



Sun StorageTek™ PCI-X SAS 8-Channel HBA Installation Guide

For HBA Model SG-XPCI8SAS-E-Z

Sun Microsystems, Inc.
www.sun.com

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Contents

Preface xi

1. HBA Overview 1

Features 2

Operating System Requirements 3

System Interoperability 4

Host Platform Support 4

Storage System Support 5

Software Support 5

2. Installing, Connecting, and Testing the HBA 7

Observing ESD and Handling Precautions 7

Installing the HBA 8

▼ To Prepare for Hardware Installation 8

▼ To Unpack and Install the HBA 9

Testing the HBA Installation 11

▼ To Test the Installation Using the SPARC OBP `probe-scsi-all` Command 12

▼ To Test the Installation Using the Solaris `format` Command 13

▼ To Test the Installation Using the SunVTS Software 17

Booting Through the HBA 18

▼ To Boot an x86 Server From an External Disk Drive	18
3. Installing the HBA Software	23
Downloading and Installing the Solaris OS Patches	23
Solaris OS Driver Utilities	24
HBA Driver	24
Diagnostic Support	24
Firmware Upgrades	24
▼ To Download and Install the Solaris OS Recommended Patch Cluster	24
▼ To Download and Install the Solaris Driver Patch	25
Downloading and Installing the Linux Driver and Firmware	25
Linux Driver and Utilities	26
▼ To Download and Install the Linux Driver	26
▼ To Download and Update the Linux Firmware	26
Downloading and Installing the Windows Server 2003 Driver and Firmware	27
Windows 2003 Server Driver and Utilities	27
▼ To Download and Install the Windows Driver	27
▼ To Download and Update the Windows Firmware	27
A. HBA Specifications	29
Physical Dimensions	29
Connectors	30
PCI Performance	30
Electrical and Environmental Specifications	31
Electrical Characteristics	31
Thermal and Atmospheric Characteristics	32
Safety Characteristics	32
B. Declaration of Conformity, Regulatory Compliance, and Safety Statements	33

Declaration of Conformity	35
Safety Agency Compliance Statements	37
Regulatory Compliance Statements	49

Figures

FIGURE 1-1	Sun StorageTek PCI-X SAS 8-Channel HBA	2
FIGURE 2-1	Installing the HBA into a PCI-X Slot	10
FIGURE 2-2	Connecting the Mini-SAS Cable to the HBA Connector	11
FIGURE A-1	Internal and External Connectors	30

Tables

TABLE 1-1	Supported Operating System Versions	3
TABLE 1-2	Host Platform Support	4
TABLE 1-3	Software Support	5
TABLE 3-1	Patches for the Solaris 10 Operating System	23
TABLE A-1	Physical Dimensions	29
TABLE A-2	Maximum Power Requirements	31
TABLE A-3	HBA Temperature and Humidity Ranges	32

Preface

This *Sun StorageTek PCI-X SAS 8-Channel HBA Installation Guide* describes how to install the Sun StorageTek™ PCI-X Serial Attached SCSI (SAS) 8-Channel host bus adapter (HBA). This manual is intended for experienced system administrators.

Before You Read This Book

Before you install and use the HBA as described in this manual, you must read and understand the following documents:

- *SunVTS 6.X User Guide*
- *SunVTS 6.X Reference Manual*

How This Book Is Organized

- [Chapter 1](#) describes the Sun StorageTek PCI-X 8-Channel SAS HBA.
- [Chapter 2](#) explains how to install the HBA, connect it to a storage device, and test it. It also includes instructions on booting from a hard disk connected to the HBA.
- [Chapter 3](#) describes driver requirements and utility software for the supported operating systems.
- [Appendix A](#) contains the specifications for the Sun StorageTek PCI-X 8-Channel SAS HBA.
- [Appendix B](#) contains the Declaration of Conformity, regulatory, and essential safety information.

Using UNIX Commands

This document might not contain information on basic UNIX[®] commands and procedures such as shutting down the system, booting the system, and configuring devices. See the following for this information:

- Software documentation that you received with your system
- Solaris[™] operating environment documentation, which is at <http://docs.sun.com>

Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .

* The settings on your browser might differ from these settings.

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To access Solaris OS usage documents listed under “Using UNIX Commands” on page xii and the SunVTS™ software documents listed in “Before You Read This Book” on page xi, go to `docs.sun.com`.

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HBA Overview

This chapter gives a general overview of the Sun StorageTek PCI-X Serial Attached SCSI (SAS) 8-Channel host bus adapter (HBA).

This chapter contains the following sections:

- [“Features” on page 2](#)
- [“Operating System Requirements” on page 3](#)
- [“System Interoperability” on page 4](#)

Features

The Sun StorageTek PCI-X SAS 8-Channel HBA is a low-profile, single-slot expansion board that interfaces to a PCI-X 133-MHz bus.

An optional standard height mounting bracket is provided with each HBA as shown in [FIGURE 1-1](#).

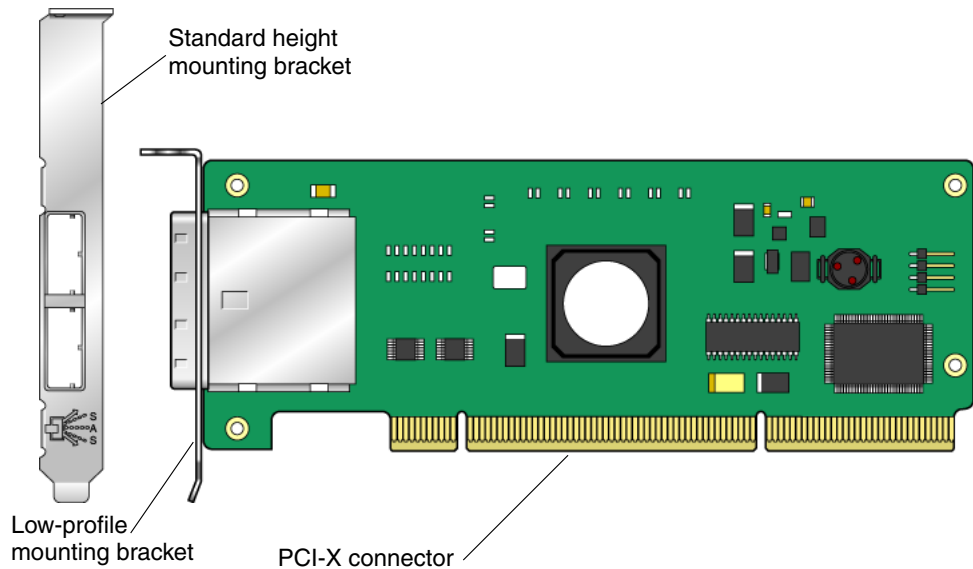


FIGURE 1-1 Sun StorageTek PCI-X SAS 8-Channel HBA

The HBA includes the following features:

- Includes eight independent SAS channels that support both SAS and SATA signaling.
- Allows 3 Gb/s, full-duplex connections that are supported by all eight SAS channels.
- Supports up to 122 SAS/SATA devices through the use of an expander box.
- Includes field programmable 512-Kbyte flash ROM (contains BIOS, FCode, and firmware) for booting in a Sun SPARC or Sun x64/x86 processor-based host system.
- Supports SSP, STP, and SMP as defined in the Serial Attached SCSI (SAS) Specification, version 1.0.
- Supports SATA as defined in the Serial ATA Specification, version 1.0.

- Is Restriction of Hazardous Substances (RoHS) 6 compliant.

The PCI-X interface is compliant with the PCI-X Specification, revision 2.0, and it is backward compliant with previous versions of the PCI-X specifications. The HBA is keyed for 3.3 V PCI-X add-in card slots. The PCI-X to 3.0 Gbit/s SAS HBAs use either a standard PCI or a low-profile PCI mounting bracket. The HBA SAS interface is compatible with the ANSI Serial Attached SCSI Specification, revision 1.0 and the Serial ATA Specification, revision 1.0a.

Operating System Requirements

The Sun StorageTek PCI-X SAS 8-Channel HBA requires the minimum operating system levels listed in [TABLE 1-1](#).

TABLE 1-1 Supported Operating System Versions

Operating System	Supported Versions (minimum)
Solaris 10 for x64/x86 and SPARC	Solaris 10, Update 2
Linux	Red Hat Enterprise Linux (RHEL) 4 Update 3 and Update 4 x64
	SUSE Linux Enterprise Server (SLES) 8
	SUSE Linux Enterprise Server (SLES) 9 SP3 x64
VMware	ESX Server version 3.0.1
Microsoft Windows	Windows Server 2003 Enterprise Edition x64
	Windows Server 2003 Enterprise Edition x86 w/SP1
	Windows Server 2003 Standard Edition x86 w/SP1

System Interoperability

This section provides host platform, storage, and software support for the SAS HBA. This section contains the following topics:

- [“Host Platform Support” on page 4](#)
- [“Storage System Support” on page 5](#)
- [“Software Support” on page 5](#)

Host Platform Support

[TABLE 1-2](#) lists the host platforms supported by the SAS HBA.

