



AlphaServer 8200
V97-1.6—16 Oct 1997
DIGITAL Systems and Options Catalog

Product Description

The DIGITAL AlphaServer 8200 is the highest performance office system in the industry. It can be configured with up to six of the world's fastest microprocessors (Alpha microprocessor 21164) with 5/300 MHz, 5/440 MHz, or 5/625 MHz CPUs. With the enormous capacity of the Alpha 64-bit architecture—up to 12 GB of memory, and PCI I/O of up to 108 slots—this server offers room for growth for the largest and most complex applications.

ServerWORKS Manager provides advanced server and network management capabilities and is supplied with all AlphaServer systems. Simple Network Management Protocol (SNMP) enables information to pass from the managed system to the console for Digital UNIX, Windows NT, and OpenVMS for AlphaServers. Using ServerWORKS, the system manager can build and view topological maps of the network. Detailed server information is viewable, including system, network, storage, and environmental information. All AlphaServer systems are also supplied with management tools to complement ServerWORKS Manager. These include storage, application, and database management tools. For more information, see the StorageWorks Software section of this catalog.

AlphaServer 8200 runs DIGITAL UNIX or OpenVMS operating systems and offers the reliability and availability features customers require. Clusters, hot swap disks, RAID, redundant power, ECC memory and data paths, fault management, and uninterruptible power supply (UPS) are all available.

Small enterprises and large departments can have an office server with unprecedented performance, capacity, and reliability for those applications previously available on enterprise systems. Large databases, complex simulations, data warehousing, and decision support are examples of the kinds of applications the AlphaServer 8200 can support with ease. And, with up to 12 GB of memory, this office server can provide all the benefits that very large memory/very large database (VLM/VLDB) systems have provided in the past.

For technical and scientific users, the AlphaServer 8200 provides supercomputer performance in the office. The AlphaServer 8200 has single processor floating-point performance that dominates the competition in the generic benchmarks and wins at the application level as well.

The AlphaServer 8200 includes a one year hardware warranty, onsite 4-hour response, 5 days per week. System installation is included with the AlphaServer 8200 5/440 and 5/625 systems.

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Step 1—Base Systems

- AlphaServer 8200 5/300 Systems require
 - DIGITAL UNIX V3.2B or later, and OpenVMS V6.2 or later
- AlphaServer 8200 5/440 and 5/625 Systems require
 - DIGITAL UNIX V3.2G or DIGITAL UNIX V4.0a, or OpenVMS V6.2-1H3 or V7.1. **Note:** 5/440 systems also supported under DIGITAL UNIX V4.0A.
- Software media and documentation required for first system on site. See Step 13 for ordering information.
- Console terminal required to install system. See Step 10 unless terminal is available on site.
- Base Servers include a five-slot backplane—three slots are used by the CPU module, memory module, and system I/O module (KFTIA-AA).
 - Two slots are available for additional CPU, memory, or system I/O module(s).
- CD-ROM drive and a SCSI system disk drive (2.1 GB or 4.3 GB) are included in a BA656 Internal Storage Drawer, connected via single-ended SCSI-2 port on KFTIA-AA system I/O module.
 - Four additional narrow 3.5-inch StorageWorks devices can be added in the BA656 Internal Storage Drawer.
- Universal single-phase power supply supplies necessary power for system; requires selection of power cord from Step 2 of this section.
- Redundant power supply (N+1) can be added if required.
- For recommended power protection see section after system specifications. UPS Power Management Software is included in ServerWORKS Manager kit. Software communicates with recommended UPS.

AlphaServer 8200 Base Servers include

- Processor module with:
 - One or two Alpha microprocessor 21164 5/300 MHz CPU(s); each CPU includes 4 MB Backup cache, or
 - Two Alpha microprocessor 21164 5/440 or 5/625¹MHz CPUs; each CPU includes 4 MB Backup cache
 - System I/O module (KFTIA-AA) includes
 - I/O channel
 - Two twisted-pair 802.3/Ethernet
 - Single-ended SCSI-2 port
 - Three Fast Wide Differential (FWD) SCSI-2 ports
 - Three CK-KFTIA-AA Cabinet Kits
 - 128, 256, 512 MB, 1 GB, 2 GB or 4 GB of memory
 - BA656 Internal Storage Drawer
 - 2 GB 3.5-inch SCSI disk drive (5/300 systems) or 4.3 GB 3.5-inch SCSI disk drive (5/440 systems)
 - 600 MB CD-ROM drive
 - Universal single phase power
- 48 V dc power supply
 - Shielded console cable included for connection to console terminal (BC16E-25)
 - Factory Installed Software (FIS)
 - 5/300 operating system software
 - DIGITAL UNIX base license, DIGITAL NAS Base Server 200 software, **or**
 - OpenVMS base license, DIGITAL NAS Base Server 200 software
 - 5/440 and 5/625 operating system software
 - DIGITAL UNIX, base license, Unlimited User license, Server Extension license, Internet Access Software license, **or**
 - OpenVMS base license, DIGITAL Enterprise Integration Package (EIP) V1.0
 - One year hardware product warranty
 - 90-day software product warranty
 - System installation included with AlphaServer 8200 5/440 and 5/625 Base Servers

1. 5/625 CPUs clocked at 612.8 MHz for AlphaServer 8200 applications.

5/300 Single-CPU systems	Operating System	Memory	SCSI Disk
DA-281AB-A9	DIGITAL UNIX	128 MB	2.1 GB
DA-281AD-A9	DIGITAL UNIX	512 MB	2.1 GB
DY-281AB-A9	OpenVMS	128 MB	2.1 GB
DY-281AD-A9	OpenVMS	512 MB	2.1 GB

Step 1—Base Systems (continued)

5/300 Dual-CPU systems	Operating System	Memory	SCSI Disk
DA-281BB-A9	DIGITAL UNIX	128 MB	2.1 GB
DA-281BC-A9	DIGITAL UNIX	256 MB	2.1 GB
DA-281BD-A9	DIGITAL UNIX	512 MB	2.1 GB
DA-281BF-A9	DIGITAL UNIX	2 GB	2.1 GB

AlphaServer 8200 Base Servers

5/300 Dual-CPU systems	Operating System	Memory	SCSI Disk
DY-281BB-A9	OpenVMS	128 MB	2.1 GB
DY-281BC-A9	OpenVMS	256 MB	2.1 GB
DY-281BD-A9	OpenVMS	512 MB	2.1 GB
DY-281BF-A9	OpenVMS	2 GB	2.1 GB

5/440 Dual-CPU systems	Operating System	Memory	SCSI Disk
DA-282FE-C9	DIGITAL UNIX	1 GB	4.3 GB
DA-282FF-C9	DIGITAL UNIX	2 GB	4.3 GB
DA-282FG-B9	DIGITAL UNIX	4 GB	4.3 GB
DY-282FE-C9	OpenVMS	1 GB	4.3 GB
DY-282FF-C9	OpenVMS	2 GB	4.3 GB
DY-282FG-B9	OpenVMS	4 GB	4.3 GB

5/625 Dual-CPU systems	Operating System	Memory	SCSI Disk
DA-282GF-A9	DIGITAL UNIX	2 GB	4.3 GB
DY-282GF-A9	OpenVMS	2 GB	4.3 GB

Step 1—Base Systems (continued)**AlphaServer 8200 Expanded Base Server includes**

- .. Processor module with:
 - Two Alpha microprocessor 21164 5/440 MHz or 5/625¹ MHz CPUs; each CPU includes 4 MB Backup cache
- .. System I/O module with four I/O channels (KFTHA-AA)
- .. 1 GB, 2 GB or 4 GB of memory
- .. PCI Shelf Mount Box (DWLPB-CA)
- .. PCI Fast Wide Differential (FWD) SCSI controller (KZPSA-BB)
- .. DIGITAL Fast Ethernet network interface card
- .. BA656 Internal Storage Drawer
- .. SCSI-2 16-bit wide StorageWorks shelf (BA356-JB)
- .. StorageWorks SCSI signal converter (DWZZB-VW)
- .. BN21K-01 Fast Wide Differential cable
- .. 4.3 GB 3.5-inch SCSI disk drive (located in BA356-JB)
- .. 600 MB CD-ROM drive
- .. PCI single-ended SCSI controller (KZPAA-AA) and BN21H-02 SCSI cable (connects to CD-ROM)
- .. Universal single phase power
- .. 48 V dc power supply
- .. Shielded console cable included for connection to console terminal
- .. Factory Installed Software (FIS)
- .. 5/440 and 5/625 operating system software
 - DIGITAL UNIX base license, Unlimited User license, Server Extension license, Internet Access Software license, **or**
 - OpenVMS base license, DIGITAL Enterprise Integration Package (EIP) V1.0.
- .. One year hardware product warranty
- .. 90 day software product warranty

System installation included with AlphaServer 8200 5/440 and 5/625 Expanded Base Servers¹. 5/625 CPUs clocked at 612.8 MHz for AlphaServer 8200 applications.

5/440 Dual-CPU systems	Operating System	Memory	SCSI Disk
DA-282FE-D9	DIGITAL UNIX	1 GB	4.3 GB
DA-282FF-D9	DIGITAL UNIX	2 GB	4.3 GB
DA-282FG-C9	DIGITAL UNIX	4 GB	4.3 GB
DY-282FE-D9	OpenVMS	1 GB	4.3 GB
DY-282FF-D9	OpenVMS	2 GB	4.3 GB
DY-282FG-C9	OpenVMS	4 GB	4.3 GB
5/625 Dual-CPU systems	Operating System	Memory	SCSI Disk
DA-282GE-B9	DIGITAL UNIX	1 GB	4.3 GB
DA-282GF-B9	DIGITAL UNIX	2 GB	4.3 GB
DA-282GG-B9	DIGITAL UNIX	4 GB	4.3 GB
DY-282GE-B9	OpenVMS	1 GB	4.3 GB
DY-282GF-B9	OpenVMS	2 GB	4.3 GB
DY-282GG-B9	OpenVMS	4 GB	4.3 GB

Step 1a—5/300 System Building Blocks

System Building Blocks are an alternative to standard Base Servers or Expanded Base Servers. They provide flexibility in configuring the AlphaServer 8200 with a choice of memory and I/O options.

