

PCI UltraSCSI Host Adapter Installation Guide

Single-Ended and Differential Dual-Channel Models



THE NETWORK IS THE COMPUTER™

Sun Microsystems Computer Company

A Sun Microsystems, Inc. Business
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Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Department of Communications (DOC) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan

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 not installed and used in accordance with the instruction manual, 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.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted-pair (UTP) cables.

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

FCC Class B Notice

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

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

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

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

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted pair (UTP) cables.

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.

DOC Class A Notice - Avis DOC, Classe A

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

DOC Class B Notice - Avis DOC, Classe B

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

VCCI 基準について


第一種VCCI基準について

第一種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、第一種情報装置です。これらの製品には、下記の項目が該当します。

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取り扱い説明書に従って正しくお取り扱いください。

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 risk of personal injury and equipment damage. Follow the instructions.



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



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



On – Applies AC power to the system.

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



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.

SELV Compliance

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

Power Cord Connection



Caution – Sun products are designed to work with single-phase power systems having a grounded neutral conductor. 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. 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.



Caution – Your Sun product is shipped with a grounding type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

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.

System Unit Cover

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



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

Einhaltung sicherheitsbehördlicher Vorschriften

Auf dieser Seite werden Sicherheitsrichtlinien beschrieben, die bei der Installation von Sun-Produkten zu beachten sind.

Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz die folgenden Sicherheitsvorkehrungen, wenn Sie Ihr Gerät installieren:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Vergewissern Sie sich, daß Spannung und Frequenz Ihrer Stromquelle mit der Spannung und Frequenz übereinstimmen, die auf dem Etikett mit den elektrischen Nennwerten des Geräts angegeben sind.
- Stecken Sie auf keinen Fall irgendwelche Gegenstände in Öffnungen in den Geräten. Leitfähige Gegenstände könnten aufgrund der möglicherweise vorliegenden gefährlichen Spannungen 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 – Hohe Temperatur. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.



Achtung – Gefährliche Spannungen. Anweisungen befolgen, um Stromschläge und Verletzungen zu vermeiden.



Ein – Setzt das System unter Wechselstrom.

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



Aus – Unterbricht die Wechselstromzufuhr zum Gerät.



Wartezustand (Stand-by-Position) - Der Ein-/Wartezustand-Schalter steht auf Wartezustand. Änderungen an Sun-Geräten.

Nehmen Sie keine mechanischen oder elektrischen Änderungen an den Geräten vor. Sun Microsystems, übernimmt bei einem Sun-Produkt, das geändert wurde, keine Verantwortung für die Einhaltung behördlicher Vorschriften

Aufstellung von Sun-Geräten



Achtung – Um den zuverlässigen Betrieb Ihres Sun-Geräts zu gewährleisten und es vor Überhitzung zu schützen, dürfen die Öffnungen im Gerät nicht blockiert oder verdeckt werden. Sun-Produkte sollten niemals in der Nähe von Heizkörpern oder Heizluftklappen aufgestellt werden.

Einhaltung der SELV-Richtlinien

Die Sicherung der I/O-Verbindungen entspricht den Anforderungen der SELV-Spezifikation.

Anschluß des Netzkabels



Achtung – Sun-Produkte sind für den Betrieb an Einphasen-Stromnetzen mit geerdetem Nulleiter vorgesehen. Um die Stromschlaggefahr zu reduzieren, schließen Sie Sun-Produkte nicht an andere Stromquellen an. Ihr Betriebsleiter oder ein qualifizierter Elektriker kann Ihnen die Daten zur Stromversorgung in Ihrem Gebäude geben.



Achtung – Nicht alle Netzkabel haben die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastungsschutz und sind daher für Computersysteme nicht geeignet.



Achtung – Ihr Sun-Gerät wird mit einem dreiadrigen Netzkabel für geerdete Netzsteckdosen geliefert. Um die Gefahr eines Stromschlags zu reduzieren, schließen Sie das Kabel nur an eine fachgerecht verlegte, geerdete Steckdose an.

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



Achtung – Der Ein/Aus-Schalter dieses Geräts schaltet nur auf Wartezustand (Stand-By-Modus). Um die Stromzufuhr zum Gerät vollständig zu unterbrechen, müssen Sie das Netzkabel von der Steckdose abziehen. Schließen Sie den Stecker des Netzkabels an eine in der Nähe befindliche, frei zugängliche, geerdete Netzsteckdose an. Schließen Sie das Netzkabel nicht an, wenn das Netzteil aus der Systemeinheit entfernt wurde.

