HP Host Bus Adapters for HP ProLiant Servers Installation Guide

Abstract

This document includes feature and installation information about HP host bus adapter hardware and is for the person who installs, administers, and troubleshoots servers and storage systems. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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Contents

Features

Overview

Use the information in this document to install an HP ProLiant host bus adapter.

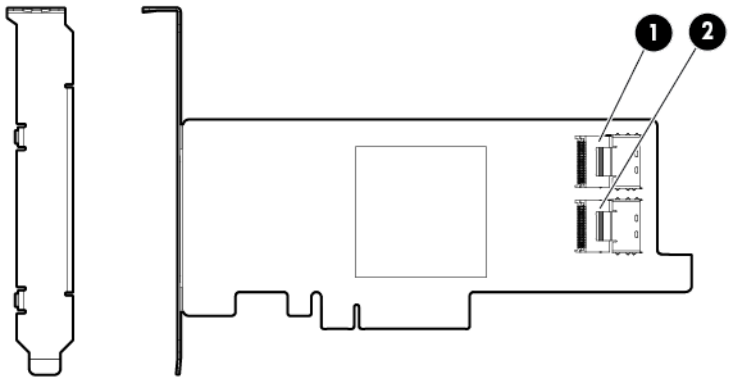
For more information, see the following resources:

- For expansion slot information and access procedures, see the server-specific documentation.
- For cabling and drive configuration information, see the external storage product documentation.

For more information about product features, specifications, options, configurations, and compatibility, see the QuickSpecs on the HP website (http://www.hp.com/go/productbulletin). At the website, choose the geographic region, and then locate the product by name or product category.

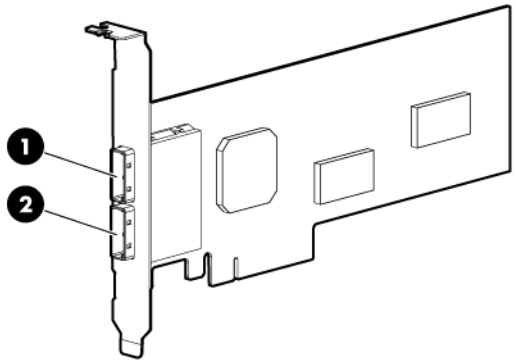
Connectors

H220 (SAS9205-8i) connectors



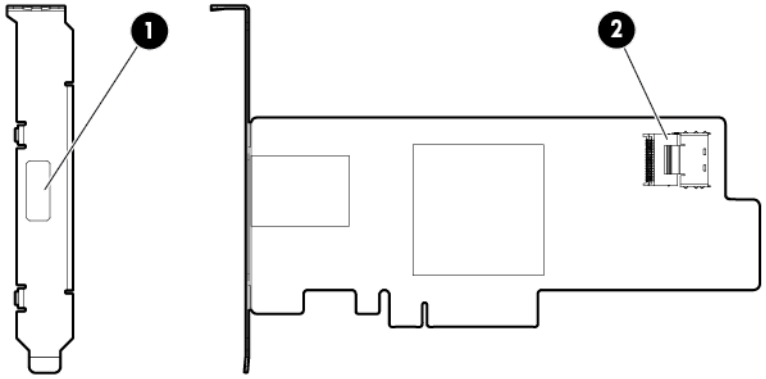
Item	Description
1	1i Mini SAS 4x connector
2	2i Mini SAS 4x connector

H221 (SAS9207-8e) connectors



Item	Description
1	1E Mini SAS 4x connector
2	2E Mini SAS 4x connector

H222 (SAS9205-4i4e) connectors



Item	Description
1	1E Mini SAS 4x connector
2	2i Mini SAS 4x connector

Specifications

To configure the adapter for maximum drive support, do not mix drive enclosures and tape drives on the same port.

Adapter	Profile	Standard	SAS transfer rate	Max internal drive support	Max external drive support
ProLiant H210i (SAS9203-2i)	Daughter card	PCIe 2.0 (x4)	Up to 6 Gb/s	SFF: 2	—
ProLiant H220 (SAS 9205-8i)	Low	PCIe 3.0 (x8)	Up to 6 Gb/s	LFF: 14 SFF: 27	—
ProLiant H221 (SAS9207-8e)	Low	PCIe 3.0 (x8)	Up to 6 Gb/s	—	LFF: 192 SFF: 200
ProLiant H222 (SAS9205-4i4e)	Low	PCIe 3.0 (x8)	Up to 6 Gb/s	LFF: 10 SFF: 14	LFF: 96 SFF: 200

For more information about product features, specifications, options, configurations, and compatibility, see the QuickSpecs on the HP website (http://www.hp.com/go/productbulletin). At the website, choose the geographic region, and then locate the product by name or product category.

For more information about drive support, see the documentation for the specific storage product that you are connecting to the adapter.