System Building Block Requirements

- .. Minimum of one memory module
- .. Minimum of one system I/O module
- .. SCSI controller
- .. Systems require DIGITAL UNIX V3.2B or later, and OpenVMS V6.2 or V7.1
- .. Console terminal required unless available on site
- .. System includes a five-slot backplane—three slots are used by the CPU, memory, and system I/O modules
 - Two slots available for additional CPU, memory, or system I/O module(s)
- .. CD-ROM drive included in BA656 Internal Storage Drawer—SCSI controller must be ordered separately
 - BA656 Internal Storage Drawer is restricted to CD-ROM drive only when KZPAA is selected
 - If KFTHA-AA I/O module is selected, the following items must be ordered to provide interface to CD-ROM in BA656 internal storage drawer. If KFTIA-AA I/O module is selected these items are not required

DWLPB-CA PCI shelf mount box; AlphaServer 8200 system cabinet only, maximum three per cabinet.
KZPAA-AA PCI single-ended SCSI controller for CD-ROM connection only—no other SCSI options can be installed in BA656 internal storage drawer if KZPAA is used as CD-ROM interface. KZPAA is restricted as CD-ROM connection only, no other disk or tape connections supported—maximum one per system. Requires BN21H-02 SCSI cable

- .. If Factory Installed Software is required, BA356-JB and appropriate disk drive and controller must be ordered separately.
- .. Universal single phase power supply will supply necessary power for system. Redundant power supply (N+1) can be added if required.
- .. **AlphaServer 8200 5/300 System Building Blocks include**
- .. Processor module with
 - One or two Alpha microprocessor 21164 300 MHz CPU(s), each CPU includes 4 MB Backup cache
- .. BA656 Internal Storage Drawer
- .. 600 MB CD-ROM drive
- .. Universal single-phase power
- .. 48 V dc power supply
- .. DIGITAL UNIX base license, **or**
- .. OpenVMS base license
- .. DIGITAL NAS Base Server 200 software
- .. One year hardware product warranty
- .. 90 day software product warranty

5/300 Single-CPU systems	Operating System	Memory	I/O Module
DA-281AY-A9	DIGITAL UNIX	Required	Required
5/300 Dual-CPU systems	Operating System	Memory	I/O Module
DA-281BY-A9	DIGITAL UNIX	Required	Required
DY-281BY-A9	OpenVMS	Required	Required

Step 1b—AlphaServer Expansion Packages—DIGITAL UNIX systems only

DECsafe packages contain all necessary hardware (excluding console terminal) and software to provide a complete and operational system in a DECsafe high availability environment.

Note: This package is only orderable with a DIGITAL UNIX system configuration. It is not orderable as a stand alone, upgrade, or spared on the order.

8YFEB-EX**DECsafe High Availability SCSI Package includes:**

- Six DS-RZ1BB-VW 2.1 GB, 3.5-inch disk drives in BA356-JB shelf
- TZ87 20 GB, 5.25-inch SCSI tape drive in second BA356-JB shelf
- Two DWZZB-VWs to convert Fast Wide Differential (FWD) SCSI signals from KFTIA-AA and KZPSA-BB for use in BA356-JB shelf
- PCI Plug-in unit (DWLPB-CA), with KZPSA-BB Fast Wide Differential (FWD) SCSI controller
- BN21K cables and CK-KFTIA-AA cable kit
- DECsafe Available Server software license kit

Step 2—Power Cord

BN23H-4E **60 Hz**—ac line cord for single phase power, one per cabinet (4.5 meters in length)

BN20P-4E **50 Hz**—ac line cord for single phase power, one per cabinet (4.5 meters in length)

Note: See Step 14 in this section for information on the appropriate power cord to order. If redundant supply (H7266-AD/AE) is ordered, power cord is included and does not have to be ordered separately.

Step 3—Additional CPU Modules (SMP Expansion Options)

- .. Up to two additional CPU modules can be added to Base Servers, Expanded Base Servers and System Building Blocks—system maximum of three CPU modules (1 to 6 CPUs).
- .. Combining 5/300 MHz, 5/350 MHz, 5/440 MHz, and 5/625 MHz CPU modules in the same system is not supported.
- .. For more than two processor modules in a system, a minimum of two memory modules are recommended for optimal system performance.
- .. All SMP upgrades include processor module with Alpha microprocessor(s), SMP extension license, and end-user product warranty.

5/300 Servers	5/350 Servers	5/440 Servers	5/625 Servers	Operating System	CPU Module Type
751P2-AX	753P2-AX			DIGITAL UNIX	Single-CPU
752P2-AX	754P2-AX	756P2-AX	758P2-AX	DIGITAL UNIX	Dual-CPU
751P1-AX				OpenVMS	Single-CPU
752P1-AX	754P1-AX	756P1-AX	758P1-AX	OpenVMS	Dual-CPU

Step 4—Memory

- .. Maximum of 12 GB of memory supported on 5/300 MHz CPUs Rev H07, H08, H09, P08, P09, P10, and all 5/350 MHz, 5/440 MHz, and 5/625 MHz CPUs
- .. For Base Servers two additional memory modules can be added for a system maximum of three.
- .. System Building Blocks require the selection of one memory module—system maximum of three.
- .. Maximum of three memory modules is reduced by one for each additional CPU module selected from Step 3 and each system I/O module added from Step 6.
- .. Memory modules
 - 128 MB through 2 GB memory modules have built in two-way interleaving; additional interleaving is accomplished by adding more memory modules
 - 4 GB memory modules have built in four-way interleaving. Best performance is achieved when two 2 GB modules are paired with one 4 GB module or one 4GB memory module is paired with another 4 GB memory module. These sets (2 x 2 GB and 1 x 4 GB) or (2 x 4 GB) can be paired with another 8 GB memory set for a maximum of 16-way interleaving.

MS7CC-BA	128 MB memory module
MS7CC-CA	256 MB memory module
MS7CC-DA	512 MB memory module
MS7CC-EA	1024 MB memory module
MS7CC-FA	2048 MB memory module
MS7CC-GA¹	4096 MB memory module

1. Supported on 5/300 MHz CPUs Rev H07, H08, H09, P08, P09, P10, and all 5/350 MHz, 5/440 MHz and 5/625 MHz CPUs.

Step 4a—Memory Upgrades

Memory upgrades are field installed only (not configured in Manufacturing).

MS7CC-UA	128 MB memory upgrade (8 MB SIMMs); upgrades 128 MB (-BA) module to 256 MB (-CA) module
MS7CC-UB	512 MB memory upgrade (32 MB SIMMs); upgrades 512 MB (-DA) module to 1 GB (-EA) module

Step 4b—Prestoserve Nonvolatile Random Access Memory (NVRAM)

- .. Supported on DIGITAL UNIX systems only.
- .. Maximum one Prestoserve I/O performance enhancement option per system.
- .. Includes Prestoserve license and documentation kit.

DJ-ML200-BA	4 MB Prestoserve, PCI option—requires DWLPB-CA/CB
DJ-ML200-CA	8 MB Prestoserve, PCI option—requires DWLPB-CA/CB
DJ-ML300-BA	4 MB Prestoserve, KFTIA-AA daughter card mounting—requires KFTIA-AA

Step 5—I/O Expansion Buses

PCI I/O bus is available on AlphaServer 8200. Application and system configuration determine maximum configuration. Configuration limits exist at I/O bus level and controller level. Verify maximum number of allowable controllers listed in Controller Configuration Table.

- .. Each DWLPB-CA/CB (PCI shelf mount box) includes 12 PCI slots and required cable for connection to I/O channel.
- .. Each PCI shelf mount box requires one I/O channel connection to KFTHA-AA or KFTIA-AA, see Step 6.
- .. Maximum of nine I/O channels available (KFTIA plus two KFTHAs)

DWLPB-CA	PCI shelf mount box for AlphaServer 8200 system cabinet only—maximum three per cabinet.
DWLPB-CB	PCI shelf mount box for AlphaServer 8200 expansion cabinet only—maximum four per cabinet.
KFE70-BA	EISA Bridge option ; PCI to EISA bridge module set—must reside in first DWLPB-CA in system cabinet only. Converts 12-slot PCI bus to 2 EISA, 6 PCI/EISA, and 2 PCI slots. Includes RX26 diskette drive, mounting hardware, and cables to mount RX26 in processor system unit. Maximum one EISA Bridge option supported per system. This option is required to support KZPSC SCSI RAID controllers. It includes diskette drive required to run the RAID Configuration Utility (RCU).

Step 6—System I/O Modules

- .. KFTIA-AA system I/O module included with Base Server; KFTHA-AA included with Expanded Base Server—any combination of KFTIA or KFTHA modules can be added for a system maximum of three.
 - Maximum nine I/O channels available on AlphaServer 8200 (two KFTHA-AA modules, one KFTIA-AA module).
- .. System Building Block requires the selection of one I/O module.

