

A-Class Carrier Grade Addendum

First Edition

Customer Order Number:Z4045-90001



Manufacturing Part Number: Z4045-96001

E0701

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Preface

Legal Notices

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Printing History

The Printing History below identifies the edition dates of this manual. Updates are made to this publication on an unscheduled, *as needed*, basis. The updates will consist of a complete replacement manual and pertinent on-line or CD-ROM documentation. The previous version may be discarded or retained, as desired, upon receipt of the updated version.

Each reprinting (Edition) of this publication or electronic documentation will incorporate all updates since the previous edition. Thus, the reprinted edition will be identical in content with prior editions of the same publication but with all interceding updates included. New editions of this manual will contain new information, as well as all updates.

First Edition - July 2001

About This Manual

This addendum contains information and procedures required to install NEBS-compliant DC A-Class Carrier-Grade servers. The A-Class Carrier Grade Addendum supplements the documentation for the HP A-Class Enterprise Server. This addendum contains information not found in the standard HP A-Class Enterprise Server documentation including:

- Racking the DC A-Class Server
- Electrical Requirements for the DC A-Class Server
- Connecting DC power to the server
- Removal and replacement of DC power supplies?
- Removal and replacement of the diffuser?
- Regulatory Information

Other Required Documentation

To install the DC A-Class server refer to both the HP A-Class Enterprise Server documentation and this addendum. The latest version of these documents can also be found at the <http://docs.hp.com/hpux/systems/> under *[Systems Hardware]*, then *[A-Class]*

General Notes, Cautions, and Warnings

WARNING Electrostatic Discharge (ESD) Precaution



When handling any electronic component or assembly (such as a PCI card or Memory SIMM), observe all antistatic precautions. An ESD kit (HP P/N A3024-80004) is available or supplied with this system. The kit contains one wrist strap, one conductive sheet, and one anti-static foam pad.

- Always wear a grounded wrist strap when working on the equipment or printed circuit boards.
- Treat all assemblies, components, and interface connections as static-sensitive.
- Avoid working in carpeted areas and keep body movement to a minimum while removing or installing boards to minimize buildup of static charge.

Battery Notice

WARNING



This device contains a Lithium battery. This battery is not to be removed or replaced by the user. If the battery needs to be replaced, contact authorized Hewlett-Packard service personnel.

Lithium batteries can explode if used improperly. Do not recharge, disassemble, or dispose of, by burning. Failure to follow this precaution can result in damage to equipment and injury to personnel.

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1 Installation

Introduction

This chapter contains information and procedures required to install a NEBS level 3-compliant A-Class carrier-grade server. The chapter contains the following information:

- An overview of the installation tasks
- Racking of the DC A-Class server
- Electrical requirements for the DC A-Class server
- Connecting DC power to the server

Other Required Documentation

To install the DC powered A-Class telecom server, refer to this documentation and to the HP standard A-Class Enterprise Server documentation located at <http://docs.hp.com/>.

Tools Required

The following tools may be required to install the L Class carrier-grade systems in an enclosure:

- Genie Load Lifter™ of equivalent.
- T-10, T15, T20, and T25 Torx drivers.
- ESD Grounding strap

Installation

To install an A-Class Carrier-Grade server in a NEBS qualified enclosure, refer to the standard A-Class Unpack and Install Instructions at <http://docs.hp.com> and proceed as follows:

NOTE

The information on AC power requirements in the standard A-Class *Site Preparation* documentation does not apply to this DC powered device.

For NEBS compliance, the server must be installed in a NEBS certified rack.

WARNING



Use of any slide mount product requires the installation of a enclosure anti-tip device.

If the anti-tip device for your enclosure is a pair of anti-tip feet, install both front and rear anti-tip feet on the enclosure before installing any slide mount product.

If the anti-tip device for your enclosures is the installation of ballast in the bottom of the enclosure, make sure you install the ballast in the enclosure before installing any slide mount product.

To determine ballast requirements, refer to the ballast worksheets in documentation accompanying the enclosure or www.eproducts.hp.com

Failure to follow these precautions can result in damage to equipment or injury to personnel.

Z4046A Racking Installation Kit Components



Step 1. Unpack and Inventory Components.

Use the packing list or shippers invoice, to inventory the components before starting the installation.

