Intel® SAS Controller RS25GB008 Hardware User's Guide

Intel Order Number: G22860-001

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Preface

This is the primary hardware guide for the Intel® SAS Controller RS25GB008 which can be used to manage SAS and SATA disk drives. It contains installation instructions and specifications.

Audience

This document assumes that you have some familiarity with SAS controllers and related support devices. The people who benefit from this book are:

- Engineers who are designing an Intel® SAS Controller RS25GB008 for their system.
- Anyone installing an Intel® SAS Controller RS25GB008 in their system.

Organization

This document includes the following chapters and appendices:

- Chapter 1 provides a general overview of the Intel® SAS Controller RS25GB008.
- Chapter 2 describes the procedures for installing and configuring the SAS Controller.
- Chapter 3 provides the characteristics and technical specifications for the Intel® SAS Controller RS25GB008.
- Appendix A provides safety instructions to be observed during installation and assembly.
- Appendix B provides regulatory and certification information.

Table of Contents

List of Figures

List of Tables

1 Overview

The Intel® SAS Controller RS25GB008 is a high-performance, intelligent PCI Express* 2.0-compliant SAS/SATA II controller offers reliability and high performance. This is an ideal solution for the large capacity storage needs of mid to low-end servers and workstations for use by workgroups and departmental-sized organizations or individuals. Intel® SAS Controller RS25GB008 offers a cost-effective way to attach physical drives to a server for storage.

As the second generation PCI Express* storage adapters, the Intel® SAS Controller RS25GB008 address the growing demand for increased data throughput and scalability requirements across mid to low-end servers and workstations.

The SAS controller controls eight external 6-Gb/s SAS/SATA ports through two SFF-8088x4 Mini SAS connectors and allows the use of expanders to connect upto 1024 devices. Note that all expander features will not be available at product launch. For more information about the use of expanders, see the *ANSI SAS Standard, version 2.0 specification*.

SATA and SAS are serial, point-to-point, device interfaces that use simplified cabling, smaller connectors, lower pin counts, and lower power requirements than parallel SCSI.

Benefits of SAS and SATA

SAS is a serial, point-to-point, enterprise-level device interface that leverages the proven SCSI protocol set. SAS is a convergence of the advantages of SATA, SCSI, and FC, and is the future mainstay of the enterprise and high-end workstation storage markets. SAS offers a higher bandwidth per pin than parallel SCSI and improves signal and data integrity.

The SAS interface uses the proven SCSI command set to ensure reliable data transfers, while providing the connectivity and flexibility of point-to-point serial data transfers. The serial transmission of SCSI commands eliminates clock skew challenges. The SAS interface provides improved performance, simplified cabling, smaller connectors, lower pin count, and lower power requirements than parallel SCSI.

SAS controllers leverage a common electrical and physical connection interface that is compatible with Serial ATA technology. The SAS and SATA protocols use a thin, 7-wire connector instead of the 68-wire SCSI cable or 40-wire ATA cable. The SAS/SATA connector and cable are easier to manipulate, connect to smaller devices, and do not inhibit airflow. The point-to-point SATA architecture eliminates difficulties created by the legacy ATA master-slave architecture, while maintaining compatibility with existing ATA firmware.

Intel® SAS Controller RS25GB008

Intel® SAS Controller RS25GB008 integrates the latest enhancements in PCI Express® and SAS technology. The SAS controller supports medium to large capacity server storage applications by connecting a 5GT/s, 8-lane PCI Express bus with two external x4 SFF8088 connectors.

The SAS Controller is designed to fit various Intel® Server Boards and systems. For the most up-to-date support list, see the Compatibility section under the link for this Intel® SAS Controller at http://www.intel.com/support/go/motherboards/server/index.htm.

The SAS controller supports the SAS protocol as described in the *Serial Attached SCSI Standard, Version 2.0*. The controller also support the Serial ATA II (SATA II) protocol defined by the *Serial ATA Specification, Version 1.0a* and the *Serial ATA II: Extension to the Serial ATA Specification, Version 1.1*. SATA II is an extension to SATA 1.0a.

Protocol Support

Each port on the SAS controllers supports SAS devices, SATA II devices, or both using SSP, SMP, STP, and SATA II as follows:

- Serial SCSI Protocol (SSP) to enable communication with other SAS devices.
- SATA II Protocol to enable communication with other SATA II devices.
- Serial Management Protocol (SMP) to share topology management information with expanders.
- Serial Tunneling Protocol (STP) support for SATA II through expander interfaces..