Gehäuseabdeckung

Sie müssen die obere Abdeckung Ihres Sun-Systems entfernen, um interne Komponenten wie Karten, Speicherchips oder Massenspeicher hinzuzufügen. Bringen Sie die obere Gehäuseabdeckung wieder an, bevor Sie Ihr System einschalten.



Achtung – Bei Betrieb des Systems ohne obere Abdeckung besteht die Gefahr von Stromschlag und Systemschäden.

Conformité aux normes de sécurité

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 protection, veuillez prendre les précautions suivantes pendant l'installation du matériel :

- Suivre tous les avertissements et toutes les instructions inscrites sur le matériel.
- Vérifier que la tension et la fréquence de la source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette de classification de l'appareil.
- Ne jamais introduire d'objets quels qu'ils soient dans une des ouvertures de l'appareil. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet conducteur introduit de la sorte pourrait produire un court-circuit qui entraînerait des flammes, des risques d'électrocution ou des dégâts matériels.

Symboles

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



Attention : risques de blessures corporelles et de dégâts matériels. Veuillez suivre les instructions.



Attention : surface à température élevée. Evitez le contact. La température des surfaces est élevée et leur contact peut provoquer des blessures corporelles.



Attention : présence de tensions dangereuses. Pour éviter les risques d'électrocution et de danger pour la santé physique, veuillez suivre les instructions.



MARCHE – Votre système est sous tension (courant alternatif).

Un des symboles suivants sera peut-être utilisé en fonction du type d'interrupteur de votre système:



ARRET – Votre système est hors tension (courant alternatif).



VEILLEUSE – L'interrupteur Marche/Veilleuse est en position « Veilleuse ».

Modification du matériel

Ne pas apporter de modification mécanique ou électrique au matériel. Sun Microsystems n'est pas responsable de la conformité réglementaire d'un produit Sun qui a été modifié.

Positionnement d'un produit Sun



Attention : pour assurer le bon fonctionnement de votre produit Sun et pour l'empêcher de surchauffer, il convient de ne pas obstruer ni recouvrir les ouvertures prévues dans l'appareil. Un produit Sun ne doit jamais être placé à proximité d'un radiateur ou d'une source de chaleur.

Conformité SELV

Sécurité : les raccordements E/S sont conformes aux normes SELV.

Connexion du cordon d'alimentation



Attention : les produits Sun sont conçus pour fonctionner avec des alimentations monophasées munies d'un conducteur neutre mis à la terre. Pour écarter les risques d'électrocution, ne pas brancher de produit Sun dans un autre type d'alimentation secteur. En cas de doute quant au type d'alimentation électrique du local, veuillez vous adresser au directeur de l'exploitation ou à un électricien qualifié.



Attention : tous les cordons d'alimentation n'ont pas forcément la même puissance nominale en matière de courant. Les rallonges d'usage domestique n'offrent pas de protection contre les surcharges et ne sont pas prévues pour les systèmes d'ordinateurs. Ne pas utiliser de rallonge d'usage domestique avec votre produit Sun.



Attention : votre produit Sun a été livré équipé d'un cordon d'alimentation à trois fils (avec prise de terre). Pour écarter tout risque d'électrocution, branchez toujours ce cordon dans une prise mise à la terre.

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



Attention : le commutateur d'alimentation de ce produit fonctionne comme un dispositif de mise en veille uniquement. C'est la prise d'alimentation qui sert à mettre le produit hors tension. Veillez donc à installer le produit à proximité d'une prise murale facilement accessible. Ne connectez pas la prise d'alimentation lorsque le châssis du système n'est plus alimenté.

Couvercle

Pour ajouter des cartes, de la mémoire, ou des unités de stockage internes, vous devrez démonter le couvercle de l'unité système Sun. Ne pas oublier de remettre ce couvercle en place avant de mettre le système sous tension.



Attention : il est dangereux de faire fonctionner un produit Sun sans le couvercle en place. Si l'on néglige cette précaution, on encourt des risques de blessures corporelles et de dégâts matériels.

Normativas de seguridad

El siguiente texto incluye las medidas de seguridad que se deben seguir cuando se instale algún producto de Sun Microsystems.

Precauciones de seguridad

Para su protección observe las siguientes medidas de seguridad cuando manipule su equipo:

- Siga todas las avisos e instrucciones marcados en el equipo.
- Asegúrese de que el voltaje y la frecuencia de la red eléctrica concuerdan con las descritas en las etiquetas de especificaciones eléctricas del equipo.

- No introduzca nunca objetos de ningún tipo a través de los orificios del equipo. Pueden haber voltajes peligrosos. Los objetos extraños conductores de la electricidad pueden producir cortocircuitos que provoquen un incendio, descargas eléctricas o daños en el equipo.