KFTHA-AA	System I/O module with four I/O channels for DWLPB-CA/CB boxes.
KFTIA-AA	System I/O module with one I/O channel for DWLPB-CA/CB shelf mount box, includes <ul style="list-style-type: none"> - two 802.3 twisted-pair Ethernet ports—requires BN26M cable per port - one single-ended SCSI-2 port—requires BN21H cable - three FWD (Fast Wide Differential) SCSI-2 ports—requires CK-KFTIA-AA and BN21K cable per port (Note: Base Servers include KFTIA-AA with three CK-KFTIA-AA cabinet kits.) One of the following optional FDDI daughter cards can be added to KFTIA-AA—see Step 9 in this section for cables. <ul style="list-style-type: none"> - Single attachment station multi-mode fiber card (DEFPZ-AA) or - Twisted-pair copper card (DEFPZ-UA) Prestoserve (DJ-ML300-BA) can be added to KFTIA-AA
BN26M-xx	Ethernet twisted-pair cable; 8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable
BN21H-xx	SCSI-2 single-ended cable; 50-pin male straight to 50-pin male straight. Connects KFTIA-AA single-ended SCSI-2 port to StorageWorks shelf.
CK-KFTIA-AA	Cabinet kit for Fast Wide Differential (FWD) SCSI-2 port. One kit required for each used port on KFTIA -AA—maximum three per KFTIA-AA. Cabinet kit includes Y-cable and FWD terminator.
BN21K-xx	SCSI-2 Fast Wide Differential cables; 68-pin male straight to 68-pin male right-angle. Connects KFTIA-AA FWD SCSI-2 ports to DWZZA-VA or DWZZB-VW (cable lengths in meters).
BN21K-02¹	Connects from KFTIA FWD port to DWZZB-VW in BA356-JB in system cabinet (front)
BN21K-03¹	Connects from KFTIA FWD port to DWZZB-VW in BA356-JB in system cabinet (rear)
BN21K-05/10	Connects from KFTIA FWD port to DWZZB-VW in BA356-JB in expansion cabinet (front or rear) Connects from KFTIA FWD port to DWZZB-VW in BA356-SB in SW500 and SW800 Cabinets

1. Manufacturing may substitute correct cable length depending on configuration.

Step 7—Storage Controllers

- .. KFTIA-AA I/O module included with Base Server; KFTHA-AA I/O module included with Expanded Base Server; System Building Blocks require I/O module.
- .. DWZZA-AA requires minimum revision E02 for connecting any Fast Wide Differential SCSI-2 port from KFTIA-AA or KZPSA-BB to externally mounted TZ8xx tape loaders.
- .. DWZZB-VW Fast Wide Differential Single-ended SCSI Converter requires minimum revision A01 for connecting FWD SCSI-2 signals from KFTIA-AA or KZPSA-BB to BA356-JB StorageWorks Shelf.
- .. System maximum of four KZPSC or KZPAC SCSI RAID controllers.
- .. Tape and optical devices are not supported on KZPSC or KZPAC SCSI RAID controllers.

PCI-based Storage Controllers

KZPSA-BB	PCI Fast Wide Differential SCSI Adapter. OpenVMS supports eight per PCI, maximum 26 with OpenVMS V6.2-1H3 per system. DIGITAL UNIX supports eight per PCI, maximum 32 per system (uses one PCI slot). Provides one SCSI-2 bus. The KZPSA supports DECsafe Available Server.
BN21K-xx	SCSI-2 Fast Wide Differential cables—68-pin male straight to 68-pin male right-angle. Connects KZPSA-BB Fast Wide Differential SCSI-2 port to DWZZA-VA or DWZZB-VW.
BN21K-01¹	Connects from KZPSA to DWZZB-VW in BA356-JB in system cabinet (front)
BN21K-02¹	Connects from KZPSA to DWZZB-VW in BA356-JB in system cabinet (rear)
BN21K-03¹	Connects from KZPSA to DWZZB-VW in BA356-JB in expansion cabinet (front or rear)
BN21K-05/10	Connects from KZPSA to DWZZB-VW in BA356-SB in SW500 and SW800 cabinets

Step 7—Storage Controllers (continued)
PCI-based Storage Controllers (continued)

KZPAC-AA	PCI one-port RAID (FWSE) Controller (UltraWide SCSI ready) with 4 MB cache memory— Uses one PCI slot. Allows RAID levels 0, 1 and 5. Includes RAID Array 230/plus subsystem software and documentation kit. KFE70-BA EISA Bridge option required. Tape and optical drives not supported. Maximum of 4 per PCI, maximum of 4 per system supported with DIGITAL UNIX V3.2G or V4.0B; OpenVMS V6.2-1H3 or v7.1.
KZPAC-CA	PCI three-port RAID (FWSE) Controller (UltraWide SCSI ready) with 4MB cache memory— Uses two PCI slots.. Allows RAID levels 0, 1 and 5. Includes RAID/Array 230/plus subsystem software and documentation kit. KFE70-BA EISA Bridge option required. Tape and optical drives not supported. Maximum of four per PCI, maximum of four per system if third port not used (otherwise maximum of three per PCI, three per system) supported with DIGITAL UNIX V3.2G or V4.0B; OpenVMS V6.2-1H3 or V7.1. Order BN31K-0E or KZPAC-SB for third port connection.
KZPAC-CB	PCI three-port RAID (FWSE) Controller (UltraWide SCSI ready) with 8MB cache memory— Uses two PCI slots.. Allows RAID levels 0, 1 and 5. Includes RAID/Array 230/plus subsystem software and documentation kit. KFE70-BA EISA Bridge option required. Tape and optical drives not supported. Maximum of four per PCI, maximum of four per system if third port not used (otherwise maximum of three per PCI, three per system) supported with DIGITAL UNIX V3.2G or V4.0B; OpenVMS V6.2-1H3 or V7.1. Order BN31K-0E or KZPAC-SB for third port connection.
BN31S-1E	1.5-meter wide single-ended SCSI cable for connections from PCI RAID controller to BA356-JB Wide SCSI StorageWORKS shelf located in the same cabinet. One is required for each used port on KZPSC-BA or KZPAC-CA/CB module.
BN31K-0E	Required for KZPSC-BA or KZPAC-CA/CB to use third port on module. Connects internally from KZPSC-BA or KZPAC-CA/CB module to second PCI slot/bulkhead.
KZPAC-SB	SCSI cable/bulkhead assembly kit with two ports for KZPSC-BA or KZPAC-CA/CB, allows connection of two third-port outputs using one PCI bulkhead slot.
BN31S-02¹	2.0 meter wide single-ended SCSI cable for connections from PCI RAID controller to BA356-JB Wide SCSI StorageWORKS shelf.
KZPSC-UB	Battery back-up for cache memory option for KZPAC or KZPSC controller.
Note: For OpenVMS systems with greater than 1 GB of memory, the following TIMA patch kits are required to support KZPAC options: V6.2 kit - ALPDRIV04_062; V7.1 kit - ALPDRIV01_071.	
MS100-BB	8 MB cache memory option; upgrades KZPAC-CA to KZPAC-CB, field installable only.
KZPSC-AA	PCI one-port SCSI RAID Controller— OpenVMS and DIGITAL UNIX support four per PCI, maximum four per system (uses one PCI slot). KFE70-AA EISA Bridge option required. Provides one fast/wide/single-ended connection. Allows RAID levels 0, 1, and 5. Tape drives are not supported.
KZPSC-BA	PCI three-port SCSI RAID Controller— OpenVMS and DIGITAL UNIX support four per PCI, maximum four per system (uses two PCI slots). KFE70-AA EISA Bridge option required. Provides three Fast Wide/single-ended connections. Allows RAID levels 0,1, and 5. Tape drives not supported. Order BN31K-0E or KZPAC-SB for third port connection.
BN31S-1E	1.5 meter wide single-ended SCSI cable for connections from PCI RAID controller to BA356-JB Wide SCSI StorageWORKS shelf located in the same cabinet. One is required for each used port on KZPSC-BA or KZPAC-CA/CB module.
BN31K-0E	Required for KZPSC-BA or KZPAC-CA/CB to use third port on module. Connects internally from KZPSC-BA or KZPAC-CA/CB module to second PCI slot/bulkhead.
KZPAC-SB	SCSI cable/bulkhead assembly kit with two ports for KZPSC-BA or KZPAC-CA/CB, allows connection of two third-port outputs using one PCI bulkhead slot.
BN31S-02¹	2.0 meter wide single-ended SCSI cable for connections from PCI RAID controller to BA356-JB Wide SCSI StorageWORKS shelf.
KZPSC-UB	Battery back-up for cache memory option for KZPAC or KZPSC controller.
MS100-AA²	16 MB Cache memory option for KZPSC-AA/BA, maximum one per controller, field installable only.
MS100-AB²	32 MB Cache memory option for KZPSC-AA/BA, maximum one per controller, field installable only.

Step 7—Storage Controllers (continued)
PCI-based Storage Controllers (continued)

KFPSA-AA	PCI DSSI Adapter (OpenVMS only) —Requires OpenVMS V6.2-1H2 or later; minimum System Console Firmware Revision 3.09. Maximum twelve per PCI, twenty-four per system with OpenVMS V6.2-1H3. (End node only). Note: KFPSA and KFMSB are not supported on same DSSI bus.
BC21Q-xx	External shielded cable (MR/MR connectors) Select required length—09, 16, 25, 50 feet.
BC22Q-xx	External shielded cable (MR/PS connectors) Select required length—16, 25, 50 feet.
CIPCA-AA	PCI-to-CI Adapter (OpenVMS only) —Requires OpenVMS V6.2-1H3 or V7.1, minimum System Console Firmware Revision 4.0-4. Maximum four per PCI, ten per system running OpenVMS V6.2-1H3; maximum four per PCI, 26 per system running OpenVMS V7.1 and System Console Firmware Revision 4.1-6. Uses one PCI slot for adapter and one EISA slot for power only. Note: KFE70 option is not required.
CIPCA-BA	Same as above except uses two PCI slots.
BNCIA-xx	Computer interconnect cable sets—Connects CIPCA to Star Coupler. Select required length—10, 20, or 45 m (10 m = 32.8 ft., 20 m = 65.6 ft., 45 m = 147.6 ft.)