A-Class Telco Racking Kit (Z4046A)

Part Number	Qty	Description
Z4046A		A-Class Telco Rack Kit (A-Class Telco)
Z4046-62001	1	Assembly-Rack Mount, A-Class Telco, Seismic
5002-1638	2	Bracket, Telco Rack Mount, A-Class Telco, Seismic
5065-5999	1	Kit, Hardware
0535-0093	4	Nut-Clip, M5
0515-0671	4	Screw, M5x0.8x16mm TORX Pan
0515-2991	4	Screw, M5x0.8x10mm TORX Pan
0515-2478	20	Screw, M4x0.7x8mm TORX Pan
A5570-00006	2	Assembly, Slide Lock Ear
A5810-62001	2	Assembly-Slide

Step 2. Perform Site Preparation

Perform *Site Preparation*, as required. Refer to the site preparation instructions for the standard A-Class server at <http://docs.hp.com> under the System Hardware heading.

Step 3. Install the server in a NEBS qualified enclosure.

Refer to this documentation and the A-Class *Unpack and Install Instructions* at <http://docs.hp.com> and proceed as follows to install the server in a NEBS qualified enclosure.

a. Install Internal Server Components

Refer to A-Class [Unpack and Install Instructions, Removal and replacement instructions, and Installing Add-On Components instructions](#) for installation instructions for internal server components.

NOTE

Some internal server components may have additional installation instructions or ReadMe files. Read and become familiar with these additional documents before beginning the installation.

Some internal components are too delicate to be installed in the server prior to shipping. These internal components are shipped with the server, but are packed separately. They can be installed after the enclosure has been unpacked and positioned.

Some of the internal components that are packed separately are not user-installable. To maintain warranty validation, these items must be installed by a Hewlett-Packard Customer Engineer. If you received Central Processing Units (CPUs), contact your Hewlett-Packard provider to arrange for installation.

NOTE

These end caps are not used in this installation and may be discarded once the installation is complete.

b. Install the first half of the slide rail assembly.

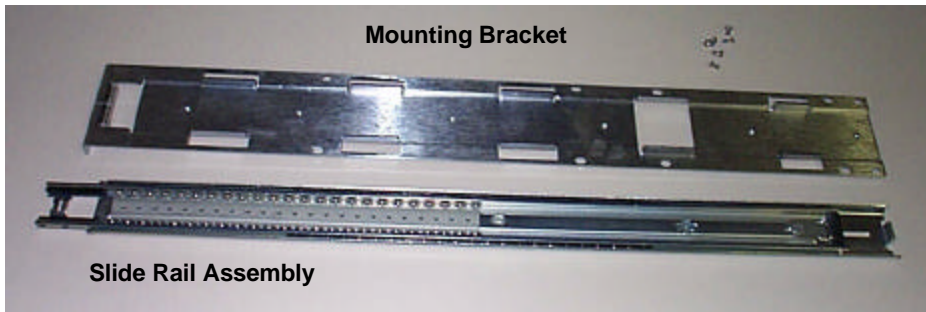
Using six M5x3 machine screws, three on each side, attach one half of a slide rail assembly to each side of the server, where indicated.



c. Install the second half of the slide rail assembly.

Using six M5x3 machine screws attach one of the remaining halves of the slide rail assembly to each of

the server mounting brackets, as shown.



d. Attach the mounting brackets and slide assemblies to the enclosure posts.

Using clipnuts and M5x16 machine screws, attach one mounting bracket and slide assembly to the posts on each side of the enclosure.

NOTE

Ensure that the brackets are level and installed on the same row of holes on all posts.



- e. Place the server onto the slide mount assembly.

WARNING



Use care when lifting the server onto the slide rails. Use two persons or an appropriate lift as necessary. Failure to follow this precaution can result in damage to equipment and injury to personnel.

Extend both slide mount assembly arms and using an appropriate lifting device or two persons, if needed, place the server onto the slide rails. Push it into the enclosure until it stops.



f. Secure the server in the enclosure.

To secure the server in the enclosure install the slide rail stops at the front of each slide assembly.

WARNING



Ensure that both safety stops are installed and the captive screws are secured. Failure to follow this precaution can result in damage to equipment or injury to personnel.



