



# Sun StorageTek™ PCI Express SAS 8-Channel Internal HBA Installation Guide

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For HBA Model SG-XPCIE8SAS-I-Z

Sun Microsystems, Inc.  
[www.sun.com](http://www.sun.com)

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# Preface

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This *Sun StorageTek™ PCI Express SAS 8-Channel Internal HBA Installation Guide* describes how to install the Sun StorageTek PCI Express SAS 8-Channel Internal HBA. This manual is intended for experienced system administrators.

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## How This Book Is Organized

- [Chapter 1](#) describes the features of the Sun StorageTek PCI Express SAS 8-Channel Internal HBA.
- [Chapter 2](#) describes host platform and driver requirements for the HBA.
- [Chapter 3](#) explains how to install the SAS HBA and connect it to storage devices.

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# 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.
<b>AaBbCc123</b>	What you type, when contrasted with on-screen computer output	% <b>su</b> 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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*Sun StorageTek PCI Express SAS 8-Channel Internal HBA Installation Guide*, part number 820-4932-11





# Introduction

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This chapter provides an overview of the Sun StorageTek™ PCI Express SAS 8-Channel Internal HBA (SG-XPCIE8SAS-I-Z).

The SG-XPCIE8SAS-I-Z is a host bus adapter (HBA) in the form of a PCI Express card that can be delivered with a spectrum of Sun servers and workstations. As a disk controller, it is chosen because of its ability to create hardware RAID (Redundant Array of Inexpensive Disks) configurations that are faster than RAID configurations created with software.

This chapter contains the following sections:

- [“Features” on page 2](#)
- [“Performance” on page 3](#)
- [“Mirroring Your Boot Disk” on page 4](#)

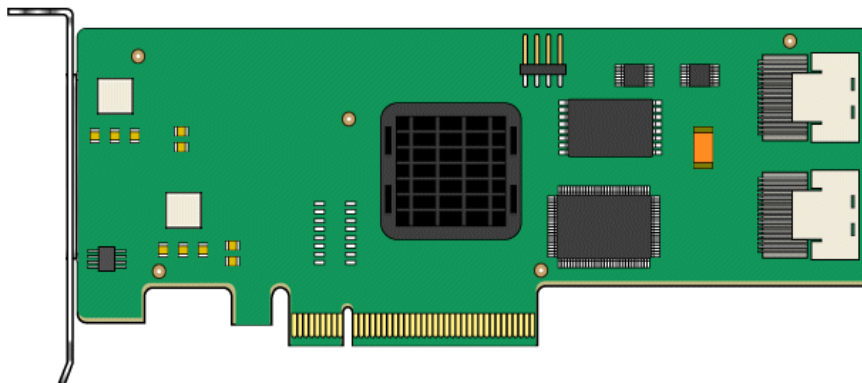
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# Features

The Sun StorageTek PCI Express SAS 8-Channel HBA (SG-XPCIE8SAS-I-Z) is a low-profile adapter that provides connectivity to a server's internal disks. The SG-XPCIE8SAS-I-Z provides eight-channel SAS connectivity for the Solaris™, Linux, and Windows OS.

A simplified view of the board is shown in [FIGURE 1-1](#).

**FIGURE 1-1** Sun StorageTek PCI Express SAS 8-Channel HBA



The SG-XPCIE8SAS-I-Z includes the following features:

- Has eight independent SAS channels that support both SAS and SATA disks.
- Has eight PCI Express physical layers (PHYs).
- Is capable of 3.0 Gbit/s SAS link rates and 3.0 Gbit/s SATA link rates.
- Provides field-programmable 2-MB flash ROM (contains BIOS, FCode, and firmware) for booting in a Sun SPARC or Sun x64 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.
- Provides configurable drive spin-up sequencing on a per-PHY basis.
- Simplifies cabling with a point-to-point, serial architecture.
- Provides a serial, point-to-point, enterprise-level storage interface.
- Is Restriction of Hazardous Substances (RoHS) 6 compliant.

