

Systems and  
Options Catalog

April 1995  
Supplement

digital

# Digital



**Introduction**

This supplement to the Digital Systems and Options Catalog includes ordering information for major new hardware products announced between December 1994 and April 1995. Customers, sales representatives, and partners should retain their January 1995 edition and use this supplement to update the ordering and configuring information.

**Contents**

<b>Alpha Systems</b>	
AlphaStation 200 4/100 Desktop Workstations	1
AlphaStation 250 4/266 Desktop Workstations	11
AlphaServer 400 4/166 Systems	23
AlphaServer 1000 4/233 Systems	35
AlphaServer 1000 4/233 Rackmount and Cabinet Systems	49
AlphaServer 2000 4/233 and 4/275 Systems	58
AlphaServer 2100 4/233, 4/275, and 5/250 Systems	95
AlphaServer 2100 4/233, 4/275, and 5/250 Rackmount Systems	132
AlphaServer 2100 4/233, 4/275, and 5/250 Cabinet Systems	143
Digital AlphaServer 8200 Systems	157
Digital AlphaServer 8400 Systems	172
<b>VAX Systems</b>	
VAXstation 4000 Model 96 Systems	195
MicroVAX 3100 Model 96 Systems	204
VAX 4000 Model 106A Systems and Servers	214
<b>ADVANTAGE-UPGRADES</b>	226
<b>Personal Computing</b>	
Prioris HX 590 and Prioris 590DP Servers	255
Multia Multi-Client Desktop Systems	263
<b>Networks, Communications, Cables</b>	
ATMworks 750 Adapter	267
GIGAswitch/ATM Networking Switch	269
Digital NetRider Remote Access System	272
Fast EtherWORKS PCI 10/100	273
Asynchronous Multiplexer for EISA/ISA Systems	274
<b>Storage Devices</b>	
StorageWorks RAID Array 230 Subsystems	275
KZPSA—PCI to SCSI Fast Wide Differential Storage Adapter	278
StorageWorks DWZZB 16-Bit SCSI Bus Extender and Signal Converter	279
StorageWorks BA356 Wide 16-Bit Deskside Expansion Pedestal	281
StorageWorks Fast Wide RZ26L and RZ28 SCSI Disk Drives	284
StorageWorks TLZ07/7L 4mm DAT Loader Subsystem	285
StorageWorks TL810 Automated DLT Library	287
StorageWorks RWZ52 Multifunction Optical Drive	289
<b>Terminals, Scanners, and Printers</b>	
VT Lan40 Windowing Network Terminals	291
<b>Environmental Products</b>	
Prestige Models 3000/6000 Office/Data Center On-Line Systems	296
<b>Index</b>	

**Note to European Customers:**

Some part numbers and system variants may differ in Europe. Please consult your local Digital sales representative for further information.

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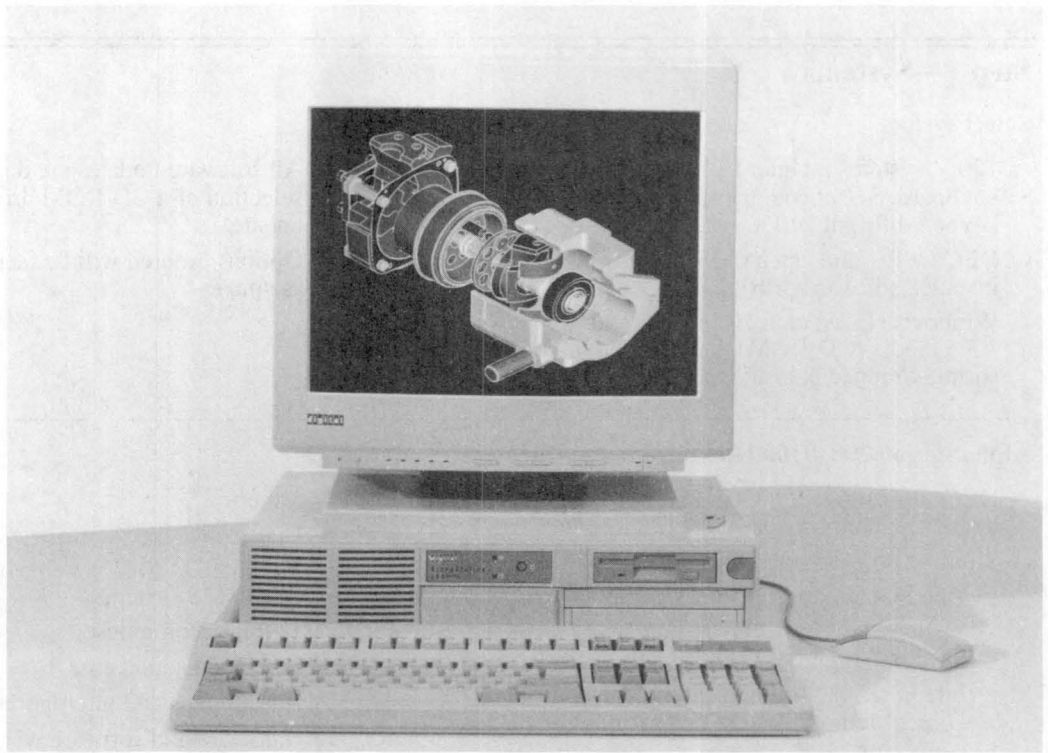
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## AlphaStation 200 4/100 Desktop Workstations

### Product Description

The AlphaStation 200 4/100 workstation is the entry-level PCI-based desktop client system. The AlphaStation 200 4/100 system delivers 20% better performance than the DEC 3000 Model 300LX system and provides access to thousands of applications running on DEC OSF/1, OpenVMS, or Microsoft Windows NT Workstation operating systems.

The AlphaStation 200 4/100 system uses the DECchip 21064 processor running at 100 MHz with performance estimated at 74 SPECint92 and 92 SPECfp92. This system is packaged in a compact, slimline desktop enclosure with capacity for up to 384 Mbytes of parity memory, four storage slots, and three option slots.

The high performance PCI I/O bus, running at 132 Mbytes/second, provides expansion for options such as high-performance graphics, networking, and SCSI adapters. Lower performance options are supported on the ISA bus. Systems support a wide variety of industry-standard peripherals and PCI/ISA options. Other standard features include integrated Twisted Pair/ThinWire Ethernet, stereo-quality audio, and an array of external ports for serial/parallel communications, and external SCSI. This combination of standard features allows multiple in-box configurations without the need for additional tabletop options or expansion boxes.

Customer-installable chip upgrades provide investment protection to all AlphaStation 200 users. This investment protection and industry-leading three-year hardware warranty make Digital workstations highly competitive.

## Step 1—Systems

Select system.

- 120 V systems include 120 V power cord and English keyboard. Select country specific power cord and keyboard for **all** 240 V systems.
- DEC OSF/1 and OpenVMS systems include factory-installed software (FIS).
- Windows NT systems include Windows NT Workstation V3.5 media (CD-ROM), license, and documentation in shrink-wrapped package.
- All software updates are delivered on CD-ROM, selection of a CD-ROM drive is required for first system on site.
- Options ordered will be factory installed unless specified as **spares**

### AlphaStation 200 4/100 Desktop Systems include

- DECchip 21064 100-MHz CPU with 512 Kbyte on-board secondary cache
- Slimline desktop enclosure which includes:
  - One PCI slot, one PCI/ISA combination slot, and one ISA slot
  - Six SIMM memory slots
  - Integrated PCI-based Fast SCSI-2 controller with Direct Memory Access and external SCSI-2 connector
  - Integrated high-performance Twisted Pair/ThinWire Ethernet
  - 210-watt power supply
  - Two serial ports, support full modem control
  - One bi-directional enhanced parallel port
  - Keyboard port and mouse port
- Memory
- Disk
- Keyboard (120 V systems only; OpenVMS keyboard on OpenVMS systems)
- Three-button mouse
- Integrated sound card
- Headphones and microphone
- Hardware and software warranties\*
- English hardware documentation
- DEC OSF/1 V3.2 2-user base license, DEC Open3D license, Multimedia Services license, NAS 150 license, **or**
- OpenVMS V6.1-1H1 base license, DEC Open3D license, NAS 150 license, VMScluster Client license **or**
- Windows NT Workstation V3.5 media kit

\*See Step 11 Hardware and Software Supplemental Support Services for additional information

Order Number	Operating System	Memory	Graphics <sup>1</sup>	Monitor	Hard Disk Drive	CD-ROM	Diskette
<b>PB410-AA/AB</b>	DEC OSF/1	32 Mbytes	Mandatory	Recommended	535 MB	Recommended	Recommended
<b>PB410-BA/BB</b>	DEC OSF/1	32 Mbytes	Mandatory	Recommended	1.0 GB	Recommended	Recommended
<b>PB411-AA/AB</b>	OpenVMS	32 Mbytes	Mandatory	Recommended	535 MB	Recommended	Recommended
<b>PB411-BA/BB</b>	OpenVMS	32 Mbytes	Mandatory	Recommended	1.0 GB	Recommended	Recommended
<b>PB412-AA/AB<sup>2</sup></b>	Windows NT	16 Mbytes	Mandatory	Recommended	340 MB	600 MB	1.44 MB

<sup>1</sup>Graphics option must be on purchase order at initial order acceptance.

<sup>2</sup>Windows NT systems require graphics option and monitor to run all functions.

Notes: xA = 120V and xB = 240V

## Step 2—Monitors

- Windows NT systems require graphics option and monitor to run **all** functions.

<b>VRC15-PA/P4</b>	15-inch color monitor, 120/240 V N.H./S.H., SVGA, 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes jumper power cord, video cable, and 120 V power cord. Order country-specific power cord for 240 V use from Step 10.
<b>VRT17-PA/P4</b>	17-inch high-resolution color monitor, 120/240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use from Step 10.
<b>VRC21-PA/P4</b>	21-inch high-resolution color monitor, 120/240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use from Step 10.

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### Step 3—Memory

Six SIMM slots support three memory options (3 SIMM pairs) for maximum of 192 Mbytes. Memory pairs can be mixed.

- DEC OSF/1 and OpenVMS systems include 32 Mbytes of memory, leaving four SIMM slots open. Additional memory may be required for some applications.
- Windows NT systems include 16 Mbytes of memory, leaving four SIMM slots open. Additional memory may be required for some applications.
- Windows NT systems **require** a minimum of 16 Mbytes of memory; 32 Mbytes are **recommended** if running MS-DOS and Windows V3.1 applications within Windows NT *Windows-on-Windows* environment.

<b>MSP01-AA</b>	8-Mbyte (2 x 4-Mbyte 70ns SIMMs)
<b>MSP01-AB</b>	16-Mbyte (2 x 8-Mbyte 70ns SIMMs)
<b>MSP01-AC</b>	32-Mbyte (2 x 16-Mbyte 70ns SIMMs)
<b>MSP01-AD</b>	64-Mbyte (2 x 32-Mbyte 70ns SIMMs)

**Note:** 192 Mbytes of memory can only be obtained by first installing 64-Mbyte option.

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### Step 4—Storage—see system diagram for recommended slot(s) for storage devices

Select storage devices if required.

- Integrated PCI-based Fast SCSI-2 controller supports three internal devices and four external SCSI devices. Seven external SCSI devices are supported if storage devices are not installed in system enclosure.
- DEC OSF/1 and OpenVMS systems include factory-installed software (FIS) on a hard disk drive.

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#### Step 4a—Internal Storage

- System enclosure supports four storage devices:
  - One dedicated 3.5-inch diskette drive slot
  - One 5.25-inch removable media device slot (DAT tape, QIC tape or CD-ROM)
  - One 3.5- x 1.6-inch disk drive slot (non-accessible)
- One 3.5- x 1.0-inch disk drive slot
- Windows NT systems include one 1.44-Mbyte diskette drive and CD-ROM
- Software distribution is only available on CD-ROM

#### Removable Media Devices

Order Number	Description
<b>PBXRX-AA</b>	1.44-Mbyte 3.5-inch diskette drive (RX23L)
<b>PBXRD-AA</b>	600-Mbyte 5.25-inch half-height dual-speed CD-ROM drive (RRD43)
<b>PBXTL-CA</b>	8.0-Gbyte 3.5-inch half-height DAT tape (TLZ07)
<b>PBXTZ-AA</b>	2.0-Gbyte 5.25-inch half-height QIC tape drive (TZK11)

#### Hard Disk Drives

Order Number	Description
<b>PBXRZ-AA</b>	340-Mbyte 3.5-inch x 1-inch hard disk drive (RZ24M—Windows NT systems only)
<b>PBXRZ-CA</b>	535-Mbyte 3.5-inch x 1-inch hard disk drive (RZ25M)
<b>PBXRZ-EA</b>	1.05-Gbyte 3.5-inch x 1-inch hard disk drive (RZ26L)
<b>PBXRZ-HA</b>	2.1-Gbyte 3.5- x 1.6-inch hard disk drive (RZ28)

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#### Step 4b—External Storage

Systems support four external devices on integrated PCI-based Fast SCSI-2 controller when three devices are installed in system enclosure. Seven external SCSI devices are supported if storage devices are not installed in system enclosure. Select PCI-based Fast SCSI-2 controller option cards if additional external storage is required.

#### PCI-based Fast SCSI-2 Controller

- Maximum of two KZPAA controllers supported per system
- PCI-based Fast SCSI-2 controller supports seven additional external devices.

<b>KZPAA-AA</b>	PCI-based Fast SCSI-2 controller—requires one PCI slot
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Step 4b—External Storage (*continued*)**Single Drive Tabletop Expansion**

- Tabletop expansion units include North American power cord; order country-specific power cord for 240 V use
- Each tabletop expansion unit requires 3-foot SCSI cable (BC09D-03)

**TLZ07-DA** 8.0-Gbyte 3.5-inch half height 4-mm DAT tape drive  
**RRD43-FA** 600-Mbyte 5.25-inch half-height dual-speed CD-ROM

**StorageWorks Expansion Units (BA350 and BA353)**

- BA350 Deskside Expansion Unit supports maximum of seven 3.5-inch half-height or two 5.25-inch SCSI devices.
- BA353 Desktop Expansion Box supports three 3.5-inch half-height or two 3.5-inch half-height and one 5.25-inch half-height drive.
- BA350 and BA353 Expansion Units include North American power cord. Order country-specific power cord for 240 V use. See *January 1995, Digital System and Options Catalog*, Chapter 8, *Storage Devices*, for BA350 power cord information.
- Order SCSI cable separately; (BN21H-xx) system box to BA350/BA353.

**StorageWorks BA350 Deskside Expansion Unit**

**BA350-KB** StorageWorks deskside expansion unit includes: BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and North American power cord

**StorageWorks BA353 Desktop Expansion Box**

**BA353-AA** StorageWorks desktop expansion box

**Supported SCSI devices**

SCSI devices may be purchased separately and are customer installable.

		<b>BA353</b>	<b>BA350</b>
<b>RZ25L-VA</b>	535-Mbyte 3.5-inch half-height disk drive	X	X
<b>RZ26L-VA</b>	1.0-Gbyte 3.5-inch half-height disk drive	X	X
<b>RZ28-VA</b>	2.1-Gbyte 3.5- x 1.6-inch disk drive	X	X
<b>RRD43-VA</b>	600-Mbyte 5.25-inch half-height compact disk drive		X
<b>RRD43-VU*</b>	600-Mbyte 5.25-inch half-height compact disk drive		X

\* 600-Mbyte CD-ROM drive can be added to RRD43-VA or TZK11-VA for a total of two 5.25-inch drives in one carrier.

**Step 5—Graphics Options/Multi-Screen Options****Graphics Options**

- Systems do not include graphics option. Selection of graphics option is mandatory.

**Multi-Screen Options (DEC OSF/1 and OpenVMS systems only)**

- DEC OSF/1 and OpenVMS systems support maximum of two graphics cards and two monitors.
- Multi-screen systems expand monitor area. They are single-user systems, with one keyboard and one mouse.
- Monitor cables included with each monitor.
- Add graphics card for each additional monitor, provided there are free PCI slots.
- Multi-screen PCI graphics options are **not** supported on Windows NT systems.

<b>Order Number</b>	<b>Description</b>	<b>Supported Operating System</b>	<b>Bus Slots Required/Recommended Slot</b>
<b>PB2GA-FA</b>	ATI Mach64 8-plane, PCI graphics accelerator, 1280 x 1024 x 256 colors, 72Hz	DEC OSF/1	One PCI/A
<b>PB2GA-FV</b>	ATI Mach64 8-plane, PCI graphics accelerator, 1280 x 1024 x 256 colors, 72Hz	OpenVMS	One PCI/A
<b>PB2GA-FN</b>	ATI Mach64 8-plane, PCI graphics accelerator, 1280 x 1024 x 256 colors, 72Hz	Windows NT	One PCI/A

**Step 5—Graphics Options/Multi-Screen Options (continued)**

<b>PBXGA-AA*</b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1, OpenVMS	One PCI/A
<b>PBXGA-BA*</b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1, OpenVMS	One PCI/A
<b>PBXGA-CA*</b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1, OpenVMS	One PCI/A
<b>PBXGA-AN†</b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/A
<b>PBXGA-BN†</b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/A
<b>PBXGA-CN†</b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/A
<b>PBXGA-JA</b>	DEC864, entry level graphics, with 2-Mbyte DRAM, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/A
<b>MSP01-DA</b>	2-Mbyte DRAM upgrade for PB2GA-JA	Windows NT	—

\* Multi-screen graphics options for DEC OSF/1 and OpenVMS systems require DEC Open3D media which is included in factory installed software (FIS).

† Graphics options include ZLXp-E Support Services Software for Microsoft Windows NT license, media, and documentation.

**Step 6—AlphaStation Multimedia Options**

Systems include sound card, headphones and microphone; select replacement headphones and microphone if required.

**AVH01-AA** Replacement headphones and microphone

**FullVideo Supreme (DEC OSF/1 systems only)**

- Single-slot PCI option that works with any graphics option
- Features include:
  - Full motion NTSC video input at 30 frames/second, 640 x 480
  - Full motion PAL, SECAM video input at 50 fields/second, 640 x 480
  - NTSC, PAL video output
  - Composite video input and output connections
- Supported by Multimedia Services for DEC OSF/1 and Multimedia Services Development kit for DEC OSF/1.

**ATI VideoBasic (for Windows NT systems only)**

- Single-slot PCI option that works with any graphics option
  - Full motion NTSC video input at 30 frames/second, 320 x 240
  - One S-Video and two composite video connections
  - ATI TV frame grabber and MediaCapture applications
  - Software drive on Windows NT 3.5-inch diskette

Order Number	Description	Supported Operating System	Bus Slots Required
<b>AV301-AA</b>	FullVideo Supreme Video In/Out	DEC OSF/1	One PCI
<b>AV201-AN</b>	VideoBasic Video Input Option	Windows NT	One PCI
<b>AVH01-AA</b>	Replacement headphones and microphone		

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## Step 7—Communications and Miscellaneous Adapters

Systems include integrated high-performance Ethernet (Twisted Pair/ThinWire)

Order Number	Description	Supported Operating Systems	Bus Slots Required/Recommended Slot
DE435-AA	High-performance Ethernet, includes cables: BNE4G-02 for AUI BN26K-xx for 10BaseT (twisted pair) BC16M-xx for ThinWire	DEC OSF/1 OpenVMS* Windows NT	One PCI/B
PBXDF-AA	Modem 14.4K	Windows NT	One ISA/C
DETTR-BA/BB	10BaseT to AUI (UTP to thick wire) single port adapter /repeater, 120/240V. 120 V variant includes North American power cord; order country-specific power cord for 240 V variant.	DEC OSF/1 OpenVMS Windows NT	N/A

\* DE435 as add-on option not currently supported on OpenVMS.

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## Step 8—Printers

See *January 1995, Digital Systems and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers*, for ordering information. The AlphaStation 200 has two serial ports and one bi-directional parallel port on rear of system enclosure. Either port may be used as a printer port depending on printer type.

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## Step 9—Software

- Windows NT systems include Windows NT Workstation V3.5 media (CD-ROM), license, and documentation in shrink-wrapped package.
- DEC OSF/1 and OpenVMS systems **require** operating system media and documentation for first system on site.
- AlphaStation systems running OpenVMS **cannot** use standard OpenVMS V6.1 software distribution; a separate kit containing OpenVMS V6.1-H2 must be ordered. QA-MT1AP-H8 is a hardware update kit, which includes all OpenVMS binaries needed to run AlphaStation 200 systems and all OpenVMS V6.1 and V6.1-H2 documentation in Bookreader format.
- Software Processor Code = E.

### DEC OSF/1 Media and Documentation

QA-MT4AA-H8	DEC OSF/1 media and documentation on CD-ROM
QA-MT4AA-GZ	DEC OSF/1 base hardcopy documentation
QA-MT4AB-GZ	DEC OSF/1 End User documentation
QA-MT5AA-GZ	DEC OSF/1 Developer's documentation
QA-MT6AA-GZ	DEC OSF/1 Server Extension documentation

### DEC OSF/1 Layered Products CD-ROM

DEC OSF/1 systems include Multimedia Services license; order media and documentation separately. Media and documentation for Multimedia Services is included in Layered Products for DEC OSF/1 CD-ROM.

QA-054AA-H8 Layered products media and documentation for DEC OSF/1 on CD-ROM

### DEC Open3D for DEC OSF/1

DEC OSF/1 systems include DEC Open3D license; media is included in factory installed software (FIS). Order media and documentation separately if required.