Installation procedure

Installation overview

> ⚠ **WARNING:** To reduce the risk of personal injury or damage to the equipment, consult the safety information and user documentation provided with the server before attempting the installation. Some servers contain high energy, high circuits, moving parts (such as fan blades), or any combination of these hazards, that may be exposed if covers and access panels are removed while the product is powered. These products are intended to be serviced only by qualified personnel who have been trained to deal with these hazards. Do not remove enclosures or attempt to bypass any interlocks that may be provided for the purpose of guarding against these hazardous conditions.

> ⚠ **WARNING:** To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.

The installation procedure involves the following steps:

1. Preparing the server (on page 7)
2. Installing the adapter hardware (on page 7)
3. Connecting the adapter (on page 9)
4. Completing the installation procedure (on page 10)

Preparing the server

1. Update the server firmware by using SPP. To download SSP, see the HP website (http://www.hp.com/go/spp). For more information, see the server documentation.
2. Back up all server data.
3. Shut down the operating system as outlined in the operation system instructions.
4. Power down the server.
5. Power down all peripheral devices.
6. Disconnect the power cord from the power source.
7. Disconnect the power cord from the server.
8. Disconnect all peripheral devices from the server.

Installing the adapter hardware

Installing the H220, H221, or H222 HBA

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning this procedure.

For more information, see "Electrostatic discharge (on page 11)."

To install the adapter:

1. Depending on the server model, open or remove the access panel.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

2. Locate the PCIe expansion slots, and then select a slot that supports the adapter.

   For more information, see "Specifications (on page 5)" and the server documentation.
3. Depending on the server model, remove the retaining screw or open the expansion slot latch that secures the PCIe slot.
4. Remove the slot cover and save it. To maintain proper airflow, the slot must have an expansion board or slot cover installed.
5. Install the adapter in the expansion slot, and press it firmly into place. The contacts on the adapter edge must be fully seated in the expansion slot.
6. Depending on the server model, secure the adapter by installing the retaining screw or by closing the slot latch.

Installing the H210i HBA

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning this procedure.

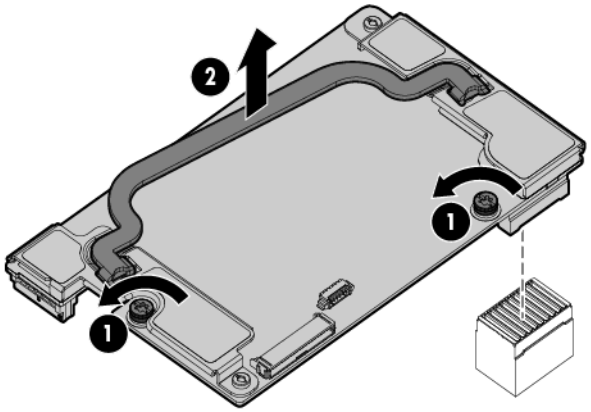
For more information, see "Electrostatic discharge (on page 11)."

To install the adapter:

1. Power down the server.
2. Remove the server.
3. Remove the access panel.

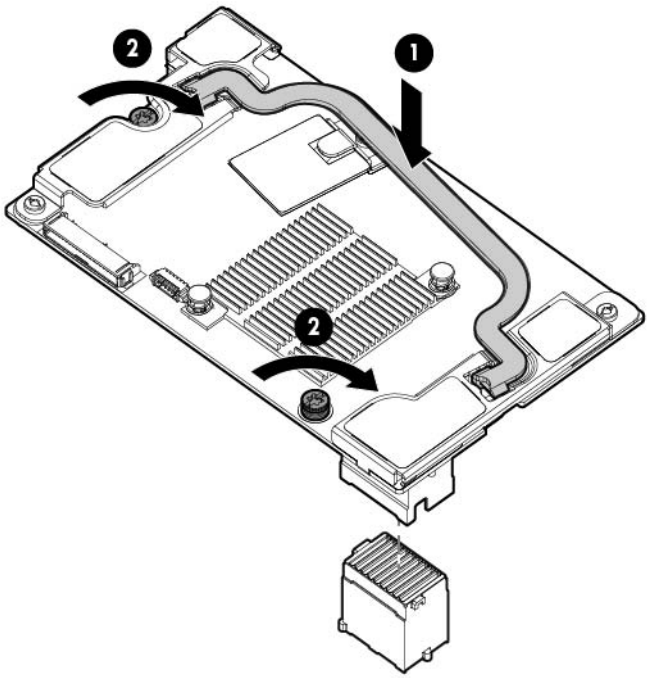
CAUTION: Always be sure that both captive screws are disengaged before removing the HBA. Failure to disengage the screws may result in damage to the HBA.

4. If another HBA or controller is installed, disengage the captive screws and use the handle to remove the HBA or controller.