The PCI Express interface is compliant with the PCI Express Specification, revision 1.0a. All PCI software is backward compliant with previous versions of the PCI Express specifications. The PCIe to SAS HBA interface is compatible with the ANSI Serial Attached SCSI Specification, revision 1.0 and the Serial ATA Specification, revision 1.0a.

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## Performance

The SG-XPCIE8SAS-I-Z HBA is based on LSI's 1068E chip.

The HBA can create hardware RAID volumes of types RAID 0, 1, or 1E. There are various ways you can create these volumes:

- For the Solaris, Linux, and Windows OS, you can use an LSI BIOS configuration utility to set up RAID volumes, *except* for servers with a SPARC processor. See [Mirroring Your Boot Disk](#), later in this chapter.
- For already-installed Linux and Windows OS, you can use the MSM (MegaRAID Storage Manager) program to set up and manage RAID volumes.
- For the Solaris OS, you can use the Solaris `raidctl` command to set up and manage RAID volumes, for all processors *including* SPARC processors.

The SG-XPCIE8SAS-I-Z HBA can create two and only two volumes. The two volumes can contain up to 12 disks total plus zero, one, or two hot spares (no more than 14 disks).

RAID 0 can have two to 10 striped disks.

RAID 1 can have two mirrored disks plus zero, one, or two hot spares. Only two disks are permitted in a RAID 1 mirror.

RAID 1E can have up to 12 mirrored disks plus zero, one, or two hot spares, if all disks are in one volume and there is no other volume. RAID 1E requires a minimum of three disks.

You can simultaneously have one volume of RAID 0 and another of either RAID 1 or 1E.

---

**Note** – The *Sun LSI 106x RAID User's Guide* (document number 820-4933) describes the different types of RAID volumes in detail. This guide can be found in the collection of documents for your server at <http://docs.sun.com>.

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The SG-XPCIE8SAS-I-Z can simultaneously address RAID volumes and individual disks that are not in RAID volumes.

# Mirroring Your Boot Disk

If you want to mirror your boot disk, you should create the RAID volume *before* you install your OS. There is an LSI RAID configuration utility you can use to do this. It is entered from the server's BIOS and can be used for any Linux, Solaris, or Windows operating system.

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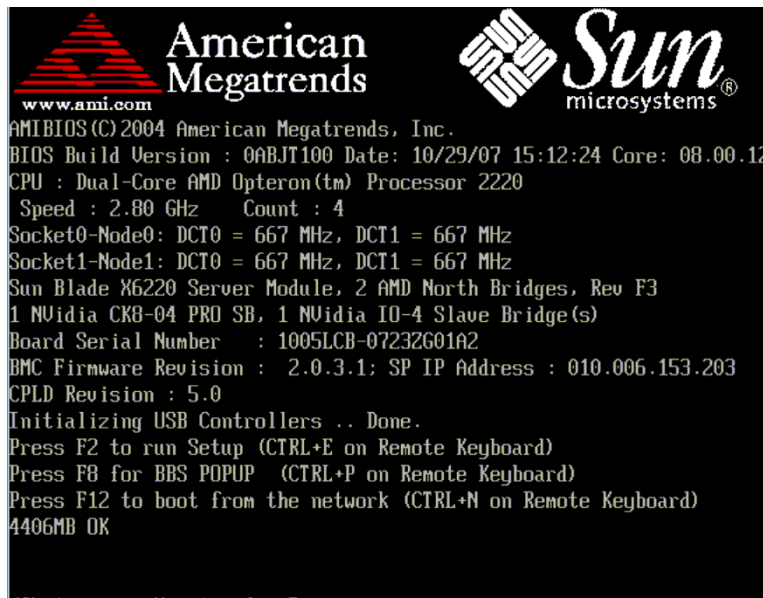
**Note** – If you want to migrate your boot disk to a RAID volume you create after installing the OS, you must save space at the end of the boot disk for this purpose.