Símbolos

En este libro aparecen los siguientes símbolos:



Precaución – Existe el riesgo de lesiones personales y daños al equipo. Siga las instrucciones.



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



Precaución – Voltaje peligroso presente. Para reducir el riesgo de descarga y daños para la salud siga las instrucciones.



Encendido – Aplica la alimentación de CA al sistema.

Según el tipo de interruptor de encendido que su equipo tenga, es posible que se utilice uno de los siguientes símbolos:



Apagado – Elimina la alimentación de CA del sistema.



En espera – El interruptor de Encendido/En espera se ha colocado en la posición de *En espera*.

Modificaciones en el equipo

No realice modificaciones de tipo mecánico o eléctrico en el equipo. Sun Microsystems no se hace responsable del cumplimiento de las normativas de seguridad en los equipos Sun modificados.

Ubicación de un producto Sun



Precaución – Para asegurar la fiabilidad de funcionamiento de su producto Sun y para protegerlo de sobrecalentamientos no deben obstruirse o taparse las rejillas del equipo. Los productos Sun nunca deben situarse cerca de radiadores o de fuentes de calor.

Cumplimiento de la normativa SELV

El estado de la seguridad de las conexiones de entrada/salida cumple los requisitos de la normativa SELV.

Conexión del cable de alimentación eléctrica



Precaución – Los productos Sun están diseñados para trabajar en una red eléctrica monofásica con toma de tierra. Para reducir el riesgo de descarga eléctrica, no conecte los productos Sun a otro tipo de sistema de alimentación eléctrica. Póngase en contacto con el responsable de mantenimiento o con un electricista cualificado si no está seguro del sistema de alimentación eléctrica del que se dispone en su edificio.



Precaución – No todos los cables de alimentación eléctrica tienen la misma capacidad. Los cables de tipo doméstico no están provistos de protecciones contra sobrecargas y por tanto no son apropiados para su uso con computadores. No utilice alargadores de tipo doméstico para conectar sus productos Sun.



Precaución – Con el producto Sun se proporciona un cable de alimentación con toma de tierra. Para reducir el riesgo de descargas eléctricas conéctelo siempre a un enchufe con toma de tierra.

La siguiente advertencia se aplica solamente a equipos con un interruptor de encendido que tenga una posición "En espera":



Precaución – El interruptor de encendido de este producto funciona exclusivamente como un dispositivo de puesta en espera. El enchufe de la fuente de alimentación está diseñado para ser el elemento primario de desconexión del equipo. El equipo debe instalarse cerca del enchufe de forma que este último pueda ser fácil y rápidamente accesible. No conecte el cable de alimentación cuando se ha retirado la fuente de alimentación del chasis del sistema.

Tapa de la unidad del sistema

Debe quitar la tapa del sistema cuando sea necesario añadir tarjetas, memoria o dispositivos de almacenamiento internos. Asegúrese de cerrar la tapa superior antes de volver a encender el equipo.



Precaución – Es peligroso hacer funcionar los productos Sun sin la tapa superior colocada. El hecho de no tener en cuenta esta precaución puede ocasionar daños personales o perjudicar el funcionamiento del equipo.

Declaration of Conformity

Marketing Part Numbers: X6540A, X6541A, and X6600A
Product Names: Dual-Channel UltraSCSI PCI Host Adapters and associated kits,
Single-Ended and Differential.

EMC

USA – FCC Class B

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

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

European Union

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

EN55022 / CISPR22 (1995)	Class B	Compatible Electronics Report Nos: C70109J2, C70110K1
EN50082-1	IEC801-2 (1991)	4 kV (Direct), 8 kV (Air)
	IEC1000-4-3	3 V/m, 80% AM at 1KHz
	IEC801-4 (1988)	1.0 kV Power Lines, Signal Lines Not Applicable

Safety

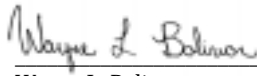
This equipment complies with the following requirements of the Low Voltage Directive 73/23/EEC:

EC Type Examination Certificates:

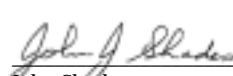
EN60950/IEC950 (1993)	TUV Rheinland Certificate # S9771525
EN60950 w/ Nordic Deviations	CB Scheme Certificate # (pending)

Supplementary Information

This product was tested and complies with all the requirements for the CE Mark.



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Preface

The *PCI UltraSCSI Host Adapter Installation Guide* provides information about PCI single-ended and differential dual-channel UltraSCSI host adapter cards.