Operating System Support

- Windows Server 2008* R2, Windows 7*, Windows Server 2003*, Windows Vista*, and Windows XP*
- Red Hat* Enterprise Linux 5.0 and 6.0
- SuSE* Linux Enterprise Server 10 and 11

The operating systems supported may not be supported by your server board. See the *Tested operating system list* for your server board at *http://www.intel.com/support/go/motherboards/server/index.htm*.

To make sure the SAS Controller support your operating system, see also the *Tested Hardware and Operating System List* for the Intel® SAS Controller RS25GB008.

Usability

- The card ships with both a standard and a low-profile bracket.
- Upto 6.0 Gb/s serial, point-to-point data transfer rates
- Support for non-disk devices and mixed capacity drives
- Upgradeable Flash ROM interface
- Allows for staggered spin up, hot-plug, and lower power consumption
- Allows mixed connections to SAS targets or SATA II targets

SAS/SATA Features of the LSI* LSISAS2308 Processor Chip

See "LSI* LSISAS2308 Processor Chip" for SAS/SATA features of the LSI* LSISAS2308 Processor Chip.

2 Intel® SAS Controller RS25GB008 Hardware Installation

Requirements

- Intel(R) SAS Controller RS25GB008
- A host system with an available x8 or x16 PCI-Express* slot
- Resource CD, which contains drivers and documentation
- SAS or SATA 6.0 hard drives

Note: *Intel Corporation strongly recommends using an uninterruptible power supply (UPS).*

Installing the SAS Controller

To install the SAS Controller, follow these steps:

1. Turn off the power to the system, all drives, enclosures, and system components. Remove the power cord(s).
2. Remove the server system cover. For instructions, see the server system documentation.
3. If necessary, change the bracket on the SAS controller to fit the height of the server system.
4. Install the SAS controller into an available server system x8 or x16 PCI-Express* slot (see Figure 1). To locate an appropriate slot and for instructions on installing an add-in card, see your server system documentation.

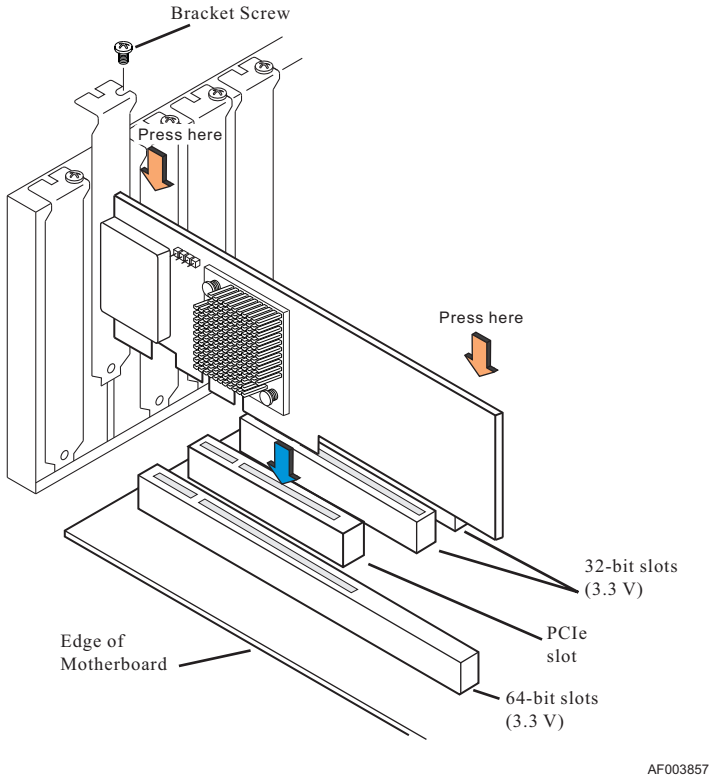


Figure 1. Installing the Intel® SAS Controller RS25GB008

5. Configure and install the SAS Devices, SATA II Devices, or both in the target external storage case. Refer to the documentation of the devices for any preinstallation configuration requirements.
6. Use SAS cables to connect the SAS controller to the target external storage case.
7. Install the server system cover and connect the power cords. For instructions, see your server system documentation.

Replacing a Controller

To replace the SAS controller, see your server system documentation for instructions to remove and then install an add-in adapter.

Configuring the SAS Controller

After performing the Intel® SAS Controller RS25GB008 installation, you must install the operating system driver. For the latest operating system driver with detailed installation instructions, see the Latest Downloads section under the link for this Intel® SAS Controller at http://www.intel.com/p/en_US/support/server.