QA-0AFAA-H8 DEC Open3D for DEC OSF/1 media and documentation

### NAS 150 for DEC OSF/1

NAS 150 license is included with DEC OSF/1 systems, order media and documentation separately.

NAS 150 includes: DCE Runtime Services Kit, ObjectBroker, DECmessageQ for DEC OSF/1, Motif, NFS, TCP/IP.

### DEC OSF/1 Layered Products CD-ROM

QA-054AA-H8 Layered products for DEC OSF/1 media and documentation on CD-ROM

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**Step 9—Software (continued)****OpenVMS Media and Documentation**

- QA-MT1AP-H8 OpenVMS V6.1-H2 media and on-line documentation on CD-ROM  
 QA-MT1AA-H8 OpenVMS V6.1 media and documentation on CD-ROM  
 QA-MT1AH-GZ OpenVMS base hardcopy documentation

**OpenVMS Layered Products CD-ROM**

- QA-03XAA-H8 Layered products for OpenVMS media and documentation on CD-ROM

**DEC Open3D for OpenVMS**

OpenVMS systems include DEC Open3D license; media is included in factory installed software (FIS). Order media and documentation separately if required.

- QA-0ADAA-H8 DEC Open3D for OpenVMS media and documentation

**NAS 150 for OpenVMS**

NAS 150 license is included with OpenVMS systems. Media available on layered products CD-ROM.

NAS 150 includes: DECwindows Motif for OpenVMS, ObjectBroker (ACA Services), DECmessageQ for OpenVMS, DECnet for OpenVMS End System, DECnet/OSI for OpenVMS End Node, DEC TCP/IP Client for OpenVMS, DEC Runtime Services.

VMScluster Client for OpenVMS license is also included.

**Media for Microsoft Windows NT**

- QB-0QRAA-SA Windows NT media kit (CD-ROM)

**Support Services Software for Microsoft Windows NT**

Windows NT workstations with ZLXp-E graphics options (PBXGA-AN, -BN, -CN) include the following license, media, and documentation.

- QM-356AA-AA License for ZLXp-E Support Services Software for Microsoft Windows NT  
 QB-356AA-SA ZLXp-E Support Services Software for Microsoft Windows NT—license, media (diskette), and documentation  
 QA-356AA-GZ ZLXp-E Support Services Software for Microsoft Windows NT (documentation only)

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**Step 10—Power Cords, Keyboards, Mouse, and Documentation**

- 120 V systems include 120 V power cord, English keyboard, mouse and documentation. Select country specific power cord and keyboard for all 240 V systems.
- An installation card (EK-PCDTA-II) is included with each system.

Power Cord	Keyboard	Country
BN19P-1K	LK471-AA	North American (English)
BN03A-2E	LK471-AB	Belgium (French)
BN19L-2E	LK471-AD	Denmark
BN03A-2E	LK471-AP	France
BN03A-2E	LK471-AM	Swedish (Finish)
BN03A-2E	LK471-AG	Germany
BN24X-2E	LK471-AI	Italy
BN03A-2E	LK471-AN	Norway
BN03A-2E	LK471-AV	Portugal
BN03A-2E	LK471-AS	Spain
BN19E-2E	LK471-AK	Switzerland (French)
BN26D-2E	LK471-AE	U.K., Ireland

**Step 10—Power Cords, Keyboards, Mouse, and Documentation (continued)**

BN-18L-2E	LK471-AT	Israel (Hebrew)
BN22X-2E	LK471-AA	Africa, India (English)
BN19H-2E	LK471-AA	Australia, New Zealand (English)

**Mouse**

PBXWS-AA	PS/2 compatible 3-button Mouse
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**User Documentation**

EK-PCDTA-UI	User Documentation—English
EK-PCDTA-UP	User Documentation—French
EK-PCDTA-UG	User Documentation—German
EK-PCDTA-UU	User Documentation—Italian
EK-PCDTA-US	User Documentation—Spanish
EK-PCDTA-UH	User Documentation—Dutch

**Technical Documentation (Optional)**

EK-PCDSA-TI	Technical Documentation
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**Step 11a—Hardware and Software Supplemental Support Services****Hardware—Americas and Asia Pacific Area only**

- AlphaStation 200 systems include three-year hardware warranty (1st year on-site service, 5 x 9, next day response time; 2nd and 3rd years, return to Digital).
- Select optional Hardware Supplemental Support Services if required.

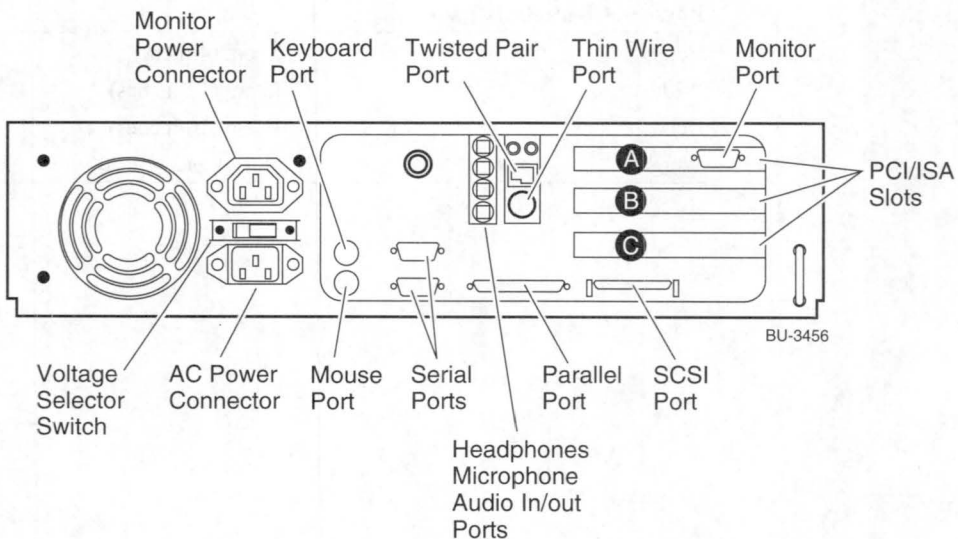
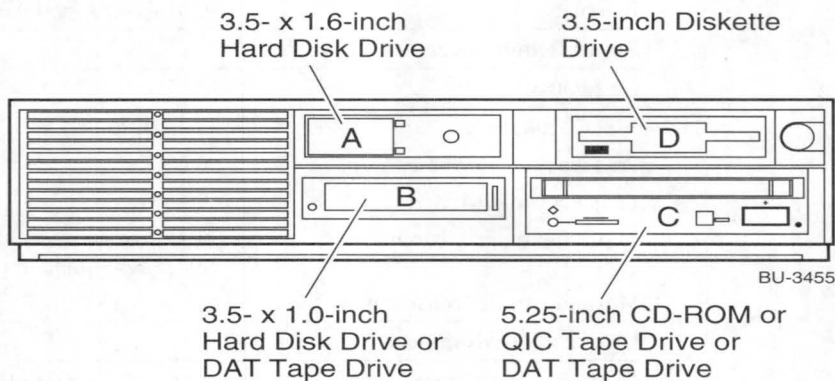
FM-XLXHW-36	Years 2 and 3, 5 x 9, next day response time
FM-XL4HR-36	Years 1-3, 5 x 9, 4 hour response
FM-XL512-36	Years 1-3, 5 x 12, 4 hour response
FM-XL616-36	Years 1-3, 6 x 16, 4 hour response
FM-XL724-36	Years 1-3, 7 x 24, 4 hour response
FM-XL4HR-60	Years 1-5, 5 x 9, 4 hour response
FM-XL512-60	Years 1-5, 5 x 12, 4 hour response
FM-XL616-60	Years 1-5, 6 x 16, 4 hour response
FM-XL724-60	Years 1-5, 7 x 24, 4 hour response

**Software—Americas and Asia Pacific Area only**

- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software Supplemental Support Services for DEC OSF/1 include advisory and remedial software support with new version license rights for DEC OSF/1, Open3D, Multimedia Services and NAS 150 for the time period indicated.
- Software Supplemental Support Services for OpenVMS include advisory and remedial software support with new version license rights for OpenVMS, Open3D and NAS 150 for the time period indicated.
- Software Supplemental Support Services for Windows NT include advisory and remedial software support for the time period indicated.

FM-XLOSF-12	12-month Software Supplemental Support Services for <b>DEC OSF/1</b> systems
FM-XLOSF-36	36-month Software Supplemental Support Services for <b>DEC OSF/1</b> systems
FM-XLOSF-60	60-month Software Supplemental Support Services for <b>DEC OSF/1</b> systems
FM-XLVMS-12	12-month Software Supplemental Support Services for <b>OpenVMS</b> systems
FM-XLVMS-36	36-month Software Supplemental Support Services for <b>OpenVMS</b> systems
FM-XLVMS-60	60-month Software Supplemental Support Services for <b>OpenVMS</b> systems
FM-XLNTS-12	12-month Software Supplemental Support Services for <b>Windows NT</b> systems
FM-XLNTS-36	36-month Software Supplemental Support Services for <b>Windows NT</b> systems
FM-XLNTS-60	60-month Software Supplemental Support Services for <b>Windows NT</b> systems

AlphaStation 200 4/100 Desktop Workstation Diagrams



## Specifications

PCI	132-Mbyte/second
Fast SCSI-2 bus	10-Mbyte/s transfer rate
Ethernet	10-Mbit/s Twisted Pair/Thin Wire standard
<b>Power Requirements</b>	
Line voltage	120/240 V
Voltage tolerance	88-132/176-264 V
Frequency single phase	50/60 Hz
Frequency tolerance	47-63 Hz
Maximum running current	7.0A/3.3A with monitor 5.0A/2.3A without monitor
Maximum power consumption	180 W
<b>Operating Environment</b>	
Operating temperature	10° to 40° C (50° to 104° F)
Operating humidity	20% to 80% relative humidity
Maximum wet bulb	40° C (104° F)
Storage temperature	-20° C to 65° C (-4° F to 149° F)
Storage humidity	10% to 90% relative humidity
Maximum wet bulb	65° C (149° F)
Maximum altitude	
Operating	2,438 m (8,000 ft) maximum
Nonoperating	4,876 m (16,000 ft) maximum
Nonoperating shock	30G, 25ms halfsine
<b>Physical Characteristics</b>	
Height	10 cm (4 inches)
Width	43 cm (17 inches)
Depth	41 cm (16 inches)
Weight	11-14 kg (25-30lb)

## AlphaStation 250 4/266 Desktop Workstations



### AlphaStation 250 4/266 Desktop Workstations

#### Product Description

The AlphaStation 250 4/266 Workstation is a new member of the AlphaStation family. The AlphaStation 250 series delivers premium performance and provides access to tens of thousands of applications running on DEC OSF/1, OpenVMS or Microsoft Windows NT Workstation systems.

The AlphaStation 250 4/266 uses the DECchip 21064A processor running at 266 MHz with 2 Mbytes of onboard secondary cache. The CPU performance measures 198.6 SPECint92 and 262.5 SPECfp92.

The system is housed in a low-profile desktop with capacity for 256 Mbytes of parity memory, 128-bit wide memory bus, four storage slots, and three option slots (one PCI, one combination PCI/ISA and one ISA). The high performance PCI I/O bus, running at 132 Mbytes/second, provides expansion for options such as high-performance graphics, networking, and SCSI adapters. Lower performance options are supported on the ISA bus. The system supports a wide variety of industry-standard peripherals and PCI/ISA options. Other standard features include integrated Twisted Pair/ThinWire Ethernet, stereo-quality audio, and an array of external ports for serial/parallel communications, and external SCSI connector. This combination of standard features allows multiple in-box configurations without the need for additional tabletop options or expansion boxes.

## Step 1—Systems

Select system.

- DEC OSF/1 and OpenVMS systems include factory-installed software (FIS).
- Windows NT systems include Windows NT Workstation V3.5 media (CD-ROM), license, and documentation in shrink-wrapped package. Windows NT software media is distributed on CD-ROM only, selection of a CD-ROM drive is recommended.
- Windows NT systems require a graphics option and monitor to run all functions.
- All software updates are distributed on CD-ROM, selection of CD-ROM drive is required for first system on site.
- Options ordered will be factory installed unless specified as **spares**.
- Uninterruptable Power Supplies are available; see UPS Information following System Specifications.

### AlphaStation 250 4/266 Desktop Systems include

- DECchip 21064A 266-MHz CPU with 2 Mbyte on-board secondary cache
- Slimline desktop enclosure which includes:
  - Three expansion slots: One PCI, one combination PCI/ISA, and one ISA
  - Eight SIMM memory slots (two memory options)
  - Integrated PCI-based Fast SCSI-2 controller with Direct Memory Access and external SCSI-2 connector
  - Integrated high-performance Twisted Pair/ThinWire Ethernet
  - Integrated sound card
  - 210-watt power supply
  - Two serial ports, support full modem control
  - One bi-directional enhanced parallel port
  - Keyboard port and mouse port
- 32 or 64 Mbyte memory (Packaged systems only)
- 1.44 Mbyte diskette drive (RX23L)
- Keyboard (120 V Packaged systems only)
- Power cord (120 V systems only)
- Three-button mouse (Packaged systems only)
- Headphones, and microphone
- Hardware and Software warranties\*
- Hardware documentation
- DEC OSF/1 2-user base license, DEC Open3D license, Multimedia Services license, NAS 150 license, **or** OpenVMS base license, OpenVMS 1-user license, DEC Open3D license, NAS 150 license, **or** Windows NT Workstation V3.5 media kit

\*See Step 11 Hardware and Software Supplemental Support Services for additional information

### Packaged systems

- 120 V Packaged systems include 120 V power cord and U.S. keyboard. Select country specific power cord and keyboard for **all** 240 V systems.
- Graphics option is mandatory for Packaged systems.
- Mandatory items **must** be on purchase order at initial order acceptance.

Order Number AA=120 V AB=240 V	Operating System	Memory	Graphics	Monitor	Hard disk drive	600 Mbyte CD-ROM	Ethernet
PB460-AA/AB	DEC OSF/1	64 Mbytes*	Mandatory	Recommended	1.05 Gbyte	600 Mbyte	Included
PB461-AA/AB	OpenVMS	64 Mbytes*	Mandatory	Recommended	1.05 Gbyte	600 Mbyte	Included
PB462-AA/AB	Windows NT	32 Mbytes†	Mandatory	Recommended	535 Mbyte	600 Mbyte	Included

\* Includes one MSP01-BB 64 Mbyte memory option

† Includes one MSP01-BA 32 Mbyte memory option

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## Step 1—Systems (*continued*)

### Base Systems

- 120 V Base systems include 120 V power cord. Select country specific power cord for **all** 240 V systems.
- **Recommended options:**
  - Graphics option, monitor, CD-ROM drive, keyboard, mouse, and 240V power cord
- **Mandatory options:**
  - Memory (minimum of 32 Mbytes memory; additional memory may be required for some applications).
  - One hard disk drive
- Mandatory items **must** be on purchase **order at initial order acceptance**

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Order Number	Operating System	Memory	Graphics	Monitor	Hard disk drive	600 Mbyte CD-ROM	Ethernet
PB46A-AA	DEC OSF/1	Mandatory	Recommended	Recommended	Mandatory	Recommended	Included
PB46A-BA	OpenVMS	Mandatory	Recommended	Recommended	Mandatory	Recommended	Included
PB46A-CA	Windows NT	Mandatory	Recommended	Recommended	Mandatory	Recommended	Included

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## Step 2—Memory

System supports two memory options (4 SIMMs per option) for maximum of 256 Mbytes. Memory sets can be mixed.

- Packaged systems include 32 or 64 Mbytes of memory
- Base systems require minimum of 32 Mbytes memory (additional memory may be required for some applications)
- 256 Mbytes of memory can only be obtained by starting with a Base system with one 128 Mbyte memory option, otherwise one memory option must be removed

MSP01-BA	32 Mbyte (4 x 8 Mbyte 70ns SIMMs)
MSP01-BB	64 Mbyte (4 x 16 Mbyte 70ns SIMMs)
MSP01-BC	128 Mbyte (4 x 32 Mbyte 70ns SIMMs)

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## Step 3—Monitors

- Windows NT systems require a graphics option and monitor to run **all** functions.
- DEC OSF/1 and OpenVMS systems require a graphics option, a monitor is recommended.

VRC15-PA/P4	15-inch color monitor, 120 V, 240 V N.H./S.H., SVGA, 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes jumper power cord, video cable, and 120 V power cord.
VRT17-PA/P4	17-inch high-resolution color monitor, 120 V, 240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use from Step 10.
VRC21-PA/P4	21-inch high-resolution color monitor, 120 V, 240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use from Step 10.

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## Step 4—Storage—See system diagram for recommended slot(s) for storage devices

Select storage devices if required.

- Integrated PCI-based Fast SCSI-2 controller supports three internal devices and four external SCSI devices. Seven external SCSI devices are supported if storage devices are not installed in system enclosure.
- Packaged DEC OSF/1 and OpenVMS systems include factory-installed software (FIS) on 1.05 Gbyte hard disk drive.
- Base systems require a minimum of one 535 Mbyte hard disk drive.
- Windows NT systems require CD-ROM to load operating system software.
- Windows NT systems are factory prepared for formatting and partitioning the hard disk drive.

## Step 4a—Internal Storage

- System enclosure supports four storage devices:
  - One dedicated 3.5-inch diskette drive slot
  - One 5.25-inch removable media device slot (QIC tape, DAT tape or CD-ROM)
  - One 3.5- x 1.6-inch hard disk drive slot
  - One 3.5- x 1.0-inch hard disk drive slot
- All systems include one 1.44 Mbyte diskette drive
- Software distribution is only available on CD-ROM

**Removable Media Devices**

Order Number	Description	Supported in Slot(s)
PBXRDA-AA	600 Mbyte 5.25-inch half-height dual-speed CD-ROM drive (RRD43)	C
PBXTL-CA	8.0 Gbyte 3.5- x 1.6-inch 4-mm DAT drive (TLZ07)	C
PBXTZ-AA	2.0 Gbyte 5.25-inch half-height QIC tape drive (TZK11)	C

**Hard Disk Drives**

Order Number	Description	Supported in Slot(s)
PBXRZ-CA	535 Mbyte 3.5-inch x 1-inch hard disk drive (RZ25M)	A B
PBXRZ-EA	1.05 Gbyte 3.5-inch x 1-inch hard disk drive (RZ26L)	A B
PBXRZ-HA	2.1 Gbyte 3.5- x 1.6-inch hard disk drive (RZ28)	A

## Step 4b—External Storage

- Systems support four external devices on integrated PCI-based Fast SCSI-2 controller when three devices are installed in system enclosure.
- Seven external SCSI devices are supported if storage devices are not installed in system enclosure.
- Select PCI-based Fast SCSI-2 controller option cards if additional external storage is required.

**PCI-based Fast SCSI-2 Controller (maximum of two KZPAA controllers supported per system)**

- Select one additional Fast SCSI-2 controller, if required.
- PCI-based Fast SCSI-2 controller supports seven additional external devices.

**KZPAA-AA** PCI-based Fast SCSI-2 controller—requires one PCI slot

**Single Drive Tabletop Expansion**

- Tabletop expansion units include North American power cord; order country-specific power cord for 240 V use.
- Each tabletop expansion unit requires 3-foot SCSI cable (BC09D-03).

**RRD44-DA** 600 Mbyte 5.25-inch half-height dual-speed CD-ROM

**TLZ07-DA** 8.0 Gbyte 3.5- x 1.6-inch 4-mm DAT tape drive

**StorageWorks Expansion Units (BA350 and BA353)**

- BA350 Deskside Expansion Unit supports maximum of seven 3.5-inch half-height or two 5.25-inch SCSI devices.
- BA353 Desktop Expansion Box supports three 3.5-inch half-height or two 3.5-inch half-height and one 5.25-inch half-height drive.
- BA350 and BA353 Expansion Units include North American power cord. Order country-specific power cord for 240 V use.
- Order SCSI cable separately; (BN21H-xx) system box to BA350/BA353.

**StorageWorks BA350 Deskside Expansion Unit**

**BA350-KB** StorageWorks deskside expansion unit includes: BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and North American power cord

**StorageWorks BA353 Desktop Expansion Box**

**BA353-AA** StorageWorks desktop expansion box

Step 4b—External Storage (*continued*)**Supported SCSI devices**

SCSI devices may be purchased separately and are customer installable.

		BA353	BA350
<b>RZ26L-VA</b>	1.0 Gbyte 3.5-inch half-height disk drive	X	X
<b>RZ28-VA</b>	2.1 Gbyte 3.5- x 1.6-inch disk drive	X	X
<b>RRD44-VA</b>	600 Mbyte 5.25-inch half-height compact disk drive		X
<b>RRD44-VU*</b>	600 Mbyte 5.25-inch half-height compact disk drive		X

\* 600 Mbyte CD-ROM drive can be added to RRD44-VA or TZK11-VA for a total of two 5.25-inch drives in one carrier.

Refer to January 1995 *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for additional BA350 modular storage shelf configurations.

**Step 5—Graphics Options/Multi-Screen Options****Graphics Options**

- Graphics option is **mandatory** for all Packaged systems, and is recommended for Base systems.