---

## ▼ To Mirror Your Boot Disk

1. **Power off your server and then power it back on. The BIOS screen appears. Watch for the LSI Logic Corp. screen.**

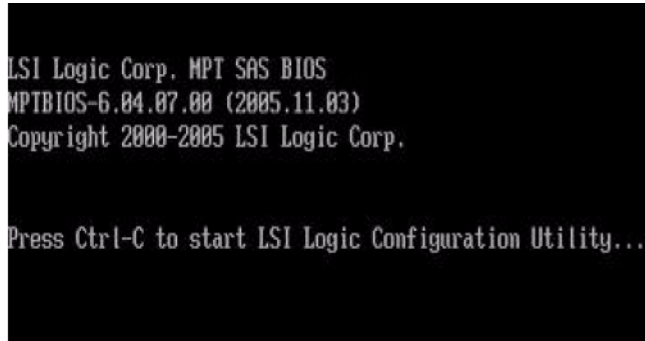
**FIGURE 1-2** Opening Screen of a Typical Server BIOS



Watch for the LSI  
Logic prompt to  
press Ctrl-C.

2. When the BIOS screen shows the LSI Logic Corp. message, press Ctrl-C to start the LSI Logic Configuration Utility (see [FIGURE 1-3](#)).

**FIGURE 1-3** BIOS Screen Showing LSI Logic Corp. Message



3. Follow the on-screen instructions to create a mirrored RAID.

You can choose between RAID 1 (two mirrored disks with zero, one, or two hot spares) or RAID 1E (three or more mirrored disks with zero, one, or two hot spares).

4. Exit the LSI RAID configuration utility.
5. Install your OS on this RAID volume.

## RAID Documentation

The LSI BIOS RAID configuration utility is described in detail in the *Sun LSI 106x RAID User's Guide* (820-4933), which is in the collection of documents for your server at <http://docs.sun.com>.

This guide also covers the use of the MegaRAID Storage Manager (MSM) for Linux and Windows operating systems, and the Solaris utility `raidctl`.



## Preparing to Use the SAS HBA

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This chapter describes the host platform and driver requirements for the SG-XPCIE8SAS-I-Z host bus adapter. It contains the following sections:

- “Host Platform Support” on page 7
  - “HBA Drivers” on page 8
- 

### Host Platform Support

The SG-XPCIE8SAS-I-Z HBA is supported by the platforms listed in [TABLE 2-1](#).

**TABLE 2-1** Host Platform Support for the SG-XPCIE8SAS-I-Z Host Bus Adapter

<b>Platform Type</b>	<b>Platform</b>
<b>Workstations</b>	Sun Ultra™ 40 M2 workstation
<b>Servers</b>	Sun Fire™ X4140 server
	Sun Fire X4150 server
	Sun Fire X4240 server
	Sun Fire X4250 server
	Sun Fire X4440 server
	Sun Fire X4450 server

---

# HBA Drivers

Your SG-XPCIE8SAS-I-Z adapter requires the correct drivers if it is to perform properly. The drivers you need depend on your OS, and can be found on the Tools & Drivers CD for your server.

There are various ways to make sure that you have the correct drivers:

- If you use the Sun Installation Assistant (SIA) to install a Linux or Windows OS, the correct drivers will *automatically* be installed for you.
- If you install a Linux or Windows OS manually, you need to obtain the drivers from the Tools & Drivers CD and install them yourself.
- If you install a Solaris OS, the drivers are included in the OS for Solaris 10 8/07 and later versions.

## The Tools & Drivers CD

A Tools & Drivers CD is delivered with your server.

You can also download an ISO image of the Tools & Drivers CD from the Sun web site.

## ▼ To Download a Tools & Drivers CD Image

TABLE 2-2 shows an active URL for the Tools & Drivers download site for each host platform.