TABLE 1-2 Host Platform Support

Platform	Supported OS
SPARC Servers and Workstations	
Sun Fire™ V445 server	Solaris
Sun Fire V215 and V245servers	Solaris
Sun Fire V125 server	Solaris
Sun Fire V210, V240, V250, and Netra 240 servers	Solaris
Sun Fire V440 server	Solaris
Sun Fire V480, V490, V880, and V890 servers	Solaris
Sun Fire V1280 and E2900 servers	Solaris
Sun Fire 4800, 4810 and E4900 servers	Solaris
Sun Fire 6800 and E6900 servers	Solaris
Sun Fire 12K and E20K servers	Solaris
Sun Fire 15K and E25K servers	Solaris
Sun Fire 20K and 25K servers	Solaris
Sun Fire T2000 server	Solaris
Sun Ultra™ 45 workstation	Solaris
Sun Blade™ 2500 workstations	Solaris

TABLE 1-2 Host Platform Support (*Continued*)

Platform	Supported OS
Sun x64 Servers and Workstations	
Sun Fire X4100, and X4200 servers	Solaris, Linux, and Windows
Sun Fire V40z server	Solaris, Linux, and Windows
Sun Ultra 40 workstation (x64)	Solaris, Linux, and Windows

Storage System Support

The SAS HBA supports the Sun StorageTek 2500 array.

Software Support

The SAS HBA supports the following software applications.

TABLE 1-3 Software Support

Software	Supported OS
Sun Cluster 3.x	Solaris
Sun StorEdge Traffic Manager 4.6	Solaris
Sun StorEdge Enterprise Backup Software 6.0B	Solaris, Linux, and Windows
VERITAS Volume Manager (VxVM) 3.5/4.0	Solaris
VERITAS File System 5.0	Solaris
VERITAS NetBackup 6.0	Solaris, Linux, and Windows

Installing, Connecting, and Testing the HBA

This chapter describes how to install the Sun StorageTek PCI-X SAS 8-Channel HBA, test the installation, and boot from a disk drive connected to the HBA.

This chapter contains the following sections:

- [“Observing ESD and Handling Precautions” on page 7](#)
- [“Installing the HBA” on page 8](#)
- [“Testing the HBA Installation” on page 11](#)
- [“Booting Through the HBA” on page 18](#)

Observing ESD and Handling Precautions



Caution – Damage to the HBA can occur as the result of careless handling or electrostatic discharge (ESD). Always handle the HBA with care to avoid damage to electrostatic sensitive components.

To minimize the possibility of ESD-related damage, Sun strongly recommends using both a workstation antistatic mat and an ESD wrist strap. You can get an ESD wrist strap from any reputable electronics store or from Sun as part number #250-1007. Observe the following precautions to avoid ESD-related problems:

- Leave the HBA in its antistatic bag until you are ready to install it in the system.

- Always use a properly fitted and grounded wrist strap or other suitable ESD protection when handling the HBA and observe proper ESD grounding techniques.
- Hold the HBA by the edge of the PCB or mounting bracket, not by the connectors.
- Place the HBA on a properly grounded antistatic work surface pad when it is out of its protective antistatic bag.

Installing the HBA

Before you start, read the instructions in this section, as well as the installation instructions for the storage devices to be connected to the HBA.

▼ To Prepare for Hardware Installation

1. **Read and observe the safety information for this product.**

See [“Safety Agency Compliance Statements” on page 37](#).

2. **Install the required patch for your OS as described in [“Downloading and Installing the Solaris OS Patches” on page 23](#).**

3. **Install the SunVTS software on the host.**

The SunVTS software is shipped on the Supplemental Software CD-ROM along with the Solaris OS CD-ROM. Read the user’s guide listed in [“Before You Read This Book” on page xi](#) for instructions about installing the SunVTS software.

4. **Exit the operating environment.**

To inform any mounted users that the system will be going down, use the shutdown command. Otherwise, use the `init 0` command. See the man pages or the Solaris documentation for more information about these commands.

```
# shutdown
...
ok
```

5. **Power off the system.**

For instructions, refer to the system documentation that came with your system.

▼ To Unpack and Install the HBA

1. Unpack the box containing the HBA and inspect it for damage.

Note – Leave the HBA in the protective bag until you are ready to install it.

2. Turn off the system's power and physically remove the power cord(s) from the system.
3. Remove the cover from the system's chassis.
4. Disconnect the system from any networks.
5. Locate an empty PCI-X slot.
6. If the server chassis requires a standard height bracket, replace the low-profile bracket that is attached to the board with the standard height bracket.

Refer to the system's hardware documentation for information about mounting details (mounting holes, standoff locking and unlocking, and screws to secure the card).



Caution – Damage to the HBA can occur as the result of careless handling or electrostatic discharge (ESD). See [“Observing ESD and Handling Precautions” on page 7](#) for more information.

7. Align the HBA to a PCI-X slot, and press down gently but firmly to seat the HBA in the slot.

[FIGURE 2-1](#) illustrates how to insert the HBA in a PCI-X slot.

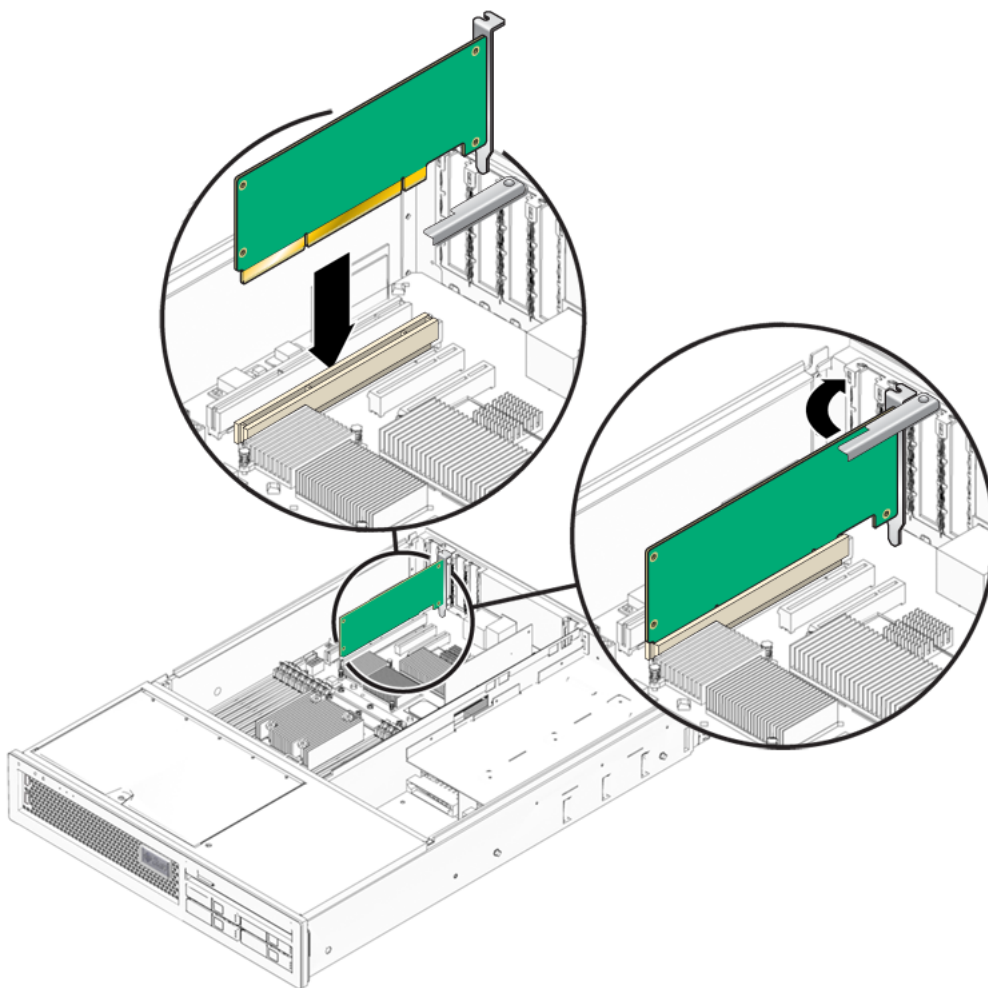


FIGURE 2-1 Installing the HBA into a PCI-X Slot

8. Install the bracket screw, when present, or engage the system's retention mechanism to secure the HBA to the system's chassis.
9. Replace the system's cover, and reconnect the power cord(s) and any network cables.
10. Power on the system.
11. Connect the mini-SAS cables between the HBA and the external storage or switch.

Note – The HBA contains two mini-SAS connectors. Each connector contains four PHYs enabling eight SAS lanes to connect to storage.

FIGURE 2-1 shows the location of the connectors on the HBA.