3 Intel® SAS Controller RS25GB008 Characteristics

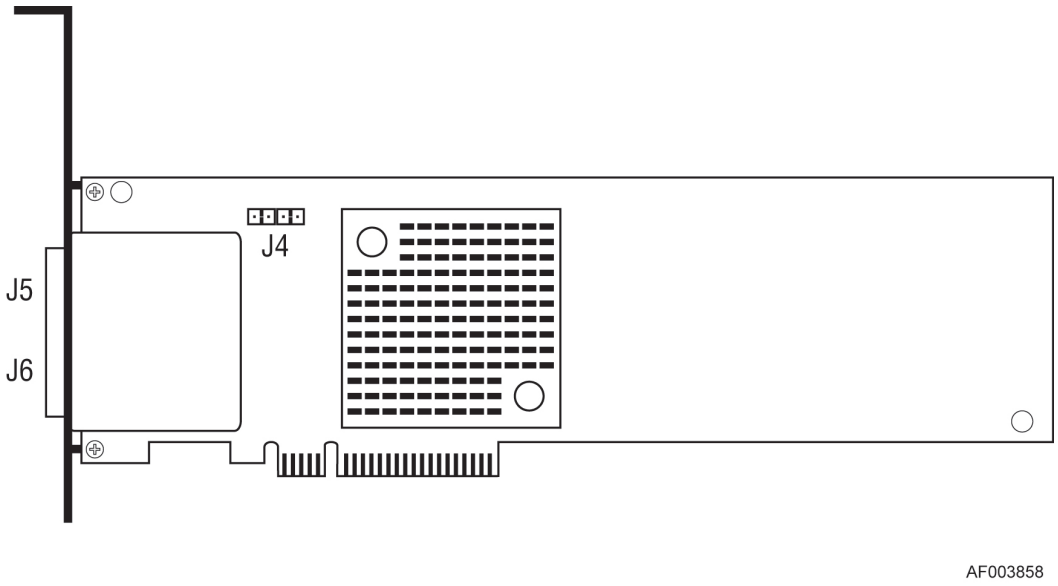


Figure 2. Card Layout

Table 1. Jumper Description

Jumper	Description	Type	Comments
J4	Universal Asynchronous Receiver/Transmitter (UART)	4-pin Connector	4-pin Connector
J5	External Mini SAS 4i Connector	SFF8088	Connection to SAS/SATA devices
J6	External Mini SAS 4i Connector	SFF8088	Connection to SAS/SATA devices

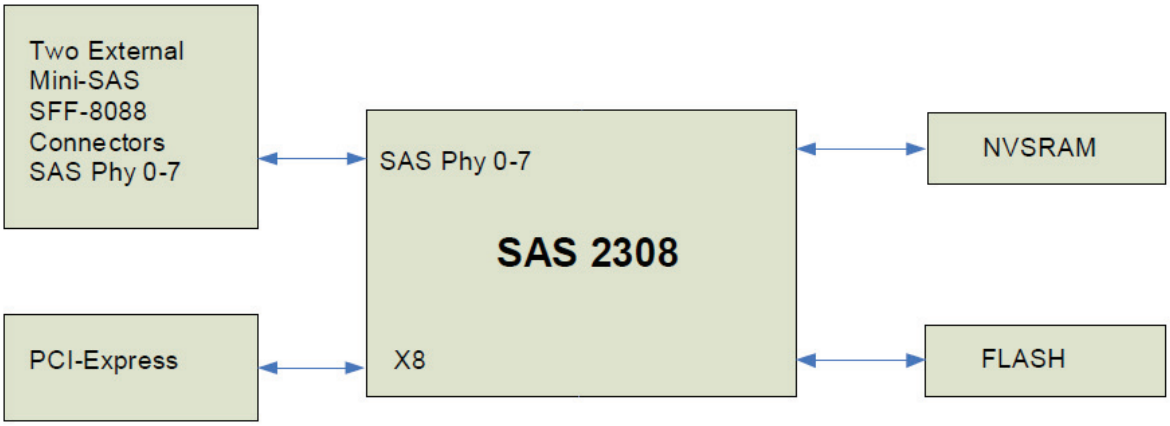


Figure 3. RS25GB008 Hardware Block Diagram

Major Components

LSI* LSISAS2308 Processor Chip

The LSI* LSISAS2308 Processor Chip provides the following functionality:

- x8 PCI Express* bus operating at 5.0 Gb/s serial transfer rate
- SAS/SMP/STP/SATA support
- Supports SAS and SATA devices
- Initiator and Target mode (SSP)
- Supports narrow ports and wide ports
- PCI Express* interface supports x8, x4, and x1 lane configurations

For more information, see http://www.lsi.com/.