1. Manufacturing may substitute correct cable length depending on configuration.
2. Requires AlphaServer 8200 minimum System Console Firmware Revision 3.2.2, OpenVMS V6.2-1H2 and DIGITAL UNIX V3.2D or later operating system software.

Step 7a—Non-Backplane External Storage Controllers

- .. HSZ50 family of SCSI Storage Array Controllers are supported under DIGITAL UNIX V3.2G and V4.0A and OpenVMS V6.2-1H3. A DIGITAL UNIX patch OSF405-034 is required for dual failover.
- .. HSJ50 family of CI Storage Array Controllers are supported under OpenVMS V6.2-1H3 with CIPCA-AA/BA or CIXCD-AC CI controllers. QB-5C4AA-SA software kits are required for each external cache (1 for HSJ50, 2 for HSJ52, 4 for HSJ54).
- .. HSD50 family of DSSI Storage Array Controllers are supported under OpenVMS V6.2-1H3 with KFPSA PCI DSSI adapters and minimum SRM console V4.1-6.
 - Controllers require KZPSA, KFPSA, or CIPCA SCSI adapters or controllers, as appropriate.
 - HSZ50-Ax requires one QB-5CJAA-SA kit.
 - HSZ52-Ax requires two QB-5CJAA-SA kits.
 - HSZ54-AJ requires four QB-5CJAA-SA kits.

HSZ50-AF	StorageWorks RAID Array 450/HSZ50 32 MB SCSI controller, 6 SCSI channels, 36 SCSI-2 device connections, 32 LUN maximum, 32 MB cache module, single external cache battery system building block.
HSZ50-AH	StorageWorks RAID Array 450/HSZ50 64 MB SCSI controller, 6 SCSI channels, 36 SCSI-2 device connections, 32 LUN maximum, 64 MB cache module, single external cache battery system building block.
HSZ50-AJ	StorageWorks RAID Array 450/HSZ50 128 MB SCSI controller, 6 SCSI channels, 36 dual, 42 single SCSI-two-device connections, 32 LUN maximum, 128 MB cache module, single external cache battery system building block.
HSZ52-AF	StorageWorks RAID Array 450/HSZ50 64 MB dual SCSI controllers, 12 SCSI channels, 36 SCSI-two-device connections, 32 LUN maximum, two cache modules, one dual external cache battery system building block, two external cache batteries, two 2-meter cables.
HSZ52-AH	StorageWorks RAID Array 450/HSZ50 128 MB dual SCSI controllers, 12 SCSI channels, 36 SCSI-two-device connections, 32 LUN maximum, two cache modules, one dual external cache battery system building block, two external cache batteries, two 2-meter cables.
HSZ52-AJ	StorageWorks RAID Array 450/HSZ50 256 MB dual SCSI controllers, 12 SCSI channels, 36 SCSI-two-device connections, 32 LUN maximum, two cache modules, one dual external cache battery system building block, two external cache batteries, two 2-meter cables.
HSZ54-AJ	StorageWorks RAID Array 450/HSZ50 512 MB quad SCSI controllers, 12 SCSI channels, 72 SCSI-two-device connections, 64 LUN maximum, four cache modules, two dual external cache battery system building blocks, four external cache batteries, four 2-meter cables.
HSJ50-AF	32 MB Cache 6 channel CI array controller with cache battery
HSJ50-AH	64 MB Cache 6 channel CI array controller with cache battery

Step 7a—Non-Backplane External Storage Controllers (continued)

HSJ50-AJ	128 MB Cache 6 channel CI array controller with cache battery
HSJ52-AF	Dual 64 MB Cache CI array controller with cache batteries
HSJ52-AH	Dual 128 MB Cache CI array controller with cache batteries
HSJ52-AJ	Dual 256 MB Cache CI array controller with cache batteries
HSJ54-AJ	Quad 512 MB Cache CI array controller with cache batteries
HSD50-AF	DSSI Controller, 6 channel, 64MB cache & external cache battery
HSD50-AH	DSSI Controller, 6 channel, 32MB cache & external cache battery
HSD50-AJ	DSSI Controller, 6 channel, 128MB cache & external cache battery
HSD52-AF	Two DSSI Controllers with 32 MB cache with battery
HSD52-AH	Two DSSI Controllers with 64 MB cache with battery
HSD52-AJ	Two DSSI Controllers with 128 MB cache with battery

Step 8—Storage

Note: When multiple storage devices are configured with the system, specify which devices should be installed inside the system cabinet, inside the system expansion cabinet, or installed in the external StorageWorks cabinet. Line item sequencing will allow Manufacturing to configure storage options in the appropriate cabinet.

- .. List storage options to be integrated in system cabinet immediately following system part number.
 - .. List storage options to be integrated in StorageWorks cabinet immediately following StorageWorks cabinet part number.
 - .. Order appropriate BN21x-xx SCSI cables for connecting controllers and storage options.
-

Step 8a—Internal Storage (System Cabinet)

Wide SCSI devices are supported in BA356-JB Wide SCSI StorageWorks shelves inside the System cabinet. They are also supported in external StorageWorks cabinets via BA356-SB Rackmount options for the SW500 and SW800 cabinets. The BA356-JB includes BA35X-HG 48V/150W dc power supply and BA35X-RD metric mounting hardware.

System cabinet provides space for up to six BA356 StorageWorks shelves; each shelf holds a maximum of two 5.25" devices and one 3.5-inch device or seven 3.5-inch devices. Typical configurations require a signal converter, i.e., DWZZB-VW which counts as one 3.5-inch device.

- .. DWZZB-VW is a Fast Wide Differential to Fast Wide Single-Ended Converter.
- .. BA656 Internal Storage Drawer included in base systems; provides space for four additional narrow 5400 RPM and 7200 RPM SCSI 3.5-inch devices.
- .. BA356-JB StorageWorks shelves support narrow and wide SCSI 5400 RPM and 7200 RPM disk drives.

Wide SCSI Options

- .. StorageWorks shelves (BA356-xx) are normally configured in single bus mode (seven SCSI devices per shelf). To configure BA356-xx shelf in split-bus mode the following options are required:
 - Split-bus terminator (BA35X-ME)
 - SCSI controller for each active SCSI port
 - SCSI cables to connect each controller to BA356-xx shelf

BA356-JB	Wide SCSI-2 StorageWorks Shelf —includes 16-bit I/O personality module, 48V/150W dc power supply, dc fans, and rackmounting hardware. Supports 16-bit wide SCSI devices and some 8-bit narrow SCSI devices depending on compliance with minimum revision levels.
DWZZB-VW	Wide SCSI-2 StorageWorks Signal Converter —required to convert FWD signals from KFTIA-AA and KZPSA-BB for use in the BA356-JB StorageWorks shelves.
BA35X-MG	8-bit I/O Personality Module —can be used in place of 16-bit I/O personality module for direct connection to narrow single-ended controllers, field installable only.

Step 8a—Internal Storage (System Cabinet) (continued)**16-bit Wide Drives**

DS-RZ28M-VZ	2.1 GB 16-bit 5400 RPM SCSI-2 disk drive in 3.5-inch carrier (OpenVMS V6.2-1H3,DIGITAL UNIX V3.2G)
DS-RZ1BB-VW	2.1 GB 7200 RPM 16-bit wide UltraSCSI disk drive
DS-RZ1CB-VW	4.3 GB 7200 RPM 16-bit wide UltraSCSI disk drive
DS-RZ1DB-VW	9.0 GB 7200 RPM 16-bit wide UltraSCSI disk drive

Note: UltraSCSI disk drives run in FAST-10 SCSI mode with KZPSA-BB PCI Fast Wide Differential SCSI adapters.

Note: The DS-RZ1xB-VW disk drives are not supported in a BA356 shelf on the same SCSI bus with 5.25-inch devices. The minimum operating system version tested includes OpenVMS V6.2-1H3 and DIGITAL UNIX V4.0B. To ensure 16-bit wide SCSI operation, use wide SCSI drives with wide SCSI controllers in wide SCSI StorageWorks shelves with wide SCSI cables. See *Storage Devices—StorageWorks Supported Devices* for 8-bit and 16-bit Expansion Table for minimum hardware revision levels.

8-bit Narrow Drives

DS-RZ28M-VZ	2.1 GB 5400 RPM 8-bit narrow SCSI disk drive
DS-RZ28L-VA	2.1 GB 7200 RPM 8-bit narrow SCSI disk drive
DS-RZ29L-VA	4.3 GB 7200 RPM 8-bit narrow SCSI disk drive
DS-RZ40-VA	90 GB 7200 RPM 8-bit narrow SCSI disk drive

Tape Devices

TLZ09-VA	8.0 GB DAT 3.5-inch SCSI tape drive in StorageWorks carrier. OpenVMS V6.2-1H3 and DIGITAL UNIX V3.2C required along with System Console Firmware Revision 3.0-9.
TLZ9L -VA	32/64 GB DAT tape loader in StorageWorks carrier
TKZ9E -VA	2/5/7/10/14 GB 8 mm helical scan tape drive in 5.25-inch StorageWorks carrier
TZ87-VA	20.0 GB DLT 5.25-inch SCSI tape drive in StorageWorks carrier
TZ88N-VA	20/40 GB DLT 5.25-inch SCSI tape drive in StorageWorks carrier
TZ89N-VA	35/70 GB DLT 5.25-inch SCSI tape drive in StorageWorks carrier

Note: Tape and Optical Devices not supported on KZPSC or KZPAC SCSI RAID controller

Solid State Disks

Supported with KZPSC, KZPSA, KFTIA—cannot be combined with RZxx disks/tapes on same SCSI bus.