**Multi-Screen Options (DEC OSF/1 and OpenVMS systems only)**

- DEC OSF/1 and OpenVMS systems support a maximum of two graphics cards and two monitors.
- Multi-screen systems expand monitor area. They are single-user systems, with one keyboard and one mouse.
- Monitor cables are included with each monitor.
- Add graphics card for each additional monitor, provided there are free PCI slots.
- Multi-screen PCI graphics options are **not** supported on Windows NT systems

Order Number	Description	Supported Operating System	Bus Slots Required / Recommended Slot
<b>PBXGA-AA*</b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1, OpenVMS	One PCI/A
<b>PBXGA-BA*</b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1, OpenVMS	One PCI/A
<b>PBXGA-CA*</b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1, OpenVMS	One PCI/A
<b>PBXGA-AN†</b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/A
<b>PBXGA-BN†</b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/A
<b>PBXGA-CN†</b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/A
<b>PBXGA-JA</b>	DEC864, entry level graphics, with 2 Mbyte DRAM, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/A
<b>MSP01-DA</b>	2 Mbyte DRAM upgrade for PBXGA-JA	Windows NT	—

\* Multi-screen graphics options for DEC OSF/1 and OpenVMS systems. Options require DEC Open3D media which is included in factory installed software (FIS).

† Graphics options include ZLXp-E Support Services Software for Microsoft Windows NT license, media, and documentation.

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## Step 6—AlphaStation Multimedia Options

All systems include sound card, headphones and microphone; select replacement headphones and microphone if required.

**AVH01-AA** Replacement headphones and microphone

### FullVideo Supreme (DEC OSF/1 systems only)

- Single-slot PCI option that works with any graphics option
- Features include:
  - Full motion NTSC video input at 30 frames/second, 640 x 480
  - Full motion PAL, SECAM video input at 50 fields/second, 640 x 480
  - NTSC, PAL video output
  - Composite video input and output connections
- Supported by Multimedia Services for DEC OSF/1 and Multimedia Services Development kit for DEC OSF/1.

### ATI VideoBasic (for Windows NT systems only)

- Single-slot PCI option that works with any graphics option
  - Full motion NTSC video input at 30 frames/second, 320 x 240
  - One S-Video and two composite video connections
  - ATI TV frame grabber and MediaCapture applications
  - Software drive on Windows NT 3.5-inch diskette

Order Number	Description	Supported Operating System	Bus Slots Required
AV301-AA	FullVideo Supreme Video In/Out	DEC OSF/1	One PCI
AV201-AN	VideoBasic Video Input Option	Windows NT	One PCI

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## Step 7—Communications and Miscellaneous Adapters

All systems include integrated high-performance Ethernet (Twisted Pair/ThinWire)

Order Number	Description	Supported Operating Systems	Bus Slots Required/Recommended Slot
DE435-AA	High-performance Ethernet BNE4G-02 for AUI BN26K-xx for 10BaseT (twisted pair) BC16M-xx for ThinWire	DEC OSF/1 OpenVMS Windows NT	One PCI/B
PBXDF-AA	Modem 14.4K	Windows NT	One ISA/C
DETTR-BA/BB	10BaseT to AUI (UTP to thick wire) single port adapter /repeater, 120/240V. 120 V variant includes North American power cord; order country-specific power cord for 240 V variant.	DEC OSF/1 OpenVMS Windows NT	N/A

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## Step 8—Printers

Refer to January 1995 *Digital Systems and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers*, for ordering information. The AlphaStation 250 has two serial ports and one bi-directional parallel port on rear of system enclosure. Either port may be used as a printer port depending on printer type.

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## Step 9—Software

### Software Processor Code = E

- Software requirement
  - DEC OSF/1 V3.2 or higher
  - OpenVMS V6.1-1H2 or higher
  - Windows NT V3.5 or higher
- Windows NT systems include Windows NT Workstation V3.5 media (CD-ROM), license, and documentation in shrink-wrapped package.
- DEC OSF/1 and OpenVMS Packaged and Base systems **require** operating system media and documentation for first system on site.
- OpenVMS V6.1-1H2 hardware update kit **must** be ordered in addition to OpenVMS V6.1 media and documentation kit.

### DEC OSF/1 Media and Documentation

<b>QA-MT4AA-H8</b>	DEC OSF/1 media and documentation on CD-ROM
<b>QA-MT4AA-GZ</b>	DEC OSF/1 base hardcopy documentation
<b>QA-MT4AB-GZ</b>	DEC OSF/1 End User documentation
<b>QA-MT5AA-GZ</b>	DEC OSF/1 Developer's documentation
<b>QA-MT6AA-GZ</b>	DEC OSF/1 Server Extension documentation

### DEC OSF/1 Layered Products CD-ROM

DEC OSF/1 systems include Multimedia Services license; order media and documentation separately. Media and documentation for Multimedia Services are included in Layered Products for DEC OSF/1 CD-ROM.

**QA-054AA-H8** Layered products media and documentation for DEC OSF/1 on CD-ROM

### DEC Open3D for DEC OSF/1

DEC OSF/1 systems include DEC Open3D license; media is included in factory installed software (FIS). Order media and documentation separately if required.

**QA-0AFAA-H8** DEC Open3D for DEC OSF/1 media and documentation

### NAS 150 for DEC OSF/1

NAS 150 license is included with DEC OSF/1 systems. Media available on layered products CD-ROM.

NAS 150 includes: DCE Runtime Services Kit, ObjectBroker, DECmessageQ for DEC OSF/1, Motif, NFS, TCP/IP.

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### OpenVMS Media and Documentation

OpenVMS V6.1-1H2 hardware update kit includes all OpenVMS binaries needed to run the AlphaStation 250 4/266 system and all OpenVMS AXP V6.1 and V6.1-1H2 documentation in Bookreader format.

<b>QA-MTAA-H8</b>	OpenVMS V6.1 media and documentation on CD-ROM
<b>QA-MT1AP-H8</b>	OpenVMS V6.1-1H2 hardware update kit, media and on-line documentation (CD-ROM)
<b>QA-MT1AH-GZ</b>	OpenVMS base hardcopy documentation

### OpenVMS Layered Products CD-ROM

**QA-03XAA-H8** Layered products media and documentation for OpenVMS on CD-ROM

### DEC Open3D for OpenVMS

OpenVMS systems include DEC Open3D license; media is included in factory installed software (FIS). Order media and documentation separately if required.

**QA-0ADAA-H8** DEC Open3D for OpenVMS media and documentation

### NAS 150 for OpenVMS

NAS 150 license is included with OpenVMS systems. Media available on layered products CD-ROM.

NAS 150 includes: DECwindows Motif for OpenVMS, ObjectBroker (ACA Services), DECmessageQ for OpenVMS, DECnet for OpenVMS End System, DECnet/OSI for OpenVMS End Node, DEC TCP/IP Client for OpenVMS, DEC Runtime Services, VMScluster Client for OpenVMS.

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**Step 9—Software (continued)****Windows NT Media and Documentation**

**QB-0QRAA-SA** Windows NT Workstation media (CD-ROM), license and documentation

**Support Services Software for Microsoft Windows NT**

Windows NT workstations with ZLXp-E graphics options (PBXGA-AN, -BN, -CN) include the following license, media, and documentation.

**QM-356AA-AA** License for ZLXp-E Support Services Software for Microsoft Windows NT

**QB-356AA-SA** ZLXp-E Support Services Software for Microsoft Windows NT—license, media (diskette), and documentation

**QA-356AA-GZ** ZLXp-E Support Services Software for Microsoft Windows NT (documentation only)

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**Step 10—Power Cords, Keyboards, Mouse, and Documentation**

- 120 V Packaged systems include 120 V power cord and U.S. keyboard\*. Select country specific power cord and keyboard for **all** Packaged systems ordered in Europe.
- Base systems include 120 V power cord. Select country specific power cord for **all** Base systems ordered in Europe/
- Keyboard and mouse must be ordered separately for **all** Base systems.
- An Installation Card (EK-PCCTA-II) is included with each system.

\* Packaged DEC OSF/1 and Windows NT systems include PC-style keyboard. Packaged OpenVMS systems include VMS-style keyboard

Power Cord	PC-Keyboard	VMS-Keyboard	Country
BN19P-1K	LK471-AA	LK450-AA	North American (English)
BN03A-2E	LK471-AB		Belgium (French)
BN19L-2E	LK471-AD	LK450-AD	Denmark
BN03A-2E	LK471-AP	LK450-AP	France
BN03A-2E	LK471-AM	LK450-AM	Swedish (Finish)
BN03A-2E	LK471-AG	LK450-AG	Germany
BN24X-2E	LK471-AI	LK450-AI	Italy
BN03A-2E	LK471-AN	LK450-AN	Norway
BN03A-2E	LK471-AV		Portugal
BN03A-2E	LK471-AS	LK450-AS	Spain
BN19E-2E	LK471-AK	LK450-AK	Switzerland (French)
BN26D-2E	LK471-AA	LK450-AA	U.K., Ireland
BN18L-2E	LK471-AT	LK450-AT	Israel (Hebrew)
BN22X-2E	LK471-AA	LK450-AA	Africa, India (English)
BN19H-2E	LK471-AA	LK450-AA	Australia, New Zealand (English)

**Mouse**

**PBXWS-AA** PS/2 compatible 3-button Mouse

**User Documentation**

**EK-PCCTA-UI** User Documentation—English

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**Step 11—Hardware and Software Supplemental Support Services**


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**Step 11a—Hardware and Software Supplemental Support Services (Americas and Asia Pacific Area only)**
**Hardware**

- AlphaStation 250 systems include three-year hardware warranty (1st year on-site service, 5 x 9, next day response time; 2nd and 3rd years, return to Digital).
- Select optional Hardware Supplemental Support Services if required.

<b>FM-M3XHW-36</b>	Years 2 and 3, 5 x 9, Next day response time
<b>FM-M34HR-36</b>	Years 1-3, 5 x 9, 4 Hour Response
<b>FM-M3512-36</b>	Years 1-3, 5 x 12, 4 Hour Response
<b>FM-M3616-36</b>	Years 1-3, 6 x 16, 4 Hour Response
<b>FM-M3724-36</b>	Years 1-3, 7 x 24, 4 Hour Response
<b>FM-M34HR-60</b>	Years 1-5, 5 x 9, 4 Hour Response
<b>FM-M3512-60</b>	Years 1-5, 5 x 12, 4 Hour Response
<b>FM-M3616-60</b>	Years 1-5, 6 x 16, 4 Hour Response
<b>FM-M3724-60</b>	Years 1-5, 7 x 24, 4 Hour Response

**Software**

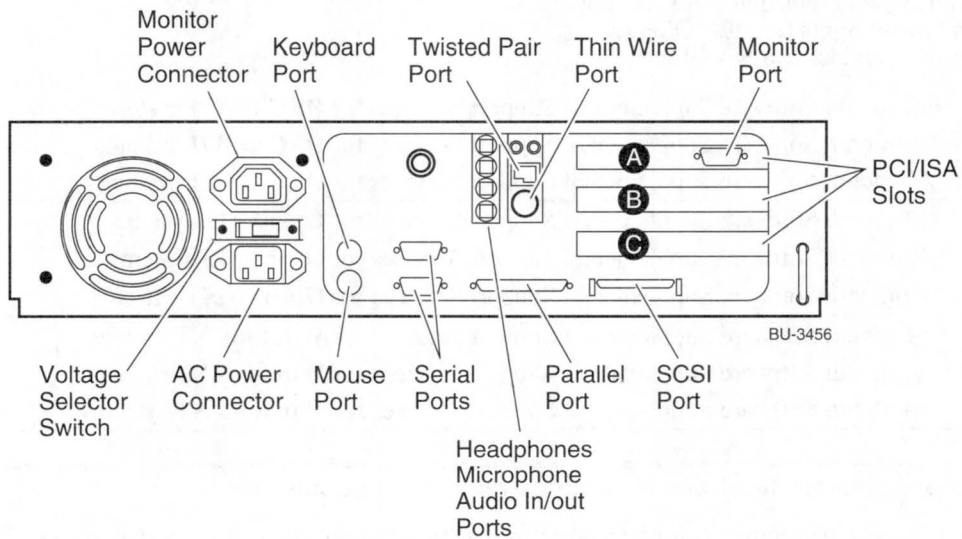
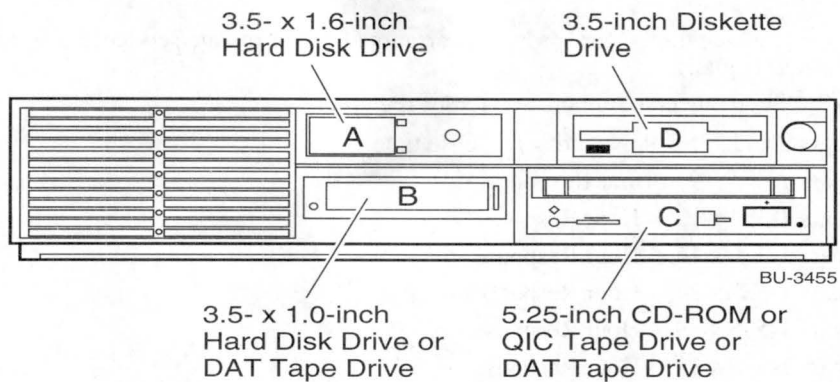
- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software Supplemental Support Service options upgrade 90-day service to time period indicated below.
- Software Supplemental Support Services for DEC OSF/1 include advisory and remedial software support with new version license rights for DEC OSF/1, Open3D, Multimedia Services and NAS 150.
- Software Supplemental Support Services for OpenVMS include advisory and remedial software support with new version license rights for OpenVMS, Open3D and NAS 150.
- Software Supplemental Support Services for Windows NT include advisory and remedial software support for the time period indicated.

<b>FM-M3OSF-12</b>	12-month Software Supplemental Support Services for <b>DEC OSF/1</b> systems
<b>FM-M3OSF-36</b>	36-month Software Supplemental Support Services for <b>DEC OSF/1</b> systems
<b>FM-M3OSF-60</b>	60-month Software Supplemental Support Services for <b>DEC OSF/1</b> systems
<b>FM-M3VMS-12</b>	12-month Software Supplemental Support Services for <b>OpenVMS</b> systems
<b>FM-M3VMS-36</b>	36-month Software Supplemental Support Services for <b>OpenVMS</b> systems
<b>FM-M3VMS-60</b>	60-month Software Supplemental Support Services for <b>OpenVMS</b> systems
<b>FM-M3NTS -12</b>	12-month Software Supplemental Support Services for <b>Windows NT</b> systems
<b>FM-M3NTS-36</b>	36-month Software Supplemental Support Services for <b>Windows NT</b> systems
<b>FM-M3NTS-60</b>	60-month Software Supplemental Support Services for <b>Windows NT</b> systems

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**Step 11b—Hardware and Software Supplemental Support Services (Europe only)**

Europe does **not** have specific part numbers for Hardware and Software Supplemental Support Services. Prices for Hardware and Software Supplemental Support Services Prices will be quoted using the Excelerator tool. For details please contact MCS Sales in your country.



## Specifications

PCI	132 Mbyte/second
Fast SCSI-2 bus	10 Mbyte/s transfer rate
Ethernet	10-Mbit/s Twisted Pair/Thin Wire standard
<b>Power Requirements</b>	
Line voltage	120 V/240 V
Voltage tolerance	90-128 V / 190-256 V
Frequency single phase	50 Hz / 60 Hz
Frequency tolerance	47-63 Hz
Maximum running current	7.0A/3.3A with monitor 5.0A/2.3A without monitor
Maximum power consumption	180 W
<b>Operating Environment</b>	
Operating temperature	10° to 40° C (50° to 104° F)
Operating humidity	20% to 80% relative humidity
Maximum wet bulb	40° C (104° F)
Storage temperature	-20° C to 65° C (-4° F to 149° F)
Storage humidity	10% to 90% relative humidity
Maximum wet bulb	65° C (149° F)
Maximum altitude	
Operating	2,438 m (8,000 ft) maximum
Nonoperating	4,876 m (16,000 ft) maximum
Nonoperating shock	30G, 25ms halfsine
<b>Physical Characteristics</b>	<b>Pedestal</b>
Height	10 cm (4 inches)
Width	43 cm (17 inches)
Depth	41 cm (16 inches)
Weight	11-14 kg (25-30lb)

**Recommended UPS: PUPS Prestige Model 650 (120 V) and Model 600 (240 V)\***

\*Should be used with a data TVSS device to provide full transient protection. Refer to TVSS section of January 1995 *Digital Systems and options Catalog*, Chapter 10, *Environmental Products*.

The UPS includes an EIA232 and LAN relay port for UPS monitoring and unattended safe system shutdown. See chart below for rating and ordering information.

**Service:** Units sold and serviced in the Continental US feature a 3 yearr, full unit hot-swap 24-48 hour replacement warranty through vendor. Other locations include a one year warranty with return to certified service location.

A 5 year vendor on-site exchange upgrade (see below) and a Digital on-site exchange service contract is also available.

AlphaStation 250 4/266	Part #	Output rating VA / Watts	Estimated System Load**	Full load support time	Est System support time
120 V	4N-AEABC-AF	650 / 455	470	15 min	>20 min
240 V	4N-AEABC-BF	600 / 420	470	14 min	>20 min

\*\* Estimated system load is worst case and includes fully configured system with large screen color monitor.

**Recommended UPS: PUPS Prestige Model 650 (120 V) and Model 600 (240 V)\* (continued)**

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<b>4N-AEAE0-PA/PB</b>	Optional hot-swap power pass with built in surge protected outlets including one extra off-line for laser printer. -PA for 120 V, -PB for 220 V models.
<b>4N-AEWAR-G1</b>	5 year vendor on-site exchange warranty upgrade (available in Intercontinental U.S. only at time of purchase).

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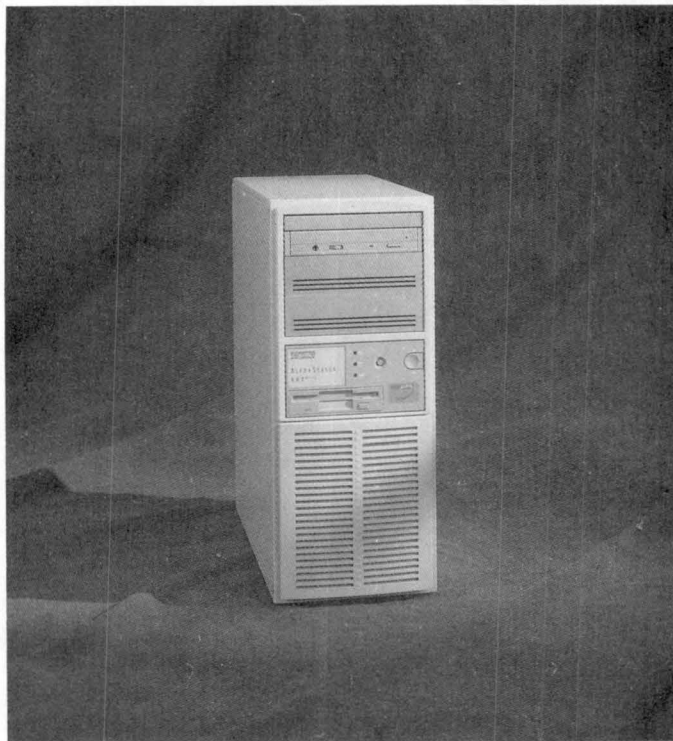
**Basic UPS Monitoring and Unattended Shutdown Software (for above UPS systems only)**

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<b>4N-AEAES-AA/AB</b>	Windows NT for Alpha and Intel x86, includes cables, media and documentation
<b>4N-AEAES-ED</b>	DEC OSF/1, includes cables, media and documentation
<b>4N-JBBBB-GG</b>	OpenVMS, includes cables, media and documentation

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For additional information, including other network options, refer to the Desktop UPS section in January 1995 *Digital Systems and Options Catalog*, Chapter 10, *Environmental Products* for ordering information.



## AlphaServer 400 4/166 Mini Tower Systems

### Product Description

The AlphaServer 400 4/166 system is a 166 MHz Alpha uniprocessor server in a mini tower enclosure. This highly reliable product offers many server specific features, including management and security, with remote management possible via a simple serial link. The product also has been designed to allow for future upgrades to faster Alpha processors.

The server supports up to 192 Mbytes of industry-standard SIMM memory and has an integrated Fast SCSI-2 controller. System enclosure supports five storage devices including a floppy diskette drive, CD-ROM, and hard disk drives. Six industry standard I/O expansion slots (two PCI, three ISA, and one PCI/ISA slot ) provide for options such as high-performance graphics, networking and SCSI adapters.

The AlphaServer 400 4/166 system comes with a three year on-site warranty. Digital's ADVANTAGE-UPGRADE Program provides a cost-effective upgrade path for investment protection.

## Step 1—Systems

Select system.

- DEC OSF/1 and OpenVMS Packaged and Base systems ordered with one 1.05 Gbyte disk include factory-installed software (FIS).
- Windows NT Packaged and Base systems include Windows NT Server plus 5-client V3.5 media (CD-ROM) and license in shrink-wrapped package.
- Options ordered will be factory installed unless specified as **spares**.