Note: *Some of these chip features may not be supported by Intel® SAS Controller RS25GB008.*

Flash ROM

An 16-MB CFI-compliant flash ROM is used to accommodate firmware and BIOS Console 2 OpROM.

Boot Strap ROM (SEEPROM)

The serial bootstrap ROM is used to configure the LSI* LSISAS2308 Processor Chip before the server board configures the PCI Express* registers. The bootstrap ROM sets the Phase Lock Loop (PLL) dividers, bootstrap configuration, and so on.

Diagnostic Components

LED Placement and Function

The Intel® SAS Controller RS25GB008 contain the following LED:

- One surface-mounted heartbeat LED (Green Color) to indicate SAS2308 activity.

SAS/SATA Connectors

The Intel® SAS Controller RS25GB008 provides the external storage support through two external SFF8088 SAS/SATA signal connectors.

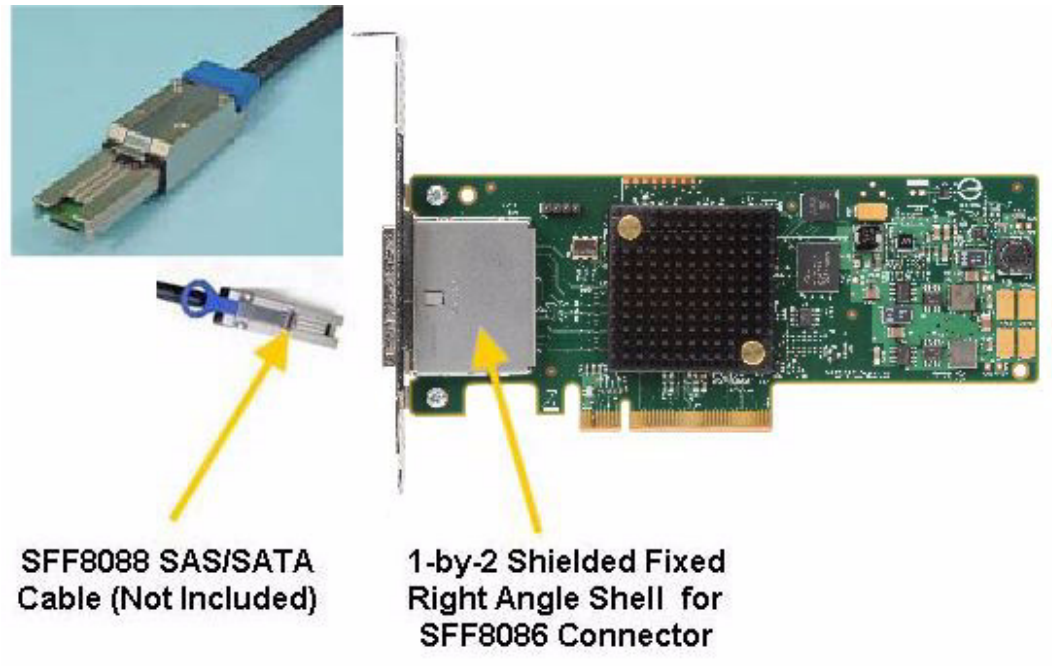


Figure 4. Intel® SAS/SATA Connectors

SAS/SATA Connector Pin-out

Signal names are with respect to the host. The device connected to the host reverses the signal names. Transmit pins connect to receive pins on the other device. The SAS/SATA connector is keyed at pin 1. These pin-outs for the serial ATA connector are not compatible with the legacy PATA connector.

Table 2. SFF8088 External Connector Pin-out

Signal	Pin	Signal	Pin
GND	A1	GND	B1
RX 0+	A2	TX 0+	B2
RX 0-	A3	TX 0-	B3
GND	A4	GND	B4
RX 1+	A5	TX 1+	B5
RX 1-	A6	TX 1-	B6
GND	A7	GND	B7
RX 2+	A8	RX 2+	B8
RX 2-	A9	RX 2-	B9
GND	A10	GND	B10
RX 3+	A11	RX 3+	B11
RX 3-	A12	RX 3-	B12
GND	A13	GND	B13

PCI Interface

The Intel® SAS Controller RS25GB008 must be installed into a standard x8 or larger PCI Express* slot that complies with the PCI Express* Specification, Revision 2.0. The controller is PCI Express* 1.0 compatible and is backward-compatible with x8 or larger slots that are wired with x1, x2, and x4 PCI Express* lanes.