EZ31-VW	134 MB Solid State Disk; requires OpenVMS V6.2 or later and DIGITAL UNIX V3.2C or later
EZ32-VW	268 MB Solid State Disk; requires OpenVMS V6.2 or later and DIGITAL UNIX V3.2C or later
EZ64-VA/VW	475 MB Solid State Disk; requires OpenVMS V6.2 or later and DIGITAL UNIX V3.2C or later
EZ69-VA/VW	950 MB Solid State Disk; requires OpenVMS V6.2 or later and DIGITAL UNIX V3.2C or later

Step 8b—External Storage (I/O Expansion Cabinet)

I/O expansion cabinet (H9B10-EA) provides space for a maximum of 16 BA356-JB SCSI StorageWorks shelves and a maximum of four DWLPB-CB PCI shelf mount boxes. Disk and tape drives supported are the same as Step 8a in this section. See configuration limitations in Step 11b in this section.

Step 8c—External Storage

The following list describes available disk storage devices, capacities, and shelf type, and available tape drives. These supported options can be added as required.

Storage Cabinets	Capacity
SW5XX, SW8XX	6–227 GB
SCSI Disk Drives	
See Step 8a in this section.	
Tape Drives	
TZ87, TZ857¹, TZ877, TZ88, TZ885, TZ887, TSZ07, TLZ09, TKZ9E, TLZ9L, TKZ60, TKZ61, TKZ62, TL810, TL812, TL820, TL822, TL826, DS-TL893-BA, DS-TL894-BA, DS-TL896-BA	
Optical Libraries	
RW546-ZA	36 GB Optical Library, 2 drives
RW551-ZC	73 GB Optical Library, 2 drives
RW552-ZF	147 GB Optical Library, 4 drives
RW555-ZF	294 GB Optical Library, 4 drives
RW557-ZF	547 GB Optical Library, 6 drives

1. Loader support for DIGITAL UNIX is available via DECnsr.

Step 9—Networks and Communications

Two twisted-pair 802.3/Ethernet controllers on KFTIA-AA system I/O module are included with each Base Server; DE500 network interface card included with Expanded Base Server. See Step 6 for twisted-pair Ethernet cable part number. Optional DEFPZ-AA/UA (FDDI) daughter card can be installed on KFTIA-AA system I/O module. Select additional devices if required. **Note:** Connection of system to Ethernet requires twisted-pair cable. *See Network Products Guide* for details.

LAN Communications Controllers—KFTIA-AA daughter cards

- .. Maximum one FDDIcontroller daughter card per KFTIA-AA I/O module
- .. System maximum of three FDDIcontroller daughter cards.

DEFPZ-AA	FDDIcontroller Fiber—Single attachment station —daughter card for mounting on KFTIA-AA. Requires BN24x cable.
BN24E-xx	Fiber-Optic Cable, Dual 2.5 mm Bayonet “ST” type connectors
BN24D-xx	Fiber-Optic Cable, Dual 2.5 mm Bayonet “ST” type connector to FDDI “MIC” connector
DEFPZ-UA	FDDIcontroller Fiber—Twisted-pair copper —daughter card for mounting on KFTIA-AA. Requires BN26x cable.
BN26M-xx	8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable
BN26S-xx	8-pin MP to 8-pin MP, screened, crossover, EIA/TIA Category 5 cable

LAN Communications Controllers—PCI based

- .. Requires DWLPB-CA/CB, PCI shelf mount box.
- .. System maximum of six DEFPZ-AA/DB/UB/MB FDDI controllers.

DE450-CA	PCI-to-Ethernet 3-port Adapter (uses one PCI slot). OpenVMS (V6.2) and DIGITAL UNIX (V3.2C) support eight per PCI, maximum eight per system. Two patch kits required to support DE450 with OpenVMS V6.2.
DE500-AA	Fast Ethernet (100 Mbit) PCI Adapter (uses one PCI slot). OpenVMS (V6.2 and V7.1) and DIGITAL UNIX (V3.2C) support eight per PCI, maximum eight per system.
DE500-XA	Fast Ethernet (100 Mbit) PCI Adapter (uses one PCI slot). OpenVMS (V6.2 and V7.1) and DIGITAL UNIX (V3.2C) support eight per PCI, maximum eight per system.

Step 9—Networks and Communications (continued)
LAN Communications Controllers—PCI based

DEFPA-AB	FDDIcontroller Fiber—Single attachment station MultiMode Fiber (uses one PCI slot). OpenVMS and DIGITAL UNIX support six per DWLPB, maximum six per system with DIGITAL UNIX V3.2G and OpenVMS V6.2-1H3 operating system releases. Requires BN34x SC type connecting cable.
DEFPA -DB	FDDIcontroller Fiber—Dual attachment station MultiMode Fiber (uses one PCI slot). OpenVMS and DIGITAL UNIX support six per DWLPB, maximum six per system with DIGITAL UNIX V3.2G and OpenVMS V6.2-1H3 operating system releases. Requires BN34x SC type connecting cable.
BN34A-xx	MultiMode Fiber Optic Duplex cable—SC connector to ST connector
BN34B-xx	MultiMode Fiber Optic Duplex cable—SC connector to SC connector
BN34D-xx	MultiMode Fiber Optic Duplex cable—SC connector to MIC connector
DEFPA-MB	FDDIcontroller Copper—Dual attachment station UTP (uses one PCI slot). OpenVMS and DIGITAL UNIX support six per DWLPB, maximum six per system with DIGITAL UNIX V3.2G and OpenVMS V6.2-1H3 operating system releases. Requires BN26x or BN25H connecting cables.
DEFPA-UB	FDDIcontroller Copper—Single attachment station UTP (uses one PCI slot). OpenVMS and DIGITAL UNIX support six per DWLPB, maximum six per system with DIGITAL UNIX V3.2G and OpenVMS V6.2-1H3 operating system releases. Requires BN26x or BN25H connecting cables.
BN26M-xx	8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable
BN26S-xx	8-pin MP to 8-pin MP, screened, crossover, EIA/TIA Category 5 cable
BN25H-03	3-meter Unshielded twisted pair RJ45 connectors
DGLPB-AB	ATMworks 350 ATM PCI bus adapter (uses one PCI slot). DIGITAL UNIX V4.0a supports four per PCI, maximum four per system.
SN-PBXNP-AC	PCI Token Ring Adapter. Uses one PCI slot. Digital UNIX V3.2G or V4.0B supports two per PCI, maximum two per system. Minimum system console support for this adapter is V4.0 AXP CD release. Requires BC26M cable.
PBXDA-AA	PCI Asynchronous 4-port Communication Adapter. OpenVMS v6.2-1H3 supports two per PCI, maximum two per system.
PBXDA-AB	PCI Asynchronous 8-port Communication Adapter. OpenVMS v6.2-1H3 supports two per PCI, maximum two per system.

LAN Communications Controllers—EISA based

- .. Requires DWLPB-CA and KFE70-BA, EISA bridge module set.
- .. See EISA Bus IRQ Address Table.

DNSES-AA	Synchronous Communications Controller (uses one EISA slot). DIGITAL UNIX supports two per EISA, maximum of two per system. OpenVMS supports one per EISA, maximum of one per system. Requires a BC19x cable.
BC19B-02	EIA-422-A/V.11 adapter cable; can be extended with BC55D-33
BC19D-02	EIA-232-D/V.24 adapter cable; can be extended with BC22F-xx
BC19E-02	EIA-423-A/V.10 adapter cable; can be extended with BC55D-33
BC19F-02	V.35 adapter cable; can be extended with BC19L-25
DW300-AA	Token Ring Adapter (uses one EISA slot). DIGITAL UNIX and OpenVMS V6.2 plus remedial stream TIMA kit (TPPR 614) support one per EISA; maximum of one per system. Requires a BN26M cable.
BN26M-xx	802.5/Token Ring twisted-pair cable; 8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable
CXI01-AA	Digiboard Asynchronous Xem/ISA Multiport Serial Card with 16 RJ45 PORTS/Xem Port (uses one EISA slot) supports one per EISA, maximum one CXI01-AA/AD per system. Supported on DIGITAL UNIX systems only.
CXI01-AB	Digiboard PORTS/Xem, 16 RJ45 Port Concentrator mounts separately from PCI bus. Maximum of three CXI01-AB can be attached to CXI01-AA; provides up to 48 additional ports. Supported on DIGITAL UNIX systems only.
CXI01-AD	Digiboard Asynchronous EPC/X Multiport Serial Card with 16 RJ45 Port EPC/CON-16 Concentrator —(uses one EISA slot) supports one per EISA, maximum one CXI01-AA/AD per system. Supported on DIGITAL UNIX systems only.

Step 9—Networks and Communications (*continued*)

LAN Communications Controllers—EISA based (*continued*)

- CXI01-AE** **Digiboard EPC/CON-16 Concentrator** mounts separately from PCI bus. Maximum of three CXI01-AE can be attached to CXI01-AD; provides up to 48 additional ports. Supported on DIGITAL UNIX systems only.
- CXI01-AC** Digiboard RJ45 to DB25 male converter
- CXI01-AF** Digiboard RJ45 to DECMJ11 adapter—eight per package

Local and Wide Area Communications Servers

Each communications server requires 802.3/Ethernet connection. Depending on server selected, either ThinWire BNC-type connection (e.g., BC16M cable) or thick wire 15-pin AUI transceiver cable (e.g., BNE3x) is required. Additional items also required—see the *Network Products Guide*.