**TABLE 2-2** URLs for Tools & Drivers CD Images

Host Platform	URL for Tools & Drivers CD
Sun Ultra 40 M2 workstation	<a href="http://www.sun.com/desktop/workstation/ultra40/downloads.jsp">http://www.sun.com/desktop/workstation/ultra40/downloads.jsp</a>
Sun Fire X4140 server	<a href="http://www.sun.com/servers/x64/x4140/downloads.jsp">http://www.sun.com/servers/x64/x4140/downloads.jsp</a>
Sun Fire X4150 server	<a href="http://www.sun.com/servers/x64/x4150/downloads.jsp">http://www.sun.com/servers/x64/x4150/downloads.jsp</a>
Sun Fire X4240 server	<a href="http://www.sun.com/servers/x64/x4240/downloads.jsp">http://www.sun.com/servers/x64/x4240/downloads.jsp</a>



**TABLE 2-2** URLs for Tools & Drivers CD Images

Host Platform	URL for Tools & Drivers CD
Sun Fire X4250 server	<a href="http://www.sun.com/servers/x64/x4250/downloads.jsp">http://www.sun.com/servers/x64/x4250/downloads.jsp</a>
Sun Fire X4440 server	<a href="http://www.sun.com/servers/x64/x4440/downloads.jsp">http://www.sun.com/servers/x64/x4440/downloads.jsp</a>
Sun Fire X4450 server	<a href="http://www.sun.com/servers/x64/x4450/downloads.jsp">http://www.sun.com/servers/x64/x4450/downloads.jsp</a>

1. **Open the web page for your host platform (see TABLE 2-2).**
2. **Pick the Tools & Drivers version you want and click Download.**
3. **Log in as requested.**

The Tools & Drivers download page opens for the version you selected.

4. **Download the package that you want.**

You can download an ISO image of the entire Tools & Drivers CD.

Alternatively, you can download only the drivers you want, such as `windows.zip` or `linux.zip`.

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**Note** – You can also obtain the current drivers from LSI’s web site. Go to: <http://www.lsilogic.com/support/sun> and click SG-XPCIE8SAS-I-Z.

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## Finding the Drivers You Need

Whether you are using a Tools & Drivers CD, a Tools & Drivers ISO image, or simply a downloaded zip file of drivers, you need to traverse the directory tree to locate the LSI drivers. For example:

```
linux/RAID/lsi/driver
```

```
windows/boot/RAID/lsi/32bit
```

```
windows/boot/RAID/lsi/64bit
```



## Installing and Connecting the SAS HBA

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This chapter describes how to install the Sun StorageTek PCI Express SAS 8-Channel HBA. The chapter contains the following sections:

- [“Observing Antistatic and Handling Precautions”](#) on page 11
  - [“Installing the SAS HBA”](#) on page 12
- 

### Observing Antistatic and Handling Precautions

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

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

- Leave the SAS 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 antistatic protection when handling the SAS HBA and observe proper antistatic grounding techniques.
- Hold the SAS HBA by the edge of the PCB or mounting bracket, not by the connectors.

- Place the SAS HBA on a properly grounded antistatic work surface pad when it is out of its protective antistatic bag.

---

## Installing the SAS HBA



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**Caution** – Refer to the service manual for your server or workstation for exact instructions on installing your HBA. Only generalized instructions for a typical server are provided here:

---

### ▼ To Unpack and Install the SAS HBA

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

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

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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 PCIe slot.**

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**Note** – If you intend to boot from a disk in a volume managed by this HBA, make sure that the card is in PCIe slot 0. For X4150 and X4250, it should be in slot 1.