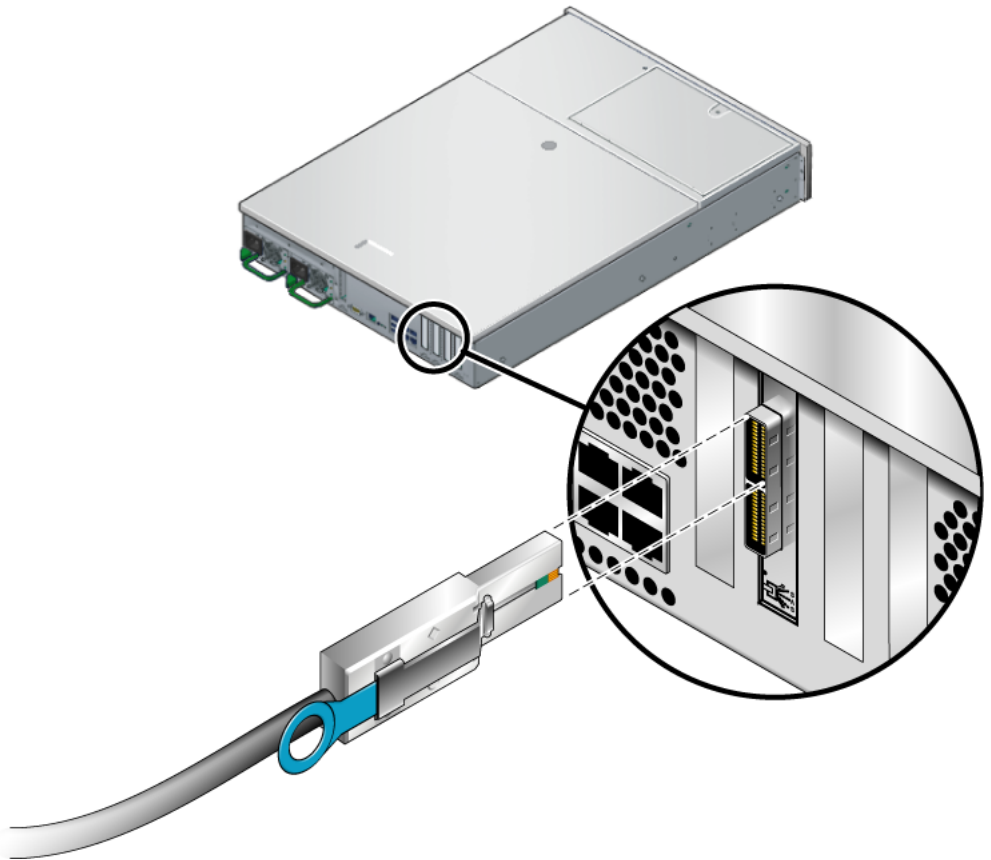


FIGURE 2-2 Connecting the Mini-SAS Cable to the HBA Connector

The HBA hardware installation is complete.

Testing the HBA Installation

To test the HBA installation in a Solaris environment, refer to the following sections:

- [“To Test the Installation Using the SPARC OBP `probe-scsi-all` Command” on page 12](#)
- [“To Test the Installation Using the Solaris `format` Command” on page 13](#)
- [“To Test the Installation Using the SunVTS Software” on page 17](#)

▼ To Test the Installation Using the SPARC OBP `probe-scsi-all` Command

Note – This procedure is not valid in a Solaris 10 for x64/x86 environment. Instead, use the `format` command to verify the installation of the HBA before attempting to use it in a Solaris 10 for x64/x86 environment. See [“To Test the Installation Using the Solaris `format` Command” on page 13](#).

1. If you have disconnected the power cable, reconnect it.
2. Power on the connected storage device, and then power on the host.
3. Bring the system down to the `ok` prompt at run level 0.

Note – If the host starts to reboot, interrupt the reboot process by pressing the Stop and A keys simultaneously.

4. At the **ok** prompt, type the `probe-scsi-all` command to verify that the system recognizes the HBA.

The `probe-scsi-all` command displays the SCSI devices that are connected to the host, as shown in the following screen example.

```
ok probe-scsi-all
/pci@7c0/pci@0/pci@1/pci@0,2/LSILogic,sas@2
MPT Version 1.05, Firmware Version 1.06.00.00
Target 0
  Unit 0   Disk      FUJITSU MAY2073RCSUN72G 0401      143374738 Blocks, 73 GB
  SASAddress 500000e0118dd3e2  PhyNum 0
Target 1
  Unit 0   Disk      FUJITSU MAY2073RCSUN72G 0401      143374738 Blocks, 73 GB
  SASAddress 500000e0115c3ec2  PhyNum 1

/pci@780/pci@0/pci@8/LSILogic,sas@0
MPT Version 1.05, Firmware Version 1.18.00.00
Target 1
  Unit 0   Disk      SUN      LCSM100_S      9617      2048000 Blocks, 1048 MB
  Unit 1   Disk      SUN      LCSM100_S      9617      2457600 Blocks, 1258 MB
  SASAddress 500a0b82804a8008  PhyNum 0
```

This example shows two SAS controllers. The first (`sas@2`) is the SAS controller resident on the motherboard. The second SAS controller (`sas@0`) has one disk drive connected (Target 1). The disk consists of two logical unit numbers (LUNs), Unit 0 and Unit 1.

▼ To Test the Installation Using the `Solaris format` Command

Use the following procedure to test the HBA installation using the `format` command on a Solaris 10 for x64/x86 platform.

1. Become a root user and type the `format` command.

```
# format
Searching for disks...done
AVAILABLE DISK SELECTIONS:
    0. clt0d0 <DEFAULT cyl 24611 alt 2 hd 27 sec 107>
        /pci@0,0/pci1022,7450@a/pci17c2,10@4/sd@0,0
    1. clt1d0 <DEFAULT cyl 24810 alt 2 hd 27 sec 107>
        /pci@0,0/pci1022,7450@a/pci17c2,10@4/sd@1,0
    2. c3t8d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
        /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@8,0
    3. c3t9d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
        /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@9,0
    4. c3t10d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
        /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@a,0
    5. c3t11d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
        /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@b,0
    6. c3t12d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
        /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@c,0
    7. c3t13d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
        /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@d,0
Specify disk (enter its number):
```

2. When prompted, type the number of the disk drive that is attached to the HBA card you just installed and press Enter.

```
# format
Searching for disks...done
AVAILABLE DISK SELECTIONS:
  0. c1t0d0 <DEFAULT cyl 24611 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@a/pci17c2,10@4/sd@0,0
  1. c1t1d0 <DEFAULT cyl 24810 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@a/pci17c2,10@4/sd@1,0
  2. c3t8d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@8,0
  3. c3t9d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@9,0
  4. c3t10d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@a,0
  5. c3t11d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@b,0
  6. c3t12d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@c,0
  7. c3t13d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@d,0
Specify disk (enter its number): 2
selecting c3t8d0
[disk formatted]
```

The Format menu is displayed.

3. Type **analyze** to select the type of test.

```
FORMAT MENU:
  disk- select a disk
  type- select (define) a disk type
  partition- select (define) a partition table
  current- describe the current disk
  format- format and analyze the disk
  fdisk- run the fdisk program
  repair- repair a defective sector
  label- write label to the disk
  analyze- surface analysis
  defect- defect list management
  backup- search for backup labels
  verify- read and display labels
  save- save new disk/partition definitions
  inquiry- show vendor, product and revision
  scsi- independent SCSI mode selects
  cache- enable, disable or query SCSI disk cache
  volname- set 8-character volume name
  !<cmd>- execute <cmd>, then return
  quit
format> analyze
```

4. Type **read** to further define the type of test, and then type **y** to continue.

```
ANALYZE MENU:
  read- read only test (doesn't harm SunOS)
  refresh- read then write (doesn't harm data)
  test- pattern testing (doesn't harm data)
  write- write then read (corrupts data)
  compare- write, read, compare (corrupts data)
  purge- write, read, write (corrupts data)
  verify- write entire disk, then verify (corrupts data)
  print- display data buffer
  setup- set analysis parameters
  config- show analysis parameters
  !<cmd>- execute <cmd> , then return
  quit
analyze> read
Ready to analyze (won't harm SunOS). This takes a long time,
but is interruptable with CTRL-C. Continue? y
pass 1

Total of 0 defective blocks repaired.
analyze>
```

5. Verify that no error occurred, as indicated by the output line `Total of 0 defective blocks repaired`.

Contact your service provider if an error occurs.

6. Type `q` twice to quit the test and the Format menu.

```
analyze> q
FORMAT MENU:
    disk - select a disk
    type - select (define) a disk type
    partition - select (define) a partition table
    current - describe the current disk
    format - format and analyze the disk
    fdisk - run the fdisk program
    repair - repair a defective sector
    label - write label to the disk
    analyze - surface analysis
    defect - defect list management
    backup - search for backup labels
    verify - read and display labels
    save - save new disk/partition definitions
    inquiry - show vendor, product and revision
    scsi - independent SCSI mode selects
    cache - enable, disable or query SCSI disk cache
    volname - set 8-character volume name
    !<cmd> - execute <cmd>, then return
    quit
format> q
#
```

Your Sun StorageTek PCI-X 8-Channel SAS HBA is ready for use.

