E0	Power-up banner printout
DF	Device driver input
DE	Device driver output (SCC only)
DD	Console entry >>>
00	Console is about to be exited

Console Information

Console Error Messages

Table 3–3 lists the console error and status messages
displayed when a command line is improperly
entered.

Table 3–3   Console Error Messages

Message	Description
? 21 CORRPTN	Console data structures have been corrupted
? 22 ILL REF	Illegal reference attempted
? 23 ILL CMD	Illegal command entered
? 24 INV DGT	Invalid digit was found by parser
? 25 LTL	Too many characters entered on command line
? 26 ILL ADDR	Invalid address was entered
? 27 LE VIEW	Length violation (currently unused)
? 28 VAL TOO LRG	The value entered was too large
? 29 ILL SW	Illegal switch was entered
? 2A SW CONF	Conflicting switches entered on the command line
? 2B UNK SW	Unknown switch entered on the command line
? 2C UNK SYM	Unknown symbol entered on the command line
? 2D AMB SYM	Ambiguous symbol entered on the command line
? 2E CHKSM	Incorrect checksum passed by the X command
? 31 TMOUT	Timeout while waiting for input during the X command
? 32 MEM ERR	Invalid virtual address translation or memory error
? 34 ILL PSWD	Illegal password was entered
? 35 PSWD NOTEN	System password is not enabled
? 36 NO PSWD DEF	No password defined
? 37 NOT IMPL	Function not implemented by the console
? 38 IPR NOT IMPL	Internal processor register not implemented on this system

(continued on next page)

Table 3–3 (Cont.)   Console Error Messages

Message	Description
? 39 IPR NOACCS	Internal processor register cannot be accessed
? 3A INV ACCS	Internal processor register cannot be accessed as specified
? 3B NVR RDERR	Problem reading NVR
? 3C NVR WRTERR	Problem writing NVR

Console Halt Messages

The following example shows the format of all console halt messages.

```
?nn msg
PC=xxxxxxxx.xxxxxxxx PSL=xx:xxxxxx.xxxxxxxx
```

where:

nn is the message number
msg is the ASCII message

Table 3–4 lists the message numbers and explains the ASCII messages. The PC and PSL of the halt are also printed.

Table 3–4   Console Halt Messages

Message Number	Message	Meaning
02	EXT HLT	Console entered due to external halt button being pressed
06	HLT INST	Console was entered due to a HALT instruction being executed
08	KSP INVAL	Console was entered because PALcode detected an invalid Kernel Stack pointer while building a stack frame
18	HW MCHK	Console was entered because PALcode detected a nonrecoverable machine check

Table 3–4 (Cont.)   Console Halt Messages

Message Number	Message	Meaning
20	SCBB BAD	Console was entered because PALcode detected an invalid SCB base while trying to dispatch to a user's handler

TURBOchannel ASIC and CORE I/O ASIC Information

TURBOchannel ASIC and CORE I/O ASIC LED Codes

The following LED codes represent the TURBOchannel and CORE I/O power-up self-tests. These tests are run from the main console. If an error occurs during a test, a field replaceable unit number and error code are displayed on the monitor. Table 3–5 lists the LED codes.

Table 3–5   TURBOchannel and CORE I/O LED Codes

LED Code	Description
3F	All tests passed
30	Slot mode test
31	Config test
32	Failing address test
33	TURBOchannel error register test
34	TURBOchannel interrupt register test
36	System support test
37	CORE I/O test
38	System interrupt test
39	LANCE, SCC0 and SCC1 tests

TURBOchannel ASIC and CORE I/O ASIC Diagnostic Error Codes

Table 3–6 lists the error codes produced by the ASIC diagnostic test. If the diagnostic test fails, reseat the cable connections to system module. Retest using the ASIC diagnostic test. If a failure reoccurs, then replace the defective component. Then, execute the diagnostic test to verify that the failure has been corrected.

All error codes are listed in hexadecimal format.

Table 3–6   ASIC Error Codes

Error Code	Description	Possible Defective Component
10	Data miscompare when testing the TURBOchannel ASIC slot mode register.	System module
12	Data miscompare when testing the TURBOchannel ASIC configuration register.	System module
14	Data miscompare when testing the TURBOchannel ASIC error register.	System module
16	Data miscompare when testing the TURBOchannel ASIC interrupt register.	System module
1E	Data miscompare when testing CORE I/O ASIC system support register	System module

TURBOchannel ASIC and CORE I/O ASIC Information

Table 3–6 (Cont.)   ASIC Error Codes

Error Code	Description	Possible Defective Component
20	Data miscompare when testing one of the following CORE I/O ASIC registers: Ethernet DMA Ptr Serial Comm Xmt DMA Ptr DMA Ptr Serial Comm Rcv Printer Xmt Port DMA Printer Rcv Port DMA Ptr ISDN Xmt DMA Ptr ISDN DMA Buffer Ptr ISDN Data Xmt Register ISDN Data Rcv Register ISDN Rcv Ptr ISDN Rcv DMA Buffer Ptr System data buffers 0-3 System Interrupt Mask Register	System module
22	Data miscompare testing CORE I/O ASIC system interrupt register	System module
24	Data miscompare testing CORE I/O ASIC Lane register	System module
26	Data miscompare testing CORE I/O ASIC SCC_0 register	System module
28	Data miscompare testing CORE I/O ASIC SCC_1 register	System module

TURBOchannel ASIC and CORE I/O Status and Error Messages

The following status messages are produced by the ASIC and CORE I/O self-test.

TURBOchannel ASIC and CORE I/O ASIC Information

```
T-STS-ASIC-SLOT MODE
T-STS-ASIC-CONFIG
T-STS-ASIC-FAILING ADDR
T-STS-ASIC-TC ERROR
T-STS-ASIC-INTERRUPT
T-STS-ASIC-SYS SUPPORT
T-STS-ASIC-COREIO
T-STS-ASIC-SYS INTERRUPT
T-STS-ASIC-LANCE/SCC0/SCC1
```

The TURBOchannel ASIC and CORE I/O ASIC
self-tests report errors in the following format:

>   address = indirect address of failing register
>   data read = data read=%x
>   data exp = data exp=%x

```
? T-ERR-ASIC-SLOT MODE
  address=%x data read=%x data exp=%x

? T-ERR-ASIC - CONFIG
  address=%x data read=%x data exp=%x

? T-ERR-ASIC - TC ERROR
  address=%x data read=%x data exp=%x

? T-ERR-ASIC - INTERRUPT
  address=%x data read=%x data exp=%x

? T-ERR-ASIC - SYS SUPPORT
  address=%x data read=%x data exp=%x

? T-ERR-ASIC - COREIO
  address=%x data read=%x data exp=%x

? T-ERR-ASIC - SYSTEM INTERRUPT
  address=%x data read=%x data exp=%x

? T-ERR-ASIC - LANCE/SCC0/SCC1
  address=%x data read=%x data exp=%x
```

CXT Information

CXT LED Codes

The following LED codes represent CXT diagnostic tests. If an error occurs during one of these tests, a field replaceable unit number and error code are displayed on the monitor.

