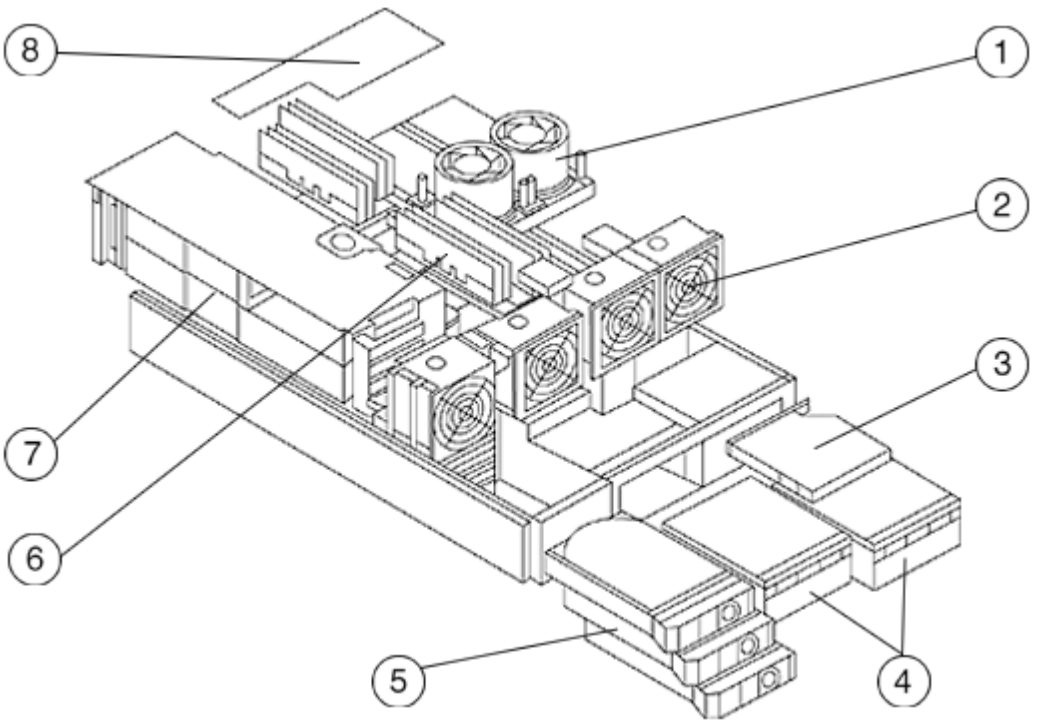
Overview



1. PA-8800 or PA-8900 processors
2. Hot-swap fans
3. DVD-ROM
4. Hot-swap power supplies
5. Hot-plug disk drives
6. 12 DDR memory DIMMs
7. PCI-X I/O slots
8. iLO Manageability Card

At A Glance

rp3410 Server Product Numbers

PA 8900 two core, 1 processor Capable Base System: A9954A
With one active and one inactive PA 8900 800 MHz core.
NOTE: The second core cannot be accessed without ordering A9770A.
NOTE: Must select either rackmount option or pedestal server mounting kit.

PA 8800 two core, 1 processor Capable Base System: A7136B
With one active and one inactive 800-MHz PA-8800 core.
NOTE: The second core cannot be accessed without ordering A9770A.
NOTE: Must select either rackmount option or pedestal server mounting kit.

Activation for second 800 MHz PA 8800 or PA 8900 processor (Optional - max 1). A9770A

NOTE: Two power cords are shipped with each system; one that connects the system to the rack PDU and one that enables direct connection to a wall socket. Localized cord is included at the regional distribution site.