▼ To Test the Installation Using the SunVTS Software

Use the SunVTS software to test a disk on a newly attached disk array to verify that the HBA is properly installed.

For details about running the SunVTS software, refer to the *SunVTS 6.X User's Guide* and the *SunVTS 6.X Test Reference Manual*.

Note – Refer to the SunVTS documentation to determine whether the host platform is supported.

1. As superuser, open the SunVTS window.

```
# /opt/SUNWvts/bin/sunvts
```

2. From the System Map, select a disk drive that is in an array that is connected to the HBA.
3. Start the disk test.
4. Verify that no errors have occurred by checking the SunVTS status window.

If problems occur, contact your service provider for assistance.

5. If no problems occur, stop the SunVTS software.

Your HBA is now ready to run applications.

Booting Through the HBA

The Sun StorageTek PCI-X 8-Channel SAS HBA uses the Solaris mpt device driver, which is included in the Solaris 10 (SPARC or x64/x86) OS.

After booting, install any required patches for the mpt driver. Refer to [“Installing the HBA Software” on page 23](#) for instructions on downloading and installing mpt driver patches.

▼ To Boot an x86 Server From an External Disk Drive

1. Initiate a system boot.

The BIOS initialization screen is displayed.

2. Immediately press Control-C.

The LSI Logic Config Utility menu is displayed.

LSI Logic Config Utility v6.12.00.00 (2006.10.31)							
Adapter List				Global Properties			
Adapter	PCI Bus	PCI Dev	PCI Fnc	PCI Slot	FW Revision	Status	Boot Order
SAS1064	07	04	00	00	1.00.01.00-IR	Enabled	0
SAS1068	07	01	00	01	1.18.00.00-IT	Enabled	
Esc = Exit Menu F1/Shift+1 = Help Alt+N = Global Properties -/+ = Alter Boot Order Ins/Del = Alter Boot List							

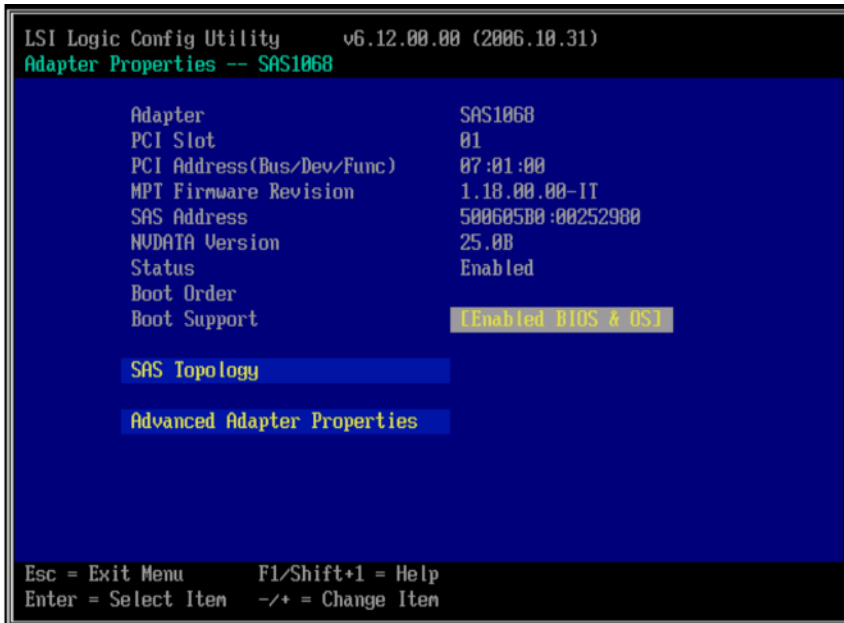
In this example, the first line (SAS1064) is the SAS controller that is resident on the motherboard. The HBA (SAS1068) is installed in PCI-X slot 01.

3. To change the boot options, use the arrow keys to move the grey highlighted field to the Boot Order field and use the following keys.

Key	Function
Insert	Enable booting
Del	Disable booting
Plus (+)	Increase the numeric value to change the boot order
Minus (-)	Decrease the numeric value to change the boot order

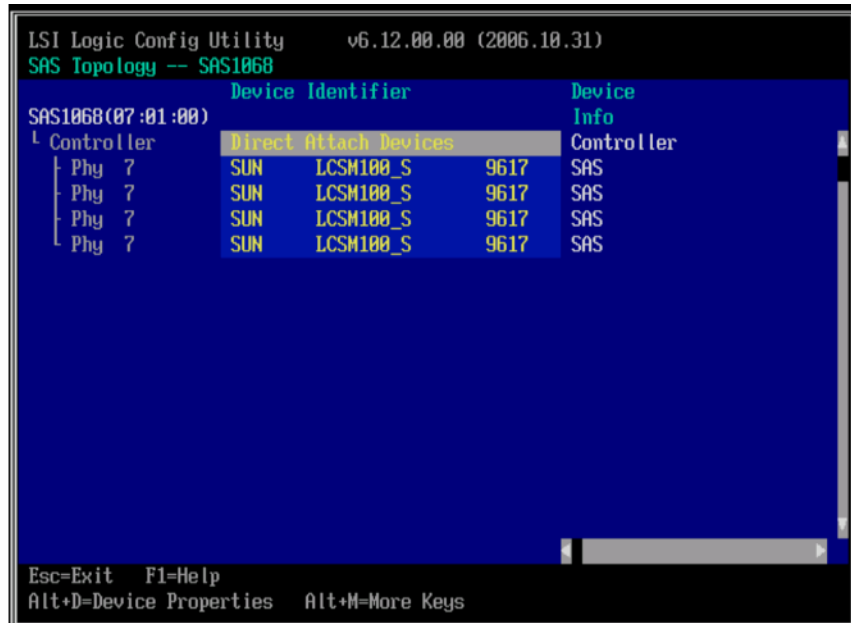
4. To change other options, move the grey highlighted field to the appropriate HBA, and press Enter.

Details for the selected adapter are displayed, as shown in the following example.



5. To view the devices attached to this adapter, highlight SAS Topology and press Return.

The following screen is displayed.



In this example, a single SAS RAID array is attached to the adapter. The array has four bonded PHYs.

6. To exit this screen, press the Escape key.
7. Use the arrow key to highlight Exit the Configuration Utility and press Enter.

Saving global properties...
Global properties saved. Hit any key to reboot.

8. Press any key to reboot the system.

Installing the HBA Software

This chapter describes driver requirements and utility software for the supported operating systems. This chapter contains the following sections:

- “Downloading and Installing the Solaris OS Patches” on page 23
- “Downloading and Installing the Linux Driver and Firmware” on page 25
- “Downloading and Installing the Windows Server 2003 Driver and Firmware” on page 27

Downloading and Installing the Solaris OS Patches

TABLE 3-1 shows the required Solaris 10 patches.

TABLE 3-1 Patches for the Solaris 10 Operating System

Patch ID	Description	Installation Procedure
125037-03 (or later)	The latest Solaris 10 for SPARC mpt driver patch	“To Download and Install the Solaris Driver Patch” on page 25
125038-03 (or later)	The latest Solaris 10 for x64/x86 mpt driver patch	“To Download and Install the Solaris Driver Patch” on page 25

The required Solaris patches are available for download at:

<http://www.sun.com/sunsolve>

Solaris OS Driver Utilities

This section describes the HBA driver requirements and the available utilities for the Solaris OS.

HBA Driver

The latest HBA driver (mpt) for the Solaris OS is included with Solaris 10 Update 2 (minimum) and Solaris 9 Update 9 (minimum) OSs. You must also install a Solaris patch, as described in “[Downloading and Installing the Solaris OS Patches](#)” on [page 23](#).

Diagnostic Support

Solaris diagnostic support for the HBA is included in the SunVTS software beginning with version 6.3. The SunVTS software is included with the Solaris 10 11/06 OS. The SunVTS software is also available for download at:

<http://www.sun.com/oem/products/vts>

Firmware Upgrades

Use the Solaris `raidctl` utility to upgrade firmware. See the man page for this command or the Solaris documentation.

▼ To Download and Install the Solaris OS Recommended Patch Cluster

1. Log in to the host.
2. In a browser, go to www.sun.com/sunsolve.
3. Read the software license agreement and click the Accept button.
4. Under Support Resources, click Patches and Updates.
5. Under Downloads, click Recommended and Security Patches.
6. Read the software license agreement and click the Agree button.

7. In the OS Recommended & Patch Clusters List, find Solaris 10 in the OS column, and click the appropriate View Readme in the OS Recommended Clusters column.
8. Print or save the `CLUSTER_README` from the browser window.
9. Click the browser's Back button to return to the previous page.
10. In the Solaris 10 OS row, click HTTP in the Clusters column.
11. In the Save As dialog box, enter a destination directory for the patch cluster, and click the OK button.
12. Follow the procedure in the `CLUSTER_README` file to install the patches.