Table 3–7 lists the CXT LED codes in hexadecimal format.

Table 3–7   CXT LED Codes

LED Code	Description
81	CXT Interrupt test
82	CXT Register test
83	CXT Video RAM test
84	CXT Patterns test
85	CXT RAMDAC test
86	CXT Stipple Mode test
87	CXT Copy Mode test
88	CXT Boolean Mode test
89	CXT Plane Mask test
8A	CXT Pixel Shift test
8B	CXT Line test
8C	CXT Box test

CXT Diagnostic Error Codes

Table 3–8 lists the error codes produced by the CXT diagnostic self-test. The errors are also listed when a `show error` command is executed.

If the diagnostic fails, then follow these steps:

1.   Ensure proper connection of monitor cable.

2.   Reseat cable connections to the system module.

3. Execute the CXT diagnostic test to verify. If
    failure reoccurs, then replace the defective
    component. Replace the items listed below one
    at a time and execute the CXT diagnostic test to
    verify that the failure has been corrected.

    a. Replace monitor cable.

    b. Replace monitor.

    c. Replace system module.

Table 3–8 lists all error codes in hexadecimal format.

Table 3–8   CXT Error Codes

Error Code	Description	Possible Defective Component
00	VDAC 1: Fill video RAM	System module
02	VDAC 2: ID register test	System module
04	VDAC 3: Revision register test	System module
06	VDAC 4: Monitor connected test	System module
08	VDAC 5: Command register test	System module
0A	VDAC 6: Overlay RAM test	System module
0C	VDAC 7: Load color map	System module
0E	VDAC 8: Color RAM test	System module
10	VDAC 9: Cursor command register test	System module
12	VDAC 10: Cursor RAM test	System module
14	VDAC 11: Cursor color test	System module
16	VDAC 12: Cursor crosshair test	System module
18	VDAC 13: Cursor signature test	System module
20	VRAM 1: Load color map	System module
22	VRAM 2: Write 55 Test	System module
24	VRAM 3: Read 55/Write AA	System module
26	VRAM 4: Read AA/Write EE	System module
40	BOX 1: Load the grid map	System module
42	BOX 2: Load the circle on the grid	System module

(continued on next page)

Table 3–8 (Cont.)   CXT Error Codes

Error Code	Description	Possible Defective Component
50	PATT 1: Fill video RAM	System module
52	PATT 2: Color bar test	System module
54	PATT 3: Color bar reference voltage test	System module
56	PATT 4: Gray scale test	System module
58	PATT 5: Red screen test	System module
5A	PATT 6: Green screen test	System module
5C	PATT 7: Blue screen test	System module
5E	PATT 8: Blue-red screen test	System module
60	PATT 9: Blue-red blue-green test	System module
62	PATT 10: Red-blue to red-green test	System module
64	PATT 11: Color signature analysis test	System module
66	PATT 12: White screen test	System module
70	INT 1: Interrupt assertion test	System module
72	INT 2: No assertion test	System module
80	REG 1: Register Write/Read and access test	System module
90	STIP 1: Stipple foreground test	System module
92	STIP 2: Stipple background test	System module
94	STIP 3: Stipple incremental test	System module
96	STIP 4: Stipple VRAM XOR test	System module
A0	LINE 1: Transparent short line (triangle) test	System module
A2	LINE 2: Transparent centered horizontal line test	System module
A4	LINE 3: Transparent alternate horizontal line test	System module
A6	LINE 4: Transparent centered vertical line test	System module
A8	LINE 5: Transparent diagonal line decrement address test	System module
AA	LINE 6: Transparent diagonal line increment address test	System module

(continued on next page)

Table 3–8 (Cont.)   CXT Error Codes

Error Code	Description	Possible Defective Component
AC	LINE 7: Transparent M < 1 XA < XB quadrant 1 test	System module
AE	LINE 8: Transparent M < 1 XA > XB quadrant 2 test	System module
B0	LINE 9: Transparent M > 1 XA < XB quadrant 1 test	System module
B2	LINE 10: Transparent M > 1 XA > XB quadrant 2 test	System module
B4	LINE 11: Opaque M < -1 XA < XB quadrant 3 test	System module
B6	LINE 12: Opaque M < -1 XA > XB quadrant 4 test	System module
B8	LINE 13: Opaque M > -1 XA < XB quadrant 3 test	System module
BA	LINE 14: Opaque M > -1 XA > XB quadrant 4 test	System module
BC	LINE 15: Line signature mode test	System module
C0	COPY 1: Copy aligned data test	System module
C2	COPY 2: Copy aligned 1 to 32 bytes test	System module
D0	BOOL 1: Boolean simple frame buffer mode test	
D2	BOOL 2: Boolean stipple mode test	
D4	BOOL 3: Boolean copy mode test	
E0	PLANE 1: Plane write test	
F0	PSHIFT 1: 32 byte positive shift test	
F2	PSHIFT 1: 32 byte negative shift test	
110	FONT 1: Shut off the cursor	
112	FONT 2: Fill screen	

ISDN Information

ISDN LED Codes

The following LED codes represent ISDN diagnostic tests. If an error occurs during one of these tests, a field replaceable unit number and error code are displayed on the monitor.

Table 3–9 lists the ISDN LED codes in hexadecimal format.

Table 3–9   ISDN LED Codes

LED Code	Description
70	Register test
71	Tone test
72	Digital loop test
73	Analog loop test
74	Interrupt test
75	DMA test
76	Logo test
77	Record utility test
78	Repeat utility test
79	Playback utility test
7F	All tests passed

ISDN Diagnostic Error Codes

Table 3–10 lists the error codes produced by the ISDN diagnostic test. If the diagnostic test fails, then follow these steps:

1. Reseat the cable connections to the system module.

2. Execute the ISDN diagnostic test. If failure reoccurs, then replace the defective component.

ISDN Information

All error codes are listed in hexadecimal format.

Table 3–10   ISDN Error Codes

Error Code	Description	Possible Defective Component
02	Data miscompare testing line interface Unit Status Register	System module
04	Data miscompare testing line interface Unit Priority Register	System module
06	Data miscompare testing line interface Unit Mode Register 1	System module
08	Data miscompare testing line interface Unit Mode Register 2	System module
A	Data miscompare testing Multiplexer Control Register 1	System module
C	Data miscompare testing Multiplexer Control Register 2	System module
E	Data miscompare testing Multiplexer Control Register 3	System module
10	Data miscompare testing Main Audio Processor Mode Register 1	System module
12	Data miscompare testing Main Audio Processor Mode Register 2	System module
14	Data miscompare testing Data Link Controller Mode Register 1	System module
16	Data miscompare testing Data Link Controller Mode Register 4	System module
20	Data miscompare testing internal digital loopback using MCR1	System module
24	Data miscompare testing internal digital loopback using MCR2	System module
26	Data miscompare testing internal digital loopback using MCR3	System module
28	Data miscompare testing internal analog loopback	System module
30	Interrupt test data miscompare	System module
32	Interrupt test time out	System module
34	Invalid 79C30A interrupt	System module
36	Interrupt not generated	System module