Connecting the Server to DC Power Source

A-Class Carrier Grade servers contain NEBS-compatible Direct Current (DC) power supplies. These switching power supplies are designed to work on DC power using a DC-to-DC converter module.

This DC power supply allows this computer to be powered from a central office -48V or -60V power source.

These power supplies provide alarm outputs, in the form of relay contact closures, to indicate a power supply anomaly or failure. A remote control input is provided to the supplies that can be used to reset the server by turning off the power supply(ies).

CAUTION



This product is for DC operation only. Do not install an AC power module or connect it to an AC power source. Failure to follow this precaution can cause damage to your equipment.

CAUTION



Ensure that all central office safety precautions are observed when connecting and disconnecting the server power supplies to the DC power source.

This product is to be installed only in Restricted Access Areas (dedicated equipment rooms, equipment closets or the like) in accordance with Articles 110-16 to 110-18 of National Electrical Code, ANSI/NFPA 70.

Installation should be performed by qualified service personnel only.

NOTE

The power supply cable connector on the front of the slide tray is used as the main disconnect device for this equipment.

CAUTION



To protect the equipment from overload or short circuits that may cause equipment damage or fire, the power supply is internally fused.

For added safety and integrity at the customer's site, the circuit which supplies DC power to the server should be protected with an appropriate 45 A fuse or circuit breaker.

Failure to follow any of these precautions can cause damage to equipment and facilities.

A-Class Carrier Grade Server Specifications

The following table lists the power and environmental specifications for the A-Class carrier grade server. For other specifications, refer to the A-Class enterprise server documentation.

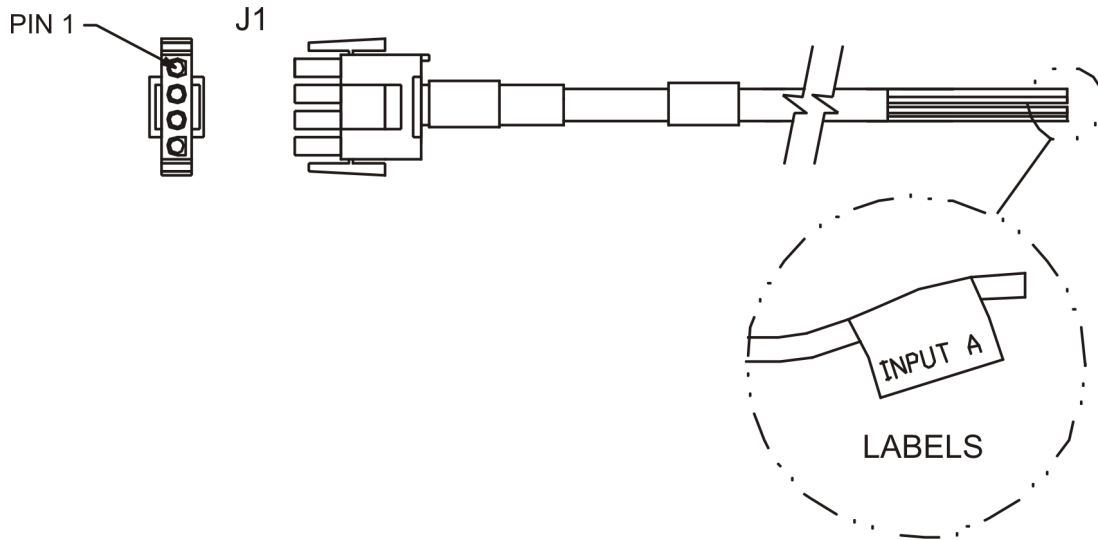
Specification	Data
Input per Power Supply	-48VDC
Maximum System Input Current	38A
Shutdown Thresholds	-72VDC (Input over-voltage) -40VDC (Input under-voltage)
Maximum Output Power per DC Supply Power	735W
Temperature Ranges: Operating: Non-operating:	5° to 35°C (41° to 95°F) -40° to -65°C (-40° to 149°F)
Remote (switched ground) RESET signal:	* Referenced to -48VDC Return 50mA (min) 500mA (max)
Alarm signals:	Dry relay contact closure for all alarms

* Contact closure causes power supply to shut down its four main outputs.
When closure is removed, the power supply restarts. (Signal name is SAONOFF)

Power Cable Installation

The following section describes the connection of the DC input power source to the server.