Standard System Features

Overview

- Operating System support: HP UX 11i version 1 and HP-UX 11i version 2 for HP 9000
- Dual channel Ultra160 SCSI controller, 2 internal disks on one channel, 1 internal disk on a second channel; second channel supports external devices as well.
- Internal and external Ultra160 SCSI port
- 10/100/1000Base-TX LAN (auto speed sensing, RJ-45 connector)
- iLO Manageability Card for remote management and HA monitoring
- Telnet and web console via 10/100Base TX management LAN (RJ-45 connector)*
- Three RS-232 serial ports linked to the management processor (multiplexed from a single DB-25 port)
- Factory integration of processors, memory, disk drives, removable media, and I/O cards
- Rackmountable into 19-inch cabinets
- Optional stand-alone pedestal mount
- One-year warranty with next business day on-site

*NOTE: Serial ports A & B on the rear of the system enclosure are not functional. Please see HP 9000 rp3410-2 Multi function Core I/O.

Standard Features

Minimum System

- One PA 8800 800 MHz processor with 32 MB Level 2 cache: One core is activated on a two core PA 8800 800 MHz processor module; a second core is activated by ordering optional part number A9770A. Or one PA 8900 800 MHz processor with 64 MB Level 2 cache: One core is activated on a two corel PA 8900 800 MHz processor module; a second core is activated by ordering optional part number A9770A.
- 1 GB PC2100 ECC Registered DDR266A SDRAM (2×256MB DIMMs)
- One power supply

Maximum Server Capacities

- Two PA 8800 800 MHz cores (one two core PA 8800 processor module) or two PA 8900 800 MHz cores (one two core PA 8900 processor module).
- 6 GB PC2100 ECC Registered DDR266A SDRAM (12×512MB DIMMs)
- Two Hotswap power supplies, providing N+1 protection for power supplies and power input
- Two PCI X/PCI IO adapter cards
- One internal DVD ROM or DVD+RW combo drive
- Three internal hot plug LVD SCSI disks

Standard System Features

- Operating System support: HP-UX 11i version 1
- Dual channel Ultra160 SCSI controller, 2 internal disks on one channel, 1 internal disk on a second channel; second channel supports external devices as well.
- Internal and external Ultra160 SCSI port
- 10/100/1000Base-TX LAN (auto speed sensing, RJ-45 connector)
- iLO Manageability Card for remote management and HA monitoring
- Telnet and web console via 10/100Base TX management LAN (RJ-45 connector)*
- Three RS-232 serial ports linked to the management processor (multiplexed from a single DB-25 port)
- Factory integration of processors, memory, disk drives, removable media, and I/O cards
- Rackmountable into 19-inch cabinets
- Optional stand-alone pedestal mount
- One-year warranty with next business day on-site

*NOTE: Serial ports A & B on the rear of the system enclosure are not functional. Please see HP 9000 rp3410-2 Multi function Core I/O.

High Availability

- N+1 Hot swap cooling
- One Hot swap power supply standard-optional second hot swap power supply for N+1 protection
- On-line memory page deallocation
- ECC protected DDR memory
- Memory chip spare to overcome single DRAM chip failures
- Dynamic Processor resilience and deallocation
- UPS power management
- Hot Plug internal disks
- Two independent Ultra SCSI channels to internal disks for mirroring across disks and channels
- Journal file system for HP-UX
- Auto reboot
- HP MC/ServiceGuard for HP-UX
- HP ServiceGuard Extension for RAC for HP-UX
- ServiceGuard Manager for HP-UX
- Insight Manager 7-proactive fault management
- EMS HA Monitors for HP-UX
- ECM Toolkit for HP-UX
- HP Surestore AutoPath for HP-UX

Standard Features

- MirrorDisk for HP-UX

Security

- Separate LAN for system management
- Password protection on console port
- Disablement of remote console ports
- SSL encryption on web console

Manageability

- HP Ignite-UX for installation and deployment of the operating system
- HP Software Distributor-UX for software and patch management
- HP Servicecontrol Suite for HP-UX
- iLO Manageability Card for comprehensive remote management of HP-UX
- Process Resource Manager for HP-UX workload management

Configuration

Processor Configuration

The HP 9000 rp3410 is a symmetrical multiprocessing (SMP) server supporting up to two PA 8800 cores (2 cores per processor, 1 processor max per system) or up to two PA 8900 cores (2 cores per processor, 1 processor maximum per system).