(continued on next page)

Table 3–10 (Cont.)   ISDN Error Codes

Error Code	Description	Possible Defective Component
38	All interrupts not received	System module
40	DMA test time out	System module
42	DMA test unexpected interrupts	System module
44	DMA test data miscompare	System module

ISDN Diagnostic Status and Error Messages

The failing FRU for all ISDN error messages is the system module. Before replacing the FRU, *first* reseat the FRU, then execute the ISDN diagnostic test to see if the failure reoccurs. The following status information is displayed when an error occurs:

```
T-STS-ISDN - REGISTER: Read/write/compare test
             on 79C30A registers
T-STS-ISDN - TONE: Output sound via ear and
             loudspeaker
T-STS-ISDN - TONE RINGER: Use tone ringer
             to generate sound
T-STS-ISDN - TONE GENERATOR: Use tone
             generator to generate sound
T-STS-ISDN - DTMF: Use DTMF to generate sound
T-STS-ISDN - DIGITAL_LOOP: Internal digital
             loopback test of MAP
T-STS-ISDN - ANALOG_LOOP: Internal analog
             loopback test of MAP
T-STS-ISDN - INTERRUPT
T-STS-ISDN - DMA
T-STS-ISDN - LOGO: Sends out Digital's sound
             logo D-E-C
T-STS-ISDN - RECORD: Records and plays
             back a user's message
T-STS-ISDN - Recording begins: Queues user to
             start talking
T-STS-ISDN - Recording ends:Queues user that
             recording has ended
T-STS-ISDN - Playback recording: Queues user
             that message is being played back
T-STS-ISDN - REPEAT: Allows user to speak
             and hear their message simultaneously
T-STS-ISDN - Have only 10 seconds:  Notify user
             how long they have
```

```
T-STS-ISDN - PLAYBACK: Play back what was recorded
             using the RECORD utility
```

The following error messages are reported by the ISDN diagnostic test.

```
? T-ERR-ISDN-ISDN$LIU_REG FAILED - DATA MISCOMPARE
      address=%x data read=%x data exp=%x

? T-ERR-ISDN-ISDN REGISTER ERROR-DATA MISCOMPARE
      address=%x data read=%x data exp=%x

? T-ERR-ISDN-ISDN DIGITAL_LOOP-DATA MISCOMPARE
      mux=%x channel=%x data in=%x data read=%x
      data exp=%x test pass=%x

? T-ERR-ISDN-ISDN ANALOG_LOOP-DATA MISCOMPARE
      data read=%x

? T-ERR-ISDN-NO INT GENERATED
      address=%x data read=%x data exp=%x

? T-ERR-ISDN-INVALID INT
      address=%x data read=%x test pass=%x

? T-ERR-ISDN-DATA MISMATCH
      data read=%x data exp=%x test pass=%x

? T-ERR-ISDM-INVALID DSR2 INT
      data read=%x data exp=%x test pass=%x

? T-ERR-ISDN-TIME OUT
      test pass=%x

? T-ERR-ISDN - TIME OUT

? T-ERR-ISDN - INVALID INTERRUPT
      data read=%x data exp=%x

? T-ERR-ISDN - DATA MISMATCH
      data read=%x data exp=%x data exp=%x
```

Memory Information

Memory LED Codes

The following LED codes represent memory power-up diagnostic tests. If an error occurs during one of these tests, a field replaceable unit number and error code is displayed on the monitor.

Table 3–11 lists the memory LED codes in hexadecimal format.

Table 3–11   Memory LED Codes

LED Code	Description
20	Machine check
21	CELL Fill memory with test pattern data
22	CELL Forward read/compare/complement/write
23	CELL Reverse read/compare/complement/write
24	ADDR Fill memory with addresses as data
25	Refresh test in progress
26	ADDR Read/compare data = address
27	BITS Fill memory with a pattern of 1's in a field of 0's
28	BITS Read/compare data=pattern
29-2A	Reserved
2B	LLSC Load-locked/store-conditional tests
2C-2E	Reserved
2F	Clear memory to zeroes

Memory Diagnostic Error Codes

Table 3–12 lists the error codes produced by the Memory diagnostic test. If the diagnostic test fails, first reseat all the memory modules. Then take out all the memory modules, and reinstall each module one at a time (followed by the memory diagnostic test) until a failure is detected.

All error codes are listed in hexadecimal format.

Table 3–12   Memory Error Codes

Error Code	Description	Possible Defective Component
02	CELL data did not equal pattern expected on forward pass	Memory module
04	CELL data did not equal pattern expected on reverse pass	Memory module
10	ADDR data should equal address but does not	Memory module
20	LLSC load-locked/store-conditional failure	Memory module
50	Single-bit error, 0 in a field of 1's test	Memory module
52	Single-bit error, 1 in a field of 0's test	Memory module
80	Uncorrectable CPU exception (probably an uncorrectable SCC error)	Memory module

Refer to Chapter **8** of the *DEC 3000 Model 300 Series AXP Hardware Reference Guide* for additional information on identifying a defective memory module.

Memory Status Messages

The following status messages may be displayed during the memory diagnostic test:

```
T-STS-MEM-Fill Mem:Addr(address) Wr(pattern)
T-STS-MEM-Cell Test:Addr(address)FWD
               Rd(pattern)Wr(pattern)
T-STS-MEM-Cell Test:Addr(address) REV
               Rd(pattern) Wr(address)
T-STS-MEM-Bits Test:Addr(address)FWD
               Rd(pattern)
T-STS-MEM-Addr Test:Addr(address)FWD
               Rd(pattern)
T-STS-MEM-Addr Test:Addr(address)Waiting
               10 seconds to test refresh
T-STS-MEM-LLSC Test:Addr(address)
T-STS-MEM-Uncorrected Error count=(hex)
T-STS-MEM-Total Pages=(hex)Tested Pages=(hex)
               Bad pages=(hex)
```

Memory Information

Memory Error Messages

When memory modules are the failing FRUs, reseat each module before replacing it with another module. Refer to Chapter 8 of the *DEC 3000 Model 300 Series AXP Hardware Reference Guide* for information to help identify a defective memory module.

The error messages that follow may be displayed during the memory diagnostic test. Table 3–13 explains the terms used in parentheses.

```
? T-ERR-MEM-MCHK reading Addr=(address)
? T-ERR-MEM-Bad page=(hex)
? T-ERR-MEM-Addr=(address) Exp=(data exp)
          Rec=(data rec) retries=(dec)
? T-ERR-MEM-FAILED,status=(hex)
? T-ERR-MEM-ldl_l/stl_c atomic sequence
? T-ERR-MEM-ldl_l/stl_c intervening I/O transaction
? T-ERR-MEM-ldl_l bcache hit
? T-ERR-MEM-stl_c bcache hit
? T-ERR-MEM-ldl_l bcache miss no victim
? T-ERR-MEM-ldl_l bcache miss with victim
? T-ERR-MEM-stl_c bcache miss with victim
? T-ERR-MEM-stl_c bcache miss no victim
```

Table 3–13 Terms Used In Memory Error Messages

Term	Description
address	8-character hexadecimal representation of the address
data exp	8-character hexadecimal representation of the data expected
data rec	8-character hexadecimal representation of the data received
pattern	8-character hexadecimal representation of the test pattern data
dec	Decimal number
hex	Hexadecimal number

MIPS Emulator Information

MIPS Emulator LED Codes

Table 3–14 lists the LED codes for MIPS Emulator diagnostic tests. If an error occurs during one of these tests, a field replaceable unit number and error code are displayed on the monitor.