Network Connectivity Products

See *Network Products Guide* for details

Step 9a—MEMORY CHANNEL Controller

DIGITAL UNIX Systems

- .. Requires DIGITAL UNIX V3.2E (DIGITAL UNIX V3.2D plus TruCluster software or MEMORY CHANNEL Driver software).
- .. Each system node in a MEMORY CHANNEL cluster requires a software license.
- .. Servers in a compute-server array require a DIGITAL UNIX Driver for MEMORY CHANNEL License.
- .. Servers in a TruCluster high-availability environment require a license for TruCluster for DIGITAL UNIX.
- .. The following options are not currently supported with MEMORY CHANNEL: DJ-ML200, DNSES-AA, CIPCA, CIXCD

OpenVMS Systems

- .. Requires OpenVMS V7.1 and OpenVMS Cluster license
- .. On systems with DWLPA-CA/CB and no other PCI option(s) and/or KFE70-BA, a maximum of two CCMAA-BA modules are supported.
- .. On systems with DWLPA-CA/CB and any PCI option(s) and/or KFE70-BA, a maximum of **one** CCMAA-BA module are supported.
- .. DWLPB-CA/CB option does not have the restrictions of the DWLPA-CA/CB
- .. DNSES-AA is not currently supported with MEMORY CHANNEL.

MEMORY CHANNEL requirements for currently installed AlphaServer 8200 systems:

- .. Console firmware at revision V2.3 or higher.
- .. CCMAA-BA Adapter must be installed in slots 0-7 of a DWLPA-CA PCI; no restriction for DWLPB-CA PCI bus.
- .. For two-system nodes, order one CCMAA-BA per system and one BC12N-10 cable to connect them.
- .. For three or more system nodes, order CCMHA-AA (MEMORY CHANNEL Hub) one CCMAA-BA and one BC12N-10 cable per system node.
- .. CCMHA-AA (MEMORY CHANNEL Hub) is configured with four CCMLA-AA Line Cards and supports up to four nodes. Expansion up to eight system nodes can be achieved by adding up to four additional CCMLA-AA Line Cards, except TruCluster production server configurations.

- CCMAA-BA** PCI to MEMORY CHANNEL controller —maximum two supported
- CCMHA-AA** MEMORY CHANNEL Hub with four line cards
- CCMLA-AA** MEMORY CHANNEL Line Card for use with MEMORY CHANNEL Hub (CCMHA-AA)
- BC12N-10** MEMORY CHANNEL Cable
- QB-3RLAQ-AA** TruCluster Software for DIGITAL UNIX
- QB-4ZCAQ-AA** DIGITAL UNIX Driver for MEMORY CHANNEL license
- QL-MUZAQ-AA** OpenVMS Cluster license for Alpha systems

Step 9a—MEMORY CHANNEL Controller (continued)

CCMHA-AA, MEMORY CHANNEL Hub, includes BN19P-2E line cord for Canada, Japan, US operation.
For other regions, order one of the following:

BN19A-2E	Ireland, United Kingdom
BN19S-2E	Egypt, India
BN19C-2E	Central Europe
BN18L-2E	Israel
BN19E-2E	Switzerland
BN24X-2E	Italy
BN19K-2E	Denmark
BN19H-2E	Australia, New Zealand

Step 10—Console Terminal

- .. Console terminal with EIA-232 25-pin DSUB connector and printer required unless otherwise available.
- .. Shielded console cable is included for connection to the console terminal.

VT510-xx	VT510 terminal
LA30N-xx	LA30 printer
LK461-xx/LK46W-xx	Keyboard

Step 11—Expansion—System Cabinet and I/O Expansion Cabinet**Step 11a—System Cabinet**

- .. System Cabinet includes one single-phase power supply.
 - provides space for additional redundant (N+1) power supply.
- .. BA656 Internal Storage Drawer included in system cabinet; provides space to accommodate four additional 3.5" narrow SCSI devices including one tape device.
- .. Provides space for six BA356-JB SCSI StorageWorks Shelves, three DWLPB-CA (PCI shelf mount boxes) or combination of StorageWorks and PCI shelves.
 - For each DWLPB-CA placed in system cabinet, subtract two BA356-JB shelves from maximum available. Example: One DWLPB-CA in system cabinet allows for a maximum of four BA356-JB shelves.

Shelf Mount Boxes	Quantity
StorageWorks shelves (BA356-JB)	6 maximum (see limits above)
PCI shelf mount box (DWLPB-CA)	3 maximum

Step 11b—I/O Expansion Cabinet

- .. I/O expansion cabinet includes one single-phase power supply.
 - provides space for additional redundant (N+1) power supply.
- .. Maximum four I/O channels supported in each I/O expansion cabinet.
- .. Space for 16 BA356-JB SCSI StorageWorks Shelves, four DWLPB-CB (PCI Rack mount boxes) or combination StorageWorks and PCI shelves.
 - For each DWLPB-CB placed in expansion cabinet, subtract two BA356-JB shelves from maximum available. Example: Three DWLPB-CB in expansion cabinet allows for a maximum of ten BA356-JB shelves.

Shelf Mount Boxes	Quantity
StorageWorks shelf (BA356-JB)	16 maximum (see limits above)
PCI shelf mount box (DWLPB-CB)	4 maximum

H9B10-EA **I/O Expansion Cabinet**—Single Phase power, maximum two per system

Note: See Step 2 for selection of appropriate power cord—one per I/O expansion cabinet. If redundant supply (H7266-AD/AE) is ordered, power cord is not required.

Step 12—Power Options

- .. Power options are available for AlphaServer 8200 system and expansion cabinets.
- .. System cabinet and expansion cabinet includes one power supply (H7266-AA)—200-240 V AC input voltage, 48 V dc, 2400 watt, output supply.
- .. Power system supports N+1 power redundancy and battery backup capability.
- .. If redundant power supply is ordered, power cord in Step 2 in this section is no longer required.

H7266-AD Single phase 48 V dc redundant power supply—60 Hz power connector, maximum one per cabinet

H7266-AE Single phase 48 V dc redundant power supply—50 Hz power connector, maximum one per cabinet

Note: See Specifications in this section for information on appropriate power supply to order.

Step 12a—Battery Backup Options

- .. Optional battery backup requires addition of H7267-AA to each power supply in system cabinet and expansion cabinets.
- .. Battery backup provides up to five minutes of capacity to power contents of system and expansion cabinets.

H7267-AA Battery backup option kit—Includes batteries, charger board, installation manual for adding battery backup operation to one power supply (H7266-AA, H7266-AD, H7266-AE). Can be field installed.

Step 12b—Power Option for BA356 StorageWorks Shelves

- .. Provides N+1 power for BA356-JB StorageWorks shelves.
- .. Occupies one slot in StorageWorks shelf.

BA35X-HG 48 V dc 150W Redundant Power Supply for StorageWorks shelf; includes 48 V dc jumper cable for connecting to first power supply in StorageWorks shelf.

Step 13—Software

Select user licenses and additional software as required. **Note:** Media and documentation required for first system on site.

Software Processor Code = Q

DIGITAL UNIX Concurrent Use Licenses

DIGITAL UNIX Concurrent Use licenses are not specific to a single system and can be moved from one system to another at user discretion.

Note: DIGITAL UNIX 8200 5/440 MHz and 5/625 MHz CPU Base Servers and Expanded Base Servers include Traditional Unlimited user license.

QL-MT7AM-3B DIGITAL UNIX Concurrent Use 1-user license

QL-MT7AM-3C DIGITAL UNIX Concurrent Use 2-user license

QL-MT7AM-3D DIGITAL UNIX Concurrent Use 4-user license

QL-MT7AM-3E DIGITAL UNIX Concurrent Use 8-user license

QL-MT7AM-3F DIGITAL UNIX Concurrent Use 16-user license

QL-MT7AM-3G DIGITAL UNIX Concurrent Use 32-user license

QL-MT7AM-3H DIGITAL UNIX Concurrent Use 64-user license

QL-MT7AQ-AA¹ DIGITAL UNIX Traditional unlimited user license

QL-MT5AQ-AA DIGITAL UNIX developer's extension license

QL-MT6AQ-AA¹ DIGITAL UNIX server extension license

QL-MTJAQ-AA DECnet/OSI end-system license

QL-MTKAQ-AA DECnet/OSI extended function license

QB-05SAQ-AA DECsafe Available Server license and documentation (DIGITAL UNIX only). Media available on layered product CD-ROM. KZMSA or KZPSA adapter required.

1. Included in 5/440 MHz and 5/625 MHz DIGITAL UNIX Base and Expanded Base Servers.

Step 13—Software (*continued*)
DIGITAL UNIX Media and Documentation

QA-MT4AA-H8	DIGITAL UNIX media and on-line documentation (base system, complementary products) on CD-ROM
QA-MT4AA-GZ	DIGITAL UNIX full hardcopy documentation
QA-MT4AB-GZ	DIGITAL UNIX end user hardcopy documentation subkit
QA-MT5AA-GZ	DIGITAL UNIX developer's extension hardcopy documentation subkit
QA-MT6AA-GZ	DIGITAL UNIX server extension hardcopy documentation subkit

OpenVMS Concurrent Use Licenses

OpenVMS Concurrent Use license provide the right to interactively use the operating system by the specified number of concurrent users on a designated OpenVMS system. OpenVMS Concurrent Use licenses can be moved from one system to another at user discretion and can be shared in a mixed OpenVMS VAX and OpenVMS Alpha cluster.