Processor Details

PA-8800 processor with two cores:

- 800-MHz
- Level 2 Cache: 32 MB (shared between cores)
- Level 1 Cache: 3 MB (1.5 MB per core)
- Single bit cache error correction
- 44 bit physical addressing
- 64 bit virtual addressing
- 4 GB maximum page size

PA-8900 processor with two cores:

- 800-MHz
- Level 2 Cache: 64 MB (shared between cores)
- Level 1 Cache: 3 MB (1.5 MB per core)
- Single bit cache error correction
- 44 bit physical addressing
- 64 bit virtual addressing
- 4 GB maximum page size

Memory Configuration

The HP 9000 rp3410 supports DDR (double data rate) SyncDRAM (synchronous dynamic random access memory) DIMMs with ECC and chip spare protection. The HP 9000 rp3410 has twelve DIMM slots, allowing a maximum of 6 GB of total system memory.

Memory Loading Rules and Performance Guidelines

- Memory is loaded in 512 MB[1], 1 GB or 2 GB options
- 512 MB option consists of 2 x 256 MB DIMMs, 1 GB option consists of 4×256 MB DIMMs, and 2 GB option consists of 4×512 MB DIMMs.
- Minimum memory is 1 GB. NOTE: 512 MB[1] (2×256 MB) is available for customers who have 512 MB installed (minimum memory was increased to 1 GB on July 12, 2004). A second pair of 256 MB DIMMs (512 MB option) must be added to achieve a quad before other memory is added. A third 256 MB DIMM pair is not supported.
- Maximum memory is 6 GB (12×512 MB DIMMs)
- Memory must be loaded in the specific order outlined on the system board.
- Memory is loaded across both memory buses (two DIMMs on each bus) to ensure maximum bandwidth and performance
- Total memory bandwidth is 8.5 GB/s, split across two 4.25 GB/s memory buses
- Open page memory latency is 80 nanoseconds

Memory Options	
Description	Part Number
512-MB PC2100 DDR-SDRAM memory pair (2x256 DIMMs)	A9772A[1]
1-GB Chip Spare PC2100 DDR-SDRAM memory quad (4x256 DIMMs)	AB542A
2-GB Chip Spare PC2100 DDR-SDRAM memory quad (4x512 DIMMs)	A9773A

[1] Available as field installable option only, and for customers who have 512 MB. Only two (2) A9772A options supported per system..

Racking Configurations

The HP 9000 rp3410 can either be factory installed in HP cabinets or customer installed in HP or third party cabinets. The racking hardware includes slider rails, enabling the server to easily slide out of a cabinet for servicing. The rails have adjustable mounting hardware, enabling the server to mount in many non HP cabinets.

HP Cabinets

The HP 9000 rp3410 was designed for and has been tested in HP Standard Rack System/E Series cabinets and the HP Universal Rack G2 cabinets. HP cabinets are the best option for customers who want to ensure that their rack environment offers the utmost in safety, ease of service, factory integration, and HP field support. The HP cabinet family is made up of the following products:

HP System/E Series:

- A4900A-(25 EIA Units): up to 12 rp3410 servers
- A4901A-(33 EIA Units): up to 16 rp3410 servers
- A4902A-(41 EIA Units): up to 20 rp3410 servers

HP Universal Rack G2 Series:

- AF002A - (42 EIA Units): up to 20 rp3410 servers
- AF012A - (36 EIA Units): up to 16 rp3410 servers

Refer to the 10000 G2 Series Rack Best Practices Guide for information on rack deployment, stabilization and transportation. Go to HP.com/go/rackandpower for more information.

For factory integration, order racking product number AB241A in the HP 9000 rp3410 ordering guide

Non-HP Cabinets

For customers who choose to use non HP cabinets, the HP 9000 rp3410 provides simple options for installation and HP field support. The HP 9000 rp3410 field rack kit contains adjustable slide rails, allowing the server to be mounted in cabinets that use the four post EIA mounting system.

Once the server is mounted in a non-HP cabinet, it must meet some simple criteria to ensure that HP field personnel can fully support the rack environment.