Technical Specifications

Table 3. Technical Specifications

Specification	Intel® SAS Controller RS25GB008
Processor	LSI* LSISAS2308 PCI* Express-SAS/SATA I/O Processor chip, 150MHz
Operating voltage	+3.3 V
Interface to host	PCI Express* Revision 2.0, x8 lane width 5.0 Gb/s
SATA bus speed	Upto 6 Gbps per port, point-to-point

Specification	Intel® SAS Controller RS25GB008
SAS/SATA ports	2x4 external ports
Physical and virtual drive support	1024 Non-RAID
Firmware	16 MB in reflashable flash ROM
Compatible devices	• 2.5-inch and 3.5-inch SAS or SATA II drives including SSD drives • Non disk devices including expanders • Can support drives of mixed capacity
Cabling	Shared connectors for multiple drives
Enclosure management	NA
Enclosure support	Assumes one SEP per enclosure

Array Performance Features

Table 4. Array Performance Features

Specification	Intel® SAS Controller RS25GB008
Host data transfer rate	Upto 5.0 Gigabit/sec per PCI Express* lane
Drive data transfer rate	Upto 6 Gigabit/sec per phy
Maximum queue tags per drive	As many as the drive can accept

Fault Tolerance

Table 5. Fault Tolerance Features

Specification	Intel® SAS Controller RS25GB008
Power Conservation	• Staggered spin-up • Lower power requirements
Drive Replacement	• Hot-plug

Electrical Characteristics

All power is supplied to the Intel® SAS Controller RS25GB008 through onboard PCI Express* slot via PCI Express* 3.3 V rails.

The supply voltages are 3.3 V ± 9 percent from PCI edge connector only. The maximum power for the +3.3 V rail is 18 W. The +3.3 V rail is used by the 3.3 V logic circuitry and also used to generate the other required voltage rails of +1.0 V and +1.8 V.

Thermal and Atmospheric Characteristics

The thermal and atmospheric characteristics are:

- Relative humidity range: 5% to 90% non-condensing
- Maximum dew point temperature: 32°C
- Airflow must be at least 200 linear feet per minute (SFPM) to avoid operating above the maximum ambient temperature.

The storage and transit environment conditions are:

- Temperature range from -45°C to 105°C (dry bulb)
- Relative humidity range: 5% to 90% non-condensing
- MTBF (electrical components) number: 2,000,000 hours at 40°C

Safety Characteristics

The Intel® SAS Controller RS25GB008 meets or exceeds the requirements of UL flammability rating V0. Each bare board is marked with the supplier name or trademark, type, and UL flammability rating.

Operating Certifications

The SAS controller in this document is qualified to get Microsoft Windows* Winqual certification (WHQL) at product launch.

Supported Device Technology

The various device technologies supported by the Intel® SAS controller RS25GB008 integrates 2 external high-performance SFF- 8088 x4 Mini SAS connectors described in the subsections that follow.

Support for Hard Disk Drive Devices

The Intel® SAS Controller RS25GB008 integrates eight internal high-performance SAS/SATA II ports that support SAS and enterprise-class SATA hard drives. Each port supports both SAS and SATA devices using the SAS Serial SCSI Protocol (SSP), Serial

Management Protocol (SMP), and Serial Tunneling Protocol (STP). The SSP protocol enables communication with other SAS devices. STP allows the SAS controller to communicate with SATA devices using the SATA commands.

SAS Expander Support

The Intel® SAS Controller RS25GB008 supports LSI* expanders and Maxim SAS expanders, that are used as a component in Intel enclosures. Other expanders may be supported post launch, based on market conditions and customer requirements.

Support for Non-Hard Disk Drive Devices

As SAS-based non-hard drive devices were not available when this controller was in development, support for these devices will be determined as they become available. For information on support for non-hard drive devices, see the Intel® SAS Controller RS25GB008 Tested Hardware and Operating System List.

SAS Bus and ID Mapping

Devices on the SAS bus are persistently mapped based on a SAS address.

Appendix A: Installation/Assembly Safety Instructions

As you use your computer system, observe these safety guidelines:

- Do not operate your computer system with any cover(s) (such as computer covers, bezels, filler brackets, and front-panel inserts) removed.
- To help avoid damaging your computer, be sure the voltage selection switch on the power supply is set to match the alternating current (AC) power available at your location.
- To help avoid possible damage to the server board, wait five seconds after turning off the system before removing a component from the server board or disconnecting a peripheral device from the computer.
- To help prevent electric shock, plug the computer and peripheral power cables into properly grounded power sources. These cables are equipped with 3-prong plugs to ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a 3-wire cable with properly grounded plugs.
- To help protect your computer system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply.
- Be sure nothing rests on your computer system's cables and that the cables are not located where they can be stepped on or tripped over.
- Do not spill food or liquids on your computer. If the computer gets wet, consult the documentation that came with it.
- Do not push any objects into the openings of your computer. Doing so can cause fire or electric shock by shorting out interior components.
- Keep your computer away from radiators and heat sources. Also, do not block cooling vents. Avoid placing loose papers underneath your computer; do not place your computer in a closed-in wall unit or on a rug.