Table 3–14   MIPS Emulator LED Codes

LED Code	Description
90	MIPS emulator running with no errors
91	Invalid REX command entered
92	Unsupported REX command entered supported in REX, but not supported by emulator
93	Bad address detected by the emulator
94	ROM not found in this slot
95	ROM object not found
96	Cannot load ROM object
97	Invalid MIPS-I instruction detected
98	ROM object called halt
99	Invalid callback called
9A	Unsupported callback called

MIPS Emulator Error Messages

The following status messages may be displayed during the MIPS emulator diagnostic test:

```
ERR-MIPS - DID NOT FIND ROM IN SLOT <N>
```
> This means that no ROM was found at TURBOchannel slot N.

```
ERR-MIPS - UNRECOGNIZED COMMAND
```
> This means that an unrecognized command was passed to the MIPS emulator.

```
ERR-MIPS - REX COMMAND NOT SUPPORTED
```
> This means that the REX command passed to the emulator is not supported at this time.

MIPS Emulator Information

```
ERR-MIPS - COULD NOT LOAD ROM OBJECT <object_name>
```
This means the the object called
<object_name> was not found in the
option ROM.

```
ERR-MIPS - ROM OBJECT REPORTED A SEVERE ERROR
```
This means that a TURBOchannel ROM has
returned a severe error code to the emulator.

NI Information

NI LED Codes

The following LED codes represent NI diagnostic
tests. If an error occurs during one of these tests,
a field replaceable unit number and error code are
displayed on the monitor.

Table 3–15 lists the NI LED codes in hexadecimal
format.

Table 3–15   NI LED Codes

LED Code	Description
50	Network address ROM test
51	Test LANCE registers
52	LANCE initialization test
53	LANCE internal loopback and DMA test
54	Interrupt test
55	LANCE CRC generation and detection test
56	Test LANCE MISS and BUFF errors test
57	Test LANCE collision detection test
58	LANCE address filtering test
59	LANCE external loopback test
5A	LANCE transmit BUFF error test
5F	All tests passed

NI Diagnostic Error Codes

Table 3–16 lists the error codes produced by the NI diagnostic test. If the diagnostic test fails, then follow these steps:

1. Reseat the loopback connector (if failure is between error codes A0 to AC).

2. Reseat cable connections to the system module.

3. Execute the NI diagnostic test to verify. If failure reoccurs, then replace the system module and then execute the NI diagnostic test to verify that the failure has been corrected.

All error codes are listed in hexadecimal format.

Table 3–16   NI Error Codes

Error Code	Description
10	Network address ROM: read access failed
12	Network address ROM: null address
14	Network address ROM: bad group address
16	Network address ROM: bad checksum
18	Network address ROM: bad group 2
1A	Network address ROM: bad group 3
1C	Network address ROM: bad test patterns
20	LANCE register address port R/W error
22	LANCE CSR0 R/W error
24	LANCE CSR1 R/W error
26	LANCE CSR2 R/W error
28	LANCE CSR3 R/W error
30	LANCE initialization failed
32	LANCE initialization: receiver disabled
34	LANCE initialization: transmitter disabled
36	LANCE initialization: receiver enabled
38	LANCE initialization: transmitter enabled
40	LANCE internal loopback/DMA: initialization failed

Table 3–16 (Cont.)   NI Error Codes

Error Code	Description
42	LANCE internal loopback/DMA: transmit failed
44	LANCE internal loopback/DMA: receive failed
46	LANCE internal loopback/DMA: packet comparison failed
48	LANCE internal loopback/DMA: initialization DMA error
4A	LANCE internal loopback/DMA: transmit DMA error
4C	LANCE internal loopback/DMA: receive DMA error
4E	LANCE internal loopback/DMA: unknown tx or rx error
50	LANCE interrupts: initialization failed
52	LANCE interrupts: TC interrupt register bit not set
54	LANCE interrupts: SIR NI interrupt register bit not set
56	LANCE interrupts: NI ISR not entered
60	LANCE CRC: initialization failed
62	LANCE CRC: transmit failed
64	LANCE CRC: receive failed
66	LANCE CRC: packet comparison failed
68	LANCE CRC: LANCE generated bad CRC
6A	LANCE CRC: LANCE rejected good CRC
6C	LANCE CRC: LANCE accepted bad CRC
6E	LANCE CRC: other error
70	LANCE rx MISS/BUFF: initialization failed
72	LANCE rx MISS/BUFF: transmit failed
74	LANCE rx MISS/BUFF: unknown receive error
76	LANCE rx MISS/BUFF: MISS error not flagged
78	LANCE rx MISS/BUFF: BUFF error not flagged
80	LANCE collision: initialization failed
82	LANCE collision: unknown transmit error
84	LANCE collision: RETRY not flagged
86	LANCE collision: transmitter disabled
90	LANCE address filtering: initialization failed
92	LANCE address filtering: transmit failed
94	LANCE address filtering: receive failed
96	LANCE address filtering: packet comparison failed
98	LANCE address filtering: broadcast filtering failed

Table 3–16 (Cont.)   NI Error Codes

Error Code	Description
9A	LANCE address filtering: promiscuous mode failed
9C	LANCE address filtering: null destination accepted
9E	LANCE address filtering: good logical address rejected
A0	LANCE external loopback: initialization failed
A2	LANCE external loopback: transmit failed
A4	LANCE external loopback: receive failed
A6	LANCE external loopback: packet comparison failed
A8	LANCE external loopback: unknown transmit error
AA	LANCE external loopback: unknown receive error
AC	LANCE external loopback: check NI port loopback connector
B0	LANCE tx BUFF: initialization failed
B2	LANCE tx BUFF: BUFF error not flagged
B4	LANCE tx BUFF: transmitter enabled
B6	LANCE tx BUFF: unknown transmit error
E4	LANCE DMA: valid DMA failed
E6	LANCE DMA: DMA failed during initialization
E8	LANCE DMA: DMA failed during transmit
EA	LANCE DMA: DMA failed during receive
F0	LANCE initialization failed
F2	LANCE transmit failed
F4	LANCE unknown transmit error
F6	LANCE receive failure
F8	LANCE unknown receive error

NI Status Messages

The following status messages may be displayed during the NI diagnostic test:

NI Information

```
T-STS-NI-Net Addr ROM test
T-STS-NI-LANCE Reg test
T-STS-NI-Init test
T-STS-NI-Int Lpbk and DMA test
T-STS-NI-Int test
T-STS-NI-CRC test
T-STS-NI-Rx Miss and Buff Err test
T-STS-NI-Collision test
T-STS-NI-Addr Filter test
T-STS-NI-Ext Lpbk test
T-STS-NI-Tx Buff Err test
```

NI Error Messages

The first line of the NI error message begins with a
question mark; succeeding lines do not.