- Anti-Tip-The rack/cabinet must be solidly anchored to the floor both front and rear. This is usually accomplished by anti-tip feet or by direct bolting to the floor.
- Air Flow-The HP 9000 rp3410 uses front to back airflow to cool the unit. Thus a cabinet cannot have a solid front or rear door. Solid doors may have to be removed or changed to an open perforation pattern.
- Cable Strain Relief-A proper method of strain relief must be used. This may force the elimination of the rear door in some cases.
- Front and Rear Access-For proper cooling and ease of service access, HP recommends 32 inches of unobstructed floor space in the front and rear of rack installations. This recommendation applies to both HP and third-party racks and cabinets.

If a rack is not required, the system can be mounted vertically in the stand-alone pedestal mount (A6940A).

Configuration

I/O Architecture

The HP 9000 rp3410 I/O architecture utilizes industry standard PCI-X and PCI buses in a unique design for maximum performance, scalability and reliability.

The HP 9000 rp3410 architecture uses seven high-speed I/O channels. Each channel provides 0.5 GB/s of sustained I/O throughput.

The two open PCI-X slots all have their own dedicated 64-bit 133-MHz PCI-X bus and their own independent I/O channel or channels. The independent channels provide improved I/O performance and error containment. Independence protects each I/O card from bus hangs or extended latencies due to the failure or high bandwidth demands of other I/O cards. Independence also ensures that each I/O card can achieve maximum throughput.

One PCI-X slot has two dedicated I/O channels, resulting in sustained PCI-X bandwidth of 1.0 GB/s. The second slot has one dedicated I/O channel, resulting in sustained PCI-X bandwidth of .5 GB/s.

All I/O slots are keyed for 3.3V I/O cards. 5V cards are not supported in the HP 9000 rp3410.

The remaining three I/O channels are allocated to the integrated core I/O.

	Number of Slots	Bandwidth Per Slot	Bus Width	Bus Speed	Slot Keying
Dedicated 1 GB/s	1	1.0 GB/s	64 bits	133 MHz, 66 MHz or 33 MHz	3.3 Volts
Dedicated 0.5 GB/s	1	0.5 GB/s	64 bits	133 MHz, 66 MHz or 33 MHz	3.3 Volts

Supported I/O Cards

I/O Card	Product Number	Connector Type(s)	HP UX / Boot Support	Max Cards / System
Mass Storage Host Bus Adapters				
PCI 2 Gb/s Fibre Channel	A6795A	LC	Yes / Yes	2 /2
PCI 1 channel U160 SCSI	A6828A[2]	VHDCI	Yes / Yes	2 /2
PCI 2 channel U160 SCSI	A6829A[2]	VHDCI	Yes / Yes	2 /4
PCI 4 channel U160 SA SCSI RAID	A7143A	VHDCI	Yes / Yes	2 /8
PCI-X 2 channel Ultra320 SCSI	A7173A	VHDCI	Yes / Yes	2 /4
PCI-X 2 channel Smart Array 6402 U320 [1]	A9890A	VHDCI	Yes / Yes	2 /4
PCI-X 4 channel Smart Array 6404 U320 [1]	A9891A	VHDCI	Yes / Yes	2 /8
PCI 2 channel PCI 2-Gb/s Fibre Channel	A6826A	LC	Yes / Yes	2 /4
Local Area Network (LAN) Adapters				
PCI 1 port 1000Base T (gigabit copper)	A6825A	RJ 45	Yes / No	2 /2
PCI 1 port 1000Base SX (gigabit fiber)	A6847A	Duplex SC	Yes / No	2 /2
PCI 1 port 10/100Base TX	A5230A[2]	RJ 45	Yes / No	2 /2
PCI-X 2-port 1000Base-T	A7012A	RJ-45	Yes / No	2 /4
PCI-X 2-port 1000Base-SX	A7011A	Duplex SC	Yes / No	2 /4
PCI 4 port 100Base TX	A5506B[2]	RJ 45	Yes / No	2 /8
PCI 1 port Universal FDDI LAN	A3739B	FDDI SC	Yes / No	2 /2
PCI 1 port 802.5 Token Ring 4/16/100	A5783A	RJ 45 and DB 9	Yes / No	2 /2
PCI-X 4-port 1000Base-T 1-GbE Adapter	AB545	RJ-45	Yes/Yes	4/16