QL-MT3AA-3B	OpenVMS Concurrent Use 1-user license
QL-MT3AA-3C	OpenVMS Concurrent Use 2-user license
QL-MT3AA-3D	OpenVMS Concurrent Use 4-user license
QL-MT3AA-3E	OpenVMS Concurrent Use 8-user license
QL-MT3AA-3F	OpenVMS Concurrent Use 16-user license
QL-MT3AA-3G	OpenVMS Concurrent Use 32-user license
QL-MT3AA-3H	OpenVMS Concurrent Use 64-user license
QL-MT3AA-3J	OpenVMS Concurrent Use 128-user license
QL-MT3AA-3K	OpenVMS Concurrent Use 256-user license
QL-MT2AQ-AA	OpenVMS Traditional unlimited user license
QL-MTFAQ-AA	DECnet/OSI end-system license
QL-MTHAQ-AA	DECnet/OSI extended function license

OpenVMS Media and Documentation

QA-MT1AA-H8	OpenVMS media and documentation on CD-ROM
QA-09SAA-GZ	OpenVMS base hardcopy documentation
QA-001AA-GZ	OpenVMS full hardcopy documentation

Layered Products CD-ROM

QA-054AA-H8	Layered products media and documentation for DIGITAL UNIX
QA-03XAA-H8 ¹	Layered products media and documentation for OpenVMS

1. Includes DIGITAL Enterprise Integration Server for OpenVMS media and documentation.

DIGITAL Enterprise Integration Package—included in 5/440 Base Servers and Expanded Base Servers

QA-5LVAA-H8	DIGITAL Enterprise Integration Server v1.0 for OpenVMS media and documentation
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DIGITAL NAS Base Server 200 Software

DIGITAL NAS Base Server 200 software included in AlphaServer 8200 5/300 MHz CPU Base Servers and Expanded Base Servers. Media available on layered product CD-ROM.

Step 14—Hardware and Software Supplemental Support Services
Hardware—Americas and Asia Pacific only

- .. Systems include one-year hardware warranty, on-site, same day, 4-hour response time.
- .. Select optional Hardware Supplemental Support Services if required.

AlphaServer 8200

One CPU less than 2 GB memory	Two CPUs less than 2 GB memory	Two CPUs 2 GB memory	
FM-8U4HR-36	FM-8D4HR-36	FM-8G4HR-36	Years 1-3, 5 x 9, 4-hour response time
FM-8U512-36	FM-8D512-36	FM-8G512-36	Years 1-3, 5 x 12, 4-hour response time
FM-8U616-36	FM-8D616-36	FM-8G616-36	Years 1-3, 6 x 16, 4-hour response time
FM-8U724-36	FM-8D724-36	FM-8G724-36	Years 1-3, 7 x 24, 4-hour response time
FM-8U4HR-60	FM-8D4HR-60	FM-8G4HR-60	Years 1-5, 5 x 9, 4-hour response time
FM-8U512-60	FM-8D512-60	FM-8G512-60	Years 1-5, 5 x 12, 4-hour response time
FM-8U616-60	FM-8D616-60	FM-8G616-60	Years 1-5, 6 x 16, 4-hour response time
FM-8U724-60	FM-8D724-60	FM-8G724-60	Years 1-5, 7 x 24, 4-hour response time

Software—Americas and Asia Pacific only

- .. Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- .. Software service upgrades for DIGITAL UNIX and OpenVMS include advisory and remedial software support with new version license rights for operating system and DIGITAL NAS Base Server 200 for the time period indicated.

AlphaServer 8200 One CPU Systems

FM-82UOS-12	12-month Software Supplemental Support for DIGITAL UNIX one CPU systems
FM-82UOS-36	36-month Software Supplemental Support for DIGITAL UNIX one CPU systems
FM-82UOS-60	60-month Software Supplemental Support for DIGITAL UNIX one CPU systems

AlphaServer 8200 One CPU Systems

FM-82UVM-12	12-month Software Supplemental Support for OpenVMS one CPU systems
FM-82UVM-36	36-month Software Supplemental Support for OpenVMS one CPU systems
FM-82UVM-60	60-month Software Supplemental Support for OpenVMS one CPU systems

AlphaServer 8200 Two CPU Systems

FM-82DOS-12	12-month Software Supplemental Support for DIGITAL UNIX two CPU systems
FM-82DOS-36	36-month Software Supplemental Support for DIGITAL UNIX two CPU systems
FM-82DOS-60	60-month Software Supplemental Support for DIGITAL UNIX two CPU systems
FM-82DVM-12	12-month Software Supplemental Support for OpenVMS two CPU systems
FM-82DVM-36	36-month Software Supplemental Support for OpenVMS two CPU systems
FM-82DVM-60	60-month Software Supplemental Support for OpenVMS two CPU systems

Step 14a—Hardware and Software Supplemental Support Services (Europe only)

Europe does not have specific part numbers for Hardware and Software Supplemental Support Services. Prices can be quoted using the Excelerator tool; contact MCS Sales in your country for information on Hardware and Software Supplemental Support Services.

Optional Controller Configuration Table

With multiple adapters that provide the same interface available on different I/O buses it is possible to exceed operating system limit on the number of ports supported for that interface. Follow these guidelines for maximum number of ports that each operating system supports. Fill in this table under the relevant area, add up number of controllers/ports available, and verify that operating system limits will not be exceeded. **Do not exceed these values.**

Option Name	A Number of Ports/Buses	B Number of Options	C Total Ports (A * B)	DIGITAL UNIX Limit	OpenVMS Limit
SCSI Options					
Included KFTIA-AA I/O module, one single-ended and three FWD SCSI ports ¹	4	1	4		
Additional KFTIA-AA I/O module, one single-ended and three FWD SCSI ports	4				
KZPSA-BB PCI fast wide differential SCSI adapter	1				
Add column "C" —must be less than or equal to value listed under operating system to be used.				32	26
802.3/Ethernet Options					
Included KFTIA-AA I/O module, two 802.3/Ethernet ports ¹	2	1	2		
Additional KFTIA-AA I/O module, two 802.3/Ethernet ports	2				
DE435-AA PCI 802.3/Ethernet controller, DE450 and DE500	1				
Add column "C" —must be less than or equal to value listed under operating system to be used.				8	8
FDDI Options					
Included KFTIA-AA I/O module, optional FDDI daughter card installed (DEFPZ-AA/UA) ¹	1				
Additional KFTIA-AA I/O module, optional FDDI daughter card installed (DEFPZ-AA/UA)	1				
DEFPA-AB/DB/UB/MB PCI FDDI controller, one port each	1				
Add column "C" —must be less than or equal to value listed under operating system to be used.				8	8

1. Applies to Base Servers only.

EISA Bus IRQ Address Table**Configuration Rules and Information**

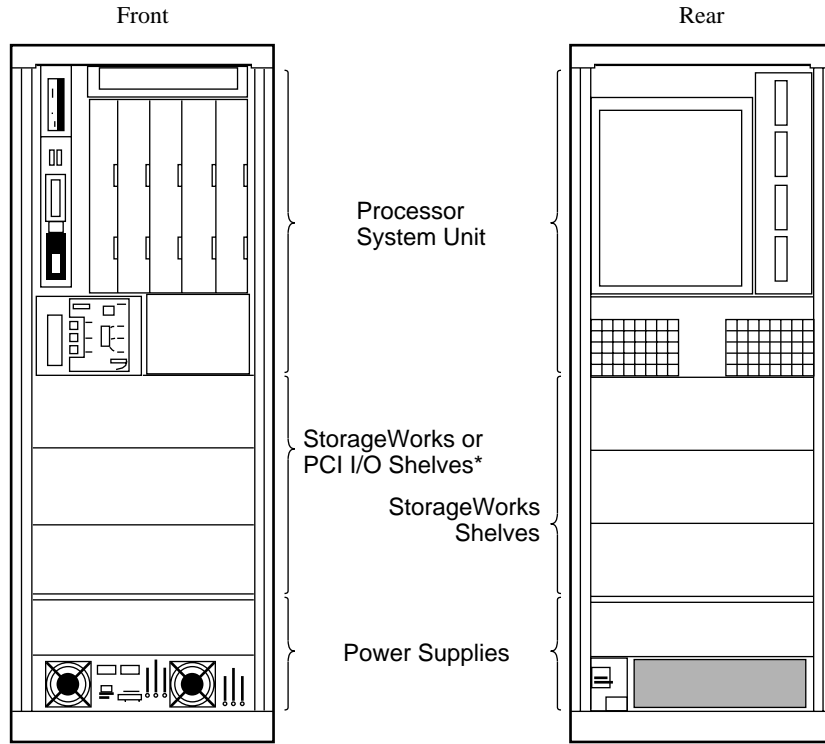
- .. EISA Bus IRQ address assignments are for DIGITAL UNIX and OpenVMS systems only.
- .. In some cases, the maximum number of each supported device is less than number of EISA bus addresses available; this is due to other limitations.
- .. Only one device can occupy any given IRQ address; if multiples of a device are configured, each device occupies a separate address.
- .. Match each device to one available address. (Note: With the table as a worksheet, fill in "0" for each device; fill in only one "0" per column).
- .. Actual IRQ address assignment will be made by EISA Configuration Utility (ECU), which is run during system manufacture, or in the installed system if EISA bus is reconfigured.