IMPORTANT: Always close the HBA handle before installing the HBA.

5. Close the H210i HBA handle and then install the HBA. To properly seat the HBA, press firmly in the areas indicated on the HBA.



Connecting the adapter

Cabling configurations vary depending on the storage product. To cable this adapter to a storage product, see the documentation provided with the storage product.

Cables for connecting the adapter to other devices are provided with most HP server products. The adapter supports external Mini-SAS cables with lengths from 1 m to 6 m. All HP cables are keyed to ensure correct installation.

For more information about product features, specifications, options, configurations, and compatibility, see the QuickSpecs on the HP website (http://www.hp.com/go/productbulletin). At the website, choose the geographic region, and then locate the product by name or product category.

You can order extra cables from an authorized HP reseller or authorized HP service provider. For the name of the nearest HP authorized reseller, see the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).

Completing the installation procedure

1. Verify that all cables are routed correctly and are not restricting other components or being pinched by them. For the correct cable routing, see the server documentation.
2. Connect the peripheral devices to the server.
3. Connect the power cord to the server.
4. Connect the power cord to the power source.
5. Power up all peripheral devices connected to the server.
6. Power up the server.
7. Install the latest firmware and drivers for the adapter.

   HP now distributes firmware, drivers, and other support software for servers through Service Pack for ProLiant, or SPP, which you can download from the HP website (http://www.hp.com/go/spp/download). Be sure to use the latest SPP version for the server.

   If you installed an OS by using the Intelligent Provisioning software, its Configure and Install feature may have provided the latest driver support.

   To directly locate the OS drivers for a particular server, enter the following web address into the browser:

   `http://www.hp.com/support/<servername>`

   In place of <*servername*>, enter the server name.

   For example:

   `http://www.hp.com/support/dl360g7`

Electrostatic discharge

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact an authorized reseller.

Regulatory compliance notices

Federal Communications Commission notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

FCC rating label

The FCC rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or ID on the label. Class A devices do not have an FCC logo or ID on the label. After you determine the class of the device, refer to the corresponding statement.

FCC Notice, Class A Equipment

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 instructions, 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 personal expense.

FCC Notice, Class B Equipment

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 that is different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Declaration of conformity for products marked with the FCC logo, United States only

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this product, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 530113
  Houston, Texas 77269-2000
- 1-800-HP-INVENT (1-800-474-6836). (For continuous quality improvement, calls may be recorded or monitored.)

For questions regarding this FCC declaration, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 510101
  Houston, Texas 77269-2000
- 1-281-514-3333

To identify this product, refer to the part, series, or model number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian notice (Avis Canadien)

Class A equipment

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.

Class B equipment

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.

European Union regulatory notice

Products bearing the CE marking comply with the following EU Directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
- Ecodesign Directive 2009/125/EC, where applicable

CE compliance of this product is valid if powered with the correct CE-marked AC adapter provided by HP.

Compliance with these directives implies conformity to applicable harmonized European standards (European Norms) that are listed in the EU Declaration of Conformity issued by HP for this product or product family and available (in English only) either within the product documentation or at the following HP website (http://www.hp.eu/certificates) (type the product number in the search field).

The compliance is indicated by one of the following conformity markings placed on the product:

For non-telecommunications products and for EU harmonized telecommunications products, such as Bluetooth® within power class below 10mW.

For EU non-harmonized telecommunications products (If applicable, a 4-digit notified body number is inserted between CE and !).

Please refer to the regulatory label provided on the product.

The point of contact for regulatory matters is Hewlett-Packard GmbH, Dept./MS: HQ-TRE, Herrenberger Strasse 140, 71034 Boeblingen, GERMANY.

Japanese notice

ご使用になっている装置に VCCI マークが付いていましたら、次の説明文をお読み下さい。

この装置は、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下さい。

VCCI-B

VCCI マークが付いていない場合には、次の点にご注意下さい。

この装置は、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は適切な対策を講ずるよう要求されることがあります。

VCCI-A

Korean notice

Class A equipment

A급 기기 (업무용 방송통신기기)	이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

Class B equipment

B급 기기 (가정용 방송통신기기)	이 기기는 가정용(B급)으로 전자파적합등록을 한 기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

Compliance

엘에스아이

- HP ProLiant H210i (SAS9203-2i) Host Bus Adapter
- HP ProLiant H220 (SAS9205-8i) Host Bus Adapter
- HP ProLiant H221 (SAS9207-8e) Host Bus Adapter
- HP ProLiant H222 (SAS9205 4i4e) Host Bus Adapter

Acronyms and abbreviations

HBA

host bus adapter

SAS

serial attached SCSI

SPP

HP Service Pack for ProLiant

Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (mailto:docsfeedback@hp.com). Include the document title and part number, version number, or the URL when submitting your feedback.