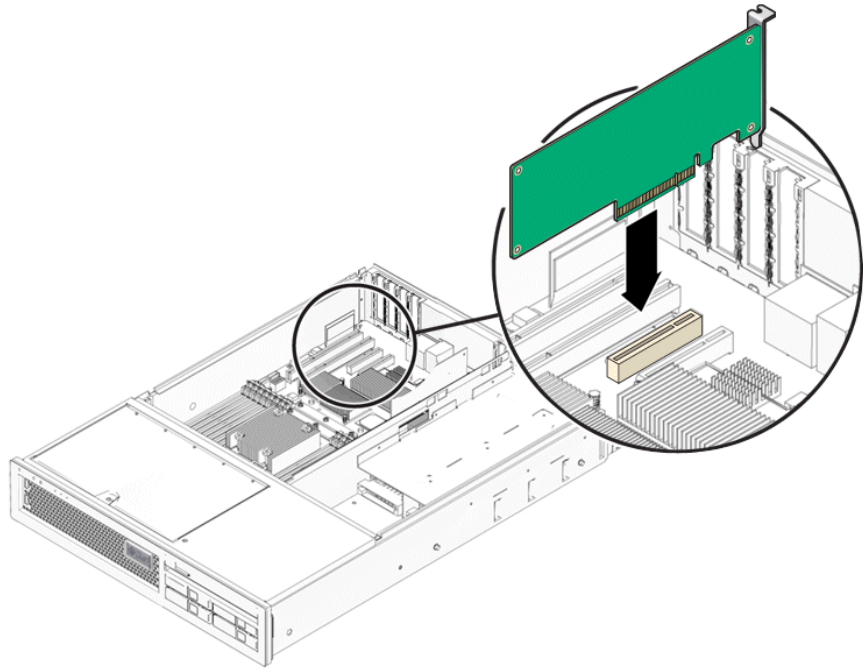
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Refer to the system's hardware documentation for information about mounting details, such as mounting holes, standoff locking or unlocking, and screws to secure the card.

6. **Align the SAS HBA to a PCIe slot and press down gently but firmly to seat the SAS HBA in the slot.**

**FIGURE 3-1** illustrates how to insert the SAS HBA in a PCIe slot in a typical server.

**FIGURE 3-1** Installing the SAS HBA into a PCIe Slot



7. Install the bracket screw, when present, or engage the system's retention mechanism to secure the SAS HBA to the system's chassis.
8. Connect the mini-SAS cables between the SAS HBA and the internal disks.
9. Replace the system's cover, and reconnect the power cords and any network cables.
10. Power on the system.

The SAS HBA hardware installation is complete.

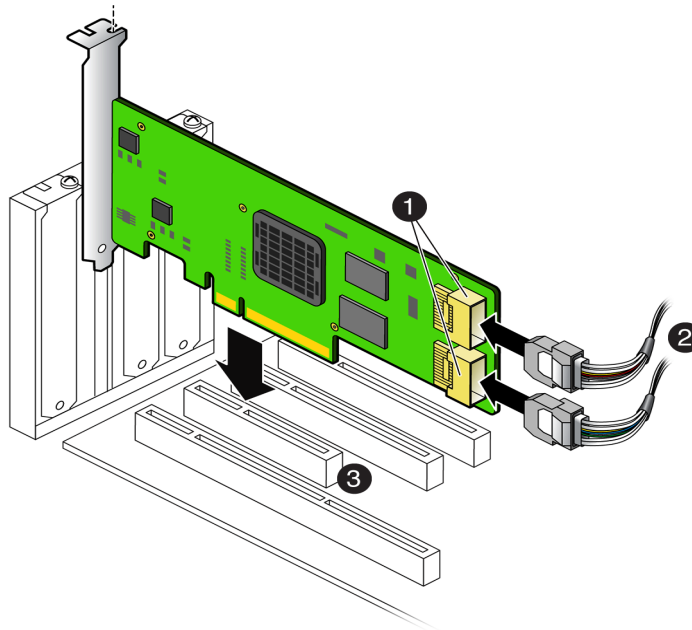
# Connecting the Disks

## SAS Connectors on the PCIe Card

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

[FIGURE 3-2](#) shows the location of the connectors on the SAS HBA.