### AlphaServer 4000 4/166 Systems include

- DECchip 21064 166-MHz CPU with 512-Kbyte onboard secondary cache
- Mini tower enclosure which includes:
  - Six expansion slots: 2 PCI, 3 ISA, and 1 PCI/ISA combination slot
  - Integrated PCI-based Fast SCSI-2 controller with DMA and external SCSI-2 connector
  - Six SIMM memory slots
  - Five storage slot:
    - One diskette drive slot
    - One CD-ROM drive slot
    - One additional removable media slot
    - Seven StorageWorks hard disk drive slots
  - 400-Watt power supply
  - Two serial ports, support full modem control
  - One bi-directional enhanced parallel port
  - PS/2 style keyboard port and mouse port
- 32 Mbytes of memory (Packaged systems only)
- 1.44 Mbyte diskette drive in dedicated slot
- High-performance Ethernet DE435-AA—uses one PCI slot (included in Packaged systems only)
- 2-button mouse (Windows NT systems)
- 3-button mouse (DEC OSF/1 and OpenVMS systems)
- Hardware documentation (Americas and APA orders only)
- Hardware Warranty: Three-year on-site\*
- Software Warranty: 90-day SPD conformance with advisory telephone support\*
- Windows NT Server plus 5-client access, V3.5 media kit, **or** DEC OSF/1 2-user base license and NAS 200 license, **or** OpenVMS base license plus 1-user license and NAS 200 license

\* Service upgrades are available; see Step 11, Hardware and Software Supplemental Services.

### Packaged Systems

- Packaged systems ordered in the Americas and Asia Pacific Area (APA) include 120 V power cord and English hardware documentation. Select country-specific power cord and hardware documentation for all Packaged systems ordered in Europe.
- All Packaged systems include high-performance PCI-based Ethernet (DE435-AA)—uses one PCI slot
- Windows NT Packaged systems include entry level graphics (DEC864) 1280 x 1024 x 256 colors, 72 Hz—uses one PCI slot
- Windows NT Packaged servers ordered in Americas and APA include U.S. keyboard. Select country-specific keyboard for all Packaged systems ordered in Europe.

Order Number	Operating System	Memory	Graphics / Monitor	1.05 Gbyte Hard disk drive	600 Mbyte CD-ROM	Ethernet
<b>PB510-AA/AB</b>	DEC OSF/1	32 Mbytes	Recommended	Included	Included	Included
<b>PB511-AA/AB</b>	OpenVMS	32 Mbytes	Recommended	Included	Included	Included
<b>PB512-AA/AB<sup>1</sup></b>	Windows NT Server	32 Mbytes	Recommended	Included	Included	Included

Note: xA = 120V and xB = 240V

4/233 - 3.94

**Step 1—Systems (continued)****Base Systems**

- **DEC OSF/1 and OpenVMS Base systems require:**
  - Minimum of 32 Mbytes memory
  - One 535 Mbyte hard disk drive
  - Country-specific power cord
- Graphics option, monitor, keyboard, and mouse for DEC OSF/1 and OpenVMS base systems are available as options if required
- **Windows NT base systems require:**
  - Minimum of 16 Mbytes memory
  - One 535 Mbyte hard disk drive
  - Compact disk drive
  - Graphics option, monitor, and keyboard
  - Country-specific power cord

Order Number	Operating System	Memory	Graphics/Monitor	Hard disk drive	600 Mbyte CD-ROM	Ethernet
PB50A-AA	DEC OSF/1	Mandatory	Recommended	Mandatory	Recommended	Recommended
PB50A-BA	OpenVMS	Mandatory	Recommended	Mandatory	Recommended	Optional
PB50A-CA	Windows NT Server	Mandatory	Recommended	Mandatory	Mandatory	Optional

**Step 2—Memory**

- Six SIMM slots support three memory options (three SIMM pairs) for maximum of 192 Mbytes.
- Packaged systems include 32 Mbyte memory
- Base systems **require:** 32 Mbytes for DEC OSF/1 and OpenVMS systems; 16 Mbytes for Windows NT systems
- System maximum of 192 Mbytes can only be obtained by starting with Base system with 64 Mbyte.
- Memory pairs can be mixed

MSP01-AA	8 Mbyte (2 x 4 Mbyte 70ns SIMMs)
MSP01-AB	16 Mbyte (2 x 8 Mbyte 70ns SIMMs)
MSP01-AC	32 Mbyte (2 x 16 Mbyte 70ns SIMMs)
MSP01-AD	64 Mbyte (2 x 32 Mbyte 70ns SIMMs)

**Step 3—Monitors**

- Windows NT systems require a graphics monitor to run **all** functions.
- Video adapter included in Windows NT Packaged system (PB512-AA/AB) supports 1024 x 768 and 1280 x 1024 resolution, 72 Hz monitors.

VRC15-PA/P4	15-inch color monitor, 120 V, 240 V N.H./S.H., SVGA, 1280 x 1024 resolution, multi-sync, MPR2, Energy Star-compliant, includes jumper power cord and video cable.
VRT17-PA/P4	17-inch high-resolution color monitor, 120 V, 240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star-compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use from Step 10.
VRC21-PA/P4	21-inch high-resolution color monitor, 120 V, 240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star-compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use from Step 10.

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## Step 4—Storage

- Select storage devices if required.
- Integrated PCI-based Fast SCSI-2 controller supports maximum of seven devices, four of which may be internal.

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### Step 4a—Internal Storage

- System enclosure supports five storage devices: One dedicated diskette drive slot, three front accessible 5.25-inch slots for removable media (tapes or CD-ROM) or hard disk drives, and one internal 3.5-inch hard disk drive slot. See system diagram.
- Packaged systems include: one 1.44 Mbyte diskette drive, one 1.0 Gbyte hard disk drive, and one CD-ROM.
- Base systems include one 1.44 Mbyte diskette drive.
- All Base systems require a minimum of one 535 Mbyte hard disk drive.
- Windows NT Base systems require one CD-ROM drive.
- Software distribution is only available on CD-ROM

### Removable Media Devices

<b>PBXRZ-AA</b>	600 Mbyte, 5.25-inch half-height dual-speed CD-ROM drive
<b>PBXTZ-AA</b>	2.0 Mbyte, 5.25-inch half-height QIC tape drive
<b>PBXTL-CA</b>	8.0 Mbyte, 3.50-inch half-height 4-mm DAT drive

### Hard Disk Drives

<b>PBXRZ-AA</b>	340 Mbyte, 3.5-inch half-height hard disk drive (Windows NT systems <b>only</b> )
<b>PBXRZ-BA</b>	535 Mbyte, 3.5-inch half-height hard disk drive
<b>PBXRZ-EA</b>	1.05 Gbyte, 3.5-inch half-height hard disk drive
<b>PBXRZ-HA</b>	2.1 Gbyte, 3.5-inch half-height hard disk drive

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### Step 4b—External Expansion

- Systems support three external devices on integrated PCI-based Fast SCSI-2 controller when four devices are installed in system enclosure.
- Seven external SCSI devices are supported if storage devices are not installed in system enclosure.
- Select one additional PCI-based Fast SCSI-2 controller option card if additional external storage is required.
  - System supports maximum of two PCI-based Fast SCSI-2 controllers
  - PCI-based Fast SCSI-2 controller supports 7 additional external devices

### PCI-based Fast SCSI-2 Controller

<b>KZPAA-AA</b>	PCI-based Fast SCSI-2 controller—requires one PCI slot
<b>KZPSA-BB</b>	PCI-based one-port, high-performance Fast Wide Differential SCSI controller
<b>KZPSC-AA*</b>	One-port PCI backplane RAID controller; includes StorageWorks Array 230 Subsystem family software and documentation kit

\*See Chapter 8, *Storage Devices*, for additional information on StorageWorks RAID Array 2x0 systems.

### Single Drive Tabletop Expansion

- Tabletop expansion units include North American power cord; order country-specific power cord for 240 V use.
- Each tabletop expansion unit requires 3-foot SCSI cable (BC09D-03)

<b>TLZ07-DA</b>	8.0 Gbyte 3.50-inch half-height 4mm DAT tape drive
<b>RRD43-FA</b>	600 Mbyte 5.25-inch half-height dual-speed CD-ROM

### StorageWorks Expansion Units (BA350 and BA353)

- BA350 Deskside Expansion Unit supports maximum of seven 3.5-inch half-height or two 5.25-inch SCSI devices
- BA353 Desktop Expansion Box supports three 3.5-inch half-height or two 3.5-inch half-height and one 5.25-inch half-height drive
- BA350 and BA353 Expansion units include North American power cord; order country-specific power cord for 240 V use
- Order SCSI cable separately; (BN21H-xx) system box to BA350/BA353

Step 4b—External Expansion (*continued*)**StorageWorks BA350 Deskside Expansion Unit**

**BA350-KB** StorageWorks deskside expansion unit includes: BA350-SB basic shelf, BA35X-HA universal AC power supply, pedestal mounting kit, and North American power cord

**StorageWorks BA353 Desktop Expansion Box**

**BA353-AA** StorageWorks desktop expansion box

**Supported SCSI devices**

SCSI devices may be purchased separately and are customer installable.

		<b>BA353</b>	<b>BA350</b>
<b>RZ25L-VA</b>	535 Mbyte 3.5-inch half-height disk drive	X	X
<b>RZ26L-VA</b>	1.0 Gbyte 3.5-inch half-height disk drive	X	X
<b>RZ28-VA</b>	2.1 Gbyte 3.5-inch half-height disk drive	X	X
<b>RRD43-VA</b>	600 Mbyte 5.25-inch half-height compact disk drive		X
<b>RRD43-VU*</b>	600 Mbyte 5.25-inch half-height compact disk drive		X

\* 600 Mbyte CD-ROM drive can be added to RRD43-VA or TZK11-VA for a total of two 5.25-inch drives in one carrier.

Refer to Chapter 8, *Storage Devices*, for additional BA350 modular storage shelf configurations.

**Step 5—Graphics Adapters**

- Windows NT systems include entry-level (PBXGA-JA) graphics adapter
- Monitor cable is included with each monitor

<b>Order Number</b>	<b>Description</b>	<b>Supported Operating System</b>	<b>Bus Slots Required/Recommended Slot*</b>
<b>PBXGA-AA<sup>†</sup></b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1 OpenVMS	One PCI/1, 2, 3a
<b>PBXGA-AN<sup>††</sup></b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/1, 2, 3a
<b>PBXGA-BA<sup>†</sup></b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1 OpenVMS	One PCI/1, 2, 3a
<b>PBXGA-BN<sup>††</sup></b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/1, 2, 3a
<b>PBXGA-CA<sup>†</sup></b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1 OpenVMS	One PCI/1, 2, 3a
<b>PBXGA-CN<sup>††</sup></b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/1, 2, 3a
<b>PBXGA-JA</b>	DEC864, Entry Level graphics, with 2 Mbyte DRAM, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI/1, 2, 3a
<b>MSP01-DA</b>	2 Mbyte DRAM upgrade for PBXGA-JA	Windows NT	—

\* See system diagram

<sup>†</sup> Multi-screen graphics options for DEC OSF/1 and OpenVMS systems. Options require DEC Open3D media which is included in factory installed software (FIS)

<sup>††</sup> Graphics options include ZLXp-E Support Services Software for Microsoft Windows NT license, media, and documentation

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## Step 7—Communications and Miscellaneous Adapters

- Packaged systems include high-performance Ethernet—Thick wire, Twisted Pair, ThinWire)

Order Number	Description	Supported Operating Systems	Bus Slots Required / Recommended Slot
DE435-AA	High-performance Ethernet. Select AUI (Thick wire), 10BaseT (Twisted Pair) or ThinWire networking cable BNE4G-02 for AUI BN26K-xx for 10BaseT (twisted pair) BC16M-xx for ThinWire	DEC OSF/1 OpenVMS Windows NT	One PCI/1, 2, 3a
PBXDF-AA	Modem 14.4K	Windows NT	One ISA/3b, 4, 5, 6

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## Step 8—Printers

Refer to Chapter 9, *Terminals, Scanners, Printers*, for ordering information. The AlphaStation 400 4/233 has two serial ports and one bi-directional parallel port on rear of system enclosure. Either port may be used as a printer port depending on printer type.

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## Step 9—Software

### Windows NT Servers

- Windows NT packaged and Base systems include Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package. Order documentation kit if required.

QA-23CAA-GZ Windows NT Server documentation kit

### DEC OSF/1 Interactive User Licenses

Select user licenses and additional software as required. Media and documentation is recommended for first system on site.

#### Software Processor Code = E

- DEC OSF/1 Interactive User Licenses are **not** specific to a single system and can be moved from one system to another at user discretion.
- DEC OSF/1 Packaged and Base systems **require** operating system media and documentation for **first** system on site.

QL-MT7A9-BB	DEC OSF/1 Interactive 1-user license
QL-MT7A9-BC*	DEC OSF/1 Interactive 2-user license
QL-MT7A9-BD*	DEC OSF/1 Interactive 4-user license
QL-MT7A9-BE*	DEC OSF/1 Interactive 8-user license
QL-MT7A9-BF*	DEC OSF/1 Interactive 16-user license
QL-MT7AE-AA	DEC OSF/1 Interactive unlimited user license
QL-MT6AE-AA	DEC OSF/1 server extension license
QL-MT5AE-AA	DEC OSF/1 C developer's extension license

\* Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

### DEC OSF/1 Media and Documentation

QA-MT4AA-H8	DEC OSF/1 media and documentation (end user, developer, server) on CD-ROM
QA-MT4AA-GZ	DEC OSF/1 full hardcopy documentation
QA-MT4AB-GZ	DEC OSF/1 end user documentation
QL-MT5AA-GZ	DEC OSF/1 developer's documentation
QA-MT6AA-GZ	DEC OSF/1 server extension documentation

**Step 9—Software (continued)****DEC OSF/1 Layered Products (CD-ROM)**

DEC OSF/1 systems include Multimedia Services License, order media and documentation separately. Media and documentation for Multimedia Services is included in DEC OSF/1 Layered Products CD-ROM.

**QA-054AA-H8** Layered products media and documentation for DEC OSF/1 on CD-ROM

**NAS 200 for DEC OSF/1**

**QL-306AE-AA** NAS 200 for DEC OSF/1 Update license

**QT-306AE-L9** NAS 200 for DEC OSF/1 Layered Product Support Service

**DECnet for DEC OSF/1**

**QL-MTJAE-AA** DECnet/OSI end-system license for DEC OSF/1

**QL-MTKAE-AA** DECnet/OSI extended function license for DEC OSF/1

**OpenVMS Distributed Interactive User Licenses**

OpenVMS Distributed Interactive User Licenses are **not** specific to a single system and **can** be moved between systems at user discretion. OpenVMS Distributed Interactive User Licenses can also be shared across an OpenVMS Cluster.

**Note:** OpenVMS Distributed Interactive User Licenses are architecture-specific and **cannot** be shared across a mixed OpenVMS Cluster (OpenVMS and OpenVMS VAX systems).

**Software Processor Code = E**

OpenVMS AlphaServer 400 systems **require** V6.1-1H2 media and documentation (QA-MT1AP-H8) for **first** system on site. QA-MT1AP-H8 includes media and on-line documentation **only**, in Bookreader format on CD-ROM.

**QL-MT3A9-BB** OpenVMS Distributed Interactive 1-user license

**QL-MT3A9-BC\*** OpenVMS Distributed Interactive 2-user license

**QL-MT3A9-BD\*** OpenVMS Distributed Interactive 4-user license

**QL-MT3A9-BE\*** OpenVMS Distributed Interactive 8-user license

**QL-MT3A9-BF\*** OpenVMS Distributed Interactive 16-user license

**QL-MT3A9-BG\*** OpenVMS Distributed Interactive 32-user license

**QL-MT3A9-BH\*** OpenVMS Distributed Interactive 64-user license

**QL-MT3AA-BR\*** OpenVMS Distributed Interactive 128-user license

**QL-MT3AB-BR\*** OpenVMS Distributed Interactive 256-user license

**QL-MT2AE-AA** OpenVMS Distributed Interactive unlimited user license

\* Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

**OpenVMS Media and Documentation—required for first system on site**

**QA-MT1AP-H8** OpenVMS media and documentation on CD-ROM

**QA-MT1AH-GZ** OpenVMS hardcopy documentation

**OpenVMS Layered Products (CD-ROM)**

**QA-03XAA-H8** Layered products media and documentation for OpenVMS on CD-ROM

**NAS 200 for OpenVMS**

**QL-23EAE-AA** NAS 200 for OpenVMS license

**QT-23EAE-L9** NAS 200 for OpenVMS Layered Product Support Service

**DECnet for OpenVMS**

**QL-MTGAE-AA** DECnet extended function license for OpenVMS

**QL-MTHAE-AA** DECnet end-system to extended function upgrade license for OpenVMS

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**Step 9—Software (continued)****Support Services Software for Microsoft Windows NT**

ZLXp-Ex graphics options for Windows NT servers include the following license, media and documentation.

QM-356AA-AA	License for ZLXp-Ex Support Services Software for Microsoft Windows NT
QB-356AA-SA	ZLXp-Ex Support Services Software for Microsoft Windows NT—license, media (diskette) and documentation
QA-356AA-GZ	ZLXp-Ex Support Services Software for Microsoft Windows NT (documentation only)

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**Step 10—Power Cords, Keyboards, and Documentation**

- Packaged systems ordered in the Americas and Asia Pacific Area (APA) include 120 V U.S. power cord and English hardware documentation. Select country-specific power cord and documentation for all Packaged systems ordered in Europe.
- Windows NT Packaged systems ordered in the Americas and APA include U.S. keyboard. Select country-specific keyboard
- for all Windows NT Packaged systems ordered in Europe. All Windows NT Base systems **require** a country-specific keyboard.
- All Base systems **require** country-specific power cord and documentation.
- Packaged and Base systems include mouse.

Power Cord	Keyboard	Country
BN19P-1K	LK471-AA	North America, Japan (English)
BN03A-2E	LK471-AB	Belgium (French)
BN19L-2E	LK471-AD	Denmark
BN03A-2E	LK471-AP	France
BN03A-2E	LK471-AM	Sweden (Finnish)
BN03A-2E	LK471-AG	Germany
BN24X-2E	LK471-AI	Italy
BN03A-2E	LK471-AN	Norway
BN03A-2E	LK471-AV	Portugal
BN03A-2E	LK471-AS	Spain
BN19E-2E	LK471-AK	Switzerland (French)
BN26D-2E	LK471-AE	U.K., Ireland
BN18L-2E	LK471-AT	Israel (Hebrew)
BN22X-2E	LK471-AA	Africa, India (English)
BN19H-2E	LK471-AA	Australia, New Zealand (English)

**Mouse—included in all Packaged and Base systems**

PCXAS-AA PS/2 compatible 3-button Mouse

**User Documentation—select for 240 V systems**

User Documentation	
EK-PCSVA-UI	User Documentation—English
EK-PCSVF-UI	User Documentation—French
EK-PCSVG-UI	User Documentation—German
EK-PCSVI-UI	User Documentation—Italian
EK-PCSVS-UI	User Documentation—Spanish
EK-PCSVD-UI	User Documentation—Dutch
EK-PCSVJ-UI	User Documentation—Japanese

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## Step 11—Hardware and Software Supplemental Support Services

**Hardware**—(Americas and Asia Pacific Area only)

- Systems include three-year hardware warranty (1st year on-site service, 5 x 9, next day response time; 2nd and 3rd years, return to Digital).
- Select optional Hardware Supplemental Support Services if required.