▼ To Download and Install the Solaris Driver Patch

1. Log in to the host.
2. In a browser, go to www.sun.com/sunsolve.
3. Read the software license agreement and click the Accept button.
4. Under Support Resources, click Patches and Updates.
5. Under PatchFinder, enter the patch numbers from [TABLE 3-1](#) for your specific Solaris release, and click the Find Patch button.
6. Print or save the patch instructions from the browser window.
7. Click the HTTP link in [Download Patch (*nnn,nnn* bytes) HTTP].
8. In the Save As dialog box, enter a destination directory for the patch, and click the OK button.

Downloading and Installing the Linux Driver and Firmware

Consult the Sun hardware platform document to determine which Linux releases are supported on your specific host platform.

Linux Driver and Utilities

The Linux drivers required to run this HBA with the Linux OS are available for download at the Sun designated page at:

<http://www.lsillogic.com/support/sun>

Consult the Sun hardware platform documentation to determine which Linux releases are supported on each specific platform.

▼ To Download and Install the Linux Driver

1. Log in to the host.
2. In a browser, go to www.lsillogic.com/support/sun.
3. Click to select# SG-XPCI8SAS-E-Z.
4. Click to select and download the Linux driver that is supported by the Linux release (Red Hat Enterprise Linux or SuSE Linux Enterprise Server) on your hardware platform.
5. Click to select and download the corresponding Readme file for the Linux driver, and follow the instructions in the Readme to complete the driver installation.

▼ To Download and Update the Linux Firmware

1. Log in to the host.
2. In a browser, go to www.lsillogic.com/support/sun.
3. Click to select SG-XPCI8SAS-E-Z.
4. Under Utilities, click Linux to download the Linux utility program, `lsiutil`.
5. Under Firmware, click to download the firmware zip file and corresponding Readme file.
6. Unzip the firmware file and follow the instructions in the Readme file to update the firmware.

Downloading and Installing the Windows Server 2003 Driver and Firmware

Consult the Sun hardware platform document to determine which Windows releases are supported on your specific host platform.

Windows 2003 Server Driver and Utilities

The HBA device driver for Windows Server 2003 is available for download at the Sun designated web page at:

<http://www.lsillogic.com/support/sun>

Consult the Sun hardware platform documentation to determine which Windows releases are supported.

▼ To Download and Install the Windows Driver

1. Log in to the host.
2. In a browser, go to www.lsillogic.com/support/sun.
3. Click to select SG-XPCI8SAS-E-Z.
4. Click to select and download the specific Windows driver that is supported by the Windows release on your hardware platform.
5. Click to select and download the corresponding Readme file for the Windows driver, and follow the instructions in the Readme file to complete the driver installation.

▼ To Download and Update the Windows Firmware

1. Log in to the host.
2. In a browser, go to www.lsillogic.com/support/sun.
3. Click to select SG-XPCI8SAS-E-Z.
4. Under Utilities, click Windows to download the Windows utility program, `lsiutil`, and to download the corresponding Readme file.

5. Under **Firmware**, click to download the firmware zip file and the corresponding Readme file.
6. **Unzip** the firmware file and follow the instructions in the Readme file to update the firmware.

HBA Specifications

The chapter contains the specifications for the Sun StorageTek PCI-X SAS 8-Channel HBA.

This appendix discusses the following topics:

- [“Physical Dimensions” on page 29](#)
- [“Connectors” on page 30](#)
- [“PCI Performance” on page 30](#)
- [“Electrical and Environmental Specifications” on page 31](#)

Physical Dimensions

PCI-X connection is made through the edge connector. The component height on the top and bottom of the board follows the PCI-X specifications.

TABLE A-1 Physical Dimensions

Dimension	Measurement
Length	6.6 inches/16.8 cm
Width	2.536 inches/6.4 cm
Low-profile mounting bracket	3.118 inches/7.9 cm
Standard height mounting bracket	4.725 inches/12 cm

Connectors

This section provides a description of the three connectors on the HBA. See [FIGURE A-1](#) for connector locations.

PCI-X connector — The PCI-X interface operates as a 32-bit or 64-bit DMA bus master. The connection is made through the internal connector, which is a +3.3 V type board edge connector. The signal definitions and pin numbers conform to the PCI-X specifications. See [FIGURE A-1](#) for connector locations.

SAS connectors — The SAS connections are SFF-8088 mini-SAS external right-angle connectors.

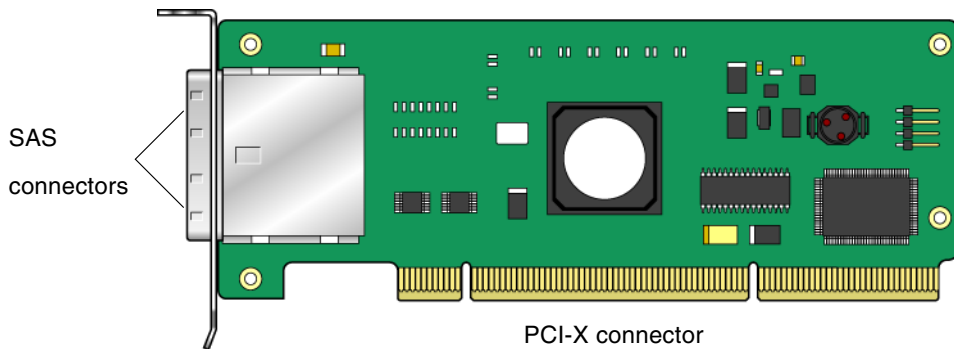


FIGURE A-1 Internal and External Connectors

PCI Performance

PCI features of the HBA include:

- Supports a 133-MHz, 64-bit PCI-X interface that does the following:
 - Operates up to 133 MHz PCI-X
 - Operates at 33 MHz or 66 MHz PCI
 - Supports 32-bit or 64-bit data transfers
 - Supports 32-bit or 64-bit addressing through Dual Address Cycles (DAC)
 - Provides a theoretical 1064 Mbytes/s PCI bandwidth
 - Complies with the PCI Local Bus Specification, revision 3.0
 - Complies with the PCI-X Addendum to the PCI Local Bus Specification, revision 2.0

- Complies with the PCI Bus Power Management Interface Specification, revision 1.2
- Complies with the PC2001 Specification
- Provides high throughput and low CPU utilization to offload the host processor
- Presents a single electrical load to the PCI Bus
- Reduces Interrupt Service Routine (ISR) overhead with interrupt coalescing
- Supports 32-bit or 64-bit data bursts with variable burst lengths
- Supports the PCI Cache Line Size register
- Supports the PCI Memory Write and Invalidate, Memory Read Line, and Memory Read Multiple commands
- Supports the PCI-X Memory Read Dword, Split Completion, Memory Read Block, and Memory Write Block commands
- Supports 16 PCI-X Split Transaction cycles
- Supports backward compatibility with previous revisions of the PCI specification
- Provides a full 32-bit or 64-bit PCI-X DMA bus master

Electrical and Environmental Specifications

The design and implementation of the HBA minimizes electromagnetic emissions, susceptibility to radio frequency energy, and the effects of electrostatic discharge. The board carries the CE mark, C-Tick mark, Canadian Compliance Statement, Korean MIC, Taiwan BSMI, Japan VCCI, FCC Class B, and is marked with the FCC Self-Certification logo. The board also meets the requirements of CISPR Class B.

Electrical Characteristics

[TABLE A-2](#) lists the maximum power requirements for the HBA under normal operation.

TABLE A-2 Maximum Power Requirements

PCI-X +3.30 V	Power	Operating Range
0.97 A	7.5 W	0 °C to 60 °C

The PCI-X PRSNT1# and PRSNT2# pins are set to indicate 7.5W maximum configuration at board build time.

Thermal and Atmospheric Characteristics

TABLE A-3 HBA Temperature and Humidity Ranges

Measure	Parameters
Temperature range	0°C to 60°C (32°F to 140°F) (dry bulb)
Relative humidity range	5% to 90% noncondensing
Maximum dew point temperature	32°C (89.6°F)
Storage and transit temperature range	-40°C to +105°C (-40°F to 221°F) (dry bulb)
Storage and Transit humidity range	5% to 90% noncondensing

Safety Characteristics

The HBA meets or exceeds the requirements of UL flammability rating 94V-0. Each bare board is marked with the supplier's name or trademark, type, and UL flammability rating. Because these boards are installed in a PCI or PCI-X bus slot, all voltages are below the SELV 42.4 V limit.