**FIGURE 3-2** Connecting the Mini-SAS Cable to the SAS HBA Connector



### Figure Legend

- 
- 1 Mini-SAS x4 (SFF-8087) internal connectors with shell.  
The lower connector in [FIGURE 3-2](#), the one closest to the gold fingers, is labeled "Port 0, 0-3." The other connector in [FIGURE 3-2](#) is labeled "Port 1, 4-7."
  - 2 Mini-SAS x4 cables.
  - 3 A PCI Express x8 slot.
-

# Disk Connection Instructions



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**Caution** – Refer to the service manual for your server or workstation for exact instructions on connecting your HDDs. Only generalized instructions for a typical server are provided here:

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## Connecting HDDs in Servers With Eight Internal Disks

Most eight-disk servers come with two Mini-SAS x4 cables already attached to the HDD backplane. The unattached ends of both cables are free to attach to the SAS HBA. In some cases, the two x4 cables are bundled together, with the individual ends free.

To make the connections:

1. Orient the server so that it is right-side up and you are looking at its front, where the disk slots are.
2. Open the top cover of the server.
3. Take the free end of the cable that is attached to the disk backplane on the left-hand side (disks 0-3) and connect it to the Mini-SAS x4 connector labeled “Port 0, 0-3” in [FIGURE 3-2](#).
4. Take the free end of the cable that is attached to the disk backplane on the right-hand side (disks 4-7) and connect it to the Mini-SAS x4 connector labeled “Port 1, 4-7” in [FIGURE 3-2](#).

---

**Note** – When the SAS HBA is plugged into a PCI Express x8 slot, the Mini-SAS x4 cables cross over one another if they are connected correctly.

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## Connecting HDDs in Servers With Sixteen Internal Disks

Most sixteen-disk servers come with two Mini-SAS x4 cables bundled together. One is already attached to a SAS expander on the HDD backplane. The unattached end of that cable is free to attach to the SAS HBA.

A second cable is present, but it is tied down and should not be used for connecting to this LSI SAS HBA. It can be used for Intel Adaptec controllers, however.

To connect the free cable to the SAS HBA:

1. Orient the server so that it is right-side up and you are looking at its front, where the disk slots are.
2. Open the top cover of the server.
3. Take the free end of the cable that is attached to the disk backplane and is not tied down and connect it to *either* of the Mini-SAS x4 connectors shown in [FIGURE 3-2](#).

All 16 disks are available for RAID volumes. As explained in [“Performance” on page 3](#), there can be no more than 14 disks in RAID volumes. Therefore, at least two of the 16 disks will not be in volumes. The BIOS and OS will see them, however, whether or not they are in volumes.

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**Note** – To unplug a Mini-SAS x4 cable, squeeze the clip on the plug, then push the plug *in* before pulling it out.

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## SAS HBA Specifications

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The appendix contains the specifications for the Sun StorageTek PCI Express SAS 8-Channel HBA.

This appendix discusses the following topics:

- [“Physical Dimensions” on page 17](#)
- [“Connectors” on page 18](#)
- [“PCI Performance” on page 18](#)
- [“Electrical and Environmental Specifications” on page 19](#)

---

## Physical Dimensions

PCI Express connection is made through the edge connector. The component height on the top and bottom of the board follows the PCI Express specifications, as shown in [TABLE A-1](#).

**TABLE A-1** Physical Dimensions

Dimension	Board
Length	6.6 inches/16.8 cm
Width	2.713 inches/6.9 cm
Mounting bracket	3.118 inches/7.9 cm

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## Connectors

This section provides a description of the connectors on the SAS HBA.

**PCI Express connector** — The PCI Express interface has eight PCI Express lanes (in two connectors) which provide possible host-side maximum transmission and reception rates of up to 4.0 Gbytes/s.

**SAS/SATA connectors** — The SAS connectors are SFF-8087 mini-SAS x4 connectors.

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## PCI Performance

PCI performance features of the SAS HBA include:

- Provides eight PCI Express PHYs
- Supports x8, x4, and x1 link widths
- Supports serial, point-to-point interconnections between devices
- Supports lane reversal and polarity inversion
- Supports PCI Express Hot Plug
- Supports Power Management
  - Supports PCI Power Management 1.2
  - Supports Active State Power Management (ASPM), including the L0, L0s, L1 states, by placing links in a power-saving mode during times of no link activity
- Contains a replay buffer that preserves a copy of the data for retransmission in case a CRC error occurs
- Supports the PCI Express Advanced Error Reporting capabilities
- Provides quality of service (QOS) link configuration and arbitration policies
- Supports Traffic Class 0 and one virtual channel
- Supports Message Signaled Interrupts (both MSI and MSI-X) as well as INTx interrupt signaling for legacy PCI support
- Supports end-to-end CRC (ECRC) and Advanced Error Reporting