<b>FM-CH4HR-36</b>	Years 1-3, 5 x 9, 4 hour response
<b>FM-CH512 -36</b>	Years 1-3, 5 x 12, 4 hour response
<b>FM-CH616 -36</b>	Years 1-3, 6 x 16, 4 hour response
<b>FM-CH724 -36</b>	Years 1-3, 7 x 24, 4 hour response
<b>FM-CH4HR-60</b>	Years 1-5, 5 x 9, 4 hour response
<b>FM-CH512 -60</b>	Years 1-5, 5 x 12, 4 hour response
<b>FM-CH616 -60</b>	Years 1-5, 6 x 16, 4 hour response
<b>FM-CH724 -60</b>	Years 1-5, 7 x 24, 4 hour response

**Software**—(Americas and Asia Pacific Area only)

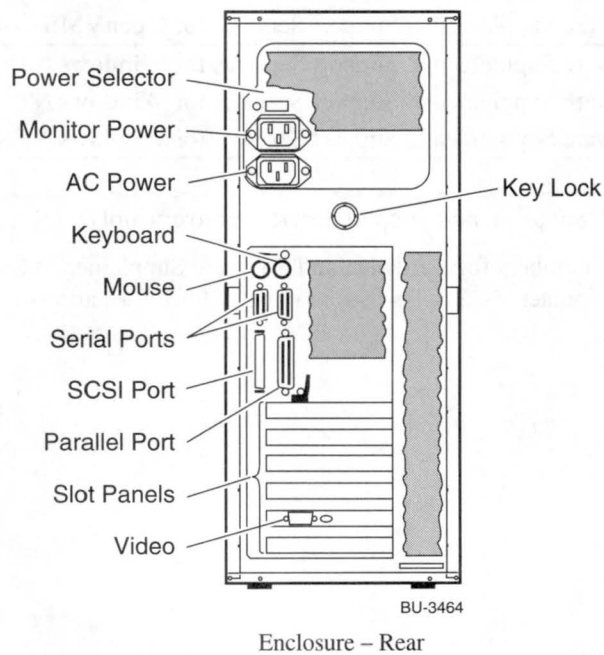
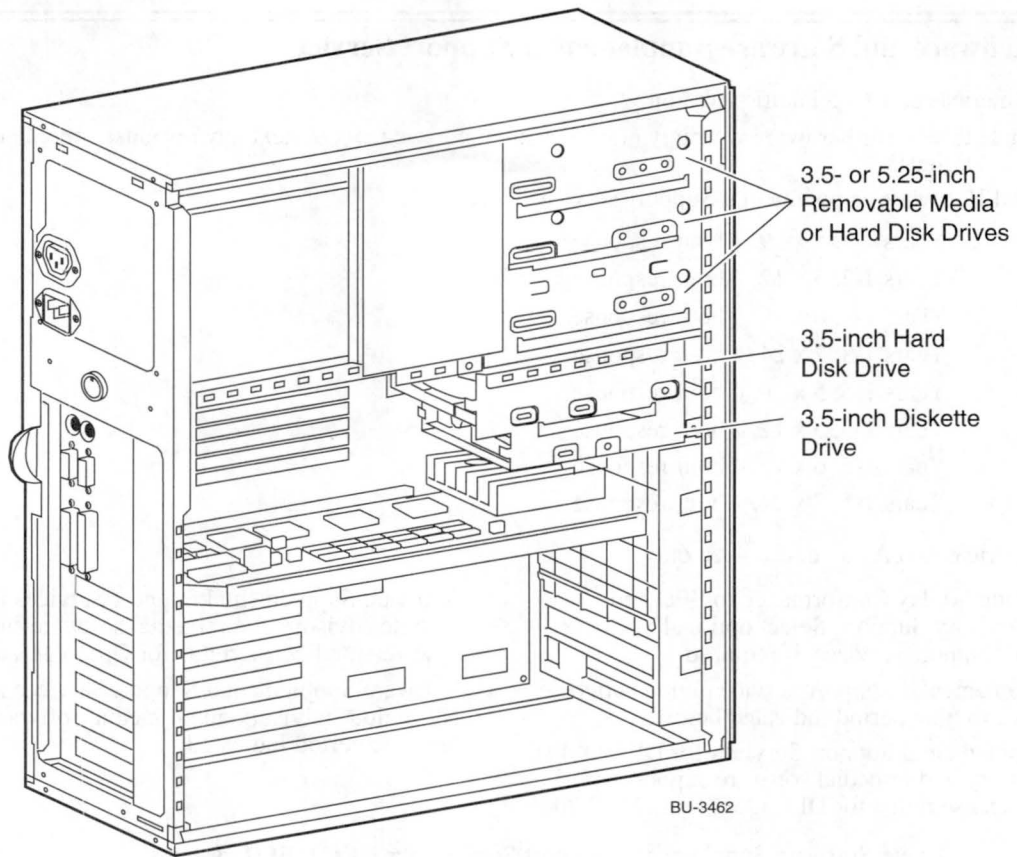
- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software Supplemental Support Service options upgrade 90-day service to time period indicated below.
- Software Supplemental Support Services for DEC OSF/1 includes advisory and remedial software support with new version license rights for DEC OSF/1 and NAS 200.
- Software Supplemental Support Services for OpenVMS include advisory and remedial software support with new version license rights for OpenVMS and NAS 200.
- Software Supplemental Support Services for Windows NT include advisory and remedial software support for the time period indicated.

<b>FM-CHOSF-12</b>	1 year Software Supplemental Support Services for <b>DEC OSF/1</b> systems
<b>FM-CHOSF-36</b>	3 year Software Supplemental Support Services for <b>DEC OSF/1</b> systems
<b>FM-CHOSF-60</b>	5 year Software Supplemental Support Services for <b>DEC OSF/1</b> systems
<b>FM-CHVMS-12</b>	1 year Software Supplemental Support Services for <b>OpenVMS</b> systems
<b>FM-CHVMS-36</b>	3 year Software Supplemental Support Services for <b>OpenVMS</b> systems
<b>FM-CHVMS-60</b>	5 year Software Supplemental Support Services for <b>OpenVMS</b> systems
<b>FM-CHNTS-12</b>	1 year Software Supplemental Support Services for <b>Windows NT</b> systems
<b>FM-CHNTS-36</b>	3 year Software Supplemental Support Services for <b>Windows NT</b> systems
<b>FM-CHNTS-60</b>	5 year Software Supplemental Support Services for <b>Windows NT</b> systems

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Step 11b—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.



## Specifications

PCI	132 Mbyte/second
ISA	16 Mbyte/second
Fast SCSI-2 bus	10 Mbyte/s transfer rate
Ethernet	DE435-xx 10-Mbit/s Twisted Pair/Thin Wire and AUI thick wire
<b>Power Requirements</b>	
Line voltage	120/240 V
Voltage tolerance	88-132/176-264 V
Frequency single phase	50/60 Hz
Frequency tolerance	47-63 Hz
Maximum running current	8.0A/4.0A
Maximum power consumption	300 W
<b>Operating Environment</b>	
Operating temperature	10° to 40° C (50° to 104° F)
Operating humidity	20% to 80% relative humidity
Maximum wet bulb	40° C (104° F)
Storage temperature	-20° C to 65° C (-4° F to 149° F)
Storage Humidity	10% to 90% relative humidity
Maximum wet bulb	65° C (149° F)
Maximum altitude	
Operating	2,438 m (8,000 ft) maximum
Nonoperating	4,876 m (16,000 ft) maximum
Nonoperating shock	30G, 25ms halfsine
<b>Physical Characteristics Mini Tower</b>	
Height	43 cm (17 inches)
Width	18 cm (7 inches)
Depth	43 cm (17 inches)
Weight	12+ kg (28+ lb)

**Recommended UPS: PUPS Prestige Model 800 "On-line" UPS\***

\*Should be used with the appropriate data line TVSS device for total surge protection. Refer to TVSS section of January 1995 *Digital Systems and Options Catalog*, Chapter 10 *Environmental Products*.

The UPS is rated 800 VA, 560 watts and includes a selectable EIA232 or LAN relay port for UPS monitoring and unattended safe system shutdown. It will provide eleven minutes of battery backup at full load or fifteen minutes for a fully configured system and video console.

**Service:** Units sold and serviced in the Continental US feature a 3-year, full unit hot-swap 24-48 hour replacement warranty through vendor. Other locations include a one year warranty with return to certified service location. A 5-year vendor on-site exchange upgrade (see below) and a Digital on-site exchange service contract is also available.

<b>4N-AEABD-AF</b>	For 120 Vac, 50 or 60 Hz systems Includes detachable 6-foot input power cord with 5-15P plug and four NEMA 5-15R output receptacles.
<b>4N-AEABD-BF</b>	For 240 Vac, 50 or 60 Hz systems Features selectable 220, 230 or 240 Vac output. Uses system power cord for detachable IEC 320 connection at UPS. Unit has four IEC 320 receptacles and comes with two output jumpers with IEC 320 connectors for connection to system.

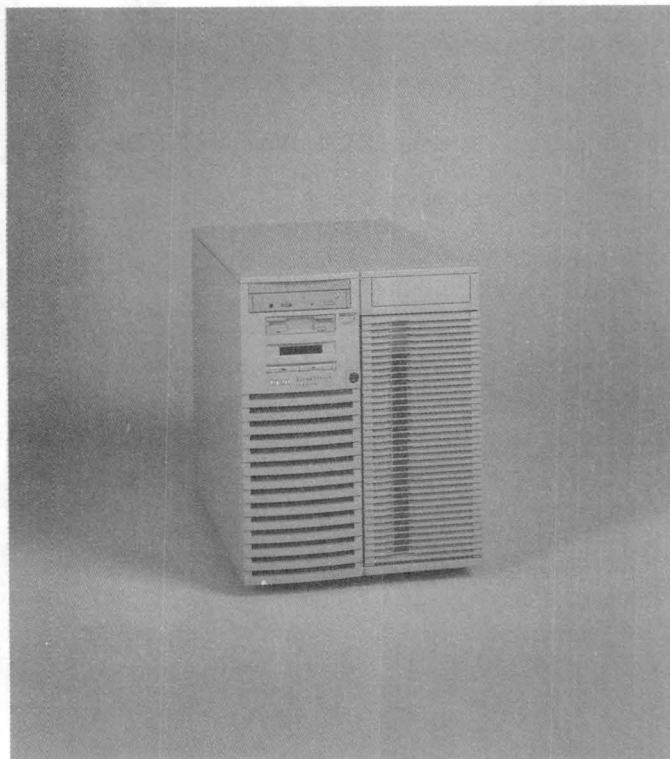
**Recommended UPS: PUPS Prestige Model 800 "On-line" UPS (continued)**

<b>4N-AEAEO-PA/PB</b>	Optional hot-swap power pass with built in surge protected outlets including one extra off-line for laser printer. -PA for 120 V, -PB for 220 V models.
<b>4N-AEWAR-G1</b>	5 year vendor on-site exchange warranty upgrade (available in Intercontinental U.S. only at time of purchase).

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

<b>4N-AEAES-AA/AB</b>	Windows NT for Alpha and Intel x86, includes cables, media and documentation
<b>4N-AEAES-ED</b>	DEC OSF/1, includes cables, media and documentation
<b>4N-JBBBB-GG</b>	OpenVMS, includes cables, media and documentation

For additional information, including external battery and other network options, refer to the Desktop UPS section in January 1995 *Digital Systems and Options Catalog*, Chapter 10, *Environmental Product*.



## AlphaServer 1000 4/233 Systems

### Product Description

The AlphaServer 1000 4/233 system is a 233 MHz Alpha uniprocessor server, with a 2-Mbyte ECC cache, in a desktide wide-tower enclosure. For investment protection, customers get a choice of three popular operating systems: DEC OSF/1, OpenVMS and Microsoft Windows NT Server. The AlphaServer 1000 4/233 offers high-reliability features such as fully redundant power supplies, internal RAID, hot swap disk, dual Fast Narrow/Wide SCSI backplane, and ECC memory.

AlphaServer 1000 systems offer server management features such as heat sensor, fan failure sensor, and power supply sensors. Remote management can be handled via a simple serial link. AlphaServer 1000 systems include a LCD operator control panel.

The AlphaServer 1000 offers provision for up to 10 internal storage devices including a floppy diskette drive and a CD-ROM. It supports up to 512 Mbytes of memory and over 14 Gbytes of internal storage with seven 2.1-Gbyte disks. It includes the provision for a tape drive, support for Wide SCSI devices, and up to seven hot swap StorageWorks disk drives.

Integrated on the AlphaServer 1000 system motherboard are an SVGA controller, diskette controller, two serial ports, one parallel port, keyboard, and mouse controller.

High reliability features, combined with simple management features, make the AlphaServer 1000 ideal for organizations with little or no MIS support. Business-critical applications can run unattended and the management features provide early indications of potential system failures.

Remote diagnosis allows a system administrator to call in, remotely run the diagnostics, configure the system, recommend a fix, or pull the right part. Support costs are reduced because on-site visits and service calls are minimized.

The AlphaServer 1000 provides large system features and performance at small system prices. Its daughter-card CPU architecture is designed to be compatible with future generations of Alpha chips; it can be easily upgraded for higher performance. AlphaServer 1000 systems are available in three flexible packages, Desktide wide tower enclosure, Rackmount and Cabinet. Rackmount and Cabinet systems are covered in separate menus.

## Step 1—Systems

Select system.

- Windows NT systems include Windows NT Server plus 5-client access, V3.5 media (CD-ROM) and license in shrink-wrapped package
- DEC OSF/1 and OpenVMS Packaged systems and Base systems ordered with a minimum of a 1.05 Gbyte disk, include factory installed software.
- Uninterruptable Power Supplies are available; see UPS Information following System Specifications.
- Options ordered that are factory installable, will be factory installed unless they are specified as **spares**.

### AlphaServer 1000 4/233 Systems include

- DECchip 21064A 233-MHz CPU with 2-Mbyte ECC onboard cache
- Pedestal enclosure which includes:
  - 10 expansion slots: Seven EISA slots, two PCI slots and one PCI/EISA combination slot
- Integrated PCI-based Fast SCSI-2 controller with DMA and external SCSI-2 connector
- Integrated SVGA graphics controller (supported on Windows NT and DEC OSF/1 systems)
- 20 industry-standard SIMM slots
- 10 storage slots:
  - One diskette drive slot
  - One CD-ROM drive slot
  - One additional removable media slot
  - Seven StorageWorks hard disk drive slots
- 400-Watt power supply
- Two serial ports, support full modem control
- One bi-directional enhanced parallel port
- PS/2 style keyboard port and mouse port
- 1.44-Mbyte diskette drive (RX23L) in dedicated slot
- 2-button mouse (Windows NT systems)
- 3-button mouse (DEC/OSF 1 and OpenVMS systems)
- English language documentation kit
- EISA Configuration Utility (ECU)
- Integrated Server Management
- Hardware Warranty: Three-year on-site\*
- Software Warranty: 90-day SPD conformance with advisory telephone support\*
- Windows NT Server plus 5-client access, V3.5 media kit, **or** DEC OSF/1 2-user base license and NAS 200 license, **or** OpenVMS base license plus 1-user license and NAS 200 license

### Packaged Systems

- Packaged systems ordered in the Americas and Asia Pacific Area include 120 V power cord and English hardware documentation. Select country specific power cord and hardware documentation for all Packaged systems ordered in Europe.
  - Packaged systems include high-performance PCI-based Ethernet (DE435-AA)—uses one PCI slot
  - Packaged systems include 600 Mbyte CD-ROM - uses one removeable media slot
  - Packaged systems include 64 Mbytes memory and 2.1 Gbyte hard disk.
  - Windows NT Packaged servers ordered in Americans and APA include U.S. keyboard. Select country specific keyboard for all Packaged systems ordered in Europe.
- Note:** DEC OSF/1 and OpenVMS systems do not include keyboard.

\* Service upgrades are available; see Step 11, Hardware and Software Supplemental Services.

Order Number	Operating System	Memory	Storage	Monitor	Graphics	Ethernet
PB71B-AA/AB	Windows NT Server	64 Mbytes Included	1 x 2.1 GB	Recommended	Included	Included
PB71B-FA/FB	DEC OSF/1	64 Mbytes Included	1 x 2.1 GB	Recommended	Included	Included
PB71B-MA/MB	OpenVMS	64 Mbytes Included	1 x 2.1 GB	Recommended	Recommended <sup>†</sup>	Included

<sup>†</sup> EISA Configuration Utility (ECU) is accessible via the console port for OpenVMS systems

**Note:** xA = 120V and xB = 240V

## Step 1—Systems (*continued*)

### Base Systems

- **DEC OSF/1 and OpenVMS Base systems require:**
    - Minimum of 32 Mbytes memory
    - One 1.05 Gbyte hard disk drive
  - Graphics option, monitor, and keyboard for DEC OSF/1 and OpenVMS base systems are available as options if required
  - **Windows NT base systems require:**
    - Minimum of 16 Mbytes memory
- One 1.05 Gbyte hard disk drive
  - CD-ROM disk drive
  - Graphics monitor
  - Windows NT Base systems ordered in Americas and APA included U.S. keyboard. Select country specific keyboard for all Base systems ordered in Europe.

Mandatory items **must** be on purchase order at initial order acceptance.

Order Number	Operating System	Memory	Graphics/Monitor	Hard disk drive	600 Mbyte CD-ROM	Ethernet
PB71C-AA/AB	Windows NT Server	Mandatory	Recommended	Mandatory	Mandatory	Recommended
PB71C-FA/FB	DEC OSF/1	Mandatory	Recommended	Mandatory	Recommended	Recommended
PB71C-MA/MB	OpenVMS	Mandatory	Recommended	Mandatory	Recommended	Recommended

## Step 2—Memory

- Packaged Systems include 64-Mbyte memory, one PB7MA-AC memory kit.
- System supports four memory kits (each kit includes five industry-standard SIMMs, the fifth SIMM in each kit is for ECC support).
- System maximum of 512 Mbytes can be obtained by replacing 64-Mbyte (standard in all packaged systems) with 128-Mbyte memory kit or purchasing a Base System and ordering 4xPB7MA-AD 128-Mbyte memory kit.

PB7MA-AA	16-Mbyte 70ns (5 x 4 Mbyte SIMMs) memory kit
PB7MA-AB	32-Mbyte 70ns (5 x 8 Mbyte SIMMs) memory kit
PB7MA-AC	64-Mbyte 70ns (5 x 16 Mbyte SIMMs) memory kit
PB7MA-AD	128-Mbyte 70ns (5 x 32 Mbyte SIMMs) memory kit

## Step 3—Monitors

- Windows NT systems require a graphics monitor to run **all** functions.
- EISA Configuration Utility (ECU) is accessible via the console port for DEC OSF/1 and OpenVMS systems. Optional graphics capability is available. Select graphics adapter, monitor, and country specific keyboard for DEC OSF/1 and OpenVMS systems if required.
- Graphics monitors other than those listed below can be used if compatible with graphics adapter included with system  
DEC OSF/1 supports 640 x 480 x 16 @ 60 Hz  
Windows NT supports 640 x 480 x 16 @ 60 Hz, 640 x 480 x 256 @ 60 Hz, 800 x 600 x 16 @ 72 Hz, 800 x 600 x 256 @ 72 Hz, 1024 X 768 X 16 @ 72 Hz.

VRC15-PA/P4	15-inch color monitor, 120 V, 240 V N.H./S.H., SVGA, 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes jumper power cord and video cable.
VRT17-PA/P4	17-inch high-resolution color monitor, 120 V, 240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use from Step 10.
VRC21-PA/P4	21-inch high-resolution color monitor, 120 V, 240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use from Step 10.

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## Step 4—Storage

- Select storage devices if required.
- Integral Fast SCSI-2 controller supports maximum of seven devices; two internal 5.25-inch removable media devices, four internal 3.5-inch, RZ26L/RZ28/RZ29B/RZ26L-VW/RZ28-VW disk drives, and one external storage device.

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### Step 4a—Internal Storage

- System enclosure supports ten storage devices: One dedicated diskette drive slot, two removable media slots, and seven 3.5-inch disk drives in internal storage assembly
- Systems include:
  - One 1.44 Mbyte diskette drive
  - One CD-ROM
  - One 2.1 Gbyte hard disk drive
- Internal storage assembly supports seven 3.5-inch disk drives (RZ26L/RZ28/RZ29B/RZ26L-VW/RZ28-VW) **only**.
- Internal storage assembly is normally configured for split-bus with four drives on first bus and three drives on second bus. By attaching the jumper cable and moving the terminator internal storage assembly can be re-configured for single-bus mode with support for a maximum of seven disk drives on one additional SCSI adapter.
- Select one of the SCSI cable kits (PB7H-xx) listed in Step 4b, for split bus mode or for second controller.
- Additional SCSI adapter is required to support internal storage assembly if set for single-bus mode.
- See Storage Diagrams for details.

### Removable Media Devices

<b>PBXRD-BA</b>	600-Mbyte, 5.25-inch half-height CD-ROM (RRD44) drive
<b>PBXTZ-AA</b>	2.0-Gbyte, 5.25-inch half-height SCSI QIC tape drive
<b>PBXTL-CA</b>	8.0-Gbyte, 3.5-inch half-height SCSI 4-mm DAT drive

### Hard Disk Drives

<b>RZ26L-VA</b>	1.05-Gbyte, 3.5-inch half-height <b>narrow</b> disk drive
<b>RZ28-VA</b>	2.1-Gbyte, 3.5-inch half-height <b>narrow</b> disk drive
<b>RZ29B-VA</b>	4.3-Gbyte, 3.5-inch disk half-height <b>narrow</b> disk drive
<b>RZ26L-VW</b>	1.05-Gbyte, 3.5-inch, half-height <b>wide</b> disk drive
<b>RZ28B-VW</b>	2.1-Gbyte, 3.5-inch, half-height <b>wide</b> disk drive

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### Step 4b—Storage Controllers

#### Configuration Rules

- StorageWorks RAID Array 210 (KZESC-xx) includes EISA backplane RAID controller and StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF and Windows NT.
- StorageWorks RAID Array 230 (KZPSC-xx) includes PCI backplane RAID controller and StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF and Windows NT.
- One port PCI based Fast Wide Differential (FWD) SCSI controller (KZPSA-BB) supports externally connected KZPSA-wide disks in the BA356 using the DWZZB wide differential to wide single-ended converter, or narrow disks using the DWZZA narrow differential to narrow or single-ended converter in BA356.
- Maximum of three PCI-based SCSI controllers supported.
- Each KZESC-xx **requires** a PB7HA-AA SCSI cable kit
- Each KZPSC-xx **requires** a PB7HA-BA SCSI cable kit
- Maximum number of **each** EISA-based storage controller supported per system:
  - Two KZESC-xx (One- and three-port controllers)
  - Maximum number of EISA-based controllers of all types is limited to the total number of available EISA slots and available IRQs
- Each controller requires one bus slot, except KFESA which requires two
- External SCSI cables are **not** included and must be ordered separately (see Step 4d)
- External DSSI cables are **not** included and must be ordered separately (see Step 4d)
- See Storage Diagrams for details.

#### Storage Controllers

<b>KZESC-AA*</b>	One-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit. PB7HA-AA <b>required</b> .
<b>KZESC-BA*</b>	Three-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit. PB7HA-AA <b>required</b> .