Power Input Cable and pinouts



J1	Description	Wire Gauge		Color
		AWG	MM ²	
1	Return A	12AWG	4MM ²	White
2	Return B	12AWG	4MM ²	Green
3	Input A (-48VDC)	12AWG	4MM ²	Black
4	Input B (-48VDC)	12AWG	4MM ²	Red

Connecting DC Power to High-Availability Systems

NOTE

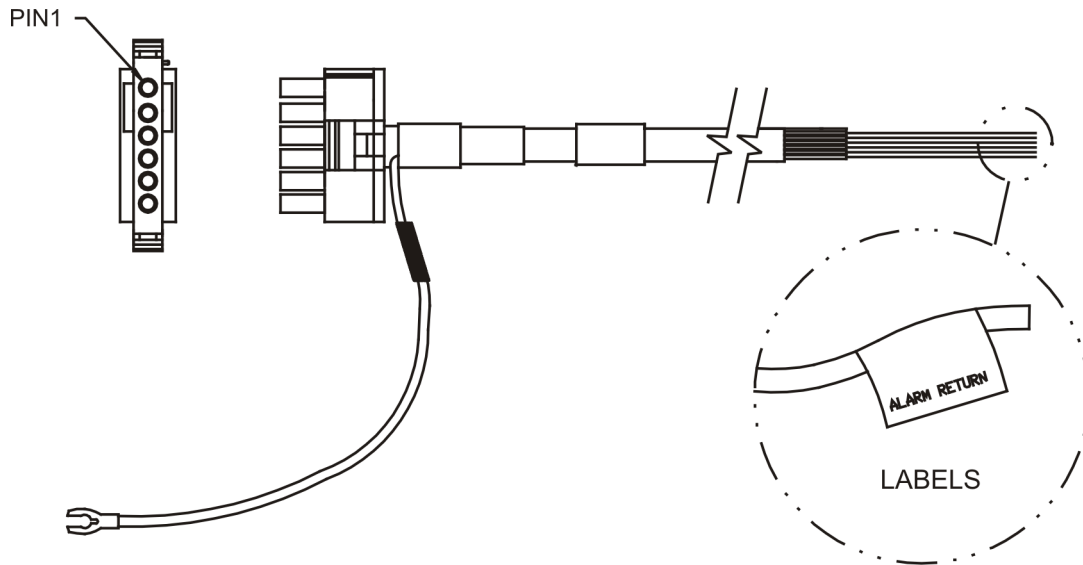
For complete power redundancy in high-availability systems, connect each power supply to separate power sources. Connect the -48V (A) and Return (RTN A) leads to one power source and the -48V (B) and Return (RTN B) leads to a different power source. This will protect the system from power failure in event one power source fails.

Connecting all power supplies to the same power source will protect the system if one power supply fails, but not from a failure in the power source. If you are connecting the power supplies to a single power supply, connect both the A and B leads on each power supply cable.

Alarm Cable Installation

The following section describes the installation of the Alarm cable for the server.

Alarm Cable and Pinouts



J1	Description	Wire Gauge		Color
		AWG	MM ²	
1	Alarm Return	22	0.4MM ²	White
2	Input A Status	22	0.4MM ²	Black
	Input B Status	22	0.4MM ²	Red
4	P/S Status	22	0.4MM ²	Green
5	Thermal Warning	22	0.4MM ²	Yellow
6	Remote DC Output On/Off	22	0.4MM ²	Blue

Safety Grounding

The A-Class carrier-grade server has a grounding lug on the rear panel for connecting to earth ground. The server must be connected to earth ground using a minimum 6 AWG (16mm²) wire with a suitable Listed/Certified terminal such as Thomas and Betts part number 54205.

CAUTION



This equipment must be connected to earth ground to assure continued safe operation, to prevent damage from electrostatic discharge, and to assure compliance with electromagnetic compatibility requirements.

Rear Panel Dual Grounding Lugs



Introduction

This chapter contains removal and replacement procedures for the hotswap DC power supply.

For Removal and replacement procedures for other A-Class components, see the Remove and Replace Procedures document at the URL <http://docs.hp.com/> under the *A-Class*.