─────────────── **Note** ───────────────

The following error messages could possibly
mean a system module failure. Install the
10BASE-T loopback connector and then
reseat all connections to the system module.
Repeat the NI diagnostic test and then
replace the system module if necessary.

────────────────────────────────────

The status messages that follow may be displayed
during the NI diagnostic tests. Table 3–17 explains
the terms used in parentheses.

```
? T-ERR-NI-DMA Init err
? T-ERR-NI-DMA Rx err
? T-ERR-NI-DMA Tx err
? T-ERR-NI-Init test-DMA err
? T-ERR-NI-Int test-DMA err
  T-ERR-NI-Err=(error code) CSR0=(csr0)
  T-ERR-NI-IR=(ir) dma_addr=(dma address)

? T-ERR-NI-Init err
? T-ERR-NI-Init test-Init err
? T-ERR-NI-Int test-Init err
  T-ERR-NI-Err=(error code) CSR0=(csr0)
    iblk_addr=(init address)
  T-ERR-NI-iblk_mode=(mode) ladrf0=(filter0)
          ladrf1=(filter1)
```

NI Information

```
? T-ERR-NI-Tx err
? T-ERR-NI-Collision test-tx error
? T-ERR-NI-Tx Buff Err test-tx err
  T-ERR-NI-Err=(error code) CSR0=(csr0) tx_addr
          =(tx address)
  T-ERR-NI-tx_desc1=(tx data1) tx_desc2=(tx data2)

? T-ERR-NI-Rx err
  T-ERR-NI-Err=(error code) CSR0=(csr0) rx_addr=
          (rx address)
  T-ERR-NI-rx_desc1=(rx data1) rx_desc2=(rx data2)

? T-ERR-NI-Net Addr ROM test-group err
  T-ERR-NI-Err=(error code) na_base=(base addr)
          na_data1=(data1)
  T-ERR-NI-na_data2=(data2) cksum=(checksum)

? T-ERR-NI-Net Addr ROM test-test patt err
  T-ERR-NI-Err=(error code) patt1=(pattern1) patt2
          =(pattern2)

? T-ERR-NI-LANCE Reg test-data miscompare
  T-ERR-NI-Err=(error code) Addr=(address)
          Exp=(exp data) Act=(actual data)

? T-ERR-NI-Int Lpbk and DMA test-Pkt err
? T-ERR-NI-Int test-Pkt err
? T-ERR-NI-CRC test-Pkt err
? T-ERR-NI-Addr Filter test-Pkt err
? T-ERR-NI-Ext Lpbk test-Pkt err
  T-ERR-NI-Err=(error code) CSR0=(csr0)
  T-ERR-NI-pkt_len=(packet length) pkt_pattern=
          (packet pattern) pkt_crc=(packet crc)

? T-ERR-NI-Int test-int err
  T-ERR-NI-Err=(error code) IR=(ir)
  T-ERR-NI-SIR=(sir) SIM=(sim)
? T-ERR-NI-Ext Lpbk test-Pkt err
  T-ERR-NI-Err=(error code)
```

NI Information

Table 3–17 describes the terms used in the NI Error
Messages.

Table 3–17   Terms Used In NI Error Messages

Term	Description
actual data	Actual data
address	Sparse address of failing location
base addr	Base address of the network address ROM
checksum	Calculated checksum
csr0	Contents of LANCE CSR0
dma address	Physical DMA address
data1	First four bytes of the network address ROM
data2	Next two bytes or network address and two byte check
error code	Error code from NI error codes section
exp data	Expected data
init address	Physical DMA address of the initialization block
ir	TURBOchannel interrupt register contents at time of error
ladrf0	Upper longword of the logical address filter
ladrf1	Lower longword of the logical address filter
mode	Initialization block mode
packet crc	Packet CRC
packet length	Packet length in bytes
packet pattern	Packet pattern or packet index
pattern1	First four bytes of test patterns
pattern2	Last four bytes of test patterns
rx address	Physical DMA address of the current receive descriptor
rx data1	First four bytes of the receive descriptor
rx data2	Second four bytes of the receive descriptor
sim	CORE I/O ASIC system interrupt mask register at error

Table 3–17 (Cont.)   Terms Used In NI Error Messages

Term	Description
`sir`	CORE I/O ASIC system interrupt register at error
`tx address`	Physical DMA address of the current transmit descriptor
`tx data1`	First four bytes of the transmit descriptor
`tx data2`	Second four bytes of the transmit descriptor

SCC Information

SCC LED Codes

The following LED codes represent SCC diagnostic tests. If an error occurs during one of these tests, a field replaceable unit number and error code are displayed on the monitor.

Table 3–18 lists the SCC LED codes in hexadecimal format.

Table 3–18   SCC LED Codes

LED Code	Description
40	SCC self-test has been entered
41	SCC self-test is connecting to driver
42	SCC Reset/Initialization test is being executed
43	SCC Modem test is being executed
44	SCC Polled test is being executed
45	SCC Interrupt test is being executed
46	SCC DMA test is being executed
47	SCC LK401 test is being executed
48	SCC Mouse test is being executed
49-4E	Reserved
4F	SED test has exited

SCC Information

SCC Diagnostic Error Codes

Table 3–19 lists the error codes produced by the SCC diagnostic test. If the diagnostic test fails, then follow these steps:

1. Check all loopbacks.

2. Reseat the keyboard connection. Make sure that none of the keys are stuck pressed down.

3. Reseat the mouse connection.

4. Reseat all connections to the system module.

5. Execute the SCC diagnostic test. If failure reoccurs, then replace the defective component. Replace the keyboard, mouse, and system module (one at a time), and then execute the SCC diagnostic test to verify that the failure has been corrected.

All error codes are listed in hexadecimal format.

Table 3–19   SCC Error Codes

Error Code	Description	Possible Defective Component
10	SCC reset test has failed	System module
20	SCC modem test failed when testing CTS<->RTS	System module
22	SCC modem test failed when testing DSR<->SS	System module
24	SCC modem test failed when testing CD<->SS	System module
26	SCC modem test failed when testing RI<->DTR	System module
30	SCC polled test has failed due to transfer timeout	System module
32	SCC polled test has failed due to parity error on receive	System module

(continued on next page)

Table 3–19 (Cont.)   SCC Error Codes

Error Code	Description	Possible Defective Component
34	SCC polled test has failed due to framing error on receive	System module
36	SCC polled test has failed due to overrun error on receive	System module
38	SCC polled test has failed due to data comparison error	System module
40	SCC Interrupt not seen at the COREIO	System module
42	SCC interrupt not seen at TURBO-channel ASIC	System module
44	SCC interrupt not seen at DECchip 21064 CPU	System module
50	SCC LK401 test has failed due to transfer timeout	Keyboard, system module
52	SCC LK401 test has failed due to illegal response received	Keyboard, system module
60	SCC Mouse test failed due to transfer timeout	Mouse, system module
62	SCC Mouse test failed due to illegal response received	Mouse, system module
70	SCC self-test was unable to connect to the driver	
80	SCC was unable to find free memory with which to test	
90	SCC had a transmit timeout during the DMA test	System module
92	SCC had unexpected interrupts during DMA test	System module
94	SCC had incorrect buffer pointers during the DMA test	System module
96	SCC had a data buffer miscompare during the DMA test	System module

SCC Information

SCC Diagnostic Status Messages

The following status messages may be displayed
during the SCC diagnostic test:

T-STS-SCC - Reset/Init Test

> This message means that the SCC reset test
> is being executed.