Using UNIX Commands

This document does not contain information on basic UNIX[®] commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris 2.x Handbook for SMCC Peripherals*
- AnswerBook[™] online documentation for the Solaris[™] 2.x software environment
- Other software documentation that you received with your system

Typographic Conventions

TABLE P-1 Typographic Conventions

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

Shell Prompts

TABLE P-2 Shell Prompts

Shell	Prompt
C shell	<i>machine_name</i> %
C shell superuser	<i>machine_name</i> #
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

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Installing the Host Adapter

This chapter describes the PCI single-ended and differential dual-channel UltraSCSI host adapter cards and explains how to install them into your system. Before you begin, have your system documentation available for reference. You will need to perform system administration procedures to halt and boot your system.

Note – If you are unfamiliar with UltraSCSI configuration guidelines, read Appendix A, “Understanding UltraSCSI,” before performing the procedures in this chapter.

Overview

The single-ended and differential host adapters are UltraSCSI devices that enable you to increase the available number of SCSI ports for adding external devices.

The host adapters are designed to be installed in SPARC™ systems running at least Solaris 2.5.1 Hardware:4/97 operating system.

The host adapters support up to 15 targets on each SCSI bus. For details, see Appendix A, “Understanding UltraSCSI.”

Installing the Host Adapter

Read these instructions and the installation instructions in your system documentation before installing the host adapter.

▼ To Prepare for Installation

1. Determine which version of the operating system you are running.

Look at the `/etc/release` file and make sure the operating system installed is at least Solaris 2.5.1 Hardware: 4/97.

Note – You must upgrade your operating system to at least Solaris 2.5.1 Hardware: 4/97 if you do not have an `/etc/release` file.

2. Exit the operating system.

If your system is a server, use the `shutdown` command to inform the mounted users that the system will be going down. Otherwise, use the `init 0` command. See the `man` pages for these commands or the Solaris AnswerBook online documentation.

3. Power down the system.

Refer to the service documentation that came with your system.



Caution – Do not disconnect the power cord from the system or from the wall outlet. This connection provides the ground path necessary to safely remove and install the printed circuit boards and components without damaging them.

4. Choose a slot into which you will install the host adapter.

Follow the procedures in the documentation supplied with your system.

5. Unpack the host adapter.

You should have the following items:

- PCI UltraSCSI host adapter (FIGURE 1-1)
- 2 meter UltraSCSI-compliant cable
- Electrostatic discharge (ESD) kit

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

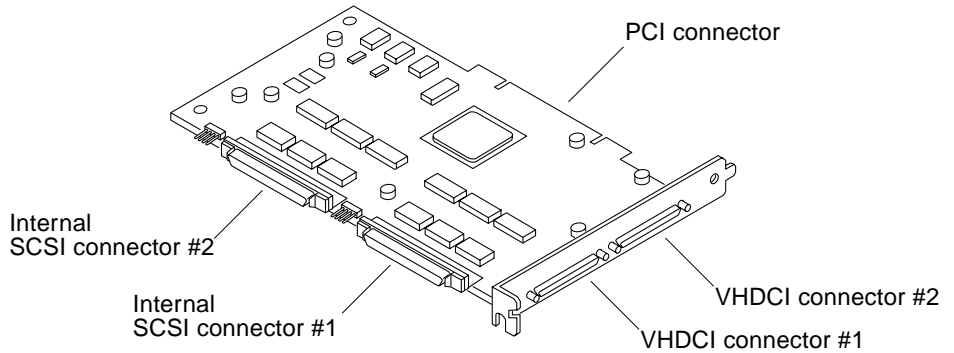


FIGURE 1-1 PCI UltraSCSI Host Adapter Card

Note – A single-ended host adapter is shown in FIGURE 1-1. There are slight variations in components between the single-ended and differential host adapters.


▼ To Install the Host Adapter

1. Open the system.

Refer to your system documentation for information about filler panels for your system.

2. Attach the wrist strap between your wrist and a metal part of the system chassis.

3. For systems with a standby-type power switch, disconnect the power cord.

Standby-type power switches have a  icon.

The wrist strap between you and the chassis provides the ground path necessary to safely remove and install the printed circuit boards and components without damaging them.

4. Remove the filler panel for the desired slot.

Refer to your system documentation for information about filler panels for your system.

5. Remove the host adapter from its protective bag.

6. Make sure that the switches and jumpers are correctly set.

For the single-ended host adapter, confirm the following settings:

- Make sure that all elements of switches U1 and U2 are off.
- Make sure that jumper TP9 is open.

For the differential host adapter, confirm the following settings:

- Make sure that all jumpers (TP1, TP2, TP3, TP5, TP6) are open.

7. Install the host adapter into the PCI slot in your system.

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



Caution – Using excessive force can bend or damage the pins.

8. Remove the wrist strap.

9. Close the system.

10. Connect the SCSI cables.

Refer to your system documentation for cabling instructions.