Configuration

PCI-X 2-port 4x Fabric Adapter	AB345A	4x Infiniband Copper	Yes/No	2 /4
Multi-Function Cards (Mass Storage / LAN)				
PCI 2 port 100Base T/ 2 port Ultra2 SCSI	A5838A[2]	VHDCI/RJ 45	Yes / No	2 /8
PCI-X 2Gb Fibre Channel / 1000BaseT	A9782A	2 LC	Yes / Yes	2 /4
PCI-X 2Gb Fibre Channel / 1000BaseSX	A9784A	1 LC, 1 RJ-45	Yes / Yes	2 /4
PCI-X 2-port 2-Gb Fibre Channel/2-port 1-Gb Ethernet Adapter	AB465A	2 RJ-45	Yes/Yes	2 /4
PCI-X 2-port 1000BT/2-port U320 Multifunction adapter	AB290A	SCSI - LVD/SE LAN - RJ-45	Yes/Yes	2/8
Wide Area Network (WAN) **Adapters**				
PCI 1 port ATM 155 Mbps Multi-Mode Fiber (MMF)	A5513A	Duplex SC	Yes / No	2 /2
2 port Programmable Serial Interface (PSI) X.25 / Frame Relay / SDLC	J3525A	RS 530, RS 232, V.35, RS 449 or X.21	Yes / No	2 /4
4 port X.25/Frame Relay	J3526A	RS 530, RS 232, V.35, RS 449 or X.21	Yes / No	2 /8
Additional Interface Cards				
PCI 8 port Serial MUX Adapter	AD278A		Yes (11i v2 only)/No	2/16
PCI 64 port Serial MUX Adapter	AD279A		Yes/No	2/128
16-port RS-232 RJ45 Port Module	AD280A[3]		Yes/No	4 per AD279A
16-port RS-232 DB25 Port Module	AD281A[4]		Yes/No	4 per AD279A
PCI HyperFabric 2 Fibre	A6386A	LC Duplex	Yes/No	2/2
PCI 64-port Terminal Multiplexer	A6749A	RS 232 or RS-422	Yes / No	2 /128
PCI 8-port Terminal Multiplexer	A6748A	RS-232	Yes / No	2 /16
PCI-X HP OpenVMS, HP-UX Graphics Card	AB551A	VGA	Yes/No	1 Card

[1]Internal disks are not supported off the Smart Array 6402; external disks only.
[2]I/O card is supported but no longer orderable.
[3]AD280A #001 Port Module Power Supply, required on Port Module (3) and Port Module (4) connected to an AD279A 64P Mux adapter.
[4]AD281A #001 Port Module Power Supply, required on Port Module (3) and Port Module (4) connected to an AD279A 64P Mux adapter.

Internal Storage Devices

Configuration

Device	Part Number
Internal Disk Drives (Optional - Maximum 3)	
36-GB 15K RPM Ultra320 SCSI Low Profile Hot Plug disk[1]	AD186A
73-GB 15K RPM Ultra320 SCSI Low Profile Hot Plug disk[1]	AD187A
146 GB 15K RPM Ultra320 SCSI Low Profile Hot Plug disk[1]	AD206A
146-GB 10K RPM Ultra320 SCSI Low Profile Hot Plug disk[1]	AD188A
300 GB 15K RPM Ultra320 SCSI Low Profile Hot Plug disk[1]	AD263A
300-GB 10K RPM Ultra320 SCSI Low Profile Hot Plug disk[1]	AD189A
Removable Media Drives (Optional - Maximum 1)	
DVD-ROM Drive Slim Line	A9919B
DVD+RW Optical drive	AB348B

[1] Disks run at the speed of the controller they are connected to. If they are connected to integrated U160 controller, they will operate at U160 speeds.