T-STS-SCC - Modem Test

> This message means that the SCC modem
> test is being executed.

T-STS-SCC - Poll test

> This message means that the SCC POLLED
> mode test is being executed. The polled test
> currently only executes in internal loopback
> mode.

T-STS-SCC - Intrpt Test

> This message means that the SCC Interrupt
> test is being executed.

T-STS-SCC - DMA test

> This message means that the SCC DMA
> test is being executed. The printer port will
> only be tested out when the console is not
> attached to it.

T-STS-SCC - LK401 test

> This message means that the LK401 test is
> being executed.

T-STS-SCC - Mouse test

> This message means that the Mouse test is
> being executed.

SCC Diagnostic Error Messages

The following error messages may be displayed
during the SCC diagnostic test:

_____ **Note** _____

All modem error messages require (1) a
modem loopback, and (2) that service mode
be selected (set diag_s 2).

_____

? T-ERR-SCC-MODEM - CTS bit Exp = 0 Rec = 1

> This message means that the modem test
> expected the CTS bit to be set to 0 but it was
> read as a 1.

? T-ERR-SCC-MODEM - CTS bit Exp = 1 Rec = 0

> This message means that the modem test
> expected the CTS bit to be set but it is clear.

? T-ERR-SCC-MODEM - DSR bit Exp = 0 Rec = 1

> This message means that the modem test
> expected the DSR bit to be set to 0 but it was
> read as a 1.

? T-ERR-SCC-MODEM - DSR bit Exp = 1 Rec = 0

> This message means that the modem test
> expected the DSR bit to be set but it is clear.

? T-ERR-SCC-MODEM - DCD bit Exp = 0 Rec = 1

> This message means that the modem test
> expected the DCD bit to be set to 0 but it
> was read as a 1.

? T-ERR-SCC-MODEM - DCD bit Exp = 1 Rec = 0

> This message means that the modem test
> expected the DCD bit to be set but it is clear.

? T-ERR-SCC-MODEM - RI bit Exp = 0 Rec = 1

> This message means that the modem test
> expected the RI bit to be set to 0 but it was
> read as a 1.

? T-ERR-SCC-MODEM - RI bit Exp = 1 Rec = 0

> This message means that the modem test
> expected to see the RI bit to be set, but it is
> clear.

? T-ERR-SCC - POLLED test - Transfer timed out

> This message means that the transfer has
> not completed. This usually means that we
> have not received the characters that were
> transmitted.

? T-ERR-SCC-DMA - Xfer tmout,Line x

> This message means that the DMA transmit
> has not completed on line x.

SCC Information

? T-ERR-SCC-DMA - Unexp ints,Line x
  T-STS-SCC - Exp=%x Rec=%x
        This message means that we did not receive
        the interrupts that were expected.

? T-ERR-SCC-DMA - Data buf miscomp,Line x
  T-STS-SCC - Addr = %x Exp = %x Rec = %x
        This message means that the data received
        by the DMA WRITE was not the same data
        that was transmitted on line x.

? T-ERR-SCC-LK401 - %x char rcvd
        This message means that the response
        received from the LK401 was less than the
        number of characters expected.

? T-ERR-SCC-LK401 - ill resp rcvd
        This message means that the response
        received from the LK401 was not the correct
        response.

? T-ERR-SCC-Mouse - %x char rcvd
        This message means that the response
        received from the mouse was less than the
        number of characters expected.

? T-ERR-SCC-Mouse - ill resp rcvd
        This message means that the mouse has
        failed its power-up self-test.

? T-ERR-SCC-CCR - Parity error
        This message means that a character
        received contains a parity error.

? T-ERR-SCC-CCR - Framing error
        This message means that a character
        received contains a framing error.

? T-ERR-SCC-CCR - Overrun error
        This message means that a character
        received contains an overrun error.

? T-ERR-SCC-CCR - rec(%x) !=exp (%x)"
        This message means that the character
        received does not equal the character
        transmitted.

```
? T-ERR-SCC-INTR - SCC%x not set at COREIO
```
      This message means that SCC bit %x is not
      set at CORE I/O.

```
? T-ERR-SCC-INTR - Not set in TCASIC
```
      This message means that the CORE I/O
      interrupt is not set at the TURBOchannel
      ASIC.

```
? T-ERR-SCC-INTR - Not set at CPU
```
      This message is not set at the DECchip
      21064 CPU.

```
? T-ERR-SCC - TNF - %s
```
      This message is displayed when the user
      requests a test that does not exist. The test
      name the user types in replaces the %s.

SCSI Information

SCSI LED Codes

The following LED codes represent SCSI diagnostic
tests. If an error occurs during one of these tests,
a field replaceable unit number and error code are
displayed on the monitor.

Table 3–20 lists the SCSI LED codes in hexadecimal
format.

Table 3–20   SCSI LED Codes

LED Code	Description
60	Dual SCSI ASIC register test
61	SCSI controller chip register test
62	Interrupt test
63	Data transfers test
64	Map error test
65	Minimal device test

(continued on next page)

SCSI Information

Table 3–20 (Cont.)   SCSI LED Codes

LED Code	Description
6F	All tests passed

SCSI Diagnostic Error Codes

Table 3–21 lists the error codes produced by the SCSI diagnostic test. If the diagnostic test fails, then follow these steps:

1. Ensure proper device connection.

2. Reseat cable connections to the system module.

3. Execute the SCSI diagnostic test to verify. If failure reoccurs, replace the items listed below one at a time, and then execute the SCSI diagnostic test to verify that the failure has been corrected.

All error codes are listed in hexadecimal format.

Table 3–21   SCSI Error Codes

Error Code	Description	Possible Defective Component
02	SCSI ASIC register test failed testing bus A	System module
04	SCSI controller register test failed testing bus A	System module
06	SCSI interrupt test failed testing bus A	System module
08	SCSI data transfer test failed testing bus A	SCSI device, system module
0A	SCSI map error test failed testing bus A	SCSI device, system module
0C	SCSI minimal device test failed testing bus A	SCSI device, system module

SCSI Diagnostic Status Messages

The following SCSI status messages are displayed during the SCSI diagnostic test:

```
T-STS-SCSI (bus) - SCSI ASIC Register test
T-STS-SCSI (bus) - SCSI Ctrl Register test
T-STS-SCSI (bus) - Interrupt test
T-STS-SCSI (bus) - Data Transfer test
T-STS-SCSI (bus) - Map Error test
T-STS-SCSI (bus) - Minimal Device test
```

SCSI Error Messages

SCSI error messages begin with a question mark, and may be followed by lines without question marks.