11. If you have disconnected the power cable, reconnect it.

12. Power on your peripherals and then your system.

Note – If your system starts to reboot, interrupt the reboot process by pressing the Stop and A keys together.

13. Make sure the host adapter is recognized by the system.

Use the `probe-scsi-all` command to display the SCSI devices connected to your system. For example:

```
ok probe-scsi-all
/pci@1f,2000/scsi@2
Target 8
  Unit 0   Disk      SEAGATE ST34371W SUN4.2G8254
/pci@1f,2000/scsi@2,1
Target 1
  Unit 0   Disk      SEAGATE ST34371W SUN4.2G8254
```

In the example, the first SCSI port (`scsi@2`) has one disk drive connected (target 8). The second SCSI port (`scsi@2,1`) also has one disk drive connected (target 1). In FIGURE 1-1, the first SCSI ports are labeled as #1; the second SCSI ports are #2.

14. Reboot your system using the `boot -r` command.

For more information on the `boot -r` command, refer to the *System Administrator's Guide* for your operating system.

▼ To Test the Installation With SunVTS

SunVTS is a diagnostic program that exercises your system to verify the functionality, reliability, and configuration of your host adapter card. Run the SunVTS program before attempting to use your new card for applications.

This section provides a brief set of instructions for running the SunVTS program. For more details, refer to the *SunVTS 2.X User's Guide*.

1. Become superuser.

```
% su <Return>
password
#
```

2. Bring up the SunVTS window.

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

3. Select a disk drive that is attached to the host adapter card you just installed.

4. Start the test.

5. Verify that no errors have occurred by checking the SunVTS status window.

6. If no problems occur, stop SunVTS.

Your host adapter card is ready to run applications.

Understanding UltraSCSI

This chapter provides general information about UltraSCSI configuration rules.

Target Devices

For UltraSCSI performance of 40 Mbytes/sec, there can be a maximum of seven devices connected to each port on the host adapter card. Up to 15 devices can be connected to each port on the host adapter card at 20 Mbytes/sec.

Note – If a bus is too busy to support 40 Mbytes/sec, an UltraSCSI device may experience errors that eventually cause it to reset and operate at 20 Mbytes/sec.

The available target addresses (SCSI IDs) for each port on the host adapter cards are 0 through F.

Note – The SCSI ID of 7 is reserved for the host adapter card.

Bus Length

Differential Host Adapter

The differential host adapter can support up to 15 devices per port on a SCSI bus length of 24 meters (78.74 feet).

Single-Ended Host Adapter

For UltraSCSI performance, you must adhere to the following cable length restrictions:

- For 1 to 3 devices, the maximum bus length per port is 3 meters (9.84 feet)
- For 4 to 7 devices, the maximum bus length per port is 1.5 meters (4.92 feet)

If you exceed these bus length restrictions, the UltraSCSI devices may operate at less than 40 Mbytes/sec. An UltraSCSI device on the bus may experience errors that eventually cause it to reset and operate at 20 Mbytes/sec.

The following table shows bus length for each type of SCSI bus.

TABLE A-1 Bus Restrictions

SCSI Type	Bus Width	Number of Devices	SCSI Bus Length ¹
SCSI-2 Fast	8 bits	1-7	6.0 meters (19.7 feet)
SCSI-2 Fast/Wide	16 bits	1-15	6.0 meters (19.7 feet)
UltraSCSI	16 bits	1-3	3.0 meters (9.84 feet)
		4-7	1.5 meters (4.92 feet)

1. You must include the internal bus length of your system in your bus length calculations.

Cabling and Termination

Use the following cabling guidelines to ensure proper device cabling and termination:

- In order to maintain UltraSCSI performance, all cables used must be UltraSCSI compliant.
- The SCSI bus must be correctly terminated. Most Sun devices use autotermination. See the documentation that came with the device.
- If external mass storage devices consist of 68-pin devices and 50-pin devices, connect the 68-pin devices to the system first and terminate the chain with a 50-pin device and its terminator. The 68-pin device connected to 68-50 pin adapter cable must be auto-terminating in order to terminate the high-order bits.



Caution – Do not connect 68-pin devices after 50-pin devices; SCSI bus errors will occur.

The following figure provides a summary of the cabling guidelines.