Integrated Multi-function Core I/O

The integrated multi function I/O provides core I/O functionally and includes the management processor, which provides remote management and high availability monitoring capabilities.

Core I/O

- 10/100/1000Base T LAN with RJ 45 connector-Supports LAN boot for operating system installation
- One external Ultra160 SCSI port-Note: the external SCSI port (SCSI channel B) can not be used if an internal drive is connected to the internal port of SCSI channel B
- Four USB 2.0 style A ports (USB 1.1 compatible)

iLO Manageability Card Functionality

- Dedicated 10/100Base-T LAN port for LAN console and embedded web console access
- DB-25 serial port-multiplexed (using W cable) into three RS-232 ports: local ASCII console, remote/modem console, and general purpose
- Password protected console ports
- Console mirroring between all local, modem, LAN, and web consoles
- Remote power up and power down control
- Configurable remote access control
- Event notification to system console-Provides connectivity, information, and support for HP-UX tools (such as STM and EMS) to notify by email, pager and/or HP response centers.
- Interface to system monitoring and diagnostic hardware via an internal IC bus
- Secure Sockets Layer security on web console

System Console Configurations

The HP 9000 rp3410's integrated Management Processor provides five methods for console connections.

- SSL-secured Web console accessible through the 10/100Base-T management LAN
- Standard telnet connections accessible through the 10/100Base-T management LAN
- Local VT100 or hpterm terminal, or VT100 or hpterm emulator via local RS-232 serial connection
- Remote VT100 or hpterm terminal, or VT100 or hpterm emulator via external modem

Configuration

Internal Disk and Media Drives

- The HP 9000 rp3410 supports up to three internal low profile hot-plug disk drives.
- Dual channel U160 SCSI provides independent channels for the internal disks-two disks on one channel (A) and one disk on a second channel (B). Split SCSI channels provide enhanced high availability-one channel can fail without impacting the disks on the other channel. Note: Each SCSI channel may be used for either internal or external connection but not both internal and external connections. SCSI channel B contains both an internal SCSI port and the external SCSI port. The external SCSI port can not be used if an internal drive is connected to the internal port of SCSI channel B. SCSI channel A only has an internal port.
- Supported by MirrorDisk/UX across disk drives and independent channels
- 36 GB 10K, 73 GB 15K, 146 GB 10K and 300-GB 10K hot plug Ultra320 SCSI disks are supported
- Optional optical media drives include a DVD ROM (A9919A), CD RW/DVD ROM combo drive (A9920A) and DVD+RW (AB348A).

HP 9000 rp3410 Power Subsystem

The HP 9000 rp3410 provides a high level of integrated power protection.

- N+1 redundant hotswap power supplies (N=1)
- N+1 redundant AC power input protection with electrical phase isolation (N=1)
- Power monitoring and control
- The HP 9000 rp3410 supports up to two hot swap power supplies for N+1 protection. One supply is shipped as a standard component with every system. The second supply is optional.
- The HP 9000 rp3410 provides an independent power input receptacle for each power supply. The independent design provides protection against losing the connection from a power cord or breaker. The HP 9000 rp3410 power cords should always be plugged into separate breakers when possible.