When working inside your computer:

- Do not attempt to service the computer system yourself, except as explained in this guide and elsewhere in Intel documentation. Always follow installation and service instructions closely.
- Turn off your computer and any peripherals.
- Disconnect your computer and peripherals from their power sources. Also disconnect any telephone or telecommunications lines from the computer.

Doing so reduces the potential for personal injury or shock.

Additional safety guidelines:

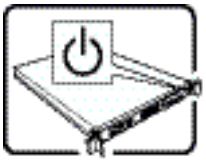
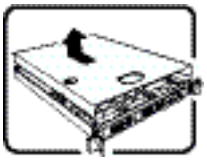
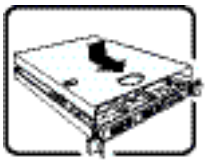
- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, make sure both connectors are correctly oriented and aligned.
- Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a microprocessor chip by its edges, not by its pins.

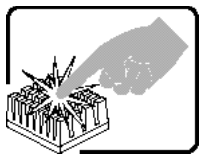
Protecting against electrostatic discharge

- Static electricity can harm delicate components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as the microprocessor. You can do so by touching an unpainted metal surface, such as the metal around the card-slot openings at the back of the computer.
- As you continue to work inside the computer, periodically touch an unpainted metal surface to remove any static charge your body may have accumulated. In addition to the preceding precautions, you can also take the following steps to prevent damage from electrostatic discharge (ESD).
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

English

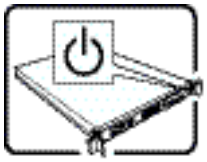
Read all caution and safety statements in this document before performing any of the instructions. See also *Intel® Server Boards and Server Chassis Safety Information* on the Resource CD and/or at http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.

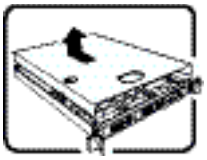
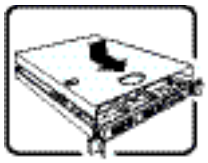
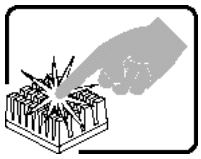
	The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply. The power cord(s) is considered the disconnect device to the main (AC) power. The socket outlet that the system plugs into shall be installed near the equipment and shall be easily accessible.
	**SAFETY STEPS:** Whenever you remove the chassis covers to access the inside of the system, follow these steps: 1. Turn off all peripheral devices connected to the system. 2. Turn off the system by pressing the power button. 3. Unplug all AC power cords from the system or from wall outlets. 4. Label and disconnect all cables connected to I/O connectors or ports on the back of the system. 5. Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system-any unpainted metal surface-when handling components. 6. Do not operate the system with the chassis covers removed.
	After you have completed the six SAFETY steps above, you can remove the system covers. To do this: 1. Unlock and remove the padlock from the back of the system if a padlock has been installed. 2. Remove and save all screws from the covers. 3. Remove the cover(s).
	For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers: 1. Check first to make sure you have not left loose tools or parts inside the system. 2. Check that cables, add-in cards, and other components are properly installed. 3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly. 4. Insert and lock the padlock to the system to prevent unauthorized access inside the system. 5. Connect all external cables and the AC power cord(s) to the system.

	A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.

Deutsch

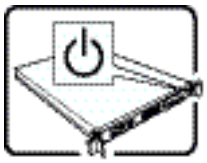
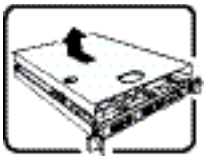
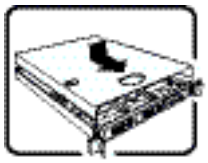
Lesen Sie zunächst sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die *Sicherheitshinweise zu Intel-Serverplatinen und -Servergehäusen* auf der Ressourcen-CD oder unter http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.