Step 4b—Storage Controllers (*continued*)

## Storage Controllers

<b>KZPSA-BB</b>	One port PCI based high-performance Fast Wide Differential (FWD) SCSI controller supports external drives only.
<b>KZPSC-AA*</b>	One-port PCI backplane RAID controller, includes StorageWorks RAID Array 230 Subsystem family software and documentation kit. <b>PB7HA-BA required.</b>
<b>KZPSC-BA*</b>	Three-port PCI backplane RAID controller, includes StorageWorks RAID Array 230 Subsystem family software and documentation kit. <b>PB7HA-BA required.</b>
<b>KZPAA-AA</b>	PCI-based one-port high-performance Fast SCSI-2 controller
<b>KFESA-AA<sup>†</sup></b>	EISA-based single-DSSI controller (OpenVMS systems only)
<b>PB7HA-AA</b>	Narrow SCSI Option Cables and Terminator (fast narrow 50 pin)
<b>PB7HA-BA</b>	Wide SCSI Option Cables and Terminator (fast wide 68 pin)

\* See Chapter 8, *Storage Devices*, for additional information on StorageWorks RAID Array 2x0 Subsystems

<sup>†</sup> Not supported as boot device. DSSI/SCSI controller (HSD05-xx) is not supported in internal storage assembly due to physical constraint.

## Step 4c—External Expansion

- Integral Fast SCSI-2 controller can be extended outside the system enclosure via the SCSI-out port to support external SCSI devices. Maximum external bus length including cable and device cannot exceed 1.0 meter.
- External tape drives are also supported on optional PCI-based high-performance SCSI controllers; KZPAA-AA (maximum external bus length including cable and tape device cannot exceed 3.0 meter) and KZPSA-BB (maximum external bus length including cable and tape device cannot exceed 25.0 meters).
- External tape drives are not supported on one- and three-port (KZESC-xx) high performance Fast-SCSI-2 controllers.
- External tape drives are supported on one- and three-port (KZPSC-xx) high performance SCSI controllers on Windows NT **only**.
- Each tabletop tape device **requires** a three-foot SCSI cable (BC09D-03).

## External Tapes support on Windows NT servers

<b>TLZ07-DA</b>	8.0 Gbyte 4mm DAT tabletop tape drive
<b>TLZ7L-DA*</b>	32.0 Gbyte 4-mm DAT autoloader

## External Tapes support on DEC OSF/1 and OpenVMS servers

<b>TLZ07-DA</b>	8.0 Gbyte 4mm DAT tabletop tape drive
<b>TLZ7L-DA*<sup>†</sup></b>	32.0 Gbyte 4-mm DAT autoloader
<b>TZK11-DA</b>	2.0 Gbyte 5.25-inch tabletop QIC tape drive
<b>TSZ07-CA</b>	40/140 Mbyte, reel/reel, tabletop tape drive
<b>TKZ60-FA/FC</b>	400 Mbyte, IBM 3480/3490 compatible tabletop tape drive
<b>TKZ09-BA</b>	5 Gbyte, 8mm, tabletop tape drive
<b>TKZ15-TA</b>	10 Gbyte, 8mm, tabletop tape drive
<b>TZ87-TA</b>	20 Gbyte, DLT tabletop tape drive
<b>TZ875-TA</b>	100 Gbyte, DLT tabletop tape drive
<b>BC09D-03</b>	3 Foot Molded SCSI Cable, required for each tabletop tape device.

\* Includes four cartridge loader. Larger magazines are supported.

<sup>†</sup> Base operating systems support sequential back-up mode only; additional software is required for random access backup. See Chapter 8, *Storage Devices*, for details.

Step 4c—External Expansion (*continued*)**External Disk Expansion**

- External BA350 StorageWorks modular storage pedestals are supported on all SCSI controllers.
- External BA350 supports RZ26L-VA, RZ28-VA, RZ29B-VA disk drives **only** when connected to one- and three-port (KZESC-xx) controllers.
- External BA356 supports RZ26L-VW and RZ28-VW disk drives **only** when connected to Fast Wide Differential SCSI controller.
- Order BN21H-02 cable to connect a single BA350 modular storage pedestal to controllers.StorageWorks BA350 Modular Storage Options.

**BA350-KB** Modular storage pedestal includes BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN21H-xx).

**BA353-AA** Modular storage desktop includes BA350 in desktop enclosure and 120 V power cord; requires SCSI cable (BN21H-xx).

**BA356-KC** Wide modular storage pedestal includes BA350 basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN21H-xx).

See Chapter 8, *Storage Devices*, for additional ordering information for StorageWorks modular storage expansion and supported devices.

## Step 4d—SCSI and DSSI Cables

**SCSI**

- One-port StorageWorks RAID Array 210 controller (KZESC-AA) options use PB7HA-AA for internal connection or BN21H-02 SCSI cable (or cable supplied with device) for external connection.
- Three-port StorageWorks RAID Array 210 controller (KZESC-BA) options use one or two PB7HA-AA for internal connection or BN21H-02 for Port 0 and CK-SWXCR-AA cable kit for Ports 1 and 2 for external connection. Requires additional EISA slot.
- One-port StorageWorks RAID Array 230 controller (KZPSC-AA) options use PB7HA-BA for internal connection or BN21H-02 SCSI cable (or cable supplied with device) for external connection.
- Three-port StorageWorks RAID Array 230 controller (KZPSC-BA) options use one or two PB7HA-BA for internal connection or BN21H-02 for Port 0 and CK-SWXCR-AA cable kit for Ports 1 and 2 for external connection. Requires additional EISA slot.
- PCI-based Fast Wide Differential (FWD) SCSI controller (KZPSA-BB) supports externally connected KZPSA-wide disks in the BA356 using the DWZZB wide differential to wide single-ended converter, or narrow disks using the DWZZA narrow differential to narrow or single-ended converter in BA356.
- PCI-based Fast SCSI-2 controller (KZPAA-AA) options use PB7HA-AA for internal connection or BN21H-02 (or cable supplied with device) for external connection.

**DSSI**

- EISA-based DSSI controller (KFESA-AA) uses “Micro-Ribbon” connection.
- KFESA to any external “Pin-Socket” DSSI connection (VAX 4000s, R400X) requires BC22Q-xx DSSI cable.
- KFESA to any external “Micro-Ribbon” DSSI straight connection (all other DSSI systems and storage devices requiring straight connection) requires BC21Q-xx DSSI cable.
- KFESA to any external “Micro-Ribbon” DSSI right-angle connection (all other DSSI systems and storage devices requiring right-angle connection) requires BC29S-xx DSSI cable.

**Step 5—Graphics Adapters**

- DEC OSF/1 and Windows NT systems support the integrated SVGA graphics controller with the following monitors:  
DEC OSF/1 supports 640 x 480 x 16 @ 60 Hz monitors  
Windows NT supports 640 x 480 x 16 @ 60 Hz, 640 x 480 x 256 @ 60 Hz, 800 x 600 x 16 @ 72 Hz, 800 x 600 x 256 @ 72 Hz, 1024 X 768 X 16 @ 72 Hz.
- EISA Configuration Utility (ECU) is accessible via the console port for DEC OSF/1 and OpenVMS systems. Optional graphics capability is available. Select graphics adapter, monitor, and country specific keyboard for DEC OSF/1 and OpenVMS systems if required.

**PB2GA-AA** EISA-based VGA Qvision 1024 x 768 graphics adapter (Windows NT, DEC OSF/1, OpenVMS systems)

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## Step 6—Networks and Communications

- Systems include PCI-based Ethernet controller (DE435-AA); uses one PCI slot, two additional PCI-based controllers supported per system.
- Select networking cable for DE435-AA:
  - BNE4G-02 for AUI
  - BN26K-xx for 10BaseT (twisted pair)
- BC16M-xx for ThinWire
- Maximum number of **each** EISA-based network controllers supported per system:
  - One DE422-AA
  - Two DEFEA-xA
  - Five FR-DW300-AA

<b>DE435-AA</b>	PCI-based Digital Etherworks 32-bit high-performance network interface card
<b>DE425-xx</b>	EISA-based Digital Etherworks 32-bit network interface card
<b>DE422-SA</b>	EISA-based Ethernet
<b>DEFEA-AA</b>	EISA-based DEC FDDIcontroller, Single Attachment
<b>DEFEA-DA</b>	EISA-based DEC FDDIcontroller, Dual Attachment (requires two slots)
<b>DEFEA-UA</b>	EISA-based DEC FDDI (UTP) controller
<b>DEFPA-AA*</b>	PCI-based DEC FDDIcontroller, Single Attachment
<b>DEFPA-DA*</b>	PCI-based DEC FDDIcontroller, Dual Attachment (requires two slots)
<b>DEFPA-UA*</b>	PCI-based DEC FDDI (UTP) controller
<b>DW300-AA</b>	EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation (Not supported by DECnet/OSI for OpenVMS)
<b>DNSES-AA</b>	EISA-based synchronous communications controller, DEC OSF/1 and OpenVMS systems <b>only</b>
<b>CXI01-AA</b>	ISA Async MUX Adapter, 16 lines. Expandable to 64 lines. Supported on Windows NT and DEC OSF/1 only.
<b>CXI01-AD</b>	ISA Async MUX Adapter, 16 lines. Expandable to 224 lines. Supported on Windows NT and DEC OSF/1 only.

\* Supported as data device only.

See Chapter 7, *Networks, Communications, and Cables*, and the *Network Products Guide* for more information.

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## Step 7—Additional Power Supply

- Additional power supply may be added for n+1 redundancy.
- Country specific power cord **must** be ordered separately, see Step 10.

**H7895-AA**            400-Watt power supply

See UPS information following System Specifications

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## Step 8—Terminals and Printers

Systems include two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.

Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required for each connection. A cable must be ordered unless otherwise provided. See Chapter 9, *Terminals, Scanners, Printers* for ordering information.

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## Step 9—Software

### Software Processor Code = E

- Windows NT Packaged and Base systems include Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package. Order documentation kit if required.
- DEC OSF/1 Packaged and Base systems **require** operating system media and documentation for **first** system on site.
- OpenVMS AlphaServer 1000 systems **require** V6.1-1H2 media and on-line documentation (QA-MT1AP-H8) for **first** system on site. QA-MT1AP-H8 includes media and on-line documentation **only**, in Bookreader format, on CD-ROM.

### Windows NT Servers

**QA-23CAA-GZ**            Windows NT Server documentation kit

**Step 9—Software** (*continued*)**DEC OSF/1 Interactive User Licenses**

Select user licenses and additional software as required. Media and documentation is recommended for first system on site.

DEC OSF/1 Interactive User Licenses are **not** specific to a single system and can be moved from one system to another at user discretion.

QL-MT7A9-BB	DEC OSF/1 Interactive 1-user license
QL-MT7A9-BC*	DEC OSF/1 Interactive 2-user license
QL-MT7A9-BD*	DEC OSF/1 Interactive 4-user license
QL-MT7A9-BE*	DEC OSF/1 Interactive 8-user license
QL-MT7A9-BF*	DEC OSF/1 Interactive 16-user license
QL-MT7AE-AA	DEC OSF/1 Interactive unlimited user license

QL-MT5AE-AA	DEC OSF/1 developer's extension license
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\* Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

**DEC OSF/1 Media and Documentation—required for first system on site**

QA-MT4AA-H8	DEC OSF/1 media and on-line documentation on CD-ROM
QA-MT4AA-GZ	DEC OSF/1 full hardcopy documentation

**DEC OSF/1 Layered Products CD-ROM**

QA-054AA-H8	Layered products media and documentation for DEC OSF/1 on CD-ROM
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**DECnet for DEC OSF/1**

QL-MTJAE-AA	DECnet/OSI end-system license for DEC OSF/1
QL-MTKAE-AA	DECnet/OSI extended function license for DEC OSF/1

**NAS 200 for DEC OSF/1**

QL-306AE-AA	NAS 200 for DEC OSF/1 Update license
QT-306AE-L9	NAS 200 for DEC OSF/1 Layered Product Support Service

**OpenVMS Distributed Interactive User Licenses**

OpenVMS Distributed Interactive User Licenses are **not** specific to a single system and **can** be moved between systems at user discretion. OpenVMS Distributed Interactive User Licenses can also be shared across an OpenVMS Cluster.

**Note:** OpenVMS Distributed Interactive User Licenses are architecture-specific and **cannot** be shared across a mixed OpenVMS Cluster (OpenVMS and OpenVMS VAX systems).

QL-MT3A9-BB	OpenVMS Distributed Interactive 1-user license
QL-MT3A9-BC*	OpenVMS Distributed Interactive 2-user license
QL-MT3A9-BD*	OpenVMS Distributed Interactive 4-user license
QL-MT3A9-BE*	OpenVMS Distributed Interactive 8-user license
QL-MT3A9-BF*	OpenVMS Distributed Interactive 16-user license
QL-MT3A9-BG*	OpenVMS Distributed Interactive 32-user license
QL-MT3A9-BH*	OpenVMS Distributed Interactive 64-user license
QL-MT3AA-BR*	OpenVMS Distributed Interactive 128-user license
QL-MT3AB-BR*	OpenVMS Distributed Interactive 256-user license
QL-MT2AE-AA	OpenVMS Distributed Interactive unlimited user license

\*Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

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**Step 9—Software (continued)****OpenVMS Media and Documentation—required for first system on site**

- OpenVMS AlphaServer 1000 systems **require** V6.1-1H2 hardware upgrade kit(media and on-line documentation, (QA-MT1AP-H8, for **first** system on site. QA-MT1AP-H8 includes media and on-line documentation **only**, in Bookreader format, on CD-ROM.
- OpenVMS V6.1 media and documentation on CD-ROM (full release kit with hardcopy documentation) is QA-MT1AA-H8.

**Note:** Standard OpenVMS V6.1 software distribution kit is **not** supported on AlphaServer 1000 systems.

QA-MT1AP-H8 OpenVMS V6.1-1H2 media and on-line documentation CD-ROM

QA-MT1AH-GZ OpenVMS hardcopy documentation

**OpenVMS Layered Products CD-ROM**

QA-03XAA-H8 Layered products media and documentation for OpenVMS on CD-ROM

**DECnet for OpenVMS**

QL-MTGAE-AA DECnet extended function license for OpenVMS

QL-MTHAE-AA DECnet end-system to extended function upgrade license for OpenVMS

**NAS 200 for OpenVMS**

QL-23EAE-AA NAS 200 for OpenVMS license

QT-23EAE-L9 NAS 200 for OpenVMS Layered Product Support Service

**DSSI Information**

EK-410AB-MG DSSI VMScluster Installation Guide

EK-D4AXP-TS DSSI VMScluster Troubleshooting Guide

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**Step 10—Power Cords, Keyboards, and Documentation**

- Systems ordered in the Americas and Asia Pacific Area (APA) include 120 V U.S. power cord unless alternate is specified. Select country specific power cord for **all** systems ordered in Europe.
- DEC OSF/1 and OpenVMS ordered in Americas, APA and Europe with graphics option and monitor require a country specific keyboard. Keyboard is not required if terminal is selected.

**Keyboards**

LK471-AA	North American, Japan (English)
LK471-AB	Belgian
LK471-AD	Danish
LK471-AA	United Kingdom (English)
LK471-AG	German
LK471-AI	Italian
LK471-AK	Swiss/French
LK471-AN	Norwegian
LK471-AP	French
LK471-AS	Spanish
LK471-AV	Portuguese
LK471-AQ	Canadian/English
LK471-AC	Canadian/French
LK471-AL	Swiss/German
LK471-AM	Swedish

\* If alternate keyboard is selected, and a keyboard is already included in system offering, both keyboards will ship.

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**Step 10—Power Cords, Keyboards, and Documentation (*continued*)**
**Power Cords**

BN26J-1K*	North American, Japan, 120 V
BN19H-2E	Australia, New Zealand
BN19C-2E	Central Europe
BN19A-2E	U.K., Ireland
BN19E-2E	Switzerland
BN19K-2E	Denmark
BN24X-2E	Italy
BN19S-2E	Egypt, India, South Africa
BN18L-2E	Israel

\* If alternate power cord is selected, and a power cord is included in system offering, both power cords will ship.

**Mouse**

PBXWS-AA	3-button Mouse (included in DEC OSF/1 and OpenVMS Ssystems)
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**Documentation: Customer and Service Kit**

Customer Kit	Service Kit	
QZ-00MAA-GZ	QA-00MAB-GZ	Customer and Service kit for AlphaServer 1000 4/233—English
QZ-00MPA-GZ	QA-00MPB-GZ	Customer and Service kit for AlphaServer 1000 4/233—French
QZ-00MSA-GA	QZ-00MSB-GZ	Customer and Service kit for AlphaServer 1000 4/233—Spanish
QZ-00MJA-GZ	QZ-00MJB-GZ	Customer and Service kit for AlphaServer 1000 4/233—Japanese
QZ-00MUA-GZ	QZ-00MUB-GZ	Customer and Service kit for AlphaServer 1000 4/233—Italian
QZ-00MGA-GZ	QZ-00MGB-GZ	Customer and Service kit for AlphaServer 1000 4/233—German

**Documentation: Customer Kit and Service Kit**

AG-Q95HA-BE	On-line documentation
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**Step 11—Hardware and Software Supplemental Support Services**

Step 11a—Hardware and Software Supplemental Support Services (**Americas and Asia Pacific Area only**)

**Hardware**

- Systems include three-year hardware warranty, on-site with 5 x 9, 24-hour response time.
- Select optional Hardware Supplemental Support Services if required.

FM-MK4HR-36	5 x 9, 4-hour response time
FM-MK512-36	5 x 12, 4-hour response time
FM-MK616-36	6 x 16, 4-hour response time
FM-MK724-36	7 x 24, 4-hour response time

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**Step 11a—Hardware and Software Supplemental Support Services (Americas and Asia Pacific Area only) (continued)****Software**

- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software service upgrades for Windows NT include advisory and remedial software support for the time period indicated.
- Software service upgrades for DEC OSF/1 and OpenVMS include advisory and remedial software support with new version license rights for operating system and NAS 200 for the time period indicated.

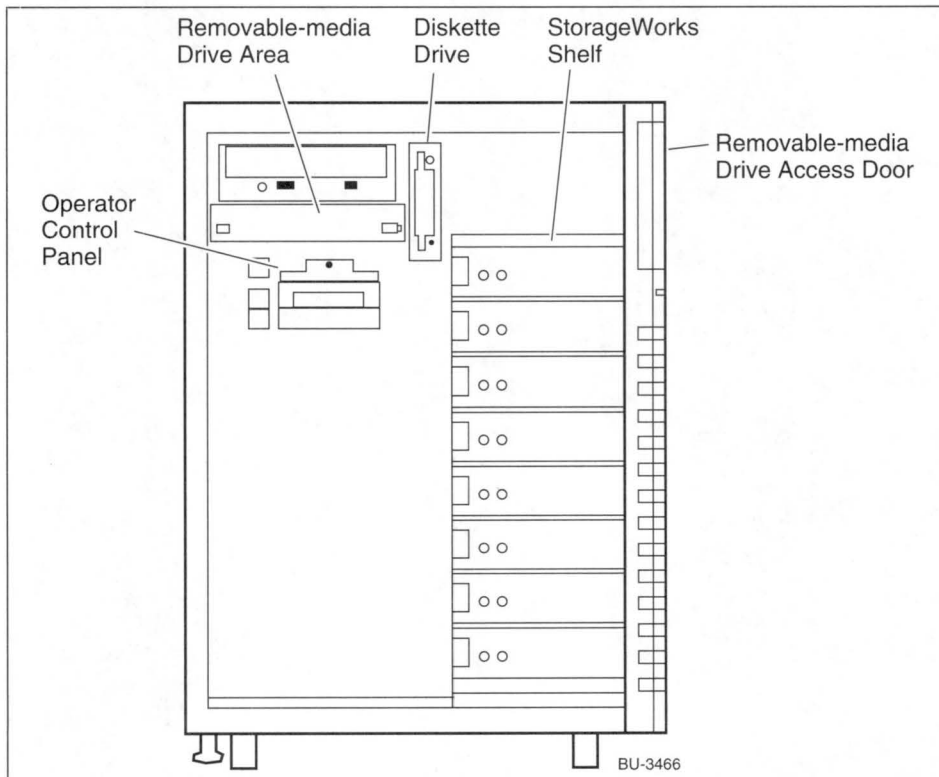
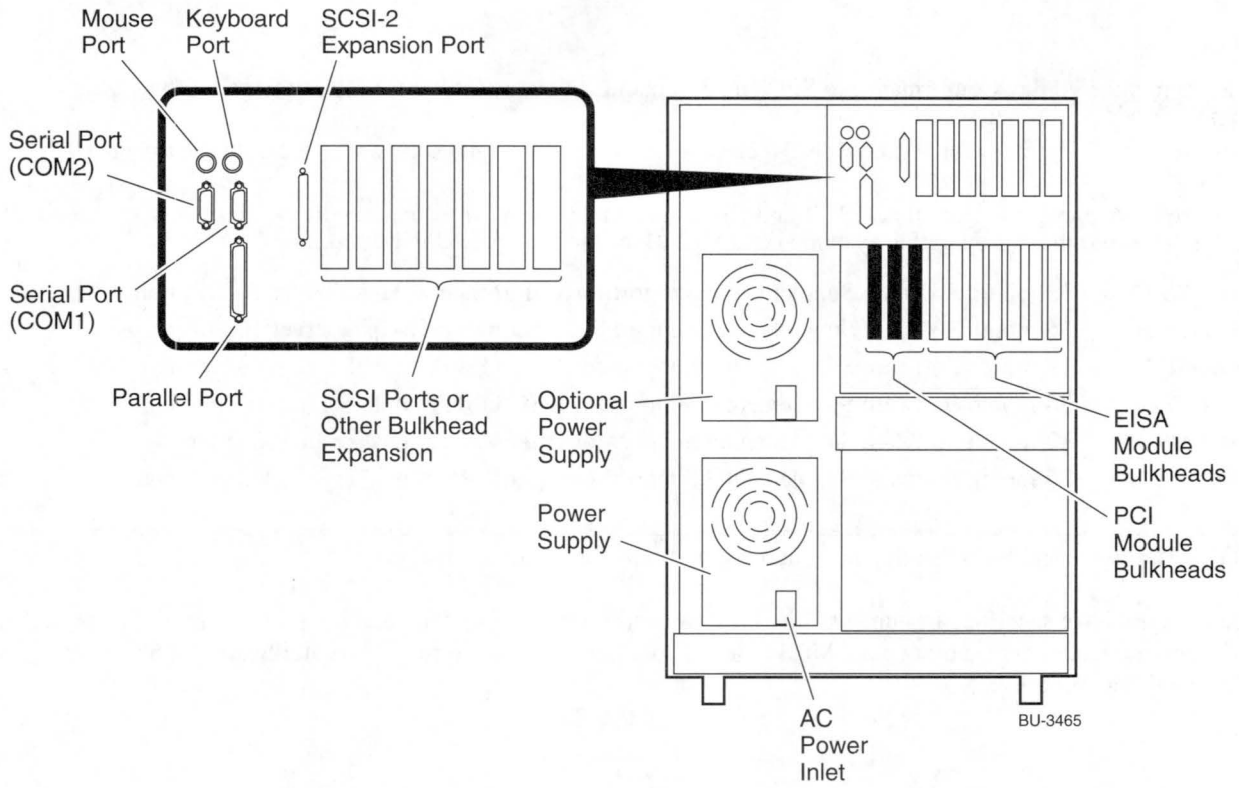
<b>FM-MKNTS-12</b>	12-month Software Supplemental Support for <b>Windows NT</b> AlphaServer 1000 systems
<b>FM-MKNTS-36</b>	36-month Software Supplemental Support for <b>Windows NT</b> AlphaServer 1000 systems
<b>FM-MKOSF-12</b>	12-month Software Supplemental Support for <b>DEC OSF/1</b> AlphaServer 1000 systems
<b>FM-MKOSF-36</b>	36-month Software Supplemental Support for <b>DEC OSF/1</b> AlphaServer 1000 systems
<b>FM-MKVMS-12</b>	12-month Software Supplemental Support for <b>OpenVMS</b> AlphaServer 1000 systems
<b>FM-MKVMS-36</b>	36-month Software Supplemental Support for <b>OpenVMS</b> AlphaServer 1000 systems

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**Step 11b—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 Exclerator tool; contact MCS Sales in your country for information on Hardware and Software Supplemental Support Services.