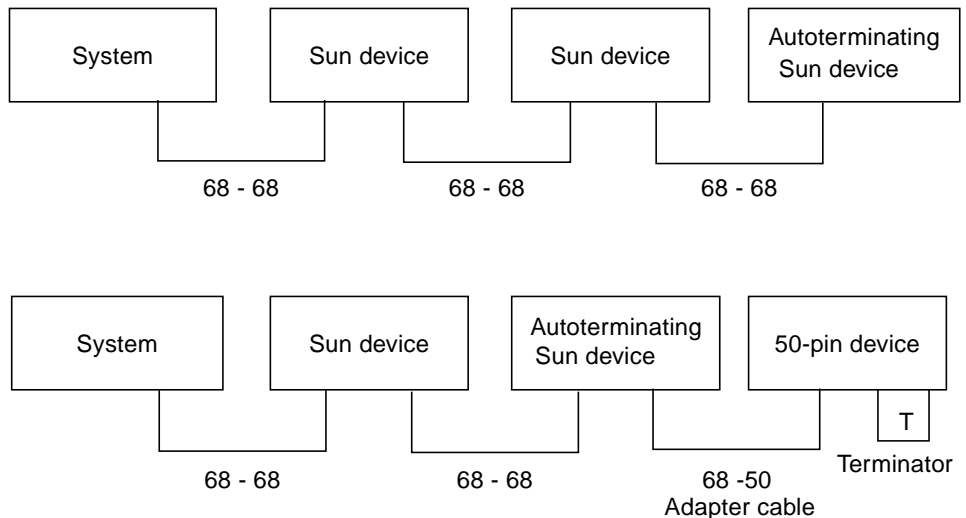


FIGURE A-1 Cabling Guidelines

Specifications (Single-Ended)

The chapter contains the specifications for the single-ended host adapter.

Physical Dimensions

TABLE B-1 Physical Dimensions

Dimension	Measurement	
	Board With Bracket	Board Without Bracket
Length	8 inches (203.2 mm)	7.5 inches (190.5 mm)
Width	4.81 inches (122.17 mm)	3.8 inches (96.5 mm)
Height	.85 inches (21.59 mm)	.5 inches (12.7 mm)
Weight	5.7 oz (47.59 g)	N/A

Power Requirements

TABLE B-2 Power Requirements

Voltage	Maximum Current
5V \pm 5%	3A
3.3V \pm 9%	130 mA
12V \pm 5%	0.05A

Performance Specifications

TABLE B-3 Performance Specifications

Feature	Specification
PCI clock	33 MHz maximum
PCI data burst transfer rate	132 Mbyte/sec
SCSI synchronous transfer rate	20/40 Mbytes/sec (Narrow/Wide)
SCSI asynchronous transfer rate	\leq 5 Mtransfers/sec (cable dependent)
Transfer block size	4 Gbyte maximum
PCI data/address lines	AD31-0
PCI modes	Master/slave
Capacitance per PCI signal line	\leq 10 pF, except for CLK between 5 to 12 pF and IDSEL \leq 8 pF
SCSI interface	Single-ended
SCSI bus parity	Yes
SCSI 8-bit bus devices	Yes
SCSI 16-bit bus devices	Yes

PCI Edge Connector Pin Definitions

TABLE B-4 PCI Edge Connector Pin Definitions J1B (Top)

Pin	Description	Pin	Description	Pin	Description
1	-12V	22	GND	43	+3.3V
2	TCK	23	AD27	44	C_BE1
3	GND	24	AD25	45	AD14
4	TDO	25	+3.3V	46	GND
5	+5V	26	C_BE3	47	AD12
6	+5V	27	AD23	48	AD10
7	INTB	28	GND	49	GND
8	INTD	29	AD21	50	KEYWAY
9	GND (PRSNT1)	30	AD19	51	KEYWAY
10	RESERVED	31	+3.3V	52	AD08
11	GND (PRSNT2)	32	AD17	53	AD07
12	KEYWAY	33	C_BE2	54	+3.3V
13	KEYWAY	34	GND	55	AD05
14	RESERVED	35	IRDY	56	AD03
15	GND	36	+3.3V	57	GND
16	CLK	37	DEVSEL	58	AD01
17	GND	38	GND	59	3V/5V
18	REQ	39	LOCK	60	ACK64
19	3V/5V	40	PERR	61	+5V
20	AD31	41	+3.3V	62	+5V
21	AD29	42	SERR		

TABLE B-5 PCI Edge Connector Pin Definitions J1A (Bottom)

Pin	Description	Pin	Description	Pin	Description
1	TRST	22	AD28	43	PAR
2	+12V	23	AD26	44	AD15
3	TMS	24	GND	45	+3.3V
4	TDI	25	AD24	46	AD13
5	+5V	26	IDSEL	47	AD11
6	INTA	27	+3.3V	48	GND
7	INTC	28	AD22	49	AD09
8	+5V	29	AD20	50	KEYWAY
9	RESERVED	30	GND	51	KEYWAY
10	3V/5V	31	AD18	52	C_BE0
11	RESERVED	32	AD16	53	+3.3V
12	KEYWAY	33	+3.3V	54	AD06
13	KEYWAY	34	FRAME	55	AD04
14	RESERVED	35	GND	56	GND
15	RST	36	TRDY	57	AD02
16	3V/5V	37	GND	58	AD00
17	GNT	38	STOP	59	3V/5V
18	GND	39	+3.3V	60	REQ64
19	RESERVED	40	SDONE	61	+5V
20	AD30	41	SBO	62	+5V
21	+3.3V	42	GND		