Electrostatic Discharge (ESD) Precautions

When handling any electronic component or assembly (such as a PCI card or Memory SIMM), you must observe the following antistatic precautions to prevent damage. An ESD kit (HP P/N A3024-80004) is available (or supplied with Memory additions). The kit contains one wrist strap, one conductive sheet, and one anti-static foam pad.

- Always wear a grounded wrist strap when working around printed circuit boards,
- Treat all assemblies, components, and interface connections as static-sensitive,
- Avoid working in carpeted areas, and
- Keep body movement to a minimum while removing or installing boards to minimize the buildup of static charge.

Battery Notice

This device contains a Lithium battery. This battery is not to be removed or replaced by the user. If the battery needs to be replaced contact you Hewlett-Packard authorized service personnel.

WARNING



Lithium batteries can explode if used improperly. Do not recharge, disassemble, or dispose of in a fire. Failure to follow this precaution can result in damage to equipment and injury to personnel.

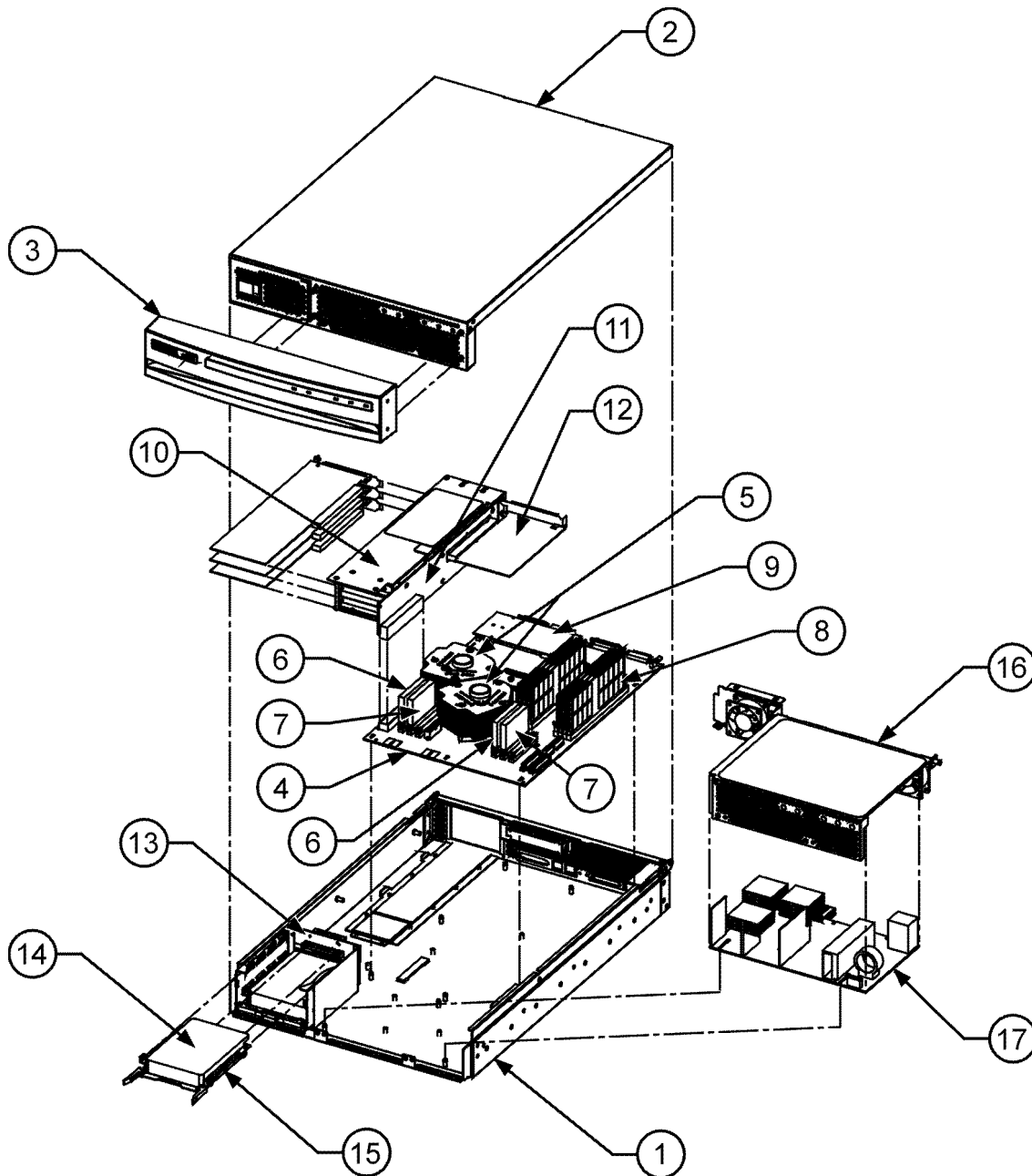
Field Replaceable Parts

The following tables list all Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) for the A500 Telecom server.

- CRUs may be removed or replaced by either the customer or qualified HP field engineering personnel.
- FRUs may, under warranty, be removed or replaced only by qualified HP field engineering personnel.

Customer Replaceable Unit (CRU) Physical Locations

This section contains views of the A500 server. The locator numbers in the diagrams correspond to the numbers in the CRU Part Number section which follows.



NOTE *Components numbered 1, 4, 5, 13, 16, and 17 are not customer replaceable and do not appear in the Customer Replaceable Unit (CRU) Part Numbers section. They are included in this illustration for continuity, only.*

Exchange CRUs

Product #	New Part #	Exch. Part #	Description	Loc. #
A6114A	A6114-60001	A6114-69006	2048 MB Memory DIMM	8
A5841A	A5841-60001	A5841-69001	1024 MB Memory DIMM	
A5840A	A5840-60001	A5840-69001	512 MB Memory DIMM	
A5572A	A5572-60002	A5572-69002	128 MB Memory DIMM	