## Specifications

<b>Shipping Dimension</b>		
Height	60 cm (23.8 in.)	
Width*	43 cm (16.9 in.)	
Depth*	65 cm (25.6 in.)	
Weight	43 kg (95 lb) typical 71 kg (156 lb) maximum	
<b>Installed Dimensions</b>		
Height	44.2 cm (18.1 in.)	
Width	35.8 cm (14.1 in.)	
Depth	53.3 cm (23 in.)	
Weight	39 kg (86 lb) typical 51 kg (113 lb) maximum	
<b>Clearances</b>	<b>Operating</b>	<b>Service</b>
Front	75 cm (29.5 in.)	75 cm (29.5 in.)
Rear	15 cm (6 in.)	75 cm (29.5 in.)
Sides	None	75 cm (20.5 in.)
<b>Environmental</b>		
Temperature	Operating**	10–40° C (50–104° F)
	Nonoperating	Not tested
	Storage (60 days)	-40–66° C (-40–151° F)
	Rate of change	11° C/hr (20° F/hr)
Relative humidity	Operating	20–80%
	Nonoperating	20–80%
	Storage (60 days)	10–95%
	Rate of change	20%/hr
Maximum wet bulb temperature	Operating Storage (60 days)	28° C (82° F) 39° C (115° F)
	Minimum dew point temperature	Operating Storage (60 days)
Maximum heat dissipation	Current	
	Single supply Dual supply	2390 Btu/hr 4097 Btu/hr
Air flow and quality	Intake location	Front
	Exhaust location	Rear
	Particle size	N/A
	Concentration	N/A
Altitude	Operating <sup>†</sup>	2000 m (6562 ft)
	Nonoperating	3600 m (12,000 ft)
Mechanical shock	Operating	7.5 G 10 ms
	Nonoperating	20 G peak 30 ms
Vibration	Operating	10-500 Hz .1 G peak
Acoustics	Operating	Average 6.2 L <sup>wA</sup> , B
	Idle	Declared 6.5 L <sup>wAd</sup> , B 6.0 L <sup>wA</sup> , B 6.3 L <sup>wAd</sup> , B
<b>Electrical—Power Supplies are universal 120/240 Vac</b>		
Nominal ac voltage	100-120 Vac	220-240 Vac
Operating Voltage range	90-132 Vac	180-264 Vac
Power source phase	Single	Single
Nominal frequency	60 Hz	50 Hz
Frequency range	57-63 Hz	47-53 Hz
Maximum inrush current	50 Amps	50 Amps
RMS current at nominal voltage (steady state)	Single power supply	8.0 Amps
	Dual power supply	4.6 Amps each supply
		4.0 Amps 2.2 Amps each supply

## Specifications (continued)

**Electrical—Power Supplies are universal 120/240 Vac (continued)**

Power cord	Type	IEC 320 C13
	Length	190 cm (75 in.)
	U.S. plug	NEMA 5-15

**Regulatory**

Agency approvals	UL Listed to UL1950 (2nd edition) CSA Certified to CAN/CSA-C22.2 No. 950-M89 TUV EN 60950 VDE 0805 GS marked ZH1/618 FCC 15J Part 15 Class B Verified CE Class B Verified VCCI Class II ITE
Reviewed to	AS 3260 Australian Standard SS 436 14 50 Swedish Standard NZS 6661:1989 New Zealand Standard EN 60 950: 1992 European Norm IEC 950 (2nd edition)

\* Dimensions of shipping pallet; fork-lift access is on the width dimension.

\*\*Maximum operating temperature at Sea Level. Reduce by 1 C (1.8 F) for each 600 m (2000 ft) above Sea Level.

† Higher altitudes are possible if maximum operating temperature is reduced (see Temperature, above); other restrictions may apply, such as maximum permissible altitude for hard disk drives.

**Recommended UPS: PUPS Prestige Model 1250**

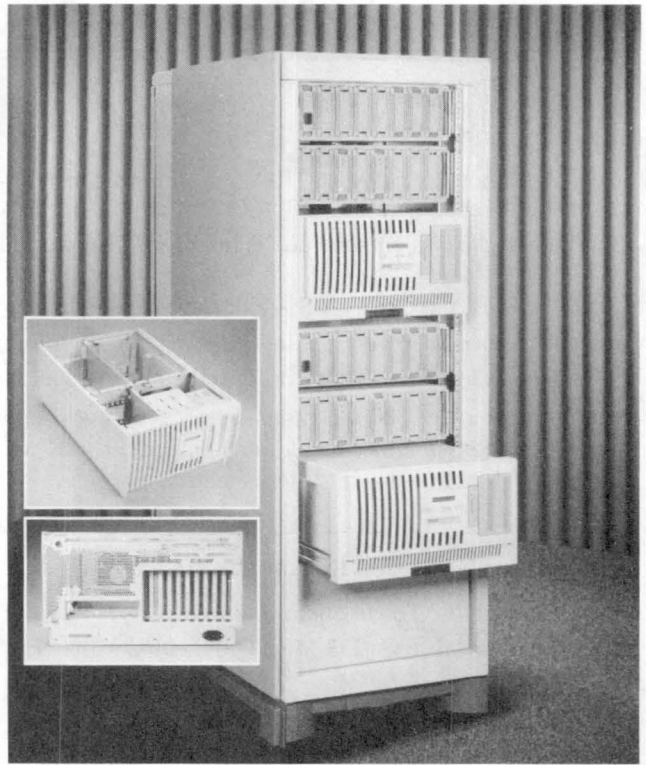
**Rating:** The UPS is a true On-Line system rated 1250VA/900W output and includes an EIA232 port for UPS monitoring. Battery support time is 9 minutes at full rated load or 15-20 minutes for a fully configured AlphaServer 1000. Unit includes "plug & play" battery extension provisions to upgrade support time.

**Service:** Units sold & serviced in the Continental US feature a 3 yr, full unit hot-swap 24-48 hr replacement warranty through vendor. Other locations include a one year warranty with return to certified service location. A 5 year vendor on-site exchange upgrade (see below) and a Digital on-site exchange service contract is also available.

<b>4N-AEABF-AA</b>	For 120 Vac, 50 or 60 Hz systems. Includes detachable 6-foot input power cord with 5-15P plug and four NEMA 5-15R output receptacles.
<b>4N-AEABF-BF</b>	For 240 Vac, 50 or 60 Hz systems. Features selectable 220, 230 or 240Vac output. Uses system power cord for detachable IEC 320 input connection at UPS. Unit has four IEC 320 receptacles and comes with two output jumpers with IEC320 connectors for connection to system.
<b>4N-AEWAR-G1</b>	5 Year on-site exchange warranty upgrade (available in Intercontinental U.S. only at time of purchase)

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

<b>4N-AEAES-AA/AB</b>	Windows NT for Alpha and Intel x86, includes cables, media and documentation
<b>4N-AEAES-ED</b>	DEC OSF/1, includes cables, media and documentation
<b>4N-JBBBB-GG</b>	OpenVMS, includes cables, media and documentation



## AlphaServer 1000 4/233 Rackmount and Cabinet Systems

### Product Description

AlphaServer 1000 4/233 Rackmount Systems are rackmountable versions of the Alpha uniprocessor PCI/EISA-based pedestal server. These systems offer 2 Mbyte ECC cache and performance ratings of 165.3 SPECint92 and 222.9 SPECfp 92, and the choice of three operating systems: Microsoft Windows NT Server, DEC OSF/1 and OpenVMS. The AlphaServer 1000 Rackmount family offers investment protection through the upscalability of the system in a neatly expandable cabinet. Integration of options in the same cabinet saves additional costs as well as valuable floor space. In addition, the daughter-card CPU architecture is designed to be compatible with future generations of Alpha chips, and can be easily upgraded for higher performance.

AlphaServer 1000 Rackmount System offers up to six internal storage devices, including floppy diskette drive, CD-ROM, and the provision for a tape drive. It supports up to 512 Mbytes of memory as well as 6 Gbytes of internal storage with three 2.1-Gbyte disks. Additional storage is available through four SCSI expansion ports located on rear panel of system for connecting StorageWorks shelves.

AlphaServer 1000 Rackmount System is designed for mounting within a 19-inch wide EIA industry-standard cabinet for use in the office, computer room, or shop floor installations. Rackmounting the AlphaServer 1000 4/233 enables system expansion and growth by using a single cabinet enclosure to configure system requirements.

Items to consider when selecting an AlphaServer 1000 4/233 Rackmount System:

- AlphaServer 1000 4/233 Rackmount requires 10.5-inches of vertical rack space.
- Rackmounted StorageWorks shelf requires 7 inches of vertical space, however a front-mounted and rear-mounted storage shelf can be mounted back-to-back in the same 7-inch space.
- Cabinet enclosure must be ordered separately if a Packaged or System Building Block (SBB) rackmount system is ordered.

## Step 1—Systems

Select system.

- Systems include 120 V or 240 V power cord depending on the variant chosen. Select country-specific keyboard for all systems except Windows NT 120 V which includes a keyboard.
- Windows NT systems include Windows NT Server plus 5-client access, V3.5 media (CD-ROM), and license in shrink-wrapped package.
- DEC OSF/1 and OpenVMS AXP systems include factory-installed software on 2.1 Gbyte hard disk drive.
- Uninterruptible Power Supplies (UPS); see UPS information following System Specifications.
- Options ordered will be factory installed unless specified as spares.

**Note:** AlphaServer 1000 rackmount systems do **not** support dual power supply configurations.

Ordering guidelines apply to rackmounted systems. For additional configuration information refer to AlphaServer 1000 4/233 Deskside system menus.

### AlphaServer 1000 4/233 Rackmount systems includes

- Rackmountable Tower enclosure with
  - DECchip 21064A 233 MHz CPU with 2 Mbyte ECC on-board cache
  - Ten expansion slots: Seven EISA slots, two PCI slots and one PCI/EISA combination slot
  - Integrated PCI-based Fast SCSI-2 controller with DMA and external SCSI-2 connector
  - Integrated SVGA graphics controller (supported on Windows NT and DEC OSF/1 AXP systems)
  - 20 industry-standard SIMM slots
  - 6 internal storage slots:
    - One dedicated diskette slot
    - One CD-ROM slot
    - One additional removable media slot
    - Three hard disk drive slots
  - 400-Watt power supply
  - Two serial ports, support full modem control
- One bi-directional enhanced parallel port
- PS/2 style keyboard port and mouse port
- 1.44-Mbyte diskette drive (RX23L) in dedicated slot
- 600 Mbyte CD-ROM drive
- Two-button mouse (Windows NT systems)
- Three-button mouse (DEC OSF/1, OpenVMS Systems)
- Power cord (120 V/240 V as appropriate)
- Integrated Server Management
- Hardware Warranty: Three-year on-site\*
- Software Warranty: 90-day SPD conformance with advisory telephone support\*
- Windows NT Server plus 5-client access, V3.5 media kit, **or** DEC OSF/1 2-user base license and NAS 200 license, **or** OpenVMS base license plus 1-user license and NAS 200 license.

\* Service upgrades are available; see Step 11, Hardware and Software Supplemental Services on AlphaServer 1000 4/233 deskside system menu.

### AlphaServer 1000 4/233 Rackmount Packaged Systems also include

- 64 Mbytes memory
- 2.1 Gbyte hard disk drive
- High-performance PCI-based Ethernet (DE435-AA) — uses one PCI slot.
- 600 Mbyte CD-ROM — uses one removable media slot.
- Windows NT and DEC OSF/1 Packaged systems include entry level graphics (DEC864) 1280 x 1024 x 256 colors, 72 Hz; uses one PCI slot.
- Windows NT packaged servers ordered in America and APA include U.S. keyboard. Select country-specific keyboard for all packaged systems ordered in Europe.
- DEC OSF/1 and OpenVMS systems do not include keyboard.

**Note:** Cabinet enclosure must be ordered separately

### AlphaServer 1000 4/233 Rackmount Packaged Systems

Order Number	Operating System	Memory	Hard Disk Drive	Graphics	Monitor	Ethernet
PB7RD-AA/AB	Windows NT	64 Mbyte	1 x 2.1 Gbyte	Included	Recommended	Included
PB7RD-FA/FB	DEC OSF/1	64 Mbyte	1 x 2.1 Gbyte	Included	Recommended	Included
PB7RD-MA/MB	OpenVMS <sup>1</sup>	64 Mbyte	1 x 2.1 Gbyte	Recommended	Recommended	Included

1 EISA Configuration Utility (ECU) is accessible via the console port for OpenVMS systems.

**Note:** xA = 120 V and xB = 240 V



## Step 1—Systems (continued)

### AlphaServer 1000 4/233 Rackmount System Building Blocks

- DEC OSF/1 and OpenVMS Base systems **require:**
  - Minimum of 32 Mbytes memory
  - One 1.05 Gbyte hard disk drive
- Graphics option, monitor, and keyboard are available as options for DEC OSF/1 and OpenVMS systems, if required.
- Windows NT Base systems **require:**
  - Minimum of 16 Mbytes memory
  - One 1.05 Gbyte hard disk drive
  - Graphics monitor
- Windows NT base systems ordered in America and APA include U.S. keyboard. Select country-specific keyboard for all base systems ordered in Europe.

**Note:** Cabinet enclosure must be ordered separately

### AlphaServer 1000 4/233 Rackmount System Building Blocks

Order Number	Operating System	Memory	Hard Disk Drive	Graphics	Monitor	Ethernet
PB7RE-AA/AB	Windows NT	Mandatory	Mandatory	Included	Recommended	Recommended
PB7RE-FA/FB	DEC OSF/1	Mandatory	Mandatory	Included	Recommended	Recommended
PB7RE-MA/MB	OpenVMS	Mandatory	Mandatory	Recommended	Recommended	Recommended

**Note:** xA = 120 V and xB = 240 V

### AlphaServer 1000 4/233 Cabinet Packaged Systems include

- Cabinet enclosure H9A10-CE/-CF, 120 V or 240 V
- AlphaServer 1000 4/233 Rackmount System
- BA35R-SF front-mounted StorageWorks shelf with one RZ28-VA 2.1 Gbyte 3.5-inch disk drive installed\*
- BN21H-02 external cable connection to BA35R (BN21H-02)
- AlphaServer 1000 Rackmount Cabinet Systems ship with dual (2) H7600-xx cabinet power distribution units and the following power cords:
  - 120 V systems (H7600-AA) = 2 x 24A terminated with NEMA L5-30P (plugs) and require NEMA L5-30R (receptacles)
  - 240 V systems (H7600-AB) = 2 x 16A terminated with NEMA L6-20P (plugs) and require NEMA L6-20R (receptacles)
- H9A10-CE/CF Cabinet Dimensions
  - Outside: 66.9-inches high, 23.62-inches wide, 33.8-inches deep
  - Usable internal rackmount: 59.5-inches high, 19-inches wide, 32.2-inches deep

\* AlphaServer 1000 4/233 Cabinet Packaged systems **require** storage controller to support BA35R-SF with RZ28-VA hard disk installed. Select storage controller from Step 4b.

### AlphaServer 1000 4/233 Cabinet Packaged Systems

Order Number	Description
PB71R-AA/AB	Windows NT Packaged rackmount system (PB7RD-AA/AB) 64-Mbytes memory, one 2.1 Gbyte hard disk drive and Ethernet controller
PB71R-FA/FB	DEC OSF/1 Packaged rackmount system (PB7RD-FA/FB) 64-Mbytes memory, one 2.1 Gbyte hard disk drive and Ethernet controller
PB71R-MA/MB	OpenVMS Packaged rackmount system (PB7RD-MA/MB) 64-Mbytes memory, one 2.1 Gbyte hard disk drive and Ethernet controller

## Step 2—Memory

- Systems include 64-Mbyte memory, one PB7MA-AC memory kit.
- System supports four memory kits (each kit includes five industry-standard SIMMs, the fifth SIMM in each kit is for ECC support).
- System maximum of 512 Mbytes can only be obtained by replacing 64-Mbyte (standard in all systems) with 128-Mbyte kit.

PB7MA-AA	16-Mbyte 70ns (5x4 Mbyte SIMMs) memory kit
PB7MA-AB	32-Mbyte 70ns (5x8 Mbyte SIMMs) memory kit
PB7MA-AC	64-Mbyte 70ns (5x16 Mbyte SIMMs) memory kit
PB7MA-AD	128-Mbyte 70ns (5x32 Mbyte SIMMs) memory kit

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### Step 3—Monitors

- Windows NT systems require a graphics monitor to run **all** functions.
- EISA Configuration Utility (ECU) is accessible via the console port for DEC OSF/1 and OpenVMS systems. Optional graphics capability is available. Select graphics adapter, monitor, and country specific keyboard for DEC OSF/1 and OpenVMS systems if required.
- Graphics monitors other than those listed below can be used if compatible with graphics adapter included with system  
DEC OSF/1 supports 640 x 480 x 16 @ 60 Hz  
Windows NT supports 640 x 480 x 16 @ 60 Hz, 640 x 480 x 256 @ 60 Hz, 800 x 600 x 16 @ 72 Hz, 800 x 600 x 256 @ 72 Hz, 1024 X 768 X 16 @ 72 Hz.

<b>VRC15-PA/P4</b>	15-inch color monitor, 120 V, 240 V N.H./S.H., SVGA, 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes jumper power cord and video cable.
<b>VRT17-PA/P4</b>	17-inch high-resolution color monitor, 120 V, 240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use..
<b>VRC21-PA/P4</b>	21-inch high-resolution color monitor, 120 V, 240 V N.H./S.H., 1280 x 1024 resolution, multi-sync, MPR2, Energy Star compliant, includes video cable and North American power cord. Order country-specific power cord for 240 V use.

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### Step 4—Storage

Select storage devices if required.

- Integral FAST SCSI-2 controller supports maximum of seven devices: two internal 5.25-inch removable media devices, three internal 3.5-inch RZ26L/RZ28-EJ variants only, and one external storage device

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#### Step 4a—Internal Storage

- All systems include 1.44 Mbyte diskette drive and 600 Mbyte CD-ROM drive
  - Rackmount Packaged systems include 2.1 Gbyte hard disk drive
  - Cabinet Packaged systems include two 2.1 Gbyte hard disk drives
- Internal storage is limited to three 3.5-inch hard disk drives RZ26L/RZ28 -EJ variants only.