Declaration of Conformity, Regulatory Compliance, and Safety Statements

This appendix contains the following information that applies to the Sun StorageTek PCI-X SAS 8-Channel HBA:

- [“Declaration of Conformity” on page 35](#)
- [“Safety Agency Compliance Statements” on page 37](#)
- [“Regulatory Compliance Statements” on page 49](#)

Declaration of Conformity

Compliance Model Number: **SAS3801X**
Product Family Name: **Sun StorageTek PCI-X SAS 8-Channel Host Bus Adapter**

EMC

USA—FCC Class B

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This equipment may not cause harmful interference.
2. This equipment must accept any interference that may cause undesired operation.

European Union

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

As Telecommunication Network Equipment (TNE) in Both Telecom Centers and Other Than Telecom Centers per (as applicable):

EN 300-386 V.1.3.2 (2003-05) Required Limits:

EN 55022:1994 +A1:1995 +A2:1997	Class B
EN 61000-3-2:2000	Pass
EN 61000-3-3:1995 +A1:2000	Pass
EN61000-4-2	6 kV (Direct), 8 kV (Air)
EN61000-4-3	3 V/m 80-1000MHz, 10 V/m 800-960 MHz, and 1400-2000 MHz
EN61000-4-4	1 kV AC and DC Power Lines, 0.5 kV Signal Lines
EN61000-4-5	2 kV AC Line-Gnd, 1 kV AC Line-Line and Outdoor Signal Lines, 0.5 kV Indoor Signal Lines > 10m
EN61000-4-6	3 V
EN61000-4-11	Pass

As Information Technology Equipment (ITE) Class B per (as applicable):

EN55022:1998/CISPR22:1997	Class B
EN 61000-3-2:2000	Pass
EN 61000-3-3:1995 +A1:2000	Pass
EN 55024:1998 +A1:2001 +A2:2003 Required Limits:	
EN61000-4-2	4 kV (Direct), 8 kV (Air)
EN61000-4-3	3 V/m
EN61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
EN61000-4-5	1 kV AC Line-Line and Outdoor Signal Lines, 2 kV AC Line-Gnd, 0.5 kV DC Power Lines
EN61000-4-6	3 V
EN61000-4-8	1 A/m
EN61000-4-11	Pass

Safety: This equipment complies with the following requirements of the Low Voltage Directive 73/23/EEC:

EC Type Examination Certificates:

EN 60950-1:2001, 1st Edition	TÜV Rheinland Certificate No. xxxxxxxxxxxx
IEC 60950-1:2001, 1st Edition	CB Scheme Certificate No. xxxxxxxxxxxx
Evaluated to all CB Countries	
UL and cUL/CSA 60950-1:2001, CSA C22.2 No. 60950-00	File: (UL File No.) Vol. Sec.

Supplementary Information: This product was tested and complies with all the requirements for the CE Mark. This equipment complies with the Restriction of Hazardous Substances (RoHS) directive 2002/95/EC.

/S/
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DATE

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DATE

Safety Agency Compliance Statements

Read this section before beginning any procedure. The following text provides safety precautions to follow when installing a Sun Microsystems product.

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols may appear in this book:



Caution – There is a risk of personal injury and equipment damage. Follow the instructions.



Caution – Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.



Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

Depending on the type of power switch your device has, one of the following symbols may be used:



On – Applies AC power to the system.



Off – Removes AC power from the system.



Standby – The On/Standby switch is in the standby position.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems is not responsible for regulatory compliance of a modified Sun product.

Placement of a Sun Product



Caution – Do not block or cover the openings of your Sun product. Never place a Sun product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Sun product.

Noise Level

In compliance with the requirements defined in DIN 45635 Part 1000, the workplace-dependent noise level of this product is less than 70 db(A).

SELV Compliance

Safety status of I/O connections comply to SELV requirements.

Power Cord Connection



Caution – Sun products are designed to work with power systems having a grounded neutral (grounded return for DC-powered products). To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.



Caution – Not all power cords have the same current ratings. Do not use the power cord provided with your equipment for any other products or use. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.



注意 – 添付の電源コードを他の装置や用途に使用しない
添付の電源コードは本装置に接続し、使用することを目的として設計され、その安全性が確認されているものです。決して他の装置や用途に使用しないでください。火災や感電の原因となる恐れがあります。

The following caution applies only to devices with a Standby power switch:



Caution – The power switch of this product functions as a standby type device only. The power cord serves as the primary disconnect device for the system. Be sure to plug the power cord into a grounded power outlet that is nearby the system and is readily accessible. Do not connect the power cord when the power supply has been removed from the system chassis.

The following caution applies only to devices with multiple power cords:



Caution – For products with multiple power cords, all power cords must be disconnected to completely remove power from the system.

Battery Warning



Caution – There is danger of explosion if batteries are mishandled or incorrectly replaced. On systems with replaceable batteries, replace only with the same manufacturer and type or equivalent type recommended by the manufacturer per the instructions provided in the product service manual. Do not disassemble batteries or attempt to recharge them outside the system. Do not dispose of batteries in fire. Dispose of batteries properly in accordance with the manufacturer's instructions and local regulations. Note that on Sun CPU boards, there is a lithium battery molded into the real-time clock. These batteries are not customer replaceable parts.

System Unit Cover

You must remove the cover of your Sun computer system unit to add cards, memory, or internal storage devices. Be sure to replace the cover before powering on your computer system.



Caution – Do not operate Sun products without the cover in place. Failure to take this precaution may result in personal injury and system damage.

Rack System Warning

The following warnings apply to Racks and Rack Mounted systems.



Caution – For safety, equipment should always be loaded from the bottom up. That is, install the equipment that will be mounted in the lowest part of the rack first, then the next higher systems, etc.



Caution – To prevent the rack from tipping during equipment installation, the anti-tilt bar on the rack must be deployed.



Caution – To prevent extreme operating temperature within the rack insure that the maximum temperature does not exceed the product's ambient rated temperatures.



Caution – To prevent extreme operating temperatures due to reduced airflow consideration should be made to the amount of air flow that is required for a safe operation of the equipment.

Laser Compliance Notice

Sun products that use laser technology comply with Class 1 laser requirements.

Class 1 Laser Product
Luokan 1 Laserlaitte
Klasse 1 Laser Apparat
Laser Klasse 1

CD and DVD Devices

The following caution applies to CD, DVD, and other optical devices.



Caution – Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Conformité aux normes de sécurité

Veillez lire attentivement cette section avant de commencer. Ce texte traite des mesures de sécurité qu'il convient de prendre pour l'installation d'un produit Sun Microsystems.

Mesures de sécurité

Pour votre sécurité, nous vous recommandons de suivre scrupuleusement les mesures de sécurité ci-dessous lorsque vous installez votre matériel:

- Suivez tous les avertissements et toutes les instructions inscrites sur le matériel.
- Assurez-vous que la tension et la fréquence de votre source d'alimentation correspondent à la tension et à la fréquence indiquées sur l'étiquette de la tension électrique nominale du matériel
- N'introduisez jamais d'objets quels qu'ils soient dans les ouvertures de l'équipement. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet étranger conducteur risque de produire un court-circuit pouvant présenter un risque d'incendie ou de décharge électrique, ou susceptible d'endommager le matériel.

Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés:



Attention – Vous risquez d'endommager le matériel ou de vous blesser. Veuillez suivre les instructions.



Attention – Surfaces brûlantes. Evitez tout contact. Les surfaces sont brûlantes. Vous risquez de vous blesser si vous les touchez.



Attention – Tensions dangereuses. Pour réduire les risques de décharge électrique et de danger physique, observez les consignes indiquées.

Selon le type d'interrupteur marche/arrêt dont votre appareil est équipé, l'un des symboles suivants sera utilisé:



Marche – Met le système sous tension alternative.



Arrêt – Met le système hors tension alternative.



Veilleuse – L'interrupteur Marche/Veille est sur la position de veille.

Modification du matériel

N'apportez aucune modification mécanique ou électrique au matériel. Sun Microsystems décline toute responsabilité quant à la non-conformité éventuelle d'un produit Sun modifié.

Positionnement d'un produit Sun



Attention – Evitez d'obstruer ou de recouvrir les orifices de votre produit Sun. N'installez jamais un produit Sun près d'un radiateur ou d'une source de chaleur. Si vous ne respectez pas ces consignes, votre produit Sun risque de surchauffer et son fonctionnement en sera altéré.

Niveau de pression acoustique

Le niveau de pression acoustique du lieu de travail définie par la norme DIN 45 635 Part 1000 doit être au maximum de 70 db(A).

Conformité SELV

Le niveau de sécurité des connexions E/S est conforme aux normes SELV.

Connexion du cordon d'alimentation



Attention – Les produits Sun sont conçus pour fonctionner avec des systèmes d'alimentation équipés d'un conducteur neutre relié à la terre (conducteur neutre pour produits alimentés en CC). Pour réduire les risques de décharge électrique, ne branchez jamais les produits Sun sur une source d'alimentation d'un autre type. Contactez le gérant de votre bâtiment ou un électricien agréé si vous avez le moindre doute quant au type d'alimentation fourni dans votre bâtiment.