A5505A	A5505-60001	A5505-69001	9 GB Disk Drive	14
A5531A	A5531-60001	A5531-69001	18 GB Disk Drive	
A6089A	A6089-67001	A6145-69001	36 GB Disk Drive	
A5570A	A5570-60002	A5570-69002	Guardian Service Processor	9

Non Exchange CRUs

Part #	Description	Loc #
A5570-60003	PCI I/O Backplane	11
A5570-60005	Secure Web Console PCA	12
A5570-00002	Disk Carrier	15
0950-3821	DC-DC Converter - Master	6
0950-3822	DC-DC Converter - Slave	7
A5570-62003	I/O Card Cage Chassis	10
A5570-62006	Plastic Front Bezel	3
A5570-67007	Chassis Top Cover	2
A5570-84001	A500 Name Plate	N/A
A5191-63001	Console-Remote-GSP Cable	N/A

NOTE The following tables list Field Replaceable Units (FRUs) for the A500 Telecom server. FRUs may be removed or replaced by qualified HP field engineering personnel only. Removal or replacement of FRUs by other than authorized personnel may affect your warranty.

Exchange FRUs

Product#	New Part #	Exch. Part #	Description	Loc. #
A5570A/ A6109A	A5570-60001*	A5570-69001	System Board	4
	A5570-62009	A5570-69009	Power Supply	17

A5570B/ A6109B	A5570-60016**	A5570-69016	System Board	4
	A5570-62009	A5570-69009	Power Supply	17

Z4045A	Z4045-60001	Z4045-69001	System Board, Telco	4
	0950-4075	Z4045-69002	Power supply DC, Telco	17

A5571A	A5571-62001	A5571-69001	440 MHz Processor	5
A6148A	A6148-62001	A6148-69001	550 MHz Processor	

* Works with A5570A/A6109A System only.

** Works with both A5570A/A6109A or A5570B/A6109B Systems.

Non-Exchange FRUs

Part #	Description	Loc #
A5570-63001	Disk Ribbon Cable	N/A
A5570-00001	PS Cover with Fans and LCDs	16
A5570-60004	Disk Media Backplane	13
A5570-67006	Chassis	1
Z4045-62002	Chassis, Telco	1

FCC Statement (USA Only)

The Federal Communications Commission (in 47 CFR 15.105) has specified that the following notice be brought to the attention of the users of this product.

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. The end user of this product should be aware that any changes or modifications made to this equipment without the approval of Hewlett-Packard could result in the product not meeting the Class A limits, in which case the FCC could void the user's authority to operate the equipment.