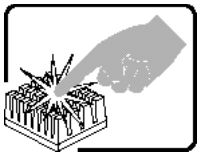
	Der Wechselstrom des Systems wird durch den Ein-/Aus-Schalter für Gleichstrom nicht ausgeschaltet. Ziehen Sie jedes Wechselstrom-Netzkabel aus der Steckdose bzw. dem Netzgerät, um den Stromanschluß des Systems zu unterbrechen. Die Stromkabel sind das "Unterbrechungsgerät" zur Hauptstromquelle. Die Steckdose, in die das System gesteckt wird, sollte sich in der Nähe des Gerätes befinden und leicht zugänglich sein.
	SICHERHEITSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten: 1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus. 2. Schalten Sie das System mit dem Hauptschalter aus. 3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose. 4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab. 5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden. 6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.

	SICHERHEITSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten: 1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus. 2. Schalten Sie das System mit dem Hauptschalter aus. 3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose. 4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab. 5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden. 6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.
	Zur ordnungsgemäßen Kühlung und Lüftung muß die Gehäuseabdeckung immer wieder vor dem Einschalten installiert werden. Ein Betrieb des Systems ohne angebrachte Abdeckung kann Ihrem System oder Teile darin beschädigen. Um die Abdeckung wieder anzubringen: 1. Vergewissern Sie sich, daß Sie keine Werkzeuge oder Teile im Innern des Systems zurückgelassen haben. 2. Überprüfen Sie alle Kabel, Zusatzkarten und andere Komponenten auf ordnungsgemäßen Sitz und Installation. 3. Bringen Sie die Abdeckungen wieder am Gehäuse an, indem Sie die zuvor gelösten Schrauben wieder anbringen. Ziehen Sie diese gut an. 4. Bringen Sie die Verschlußeinrichtung (Padlock) wieder an und schließen Sie diese, um ein unerlaubtes Öffnen des Systems zu verhindern. 5. Schließen Sie alle externen Kabel und den AC Stromanschlußstecker Ihres Systems wieder an.
	Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.

Français

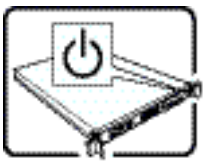
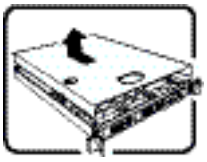
Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez *Intel® Server Boards and Server Chassis Safety Information* sur le CD Resource CD ou bien rendez-vous sur le site http://www.intel.com/support/motherboards/server/sb/cs-010770.htm

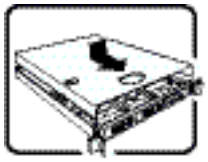
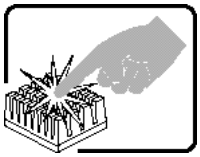
	Notez que le commutateur CC de mise sous tension /hors tension du panneau avant n'éteint pas l'alimentation CA du système. Pour mettre le système hors tension, vous devez débrancher chaque câble d'alimentation de sa prise. C'est le câble d'alimentation qui est considéré comme le moyen de se déconnecter du CA. La prise à laquelle le système est branché doit se situer à proximité de l'équipement et être facilement accessible.
	CONSIGNES DE SÉCURITÉ -Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes: 1. Mettez hors tension tous les périphériques connectés au système. 2. Mettez le système hors tension en mettant l'interrupteur général en position OFF (bouton-poussoir). 3. Débranchez tous les cordons d'alimentation c.a. du système et des prises murales. 4. Identifiez et débranchez tous les câbles reliés aux connecteurs d'E-S ou aux accès derrière le système. 5. Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier). 6. Ne faites pas fonctionner le système tandis que le boîtier est ouvert.
	Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit: 1. Si un cadenas a été installé sur à l'arrière du système, déverrouillez-le et retirez-le. 2. Retirez toutes les vis des panneaux et mettez-les dans un endroit sûr. 3. Retirez les panneaux.
	Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du boîtier avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit: 1. Assurez-vous de ne pas avoir oublié d'outils ou de pièces démontées dans le système. 2. Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés. 3. Revissez solidement les panneaux du boîtier avec les vis retirées plus tôt. 4. Remettez le cadenas en place et verrouillez-le afin de prévenir tout accès non autorisé à l'intérieur du système. 5. Rebranchez tous les cordons d'alimentation c. a. et câbles externes au système.

	Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.