Attention – Tous les cordons d'alimentation ne présentent pas les mêmes caractéristiques électriques. Les cordons d'alimentation à usage domestique ne sont pas protégés contre les surtensions et ne sont pas conçus pour être utilisés avec des ordinateurs. N'utilisez jamais de cordon d'alimentation à usage domestique avec les produits Sun.

L'avertissement suivant s'applique uniquement aux systèmes équipés d'un interrupteur Veille:



Attention – L'interrupteur d'alimentation de ce produit fonctionne uniquement comme un dispositif de mise en veille. Le cordon d'alimentation constitue le moyen principal de déconnexion de l'alimentation pour le système. Assurez-vous de le brancher dans une prise d'alimentation mise à la terre près du système et facile d'accès. Ne le branchez pas lorsque l'alimentation électrique ne se trouve pas dans le châssis du système.

L'avertissement suivant s'applique uniquement aux systèmes équipés de plusieurs cordons d'alimentation:



Attention – Pour mettre un système équipé de plusieurs cordons d'alimentation hors tension, il est nécessaire de débrancher tous les cordons d'alimentation.

Mise en garde relative aux batteries



Attention – Les batteries risquent d'exploser en cas de manipulation maladroite ou de remplacement incorrect. Pour les systèmes dont les batteries sont remplaçables, effectuez les remplacements uniquement selon le modèle du fabricant ou un modèle équivalent recommandé par le fabricant, conformément aux instructions fournies dans le manuel de service du système. N'essayez en aucun cas de démonter les batteries, ni de les recharger hors du système. Ne les jetez pas au feu. Mettez-les au rebut selon les instructions du fabricant et conformément à la législation locale en vigueur. Notez que sur les cartes processeur de Sun, une batterie au lithium a été moulée dans l'horloge temps réel. Les batteries ne sont pas des pièces remplaçables par le client.



Attention – Afin d'éviter que le rack ne penche pendant l'installation du matériel, tirez la barre anti-basculement du rack.



Attention – Pour éviter des températures de fonctionnement extrêmes dans le rack, assurez-vous que la température maximale ne dépasse pas la fourchette de températures ambiantes du produit déterminée par le fabricant.



Attention – Afin d'empêcher des températures de fonctionnement extrêmes provoquées par une aération insuffisante, assurez-vous de fournir une aération appropriée pour un fonctionnement du matériel en toute sécurité

Couvercle de l'unité

Pour ajouter des cartes, de la mémoire ou des périphériques de stockage internes, vous devez retirer le couvercle de votre système Sun. Remettez le couvercle supérieur en place avant de mettre votre système sous tension.



Attention – Ne mettez jamais des produits Sun sous tension si leur couvercle supérieur n'est pas mis en place. Si vous ne prenez pas ces précautions, vous risquez de vous blesser ou d'endommager le système.

Avis de conformité des appareils laser

Les produits Sun qui font appel aux technologies lasers sont conformes aux normes de la classe 1 en la matière.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

Mise en garde relative au système en rack

La mise en garde suivante s'applique aux racks et aux systèmes montés en rack.



Attention – Pour des raisons de sécurité, le matériel doit toujours être chargé du bas vers le haut. En d'autres termes, vous devez installer, en premier, le matériel qui doit se trouver dans la partie la plus inférieure du rack, puis installer le matériel sur le niveau suivant, etc.



Périphériques CD et DVD

L'avertissement suivant s'applique aux périphériques CD, DVD et autres périphériques optiques:

Attention – L'utilisation de contrôles et de réglages ou l'application de procédures autres que ceux spécifiés dans le présent document peuvent entraîner une exposition à des radiations dangereuses.

Einhaltung sicherheitsbehördlicher Vorschriften

Lesen Sie vor dem Ausführen von Arbeiten diesen Abschnitt. Im folgenden Text werden Sicherheitsvorkehrungen beschrieben, die Sie bei der Installation eines Sun Microsystems-Produkts beachten müssen.

Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz bei der Installation des Geräts die folgenden Sicherheitsvorkehrungen:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Stellen Sie sicher, dass Spannung und Frequenz der Stromversorgung den Nennleistungen auf dem am Gerät angebrachten Etikett entsprechen.
- Führen Sie niemals Fremdobjekte in die Öffnungen am Gerät ein. Es können gefährliche Spannungen anliegen. Leitfähige Fremdobjekte können einen Kurzschluss verursachen, der einen Brand, Stromschlag oder Geräteschaden herbeiführen kann.

Symbole

Die Symbole in diesem Handbuch haben folgende Bedeutung:



Achtung – Gefahr von Verletzung und Geräteschaden. Befolgen Sie die Anweisungen.



Achtung – Heiße Oberfläche. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.



Achtung – Gefährliche Spannungen. Befolgen Sie die Anweisungen, um Stromschläge und Verletzungen zu vermeiden.

Je nach Netzschaltertyp an Ihrem Gerät kann eines der folgenden Symbole verwendet werden:



Ein – Versorgt das System mit Wechselstrom.



Aus – Unterbricht die Wechselstromzufuhr zum Gerät.



Wartezustand – Der Ein-/Standby-Netzschalter befindet sich in der Standby-Position.

Modifikationen des Geräts

Nehmen Sie keine elektrischen oder mechanischen Gerätemodifikationen vor. Sun Microsystems ist für die Einhaltung der Sicherheitsvorschriften von modifizierten Sun-Produkten nicht haftbar.

Aufstellung von Sun-Geräten



Achtung – Geräteöffnungen Ihres Sun-Produkts dürfen nicht blockiert oder abgedeckt werden. Sun-Geräte sollten niemals in der Nähe von Heizkörpern oder Heißluftklappen aufgestellt werden. Die Nichtbeachtung dieser Richtlinien kann Überhitzung verursachen und die Zuverlässigkeit Ihres Sun-Geräts beeinträchtigen.

Lautstärke

Gemäß den in DIN 45 635 Teil 1000 definierten Vorschriften beträgt die arbeitsplatzbedingte Lautstärke dieses Produkts weniger als 70 dB(A).

SELV-Konformität

Der Sicherheitsstatus der E/A-Verbindungen entspricht den SELV-Anforderungen.

Anschluss des Netzkabels



Achtung – Sun-Geräte sind für Stromversorgungssysteme mit einem geerdeten neutralen Leiter (geerdeter Rückleiter bei gleichstrombetriebenen Geräten) ausgelegt. Um die Gefahr von Stromschlägen zu vermeiden, schließen Sie das Gerät niemals an andere Stromversorgungssysteme an. Wenden Sie sich an den zuständigen Gebäudeverwalter oder an einen qualifizierten Elektriker, wenn Sie nicht sicher wissen, an welche Art von Stromversorgungssystem Ihr Gebäude angeschlossen ist.



Achtung – Nicht alle Netzkabel verfügen über die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastschutz und sind daher für Computersysteme nicht geeignet. Verwenden Sie bei Ihrem Sun-Produkt keine Haushalts-Verlängerungskabel.

Die folgende Warnung gilt nur für Geräte mit Standby-Netzschalter:



Achtung – Beim Netzschalter dieses Geräts handelt es sich nur um einen Ein-/Standby-Schalter. Zum völligen Abtrennen des Systems von der Stromversorgung dient hauptsächlich das Netzkabel. Stellen Sie sicher, dass das Netzkabel an eine frei zugängliche geerdete Steckdose in der Nähe des Systems angeschlossen ist. Schließen Sie das Stromkabel nicht an, wenn die Stromversorgung vom Systemchassis entfernt wurde.

Die folgende Warnung gilt nur für Geräte mit mehreren Netzkabeln:



Achtung – Bei Produkten mit mehreren Netzkabeln müssen alle Netzkabel abgetrennt werden, um das System völlig von der Stromversorgung zu trennen.

Warnung bezüglich Batterien



Achtung – Bei unsachgemäßer Handhabung oder nicht fachgerechtem Austausch der Batterien besteht Explosionsgefahr. Verwenden Sie bei Systemen mit austauschbaren Batterien ausschließlich Ersatzbatterien desselben Typs und Herstellers bzw. einen entsprechenden, vom Hersteller gemäß den Anweisungen im Service-Handbuch des Produkts empfohlenen Batterietyp. Versuchen Sie nicht, die Batterien auszubauen oder außerhalb des Systems wiederaufzuladen. Werfen Sie die Batterien nicht ins Feuer. Entsorgen Sie die Batterien entsprechend den Anweisungen des Herstellers und den vor Ort geltenden Vorschriften. CPU-Karten von Sun verfügen über eine Echtzeituhr mit integrierter Lithiumbatterie. Diese Batterie darf nur von einem qualifizierten Servicetechniker ausgetauscht werden.

Gehäuseabdeckung

Sie müssen die Abdeckung Ihres Sun-Computersystems entfernen, um Karten, Speicher oder interne Speichergeräte hinzuzufügen. Bringen Sie vor dem Einschalten des Systems die Gehäuseabdeckung wieder an.