Table 3–22 explains the terms that appear in parentheses. Table 3–23 lists and explains the values that appear in the information field.

_____ **Note** _____

The following error messages indicate a possible failure in the system module or with one of the SCSI devices installed in the system. HINT—swap a known working SCSI device with one of the installed devices (this may uncover a defective device). Then, reseat all connections to the system module before replacing it with a new device.

_____

```
? T-ERR-SCSI -  NVR err

? T-ERR-SCSI (bus) - DMA map err

? T-ERR-SCSI (bus) - SCSI ASIC Reg test-Data
                     miscompare
  T-ERR-SCSI (bus) - Addr=(address) Exp=(exp data)
                     Act=(actual data)

? T-ERR-SCSI (bus) - SCSI Ctrl Reg test-Data
                     miscompare
  T-ERR-SCSI (bus) - Addr=(address) Exp=(exp data)
             Act=(actual data)
```

SCSI Information

```
? T-ERR-SCSI (bus) - SCSI Ctrl Register test-Reg bit
                     wrong
  T-ERR-SCSI (bus) - Addr=(address) Info=
                     (informational value)

? T-ERR-SCSI (bus) - Int test - cause no int
? T-ERR-SCSI (bus) - Int test - int disab high ipl
? T-ERR-SCSI (bus) - Int test - int enab high ipl
? T-ERR-SCSI (bus) - Int test - int enab low ipl
  T-ERR-SCSI (bus) - info=(informational value)
                     status=(status)
  T-ERR-SCSI (bus) - IR=(ir) CIR=(cir) IME=(ime)
```

Note

The following error messages could possibly
be caused by a SCSI device or system module
failure. Reseat the device and system module
before replacing it with another device or
module.

```
? T-ERR-SCSI (bus) - Data Trans test-nondma inq
? T-ERR-SCSI (bus) - Data Trans test-dma inq
? T-ERR-SCSI (bus) - Data Trans test-dma nonaligned inq
? T-ERR-SCSI (bus) - Data Trans test - sync dma inq
? T-ERR-SCSI (bus) - Data Trans test-virt dma inq
  T-ERR-SCSI (bus) - id=(device id) lun=(logical
                     unit number)
                     info=(informational value)
  T-ERR-SCSI (bus) - actcmd=(actual command)
                     curcmd=(current command)
                     status=(status) int=(interrupt)
  T-ERR-SCSI (bus) - IR=(ir) CIR=(cir) IME=(ime)
  T-ERR-SCSI (bus) - snskey=(sense key) extfru=
                     (extended fru info)
```

```
? T-ERR-SCSI (bus) - Data Trans test-nondma inq not
                     enough data
? T-ERR-SCSI (bus) - Data Trans test-nondma/dma inq
                     size miscompare
? T-ERR-SCSI (bus) - Data Trans test-nondma/dma_nonal
                     inq size miscompare
? T-ERR-SCSI (bus) - Data Trans test-nondma/dma_nonal
                     inq data miscompare
? T-ERR-SCSI (bus) - Data Trans test-nondma/sync inq
                     size miscompare
? T-ERR-SCSI (bus) - Data Trans test-nondma/sync inq
                     data miscompare
? T-ERR-SCSI (bus) - Data Trans test-nondma/virt inq
                     size miscompare
? T-ERR-SCSI (bus) - Data Trans test-nondma/virt inq
                     data miscompare
  T-ERR-SCSI (bus) - id=(device id) lun=(logical
                     unit number)
```

─────────── **Note** ───────────

The following error messages could possibly
be caused by a system module failure.
Reseat the module before replacing it with
another module.

────────────────────────────────

```
? T-ERR-SCSI (bus) - Map Err test - ir notval  not set
? T-ERR-SCSI (bus) - Map Err test - ir parerr  not set
  T-ERR-SCSI (bus) - id = (device id) lun = (logical unit
                     number)
  T-ERR-SCSI (bus) - virt data addr = (data addr)
                     map reg addr   = (map reg adr)
  T-ERR-SCSI (bus) - map reg data = (map data) IR = (ir)
                     CIR = (cir)

? T-ERR-SCSI (bus) - Map Err test - DMA inq err
  T-ERR-SCSI (bus) - id = (device id) lun = (logical unit
                     number) info = (informational value)
  T-ERR-SCSI (bus) - actcmd = (actual command)
                     curcmd = (current command)
             status = (status) int = (interrupt)
  T-ERR-SCSI (bus) - IR = (ir) CIR = (cir) IME = (ime)
  T-ERR-SCSI (bus) - snskey = (sense key) extfru =
                     (extended fru info)
```

─────────── **Note** ───────────

The following error messages could possibly

3–43

> mean a SCSI device or system module
> failure. Reseat the device or module before
> replacing it with another device or module.

```
? T-ERR-SCSI (bus) - Min Dev test-start unit
? T-ERR-SCSI (bus) - Min Dev test-test unit ready
? T-ERR-SCSI (bus) - Min Dev test-rewind
? T-ERR-SCSI (bus) - Min Dev test-mode select
? T-ERR-SCSI (bus) - Min Dev test-read
? T-ERR-SCSI (bus) - Min Dev test-send diagnostic
  T-ERR-SCSI (bus) - id=(device id) lun=(logical
                     unit number)
                     info=(informational value)
  T-ERR-SCSI (bus) - actcmd=(actual command)
                     curcmd=(current command)
                     status=(status) int=(interrupt)
  T-ERR-SCSI (bus) - IR=(ir) CIR=(cir) IME=(ime)
  T-ERR-SCSI (bus) - snskey=(sense key) extfru=
                     (extended fru info)

? T-ERR-SCSI (bus) - Min Dev test-wrong num bytes
? T-ERR-SCSI (bus) - Min Dev test-data miscompare
  T-ERR-SCSI (bus) - id=(device id)=lun (logical unit
                     number)
```

Table 3–22   Terms Used in SCSI Error Messages

Term	Definition
`actcmd`	Original command that was sent to SCSI bus
`actual data`	Actual data
`address`	Sparse address of failing location
`bus`	SCSI bus A
`cir`	DUAL SCSI ASIC control interrupt register contents at time of error
`curcmd`	Actual command that failed
`data addr`	Virtual address of data
`device id`	SCSI ID
`exp data`	Expected data
`extfru`	FRU value from request sense data packet

<div align="center">(continued on next page)</div>

**Table 3–22 (Cont.)   Terms Used in SCSI Error
                       Messages**

Term	Definition
`ime`	DUAL SCSI ASIC interrupt mask enable register contents at error
`info`	Informational value from following table
`interrupt`	SCSI controller interrupt register contents at time of error
`ir`	TURBOchannel interrupt register contents at time of error
`logical unit number`	Logical unit number of device
`map reg adr`	Map register address
	Note that the next two values will only be printed out when a request sense command has been executed
`snskey`	Sense key from request sense data packet
`status`	SCSI controller status register contents at time of error