Technical Specifications

Server model number	rp3410		
Server product numbers NOTE: Two power cords are shipped with each system; one that connects the system to the rack PDU and one that enables direct connection to a wall socket. Localized cord is included at the regional distribution site.	PA 8900 two core, 1 processor Capable Base System: With one active PA-8900 800-MHz core and one inactive PA 8900 800 MHz core. NOTE: The second core cannot be accessed without ordering A9770A. Must select either rackmount option or pedestal server mounting kit.		A9954A
	With one active PA-800 800-MHz core and one inactive PA 8800 800-MHz core. NOTE: The second core cannot be accessed without odering A9770A. Must select either rackmount option or pedestl server mounting kit.		A7136B
	Activation for second 800 MHz PA 8800 core or PA 8900 processor core(Optional - max 1).		A9770A
	Number of cores	1 or 2	
	Number of processors	1	
Supported Processors	**Two Core 800 MHz PA 8800 Processor Module**	Cache Level 1	3 MB (1.5 per core)
		Cache Level 2	32 MB (shared between cores)
		Floating-point coprocessor included	Yes
	Two Core 800 MHz PA 8900 Processor Module	Cache Level 1	3 MB (1.5 per core)
		Cache Level 2	64 MB (shared between cores)
		Floating-point coprocessor included	Yes
System Memory	**Minimum memory**	1 GB	
	Maximum memory capacity	6 GB	
	NOTE: Minimum memory changed to 1 GB on July 12, 2004. 512 MB will remain orderable for customers who have systems with only 512 MB and want to upgrade to 1 GB. 512 MB option will be field installable only.		
Internal Disks	**Maximum disk mechanisms**	3	
	Maximum disk capacity	900 GB	
Standard Integrated I/O	**Ultra160 SCSI-LVD**	2 channels	
	10/100/1000Base-T (RJ-45 connector)	1 port	
	RS-232 serial ports	3 ports	
	10/100Base-T management port (RJ-45 connector)	1 port	
	USB 2.0	4 ports	

Technical Specifications

I/O Buses and Slots	Total PCI-X/PCI Slots	2
	Both slots are 133-MHz, 64-bit slots on dedicated PCI-X buses	
Maximum I/O Cards (See supported I/O table for specific products)	Mass Storage	2
	LAN	2
	WAN	2
	Multi-Function (Mass Storage / LAN)	2
	Additional Interface Cards	1 or 2
Electrical Characteristics	AC Input power	100-240V 50/60 Hz
	Hot swap Power supplies	1 included, 2nd for N+1
	Redundant AC power inputs	1 included, 2nd for N+1
	Current requirements at 230V	3.6 A (shared across inputs)
	Typical maximum power dissipation	600 Watts
	Theoretical maximum power dissipation	1,350 Watts
	kW rating for UPS loading	1.3
	Typical heat dissipation (BTUs/hour)	1,945
	Maximum heat dissipation (BTUs/hour)	4,375
Site Preparation	Site planning and installation included	No
	Rack depth (in/mm)	26.8 in (680 mm)
	Rack width (in/mm)	19 in (483 mm)
	Rack height (EIA/in/mm)	2U (3.4 in) (173 mm)
	Pedestal depth (in/mm)	26.6 in (675 mm)
	Pedestal width (in/mm)	11.6 in (295 mm)
	Pedestal height (in/mm)	19.5 in (495 mm)
	Weight (kg/lbs) Rack Max.	49.0 lbs (22.2 kg)
	Weight (kg/lbs) Pedestal Max.	56.3 lbs (25.5 kg)

Technical Specifications

Environmental Characteristics	Acoustics (operator/bystander) at 25°C	<6.5 Bels LwA
	Operating Temperature (up to 5000 ft)*	41° to 95° F (5° to 35° C)
	Non-operating Temperature	-40° to 158° F (-40° to 70° C)
	Maximum rate of temperature change	50° F (10° C)/hour
	Operating relative humidity	15% to 80% RH non-condensing
	Non-operating/storage humidity	8% to 85% non-condensing
	Operating altitude above sea level	10,000 ft (3000 m) max
	Non-operating altitude above sea level	15,000 ft (4600 m) max

*NOTE: Two power cords are shipped with each system; one that connects the system to the rack PDU and one that enables direct connection to a wall socket. Localized cord is included at the regional distribution site.

NOTE: Maximum operating temperature range up to 5000 feet (1524 m). For higher altitudes, de-rate the maximum temperature by 2°C/1000 feet above 5000 feet.

Regulatory Compliance	Electromagnetic interference	Complies with FCC Rules and Regulations, Part 15 as a Class A digital device. Manufacturer's Declaration to EN55022 Level A, VCCI Registered, Class A, Korea RLL
	Safety	UL Listed, CSA Certified, UL GS Mark compliant with EN 60950 and EN 41003