SCSI Connector Pin Definitions

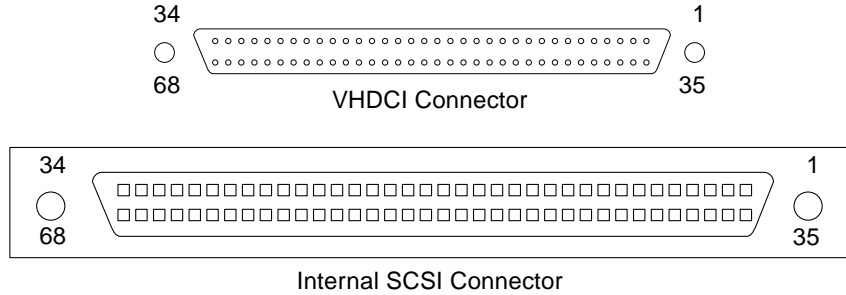


FIGURE B-1 VHDCI and Internal SCSI Connectors

TABLE B-6 SCSI Connector Pin Definitions

Pin	Description	Pin	Description	Pin	Description
1	GND	24	GND	47	SD(7)-
2	GND	25	GND	48	SDP-
3	GND	26	GND	49	GND
4	GND	27	GND	50	Cable Sense (GND)
5	GND	28	GND	51	TERMPWR
6	GND	29	GND	52	TERMPWR
7	GND	30	GND	53	OPEN
8	GND	31	GND	54	GND
9	GND	32	GND	55	ATN-
10	GND	33	GND	56	GND
11	GND	34	Cable Sense (GND)	57	BSY-
12	GND	35	SD(12)-	58	ACK-
13	GND	36	SD(13)-	59	RST-
14	GND	37	SD(14)-	60	MSG-
15	GND	38	SP(15)-	61	SEL-
16	GND	39	SDP(1)-	62	C/D-

TABLE B-6 SCSI Connector Pin Definitions *(Continued)*

Pin	Description	Pin	Description	Pin	Description
17	TERMPWR	40	SD(0)-	63	REQ-
18	TERMPWR	41	SD(1)-	64	I/O-
19	OPEN	42	SD(2)-	65	SD(8)-
20	GND	43	SD(3)-	66	SD(9)-
21	GND	44	SD(4)-	67	SD(10)-
22	GND	45	SD(5)-	68	SD(11)-
23	GND	46	SD(6)-		

Specifications (Differential)

The chapter contains the specifications for the wide differential host adapter.

Physical Dimensions

TABLE B-1 Physical Dimensions

Dimension	Measurement	
	Board With Bracket	Board Without Bracket
Length	8 inches (203.2 mm)	7.5 inches (190.5 mm)
Width	4.81 inches (122.17 mm)	3.8 inches (96.5 mm)
Height	.85 inches (21.59 mm)	.5 inches (12.7 mm)
Weight	5.2 oz (43.42 g)	N/A

Power Requirements

TABLE B-2 Power Requirements

Voltage	Maximum Current
5V \pm 5%	3A
3.3V \pm 9%	130 ma
12V \pm 5%	0.05A

Performance Specifications

TABLE B-3 Performance Specifications

Feature	Specification
PCI clock	33 MHz maximum
PCI data burst transfer rate	132 Mbytes/sec burst rate
SCSI synchronous transfer rate	40 Mbytes/sec (wide)
SCSI asynchronous transfer rate	\leq 7 Mtransfers/sec (cable dependent)
Transfer block size	4 GByte maximum
PCI data/address lines	AD31-0
PCI modes	Master/slave
Capacitance per PCI signal line	\leq 10 pF, except for CLK between 5 to 12 pF and IDSEL \leq 8pF
SCSI interface	Wide differential
SCSI bus parity	Yes
SCSI 8-bit bus devices	Yes
SCSI 16-bit bus devices	Yes

PCI Edge Connector Pin Definitions

TABLE B-4 PCI Edge Connector Pin Definitions J1B (Top)