Achtung – Nehmen Sie Sun-Geräte nicht ohne Abdeckung in Betrieb. Die Nichtbeachtung dieses Warnhinweises kann Verletzungen oder Geräteschaden zur Folge haben.

Warnungen bezüglich in Racks eingebauter Systeme

Die folgenden Warnungen gelten für Racks und in Racks eingebaute Systeme:



Achtung – Aus Sicherheitsgründen sollten sämtliche Geräte von unten nach oben in Racks eingebaut werden. Installieren Sie also zuerst die Geräte, die an der untersten Position im Rack eingebaut werden, gefolgt von den Systemen, die an nächsthöherer Stelle eingebaut werden, usw.



Achtung – Verwenden Sie beim Einbau den Kippschutz am Rack, um ein Umkippen zu vermeiden.



Achtung – Um extreme Betriebstemperaturen im Rack zu vermeiden, stellen Sie sicher, dass die Maximaltemperatur die Nennleistung der Umgebungstemperatur für das Produkt nicht überschreitet



Achtung – Um extreme Betriebstemperaturen durch verringerte Luftzirkulation zu vermeiden, sollte die für den sicheren Betrieb des Geräts erforderliche Luftzirkulation eingesetzt werden.

Hinweis zur Laser-Konformität

Sun-Produkte, die die Laser-Technologie verwenden, entsprechen den Laser-Anforderungen der Klasse 1.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

CD- und DVD-Geräte

Die folgende Warnung gilt für CD-, DVD- und andere optische Geräte:



Achtung – Die hier nicht aufgeführte Verwendung von Steuerelementen, Anpassungen oder Ausführung von Vorgängen kann eine gefährliche Strahlenbelastung verursachen.

Normativas de seguridad

Lea esta sección antes de realizar cualquier operación. En ella se explican las medidas de seguridad que debe tomar al instalar un producto de Sun Microsystems.

Medidas de seguridad

Para su protección, tome las medidas de seguridad siguientes durante la instalación del equipo:

- Siga todos los avisos e instrucciones indicados en el equipo.
- Asegúrese de que el voltaje y frecuencia de la fuente de alimentación coincidan con el voltaje y frecuencia indicados en la etiqueta de clasificación eléctrica del equipo.
- No introduzca objetos de ningún tipo por las rejillas del equipo, ya que puede quedar expuesto a voltajes peligrosos. Los objetos conductores extraños pueden producir cortocircuitos y, en consecuencia, incendios, descargas eléctricas o daños en el equipo.

Símbolos

En este documento aparecen los siguientes símbolos:



Precaución – Existe el riesgo de que se produzcan lesiones personales y daños en el equipo. Siga las instrucciones.



Precaución – Superficie caliente. Evite todo contacto. Las superficies están calientes y pueden causar lesiones personales si se tocan.



Precaución – Voltaje peligroso. Para reducir el riesgo de descargas eléctricas y lesiones personales, siga las instrucciones.

En función del tipo de interruptor de alimentación del que disponga el dispositivo, se utilizará uno de los símbolos siguientes:



Encendido – Suministra alimentación de CA al sistema.



Apagado – Corta la alimentación de CA del sistema.



Espera – El interruptor de encendido/espera está en la posición de espera.

Modificaciones en el equipo

No realice modificaciones de tipo mecánico ni eléctrico en el equipo. Sun Microsystems no se hace responsable del cumplimiento de normativas en caso de que un producto Sun se haya modificado.

Colocación de un producto Sun



Precaución – No obstruya ni tape las rejillas del producto Sun. Nunca coloque un producto Sun cerca de radiadores ni fuentes de calor. Si no sigue estas indicaciones, el producto Sun podría sobrecalentarse y la fiabilidad de su funcionamiento se vería afectada.

Nivel de ruido

De conformidad con los requisitos establecidos en el apartado 1000 de la norma DIN 45635, el nivel de ruido en el lugar de trabajo producido por este producto es menor de 70 db(A).

Cumplimiento de la normativa para instalaciones SELV

Las condiciones de seguridad de las conexiones de entrada y salida cumplen los requisitos para instalaciones SELV (del inglés *Safe Extra Low Voltage*, voltaje bajo y seguro).

Conexión del cable de alimentación



Precaución – Los productos Sun se han diseñado para funcionar con sistemas de alimentación que cuenten con un conductor neutro a tierra (con conexión a tierra de regreso para los productos con alimentación de CC). Para reducir el riesgo de descargas eléctricas, no conecte ningún producto Sun a otro tipo de sistema de alimentación. Póngase en contacto con el encargado de las instalaciones de su empresa o con un electricista cualificado en caso de que no esté seguro del tipo de alimentación del que se dispone en el edificio.



Precaución – No todos los cables de alimentación tienen la misma clasificación eléctrica. Los alargadores de uso doméstico no cuentan con protección frente a sobrecargas y no están diseñados para su utilización con sistemas informáticos. No utilice alargadores de uso doméstico con el producto Sun.

La siguiente medida solamente se aplica a aquellos dispositivos que dispongan de un interruptor de alimentación de espera:



Precaución – El interruptor de alimentación de este producto funciona solamente como un dispositivo de espera. El cable de alimentación hace las veces de dispositivo de desconexión principal del sistema. Asegúrese de que conecta el cable de alimentación a una toma de tierra situada cerca del sistema y de fácil acceso. No conecte el cable de alimentación si la unidad de alimentación no se encuentra en el bastidor del sistema.

La siguiente medida solamente se aplica a aquellos dispositivos que dispongan de varios cables de alimentación:



Precaución – En los productos que cuentan con varios cables de alimentación, debe desconectar todos los cables de alimentación para cortar por completo la alimentación eléctrica del sistema.

Advertencia sobre las baterías



Precaución – Si las baterías no se manipulan o reemplazan correctamente, se corre el riesgo de que estallen. En los sistemas que cuentan con baterías reemplazables, reemplácelas sólo con baterías del mismo fabricante y el mismo tipo, o un tipo equivalente recomendado por el fabricante, de acuerdo con las instrucciones descritas en el manual de servicio del producto. No desmonte las baterías ni intente recargarlas fuera del sistema. No intente deshacerse de las baterías echándolas al fuego. Deshágase de las baterías correctamente de acuerdo con las instrucciones del fabricante y las normas locales. Tenga en cuenta que en las placas CPU de Sun, hay una batería de litio incorporada en el reloj en tiempo real. Los usuarios no deben reemplazar este tipo de baterías.

Cubierta de la unidad del sistema

Debe extraer la cubierta de la unidad del sistema informático Sun para instalar tarjetas, memoria o dispositivos de almacenamiento internos. Vuelva a colocar la cubierta antes de encender el sistema informático.



Precaución – No ponga en funcionamiento los productos Sun que no tengan colocada la cubierta. De lo contrario, puede sufrir lesiones personales y ocasionar daños en el sistema.

Advertencia sobre el sistema en bastidor

Las advertencias siguientes se aplican a los sistemas montados en bastidor y a los propios bastidores.



Precaución – Por seguridad, siempre deben montarse los equipos de abajo arriba. A saber, primero debe instalarse el equipo que se situará en el bastidor inferior; a continuación, el que se situará en el siguiente nivel, etc.



Precaución – Para evitar que el bastidor se vuelque durante la instalación del equipo, debe extenderse la barra antivolcado del bastidor.



Precaución – Para evitar que se alcance una temperatura de funcionamiento extrema en el bastidor, asegúrese de que la temperatura máxima no sea superior a la temperatura ambiente establecida como adecuada para el producto.



Precaución – Para evitar que se alcance una temperatura de funcionamiento extrema debido a una circulación de aire reducida, debe considerarse la magnitud de la circulación de aire requerida para que el equipo funcione de forma segura.

Aviso de cumplimiento de la normativa para la utilización de láser

Los productos Sun que utilizan tecnología láser cumplen los requisitos establecidos para los productos láser de clase 1.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

Dispositivos de CD y DVD

La siguiente medida se aplica a los dispositivos de CD y DVD, así como a otros dispositivos ópticos:



Precaución – La utilización de controles, ajustes o procedimientos distintos a los aquí especificados puede dar lugar a niveles de radiación peligrosos.

Nordic Lithium Battery Cautions

Norge



Advarsel – Litiumbatteri — Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

Sverige



Varning – Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Danmark



Advarsel! – Litiumbatteri — Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Suomi



Varoitus – Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Class B Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

ICES-003 Class B Notice - Avis NMB-003, Classe B

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

VCCI 基準について

クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

クラス B VCCI 基準について

クラス B VCCI の表示  があるワークステーションおよびオプション製品は、クラス B 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

BSMI Class A Notice

The following statement is applicable to products shipped to Taiwan and marked as Class A on the product compliance label.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。



T33012

CCC Class A Notice

The following statement is applicable to products shipped to China and marked with "Class A" on the product's compliance label.

以下声明适用于运往中国且其认证标志上注有 "Class A" 字样的产品。

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。
在这种情况下，可能需要用户 对其干扰采取切实可行的措施。



GOST-R Certification Mark