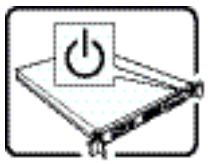
Español

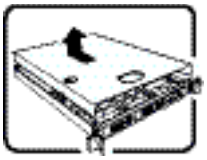
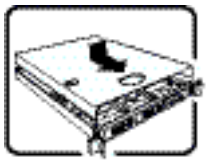
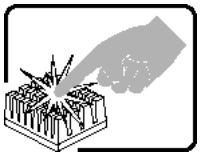
Lea todas las declaraciones de seguridad y precaucion de este documento antes de realizar cualquiera de las instrucciones. Vea *Intel® Server Boards and Server Chassis Safety Information* en el CD Resource y/o en http://www.intel.com/support/motherboards/server/sb/cs-010770.htm

	Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del sistema. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación. Estos cables actúan como dispositivo de desconexión. La toma de corriente deberá estar situada cerca del equipo y ser de fácil acceso.
	INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones: 1. Apague todos los dispositivos periféricos conectados al sistema. 2. Apague el sistema presionando el interruptor encendido/apagado. 3. Desconecte todos los cables de alimentación CA del sistema o de las tomas de corriente alterna. 4. Identifique y desconecte todos los cables enchufados a los conectores E/S o a los puertos situados en la parte posterior del sistema. 5. Cuando manipule los componentes, es importante protegerse contra la descarga electrostática (ESD). Puede hacerlo si utiliza una muñequera antiestática sujetada a la toma de tierra del chasis - o a cualquier tipo de superficie de metal sin pintar. 6. No ponga en marcha el sistema si se han extraído las tapas del chasis.
	Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello: 1. Desbloquee y extraiga el bloqueo de seguridad de la parte posterior del sistema, si se ha instalado uno. 2. Extraiga y guarde todos los tornillos de las tapas.Extraiga las tapas.

	Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas: 1. Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema. 2. Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente. 3. Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente. 4. Inserte el bloqueo de seguridad en el sistema y bloquéelo para impedir que pueda accederse al mismo sin autorización. 5. Conecte todos los cables externos y los cables de alimentación CA al sistema.
	Si el sistema ha estado en funcionamiento, el microprocesador y el disipador de calor pueden estar aún calientes. También conviene tener en cuenta que en el chasis o en el tablero puede haber piezas cortantes o punzantes. Por ello, se recomienda precaución y el uso de guantes protectores.

Italiano

	L'interruttore attivato/disattivato nel pannello anteriore non interrompe l'alimentazione in c.a. del sistema. Per interromperla, è necessario scollegare tutti i cavi di alimentazione in c.a. dalle prese a muro o dall'alimentazione di corrente. Il cavo è considerato il dispositivo d'interruzione dell'alimentazione principale (in c.a.). La presa alla quale si collega il sistema deve essere installata vicino all'unità e deve essere facilmente accessibile.

	PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi: 1. Spegnere tutti i dispositivi periferici collegati al sistema. 2. Spegnere il sistema, usando il pulsante spento/acceso dell'interruttore del sistema. 3. Togliere tutte le spine dei cavi del sistema dalle prese elettriche. 4. Identificare e sconnettere tutti i cavi attaccati ai collegamenti I/O od alle prese installate sul retro del sistema. 5. Qualora si tocchino i componenti, proteggersi dallo scarico elettrostatico (SES), portando un cinghia anti-statica da polso che è attaccata alla presa a terra del telaio del sistema - qualsiasi superficie non dipinta - . 6. Non far operare il sistema quando il telaio è senza le coperture.
	Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come seque: 1. Aprire e rimuovere il lucchetto dal retro del sistema qualora ve ne fosse uno installato. 2. Togliere e mettere in un posto sicuro tutte le viti delle coperture. 3. Togliere le coperture.
	Per il giusto flusso dell'aria e raffreddamento del sistema, rimettere sempre le coperture del telaio prima di riaccendere il sistema. Operare il sistema senza le coperture al loro proprio posto potrebbe danneggiare i componenti del sistema. Per rimettere le coperture del telaio: 1. Controllare prima che non si siano lasciati degli attrezzi o dei componenti dentro il sistema. 2. Controllare che i cavi, dei supporti aggiuntivi ed altri componenti siano stati installati appropriatamente. 3. Attaccare le coperture al telaio con le viti tolte in precedenza e avvitarle strettamente. 4. Inserire e chiudere a chiave il lucchetto sul retro del sistema per impedire l'accesso non autorizzato al sistema. 5. Ricollegare tutti i cavi esterni e le prolunghe AC del sistema.
	Se il sistema è stato a lungo in funzione, il microprocessore e il dissipatore di calore potrebbero essere surriscaldati. Fare attenzione alla presenza di piedini appuntiti e parti taglienti sulle schede e sul telaio. È consigliabile l'uso di guanti di protezione.

Appendix B: Regulatory and Certification Information

Product Safety and EMC Compliance

This Intel® SAS Controller has been evaluated for regulatory compliance as an Intel end system, and is included as part of the end system certification. For information on end system certification, refer to the product regulatory certification for the end system level product.