Pin	Description	Pin	Description	Pin	Description
1	-12V	22	GND	43	+3.3V
2	TCK	23	AD27	44	C_BE1
3	GND	24	AD25	45	AD14
4	TDO	25	+3.3V	46	GND
5	+5V	26	C_BE3	47	AD12
6	+5V	27	AD23	48	AD10
7	INTB	28	GND	49	GND
8	INTD	29	AD21	50	KEYWAY
9	GND (PRSNT1)	30	AD19	51	KEYWAY
10	RESERVED	31	+3.3V	52	AD08
11	GND (PRSNT2)	32	AD17	53	AD07
12	KEYWAY	33	C_BE2	54	+3.3V
13	KEYWAY	34	GND	55	AD05
14	RESERVED	35	IRDY	56	AD03
15	GND	36	+3.3V	57	GND
16	CLK	37	DEVSEL	58	AD01
17	GND	38	GND	59	3V/5V
18	REQ	39	LOCK	60	ACK64
19	3V/5V	40	PERR	61	+5V
20	AD31	41	+3.3V	62	+5V
21	AD29	42	SERR		

TABLE B-5 PCI Edge Connector Pin Definitions J1A (Bottom)

Pin	Description	Pin	Description	Pin	Description
1	TRST	22	AD28	43	PAR
2	+12V	23	AD26	44	AD15
3	TMS	24	GND	45	+3.3V
4	TDI	25	AD24	46	AD13
5	+5V	26	IDSEL	47	AD11
6	INTA	27	+3.3V	48	GND
7	INTC	28	AD22	49	AD09
8	+5V	29	AD20	50	KEYWAY
9	RESERVED	30	GND	51	KEYWAY
10	3V/5V	31	AD18	52	C_BE0
11	RESERVED	32	AD16	53	+3.3V
12	KEYWAY	33	+3.3V	54	AD06
13	KEYWAY	34	FRAME	55	AD04
14	RESERVED	35	GND	56	GND
15	RST	36	TRDY	57	AD02
16	3V/5V	37	GND	58	AD00
17	GNT	38	STOP	59	3V/5V
18	GND	39	+3.3V	60	REQ64
19	RESERVED	40	SDONE	61	+5V
20	AD30	41	SBO	62	+5V
21	+3.3V	42	GND		

SCSI Connector Pin Definitions

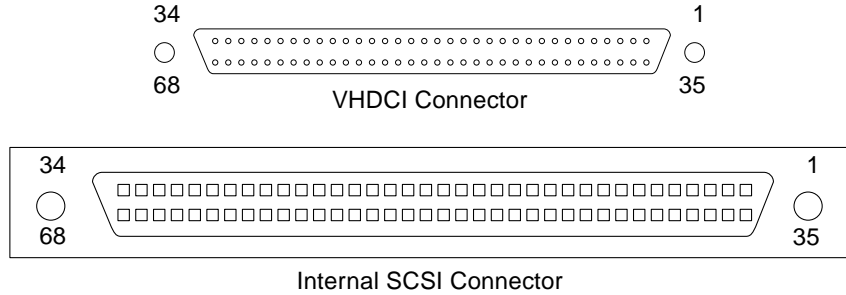


FIGURE B-1 VHDCI and Internal SCSI Connectors

TABLE B-6 SCSI Connector Pin Definitions

Pin	Description	Pin	Description	Pin	Description
1	+SD(12)	24	+RST	47	SD(6)-
2	+SD(13)	25	+MSG	48	SD(7)-
3	+SD(14)	26	+SEL	49	SDP-
4	+SD(15)	27	+C/D	50	Cable Sense (GND)
5	+SDP(1)	28	+REQ	51	TERMPWR
6	GND	29	+I/O	52	TERMPWR
7	+SD(0)	30	GND	53	OPEN
8	+SD(1)	31	+SD(8)	54	ATN-
9	+SD(2)	32	+SD(9)	55	GND
10	+SD(3)	33	+SD(10)	56	BSY-
11	+SD(4)	34	+SD(11)	57	ACK-
12	+SD(5)	35	SD(12)-	58	RST-
13	+SD(6)	36	SD(13)-	59	MSG-
14	+SD(7)	37	SD(14)-	60	SEL-
15	+SDP	38	SP(15)-	61	C/D-
16	DIFFSENS	39	SDP(1)-	62	REQ-
17	TERMPWR	40	GND	63	I/O-

TABLE B-6 SCSI Connector Pin Definitions

Pin	Description	Pin	Description	Pin	Description
18	TERMPWR	41	SD(0)-	64	GND
19	OPEN	42	SD(1)-	65	SD(8)-
20	+ATN	43	SD(2)-	66	SD(9)-
21	GND	44	SD(3)-	67	SD(10)-
22	+BSY	45	SD(4)-	68	SD(11)-
23	+ACK	46	SD(5)-		

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