Option	EISA Bus IRQ Addresses									Maximum of Each Supported	
	5	7	8	9	10	11	12	14	15	OpenVMS	DIGITAL UNIX
DNSES-AA	–	–	0	0	0	0	0	0	0	1	2
DW300-AA	0	–	–	0	0	0	–	–	0	1	1
CXI01-AA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1
CXI01-AD	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1

Table Codes:

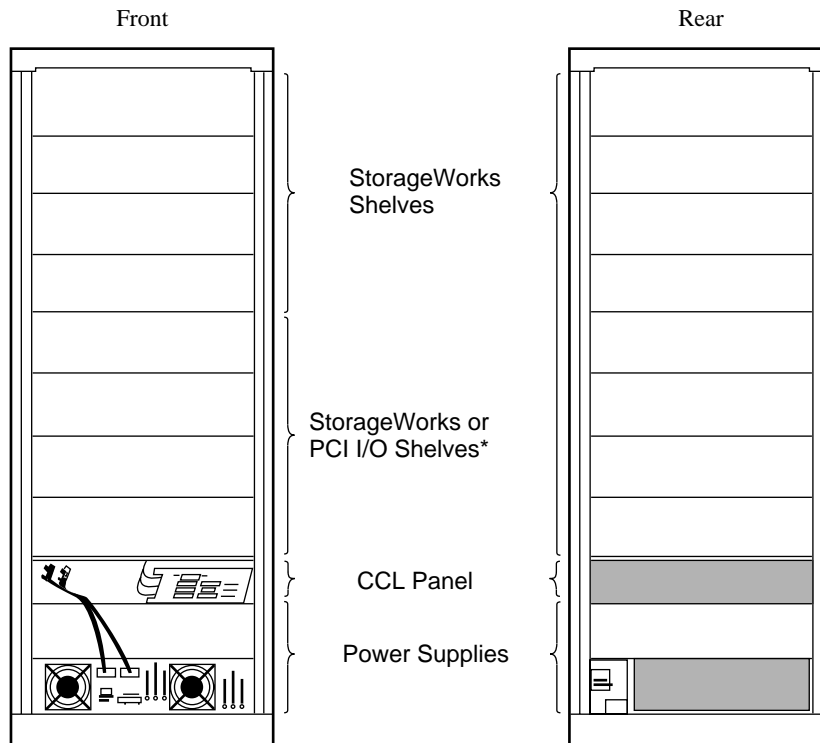
- 0 = address is available for device
- = address not available for device
- NA = Not Applicable

System Cabinet



BU-3480

Expansion Cabinet



* A PCI I/O shelf extends into the rear of the cabinet.
A StorageWorks shelf cannot be located behind a PCI shelf.

BU-3481

Specifications

Physical Characteristics	Operating	Shipping
Height	170.0 cm (67.0 in)	194.0 cm (76.25 in)
Width	60.0 cm (23.6 in)	91.5 cm (36.0 in)
Depth	92.5 cm (36.4 in)	121.5 cm (47.9 in)
Weight		
Minimum configuration	318 kg (700 lb)	363 kg (800 lb)
Maximum configuration	591 kg ((1300 lb)	636 kg (1400 lb)
Clearances	Operating	Service
Front	1.0 m (40 in)	1.5 m (59 in)
Rear	.75 m (29.5 in)	1.0 m (40 in)
Sides	0	0
Environmental	Operating	Non-Operating
Temperature	10°C to 35°C (50°F to 95°F)	-40°C to 66°C (-40°F to 151°F)
Humidity	10% to 90%	10% to 95%
Altitude	0–2.4 km (0–8200 ft)	9,100 m (30,000 ft)
Vibration	2–22 Hz @ 0.01"da minimum	22–500 Hz @ 0.25g maximim.
Heat dissipation ¹	Minimally configured system¹ (system cabinet) 3200 Btu/hr, 930 W Fully configured system² (system cabinet) 9100 Btu/hr, 2647 W Fully configured system³ (system cabinet with two I/O expansion cabinets) 21,300 Btu/hr, 6234 W	
Regulatory		
Agency approvals	UL Listed to UL1950 CSA Certified to CAN/C22.2 No. 950-M89 FCC Part 15 (Class A) CE Declaration #1259	
Reviewed to	EN 60950/A1, Jan. 1993, European Norm AS/NZS 3260:1993, Australian/New Zealand Standard EMKO-TSE{74-SEC}Summary of Nordic Deviations IEC950, 2nd Ed., 2nd Amend.	
Power Requirements ⁴	US/Canada/Japan	Europe/AP
Nominal AC input line voltage	202-240 (208) V Japan (202) V	202-240 (240) V
Frequency range	50 Hz–60 Hz	50 Hz–60 Hz
Phases	Single-phase line-to-line or line-to-neutral	Single-phase line-to-line or line-to-neutral
Maximum input current	16 A rms	16 A rms
Surge current	80 A peak	80 A peak
Rating	16 A	16 A
Power cord part number	BN23H-4E	BN20P-4E
Power cord length	4.5 m (15 ft)	4.5 m (15 ft)
Power cap (system)	DEC 12-16886-00 NEMA L6-30P	DEC 12-30333-03
Receptacle	NEMA L6-30R	IEC 309 (32 A) ⁵ 2 Pole/3-Wire (220-240 V)
PCS/PDS/PDU/UPS cable	BC26E	

1. Minimally configured system contains one power supply, one CPU module, one memory, one System I/O module, one CD-ROM, and one RZ28 disk drive.

2. Fully configured system contains two power supplies, one CPU module, two memory modules, two System I/O modules, one CD-ROM, 16 RZ28 drives, two PCI shelves, and two StorageWorks shelves.

3. Fully configured system and two expansion cabinets consists of the above “fully configured system” and two expansion cabinets which each contain one PCI shelf , 14 StorageWorks shelves, and 84 RZ28 disk drives.

4. Power system provides unity power factor which allows full utilization of the input line current (Watts = VA).

5. Receptacle type is Hubbell 332R6 or equivalent.

Recommended On-Line Power Protection/UPS Solutions for AlphaServer 8200 systems

For complete protection, UPS products should be used with data line surge protectors. See TVSS section of Environmental Products Chapter.

4N-GA249-AB	2 wire modem	wall plug in (additional plug in data modules available RN-GA240-xx)
4N-GA249-CA	10BaseT	wall plug in (additional plug in data modules available RN-GA240-xx)
4N-GA510-BF	ThinWire	device port
4N-GA245-xx	Din rail and modules	up to 32 ports

	Receptacle Module for Plug-in Connection			
UPS Model	60 HZ	50 HZ	AlphaServer 8200	External Storage
4N-AEAAJ-CL (60 Hz) 4N-AEAAJ-CU (50 Hz)	Included	Hardwired	Single phase	None
4N-AEAAL-BA	4N-AEACK-BN	Hardwired		SW500 or Expansion Cabinet
4N-AEAAN-BA (60 Hz) 4N-AEAAN-BE (50 Hz)	4N-AEACM-BN	Hardwired		SW800

UPS Models

4N-AEAAJ-CL	Prestige 6kVA (4kW), single phase, 60 Hz, 208V-120/208V, 6 ft. cord with L6-30P and (2) L6-30R, (8) 5-15R receptacles. Modular hot-swap design with 7 minutes battery at full load, extendible plug and play batteries and receptacle provisions. Unit includes 3 year hot swap warranty. Substitute -CT for 240V-240/120V operation.
4N-AEAAJ-CU	Prestige 6kVA (4kW) 50 Hz package, single phase, 50/60 Hz, 200-240V in and out, selectable; hardwired input/output.
4N-AEAAL-BA	PUPS plus 10kVA (7kW), single-phase, 50/60Hz, 176-276V in, 200-240V out, 9 minutes battery at full load; hardwired with optional plug-in output receptacle modules.
4N-AEAAN-BA	PUPS plus 15kVA (10kW), three-phase, 50/60Hz, 176-256V in, 200-240V out, 10 minutes battery at full load; hardwired with optional plug-in output receptacle modules.
4N-AEAAN-BE	PUPS plus 15kVA (10kW), three-phase, 50/60Hz, International model rated 380/415V in, 380/415/220V out; hardwired input/output.

Hardware Options

4N-AEACK-BN	PUPS plus 15kVA receptacle module (3) L6-30R, (3) 5-20R, (2) L5-20R
4N-AEACM-BN	PUPS plus 15kVA receptacle module (2) L21-30R, (1) 5-20R2, (2) L6-30R
4N-AEACH-HD	Mobile module stacker for Prestige 6kVA models (includes seismic supports)

UPS Monitoring and Unattended Shutdown Software (for above UPS systems only)

Note: Power Management software is included in ServerWORKS Manager kits shipping with all AlphaServers. Cable kit required, select UPS Communications Cable Kit.

DIGITAL UNIX	OpenVMS	UPS System
4N-AEAES-AK	4N-AEAES-EM	Prestige UPS
4N-AEAES-AK	4N-AEAES-FM	PUPS plus UPS
4N-AEAES-BK	Call for information	Network Management or multi shutdown ¹

- Requires Connect-UPS Network Adapter (SNMP compatible) - for DIGITAL UNIX systems, suffixes denote twisted pair/ThinWire
4N-AEAEO-DA/DC for 60Hz applications
4N-AEAEO-DE/DD for 50Hz applications

DIGITAL UNIX	OpenVMS	
4N-ONLIN-NT ¹	4N-ONLIS-FE	UPS Communications Cable Kit
4N-AEAEO-D*	4N-JMIU4-AB ³	4 port Option for multi-systems on one UPS
4N-AEAEO-D* ²	4N-AEAEO-D* ²	Option for SNMP/ServerWORKS Manager interface

- Connect-UPS Network Adapter, required for AlphaServer 8200 DIGITAL UNIX Platform
- Suffix * denotes Twisted pair / ThinWire = DA/DC (60Hz); DB/DD (50Hz)
- Four port multi-interface kit with splitter cable to interface with network adapter and local shutdown signal from UPS. Kits may be daisychained, kits include software.

A La Carte Software kits available for existing installations

DIGITAL UNIX ¹	OpenVMS	
4N-AEAES-AK	4N-AEAES-EM	Prestige (single system)
4N-AEAES-AK	4N-AEAES-FM	PUPS Plus (single system)
4N-AEAES-BK	See options above	Multi-systems on one UPS or Network Management