Table 3–23   SCSI Information Values

Value	Description
01	Terminal count bit clear in controller status register
02	Gross error bit clear in controller status register
03	Interrupt bit clear in controller status register
04	Bus service bit clear in controller status register
05	Disconnect bit clear in controller interrupt register
06	Disconnect bit set in controller interrupt register
07	Illegal command bit clear in controller interrupt register
08	Illegal command bit set in controller interrupt register
09	Arbitration not won
0A	Selection timeout
0B	Invalid sequence in sequence step register
0C	Unexpected ISR hit
0D	Interrupt service routine was not entered

SCSI Information

Table 3–23 (Cont.)   SCSI Information Values

Value	Description
0E	Interrupt bit in controller status register will not clear
0F	Bad request sense key
10	Bad status returned from status phase
11	Not enough sense data returned from a request sense command
12	Phase did not go to command phase
13	Phase did not go to message out phase
14	Phase did not go to message in phase
15	Command phase changed too soon
16	Message in phase changed too soon
17	Stuck in command phase
18	Stuck in message in phase
19	Stuck in message out phase
1A	Stuck in data out phase
1B	Stuck in data in phase
1C	Should not be in message out phase
1D	No interrupt after sending SCSI command
1E	No interrupt after sending command complete
1F	No interrupt after sending message accepted
20	No interrupt after sending transfer information
21	All data out bytes were not sent
22	Unexpected message reject from device
23	FIFO flag count is wrong
24	Message is unsupported
25	Bus device reset was sent, but device didn't drop off bus
26	Illegal phase
27	Should not be in data in phase
28	Problem with a device trying to reconnect
29	Unexpected disconnect message received
2A	Device not seen before trying to reconnect
2B	Bad identify message received on reconnection
2C	Out of retries for this command
2D	Too many bytes sent in data out phase
2E	Too many bytes received in data in phase

Table 3–23 (Cont.)   SCSI Information Values

Value	Description
2F	SCSI parity error
30	SCSI map error
31	SCSI bit in TURBOchannel interrupt register is not set
32	SCSI bit in TURBOchannel interrupt register is set
33	SCSI bit in control interrupt register is not set
34	SCSI bit in control interrupt register is set
35	SCSI bit in control interrupt register won't clear
36	Controller interrupt register contents different from expected
37	Controller status register contents different from expected
50	Wrong device type; device is not of type specified
51	Not enough data returned in mode sense command
52	Byte count specified for read or write is too small
53	Boot block checksum error
54	Boot block flag is not zero
55	Boot block count is zero
56	Device is too small for specified read or write
57	Device block size is not valid
58	Prom$ routine error
59	Error parsing boot string
90	SCSI bus specified is not valid
91	Utility specified is not valid
92	Device number specified is not valid
93	LUN specified is not valid
94	Wrong number of parameters for utility
95	Device number specified is the same as the host
96	Wrong mode of operation
97	Not enough data returned from device
98	Device is not a disk
99	Device is not a tape
9A	Device is not removable
9B	Device is removable
9C	Media is write protected
9D	Device is not ready

SCSI Information

Table 3–23 (Cont.)   SCSI Information Values

Value	Description
9E	Data read is incorrect
9F	LUN is illegal
A0	Problem building format page
A1	Problem building flexible page
A2	Disk capacity is too small
A3	Console function error
A4	Illegal floppy drive
A5	Illegal floppy media

TOY/NVR Information

TOY/NVR LED Codes

The following LED codes represent TOY/NVR diagnostic tests. If an error occurs during one of these tests, then a field replaceable unit number and error code are displayed on the monitor.

Table 3–24 lists the TOY/NVR LED codes in hexadecimal format.

Table 3–24   TOY/NVR LED Codes

LED Code	Description
3A	Check battery test
3B	Test NVR registers
3C	Assure clock is ticking test
3D	Test TOY registers
3E	Interrupt test
3F	All tests passed

TOY/NVR Diagnostic Error Codes

Table 3–25 lists the error codes produced by the NVR diagnostic test. If the diagnostic test fails, reseat cable connections to the system module. Then, execute the NVR diagnostic test. If failure reoccurs, then replace the defective component. Execute the NVR diagnostic test to verify that the failure has been corrected.

All error codes are listed in hexadecimal format.

Table 3–25   TOY/NVR Error Codes

Error Code	Description	Possible Defective Component
03	Soft-error on power-up, check time.	System module
04	Battery failure.	System module
08	Data miscompare testing NVR registers.	System module
10	Data miscompare testing TOY registers.	System module
20	Valid RAM and time bit clear. Possible RAM corruption due to power loss.	System module
40	Battery codes do not match.	System module
80	Update in progress, bit will not clear.	System module
100	CSR_A data miscompare.	System module
200	CSR_B data miscompare.	System module
400	Interrupt test failed - no interrupt generated.	System module

TOY/NVR Diagnostic Status and Error Messages

The following status messages are displayed when a TOY/NVR self-test occurs:

```
T-STS-NVR-NVR_REG TEST
T-STS-NVR-CHECK BATTERY TEST
T-STS-NVR-INIT TEST
T-STS-NVR-CLOCK TEST
T-STS-NVR-ASSURE_CLOCK_IS_TICKING TEST
T-STS-NVR-TOY REGISTER TEST
T-STS-NVR-CLOCK_REENTRY TEST
T-STS-NVR-INTERRUPT TEST
```

TOY/NVR Information

The following error messages are displayed when a
TOY/NVR self-test occurs:

```
? T-ERR-NVR - BATTERY FAILURE WHILE POWER WAS OFF
? T-ERR-NVR - VRT BIT FAILURE, FINAL CHECK
? T-ERR-NVR - BATTERY CODES DON'T MATCH
                address=%x data read=%x data exp=%x
? T-ERR-NVR - NVR REGISTER ERROR-DATA MISMATCH
                address=%x data read=%x data exp=%x
? T-ERR-NVR - UIP FAILED TO CLEAR ERROR
? T-ERR-NVR - ON POWERUP ALWAYS SET TIME-ERROR (3)
? T-ERR-NVR - TOY REGISTER ERROR - DATA MISMATCH
? T-ERR-NVR - UIP FAILED TO CLEAR ERROR
                address=%x data read=%x data exp=%x
? T-ERR_NVR - CLOCK HASN'T TICKED
                address=%x data read=%x data exp=%x
? T-ERR_NVR - CSR_A ERROR-DATA MISMATCH
? T-ERR_NVR - CSR_B ERROR-DATA MISMATCH
? T-ERR-NVR - NO INTERRUPT GENERATED
```

A

Power Supply DC Output Connections

Appendix Overview

This appendix is for users who want to test the DC output connections at the cable end of the power supply connector.

Table A–1 describes the pin usage for the connector.

Table A–1   DC Output Connections

Pin	Description	Pin	Description
1	+5V	11	System ok
2	+5V	12	RTN
3	+5V	13	RTN
4	+5V	14	RTN
5	+5V	15	RTN
6	+5V	16	RTN
7	+12V	17	RTN
8	-12V	18	RTN
9	POK	19	RTN
10	spkr+	20	spkr-

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