Canada RFI Statement

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

Notice relative aux interférences radioélectriques (Canada)

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

European Union RFI Statement

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

International

VCCI Statement (Japan Only)

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

Spécification ATI Classe A (France seulement)

DECLARATION D'INSTALLATION ET DE MISE EN EXPLOITATION d'un matériel de traitement de l'information (ATI), classé A en fonction des niveaux de perturbations radioélectriques émis, définis dans la norme européenne EN 55022 concernant la Compatibilité Electromagnétique.

Cher Client,

Conformément à la Réglementation Française en vigueur l'installation ou le transfert d'installation, et l'exploitation de cet appareil de classe A, doivent faire l'objet d'une déclaration (en deux exemplaires) simultanément auprès des services suivants:

Comité de Coordination des Télécommunications 20, avenue de Ségur - 75700 PARIS

Préfecture du département du lieu d'exploitation

Le formulaire à utiliser est disponible auprès des préfetures.

La déclaration doit être faite dans les 30 jours suivant la mise en exploitation.

Le non respect de cette obligation peut être sanctionné par les peines prévues au code des Postes et Télécommunications et celles indiquées dans la loi du 31 mai 1993 susvisée.

Arrêté du 27 Mars 1993, publié au J.O. du 28 Mars - ATI

Acoustics (Germany)

Acoustic Noise level per ISO 9296 (25° C).

$LpA_m < 60\text{dB}$ (operators position)

Geräuschemission (Deutschland)

$LpA_m < 60\text{dB}$ (Arbeitsplatz)

Laser Safety

This product contains a laser internal to the Optical Link Module (OLM) for connection to the Fibre communications port.

In the USA, the OLM is certified as a Class 1 laser product conforming to the requirements contained in the Department of Health and Human Services (DHHS) regulation 21 CFR, Subchapter J. The certification is indicated by a label on the plastic OLM housing.

Outside the USA, the OLM is certified as a Class 1 laser product conforming to the requirements contained in IEC 825-1:1993 and EN 60825-1:1994, including Amendment 11:1996.

General Precautions

CAUTION

Always wear a wrist-strap connected to the chassis when working in electrostatic sensitive areas. Ensure that the metal of the wrist strap contacts your skin.



CAUTION

This product is intended for Central Office installation only.

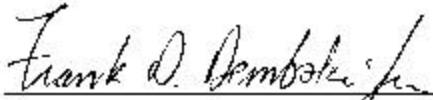


CAUTION

To protect equipment against lightning induced surge damage, all Intra-building I/O cabling must be shielded and the shield must be grounded at both ends.



Declaration of Conformity

DECLARATION OF CONFORMITY according to ISO/IEC Guide 22 and EN 45014	
Manufacturer's Name:	Hewlett-Packard Company Internet & Applications Systems Division
Manufacturer's Address:	8000 Foothills Blvd. Roseville, CA 95747 USA
declares, that the product	
Product Name:	Computer System
Model Number(s):	RSVL-0107-A-xx (where -xx is an optional suffix and x is any letter or blank)
Product Options:	All
conforms to the following Product Specifications:	
Safety:	IEC 60950: 1991+A1+A2 +A3 +A4 / EN 60950: 1992+A1+A2 +A3 +A4 +A11 IEC 60825-1:1993 +A1 / EN 60825-1:1994+A11, Class 1 GB 4943-1995
EMC:	CISPR 22: 1997 / EN 55022: 1998 Class A 1) CISPR 24: 1997 / EN 55024: 1998
	IEC 61000-3-2: 1995 / EN 61000-3-2: 1995 +A14 IEC 61000-3-3: 1994 / EN 61000-3-3: 1995 GB 9254-1988
Supplementary Information:	
The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE marking accordingly.	
1) The product was tested in a typical configuration with Hewlett-Packard computer peripherals.	
2) DC versions of the product were tested in a typical configuration with a Hewlett-Packard 6813A AC/DC power source.	
	
Roseville, 6/1/01	Frank D. Dembski Jr., Quality Manager
European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department HQ-TRE, Herrenberger Straße 130, D-71034 Böblingen (FAX: + 49-7031-14-3143)	