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# Electrical and Environmental Specifications

The design and implementation of the SAS 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 A, and is marked with the FCC Self-Certification logo. The board also meets the requirements of CISPR Class A.

## Electrical Characteristics

TABLE A-2 lists the maximum power requirements for the SAS HBA under normal operation.

**TABLE A-2** Maximum Power Requirements

PCI Express +12.0 V	Power	Operating Range
0.5 A	6.0 W	0 °C to 60 °C

# Thermal and Atmospheric Characteristics

**TABLE A-3** HBA Temperature and Humidity Ranges

<b>Measure</b>	<b>Parameters</b>
Temperature range	0°C to 60°C (32°F to 140°F) (dry bulb)
Relative humidity range	5% to 90% non condensing
Maximum dew point temperature	32°C (89.6°F)
Storage and transit temperature range	-45°C to +105°C (-49°F to 221°F) (dry bulb)
Storage and Transit humidity range	5% to 90% non condensing

## Safety Characteristics

The SAS 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 Express bus slot, all voltages are below the SELV 42.4 V limit.

# Declaration of Conformity, Regulatory Compliance, and Safety Statements

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

- [“Declaration of Conformity” on page 22](#)
- [“Safety Agency Compliance Statements” on page 23](#)
- [“Regulatory Compliance Statements” on page 40](#)

# Declaration of Conformity



## Declaration of Conformity

Compliance Model Number:	SAS3081XX
Product Family Name:	Sun StorageTek Host Bus Adapter, Sun StoreEdge PCIe SAS 8p Host Bus Adapter

### EMC

USA - FCC Class A

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):*

EN300-386 V.1.3.1 (09-2001) Required Limits:

EN55022/CISPR22	Class A
EN61000-3-2	Pa ss
EN61000-3-3	Pa ss
EN61000-4-2	8 kV (Direct), 15 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	Pa ss

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

EN55022:1998/CISPR22:1997 Class A

EN55024:1998 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	Pa ss
EN61000-3-2	Pa ss
EN61000-3-3	Pa ss

### Safety

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

EC Type Examination Certificates:

EN60950-1:2001	Provided by: Bay Area Compliance Lab Corp. Report number: R0607173-3, R606051-3
----------------	--

**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.

Dennis P. Symanski	DATE
Manager, Compliance Engineering	
Sun Microsystems, Inc.	
4150 Network Circle, MPK15-102	
Santa Clara, CA 95054, USA	
Tel: 650-786-3255	
Fax: 650-786-3723	

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# 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.

---



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**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.

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**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.

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### Laser Compliance Notice

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

Class 1 Laser Product  
Luokan 1 Laserlaite  
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.

---



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**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.

---



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**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.

---

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.

---

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.

---



**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

---

### 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 Laserlaitte  
Klasse 1 Laser Apparat  
Laser Klasse 1

### Périphériques CD et DVD

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



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**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.

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## 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 Fremdoobjekte in die Öffnungen am Gerät ein. Es können gefährliche Spannungen anliegen. Leitfähige Fremdoobjekte 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.

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

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

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

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### 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:



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**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.

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

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

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



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**Encendido** – Suministra alimentación de CA al sistema.

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**Apagado** – Corta la alimentación de CA del sistema.

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

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### 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



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**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.

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**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.

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



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**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.

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



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**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.

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#### Advertencia sobre las baterías



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**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.

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#### 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.



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**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.

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#### Advertencia sobre el sistema en bastidor

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



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**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.

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

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**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.

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**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.

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## 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.

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# 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.

## 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.

## 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。



D33012

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