#### Removable Media Devices

<b>PBXRD-BA</b>	600 Mbyte 5.25-inch half-height CD-ROM (RRD44) drive
<b>PBXTZ-AA</b>	2.0 Gbyte 5.25-inch half-height SCSI QIC tape drive
<b>PBXTL-CA</b>	8.0 Gbyte 3.5-inch half--height SCSI 4mm DAT drive

#### Hard Disk Drives

<b>RZ26L-EJ</b>	1.05-Gbyte, 3.5-inch half-height disk drive
<b>RZ28-EJ</b>	2.1-Gbyte, 3.5-inch half-height disk drive

## Step 4b—Storage Controllers

## Configuration Rules

- StorageWorks RAID Array 210 (KZESC-xx) includes EISA backplane RAID controller and StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF and Windows NT.
- StorageWorks RAID Array 230 (KZPSC-xx) includes PCI backplane RAID controller and StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF and Windows NT.
- One port PCI based Fast Wide Differential (FWD) SCSI controller (KZPSA-BB) supports externally connected KZPSA-wide disks in the BA36R using the DWZZB wide differential to wide single-ended converter, or narrow disks using the DWZZA narrow differential to narrow or single-ended converter in BA35R.
- Each KZESC-xx **requires** a PB7HA-AA SCSI cable kit.
- Each KZPSC-xx **requires** a PB7HA-BA SCSI cable kit.
- Maximum of three PCI-based SCSI controllers supported.
- Maximum number of each EISA-based storage controller supported per system:
  - Two KZESC-xx (One- and Three-port controllers)
  - Maximum number of EISA-based controllers of all types is limited to the total number of available EISA slots
- Each controller requires one bus slot
- External SCSI cables are **not** included and must be ordered separately\*
- External DSSI cables are **not** included and must be ordered separately

**Note:** Rackmount Cabinet systems include one BN21H-02 narrow SCSI cable for connection to BA35R-SF.

## Storage Controllers

<b>KZESC-AA*</b>	One-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit. PB7HA-AA required for internal connection. BN21H-02 required for external connection
<b>KZESC-BA*</b>	Three-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit. Requires CK-SWXRK-AA (provides two internal cables for two SCSI expansion slots). Three BN21H-02 external cables (for connection to three BA35R-xx rackmount StorageWork shelves) are also required.
<b>KZPSA-BB</b>	One port PCI based high-performance Fast Wide Differential (FWD) SCSI controller supports external drives only.
<b>KZPSA-BB</b>	PCI-based One-port high-performance Fast Wide Differential SCSI controller.
<b>KZPSC-AA</b>	One port PCI-based high-performance RAID controller
<b>KZPSC-BA</b>	Three port PCI-based high-performance RAID controller
<b>KZPAA-AA</b>	PCI-based One-port high-performance Fast SCSI-2 controller (requires BN21H-02 for external connection)
<b>KFESA-AA<sup>†</sup></b>	EISA-based single-DSSI controller (OpenVMS systems <b>only</b> )

## SCSI Cables

<b>PB7HA-AA</b>	Narrow SCSI cable and terminator, required for KZESC-AA controllers
<b>CK-SWXRK-AA</b>	Narrow SCSI internal cables, required for each KZESC-BA controllers
<b>BN21H-02</b>	Narrow SCSI external cable, required to connect single BA35R-xx Rackmount StorageWorks shelf to controller
<b>PB7HA-BA</b>	Fast Wide Differential SCSI internal cables and terminator (68-pin)

\* See Chapter 8, *Storage Devices*, for additional information on StorageWorks RAID Array 210 Subsystems

<sup>†</sup> Not supported as boot device. DSSI/SCSI controller (HSD05-xx) is not supported in internal storage assembly due to physical constraint.

## Step 4c—External Storage

- Integral Fast SCSI-2 controller can be extended outside the system enclosure via the SCSI-out port to support external SCSI devices. Maximum external bus length including cable and device cannot exceed 1.0 meter.
- External tape drives are also supported on optional PCI-based high-performance Fast SCSI-2 controller (KZPAA-AA), maximum external bus length including cable and tape device cannot exceed 3.0 meter.
- External tape drives are not supported on One- and Three-port (KZESC-xx) high performance Fast-SCSI-2 controllers.
- Each tabletop tape device **requires** a three-foot SCSI cable (BC09D-03).

Step 4c—External Storage (*continued*)**External Tapes support on Windows NT servers**

**TLZ07-DA** 8.0 Gbyte 4mm DAT tabletop tape drive

**TLZ7L-DA** 32.0 Gbyte 4-mm DAT autoloader

**External Tapes support on DEC OSF/1 and OpenVMS servers**

- Each tabletop tape device **requires** 3-foot SCSI cable (BC09D-03)

**TLZ07-DA** 8.0 Gbyte 4mm DAT tabletop tape drive

**TLZ7L-DA\*** 32.0 Gbyte 4-mm DAT autoloader

**TZK11-DA** 2.0 Gbyte 5.25-inch tabletop QIC tape drive

\* Base operating systems support sequential back-up mode only; additional software is required for random access backup. See Chapter 8, Storage Devices, for details.

**External Disk Expansion**

- External BA35R Rackmount StorageWorks shelves are supported on all Fast SCSI-2 controllers.
- External BA35R Rackmount StorageWorks shelves support RZ26L-VA and RZ28-VA disk drives **only** when connected to One- and Three-port (KZESC-xx) controllers.
- External BA36R Rackmount StorageWorks shelves support RZ26L-VW, RZ28-VW, and RZ29-VW disk drives when connected to Fast Wide Differential SCSI controller.
- AlphaServer 1000 Rackmount systems provide four SCSI expansion ports on rear panel of system. Four BA35R expansion shelves are supported by rear panel SCSI expansion ports.
- Order BN21H-02 cable to connect a single BA35R StorageWorks shelf to controllers.

**Rackmount StorageWorks Shelves**

**BA35R-SF** Rackmounted BA350 front mounted StorageWorks shelf for narrow SCSI disks

**BA35R-SR** Rackmounted BA350 rear mounted StorageWorks shelf for narrow SCSI disks

**BA36R-AF** Rackmounted BA350 front mounted StorageWorks shelf for wide SCSI disks

**BA36R-AR** Rackmounted BA350 rear mounted StorageWorks shelf for wide SCSI disks

## Step 4d—SCSI and DSSI Cables

**SCSI**

- One-port StorageWorks RAID Array 210 controller (KZESC-AA) options use BC25R-3B for internal connection or BN21H-02 SCSI cable (or cable supplied with device) for external connection.
- Three-port StorageWorks RAID Array 210 controller (KZESC-BA) options use one CK-SWXRK-AA which provides two internal cables for connection to two SCSI expansion slots and three BN21H-02 cables for connection to three BA35R-xx Rackmount StorageWorks Shelves.
- PCI-based Fast SCSI-2 controller (KZPAA-AA) options use BC24R-3B for internal connection or BN21H-02 (or cable supplied with device) for external connection.
- PCI-based Fast Wide Differential (FWD) SCSI controller (KZPSA-BB) supports externally connected KZPSA-wide disks in the BA36R using the DWZZB wide differential to wide single-ended converter, or narrow disks using the DWZZA narrow differential to narrow or single-ended converter in BA35R.

**DSSI**

- EISA-based DSSI controller (KFESA-AA) uses "Micro-Ribbon" connection.
- KFESA to any external "Pin-Socket" DSSI connection (VAX 4000s, R400X) requires BC22Q-xx DSSI cable.
- KFESA to any external "Micro-Ribbon" DSSI straight connection (all other DSSI systems and storage devices requiring straight connection) requires BC21Q-xx DSSI cable.
- KFESA to any external "Micro-Ribbon" DSSI right-angle connection (all other DSSI systems and storage devices requiring right-angle connection) requires BC29S-xx DSSI cable.
- KFESA to HSD05 requires BC29S-xx.
- HSD05 to HSD05 (inside system) requires BC29U-02.
- HSD05 to HSD05 (between systems) requires BC29T-09.
- HSD05 to any external "Pin-Socket" DSSI connection (VAX 4000s, R400X) requires BC29R-xx.
- HSD05 to any external "Micro-Ribbon" DSSI connection (all other DSSI systems and storage devices) requires BC29S-xx for straight connection to external device; or BC29T-09 for right-angle connection to external device.

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## Step 5—Cabinet Enclosure

Select cabinet enclosure for Packaged and Base AlphaServer 1000 4/233 Rackmount systems, if required.

- H9A10-CE/CF 19-inch EIA Rackmount Cabinet Enclosure Dimensions
  - Outside: 66.9-inches high, 23.62-inches wide, 33.8-inches deep
  - Internal usable rackmountable space: 59.5-inches high, 19-inches wide, 32.2-inches deep

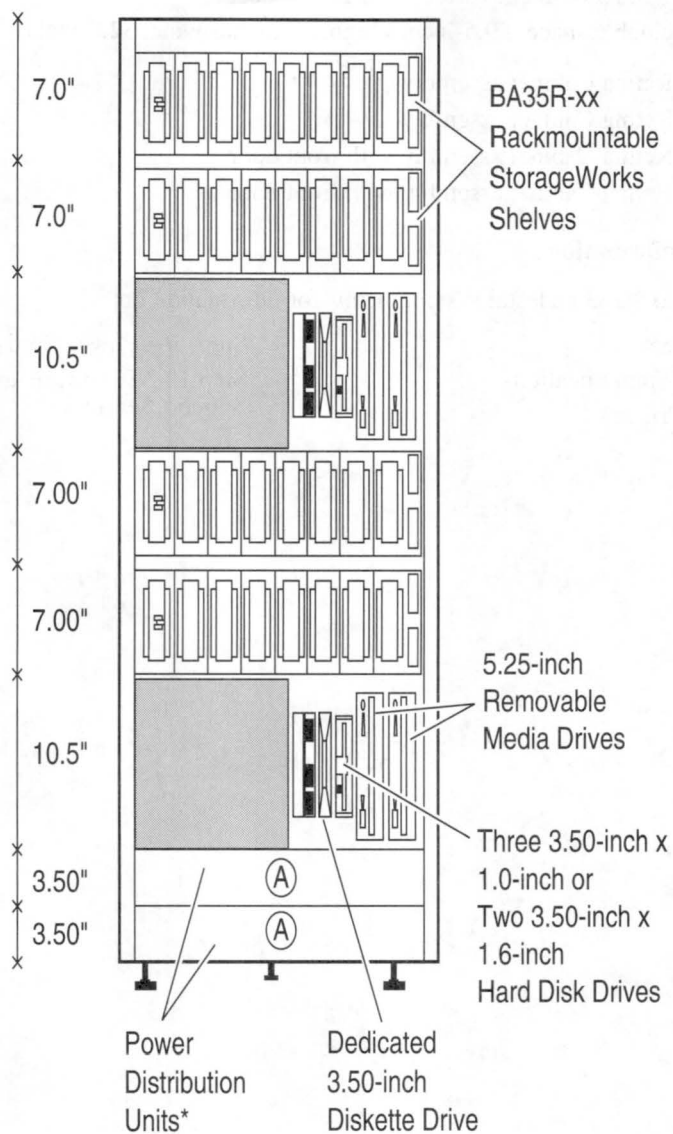
<b>HA9A10-CE</b>	120 V Retma Cabinet assembly	<i>\$ 3000</i>
<b>HA9A10-CF</b>	240 V Retma Cabinet assembly	
<b>HA9A10-CG</b>	120 V Retma Cabinet assembly with front door	
<b>HA9A10-CH</b>	240 V Retma Cabinet assembly with front door	

### Additional Configuration Information

Refer to the AlphaServer 1000 4/233 pedestal system menus for information on:

- Step 5—Graphics Adapters
- Step 6—Networks and Communications
- Step 7—Terminals and Printers
- Step 8—Software
- Step 9—Power Cords, Keyboards, and Documentation
- Step 10—Hardware and Software Supplemental Support Services

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(A) Uninterrupted Power Supplies are installed in Power Distribution Unit slots if selected as options.

H9A10-CE/-CF Cabinet requires 2 x 120V 60Hz NEMA L5-30R or 2 x 240V 50Hz NEMA L6-15R.

BU-3469

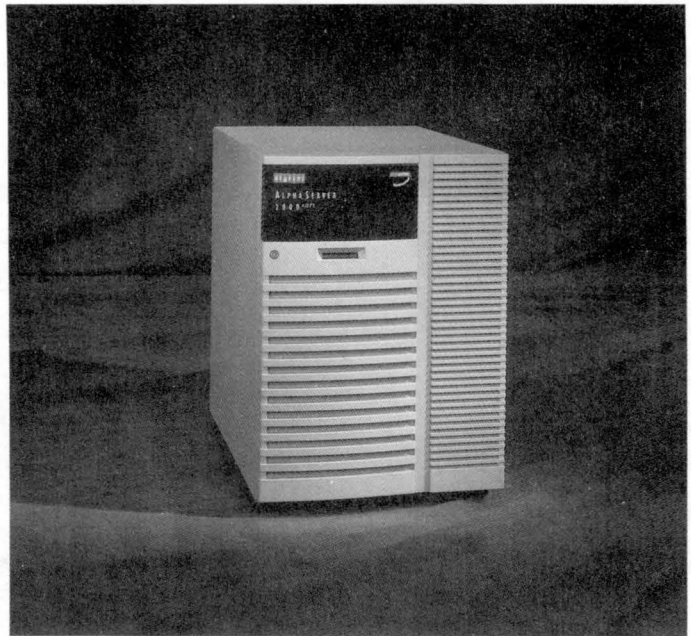
## Specifications

<b>Physical Characteristics</b>		
Height	26.7 cm (10.5 in.)	
Width	48.2 cm (19.0 in.)	
Depth	73.7 cm (29.0 in.)	
Weight	29 kg (65 lb) typical	
<b>Clearances</b>	<b>Service</b>	
Front	124.04 cm (50.0 in.)	
Rear	61.00 cm (24.0 in.)	
Sides	None	
<b>Environmental</b>		
Temperature	Operating	10–35° C (50–95° F)
	Nonoperating	Not tested
	Storage (60 days)	-40–66° C (-40–151° F)
Relative humidity	Operating	20–80% non-condensing
	Nonoperating	20–80% non-condensing
	Storage (60 days)	10–95% non-condensing
	Rate of change	20% per hour
Air flow and quality	Intake location	Front
	Exhaust location	Rear
Altitude	Operating	2000 m (6562 ft)
	Nonoperating	3600 m (12,000 ft)
Mechanical shock	Nonoperating	20 G peak 30 ms
<b>Electrical—Power Supplies are universal 120/240 Vac</b>		
Voltage range (fixed)	120 Vac	220-240 Vac
Operating Voltage range	90-132 Vac	180-264 Vac
Power source phase	Single	Single
Nominal frequency	50-60 Hz	
Frequency range	57-63 Hz	47-53 Hz
Power cord	Length	4.57 m (15 ft.)
	U.S. plug	NEMA L5-30P, Socket NEMA L5-30R
	240 V plugs	NEMA L6-20P, Socket NEMA L6-20R
<b>Regulatory</b>		
Agency approvals	UL Listed to UL1950 (2nd edition) CSA Certified to CAN/CSA-C22.2 No. 950-M89 TUV EN 60950 VDE 0805 GS marked ZH1/618 EMKO-TSE (74-SEC), summary of Nordic deviations FCC 15J Part 15 Verified Class A CE Verified Class A VCCI Class II ITE	
Reviewed to	AD 3260 Australian standard AS/NZS 3260:1963, Australia/New Zealand standard EN 60 950/A1, JAN. 1993 European norm IEC950 (2nd edition)	

## Recommended UPS for AlphaServer 1000 4/233 Rackmount System

4N-AEABF-CA	1.5kVA Rackmount 120V UPS; rackmount hardware included for mounting; Dimensions: 6.17"H x 17"W x 24"D; Weight: 81 lbs
4N-AEABF-BG*	1.5kVA 240V UPS; Dimensions: 9.6"X x 5.6"W x 15.8"D; Weight: 33 lbs

\* Requires a rackmount kit. Select 4N-AEAE0-RA = 22-27" deep or 4N-AEAE0-RB = 28-34" deep.



## AlphaServer 2000 4/233 and 4/275 Systems

### Product Description

The AlphaServer 2000 systems are low-cost Alpha symmetric multiprocessing (SMP) PCI/EISA-based servers. They offer support for OpenVMS, DEC OSF/1, and Windows NT, and are suitable for general-purpose commercial, high-performance application and database, and PC LAN Superserver computing environments.

AlphaServer 2000 4/233 (Alpha 21064A microprocessor) features a 233-MHz CPU with 1 Mbyte cache. The AlphaServer 2000 4/275 (Alpha 21064A microprocessor) features a 275 MHz CPU with 4 Mbyte cache; both can be configured with up to two processors with symmetric multiprocessing. They support up to 1 Gbyte of memory and 32 Gbytes of internal disk storage.

The system bus bandwidth is 667 Mbytes/second and the high-performance PCI I/O subsystem has a peak bandwidth of 132 Mbytes/second. The 33 Mbyte/second EISA I/O bus supports a variety of industry-standard EISA options.

The AlphaServer 2000 systems support StorageWorks storage devices. High-availability features, including internal RAID and hot swap of disks, offer data security in mission-critical environments. RAID levels supported are 0 (striping), 1 (shadowing), 0+1 (striped shadowing), and 5 (striping with parity).

AlphaServer 2000 systems are offered in a compact pedestal enclosure that easily fits beneath a desk.

The AlphaServer 2000 Pedestal System menus are organized as follows:

- Windows NT Systems
- DEC OSF/1 Systems
- OpenVMS Systems
- EISA Bus IRQ Address Table (DEC OSF/1 and OpenVMS systems)
- System and Storage Diagrams
- Specifications

## Step 1—Windows NT Server Systems

Select system.

- System includes Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package.
- Systems ordered in the Americas and Asia Pacific Area (APA) include 120 V power cord and U.S. keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.
- Uninterruptable Power Supplies are available; see UPS Information in System Specifications.
- Options ordered will be factory installed unless specified as **spares**.

### AlphaServer 2000 4/233 and 4/275 (Windows NT) Systems include

- DECchip 21064A
  - 233-MHz CPU with 1 Mbyte onboard cache, **or**
  - 275-MHz CPU with 4 Mbyte onboard cache.
- BA720 pedestal enclosure which includes:
  - Integral 10 Mbyte/s Fast SCSI-2 controller (8-bit)
  - Two EIA-232 asynchronous serial ports, 9-pin D-subminiature connectors
  - One bi-directional enhanced parallel port, 25-pin D-subminiature connector
  - PS/2 style keyboard port and mouse port
  - 8-slot RZxx storage assembly (8/16-bit)
  - Two 5.25-inch, half-height removable media slots
  - Seven EISA slots
  - Three PCI slots
  - 400-Watt power supply
- 2.88 Mbyte diskette drive in dedicated slot
- 600 Mbyte CD-ROM (uses one removable media slot)
- 2.0 Gbyte hard disk drive (uses one storage assembly slot)
- 1280 x 1024 Video Graphics Adapter (uses one EISA slot)
- Ethernet DE435-AA Card (uses one PCI slot)
- 64 Mbytes memory
- 3-button mouse
- Keyboard (Americas and APA orders only)
- Power cord (Americas and APA orders only)
- Customer documentation
- EISA Configuration Utility (ECU)
- Hardware Warranty: Three-year, on-site, with 5 x 9, 24-hour response time\*
- Software Warranty: 90-day SPD conformance with advisory telephone support\*
- Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package

\* Service upgrades are available; see Step 11, Hardware and Software Supplemental Services.

Order Number	Memory	Storage RZ28-VW = 2.0 Gbytes	EISA/PCI slots available for additional options
<b>AlphaServer 2000 4/233—233 MHz Windows NT Systems</b>			
DN-241D1-H9	64 Mbytes	1 x 2.0 Gbytes	6 EISA/2 PCI
DN-241D1-J9	128 Mbytes	1 x 2.0 Gbytes	6 EISA/2 PCI
<b>AlphaServer 2000 4/275—275 MHz Windows NT Systems</b>			
DN-242D1-H9	64 Mbytes	1 x 2.0 Gbytes	6 EISA/2 PCI
DN-242D1-J9	128 Mbytes	1 x 2.0 Gbytes	6 EISA/2 PCI

## Step 2—CPU Symmetrical Multiprocessing (SMP) Upgrade

Order up to one additional CPU, for a maximum of two. Two CPU systems require additional power supply (see Step 7).

- **Additional CPU must match the speed of CPU in system**

455NR-AA	Windows NT Server upgrade includes one 233 MHz CPU processor; SMP license is not required.
460NR-AA	Windows NT Server upgrade includes one 275 MHz CPU processor; SMP license is not required.

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### Step 3—Memory

- Select memory from Step 3a for 64 Mbyte systems (DN-24\*D1-H9)
- Select memory from Step 3b for 128 Mbyte systems (DN-24\*D1-J9)

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#### Step 3a—Memory for 64 Mbyte systems (DN-24\*D1-H9)

- DN-24\*D1-H9 system include 64 Mbytes memory (MS-452-AA plus one MS452-UA); order additional memory using one of the following tables. **No other combinations are supported**

**Table 1—For system maximum of 256 Mbyte (in small increments)**

Total Memory Required	Order Quantities Shown	
	MS452-UA	MS452-AA
96 Mbyte	1	0
128 Mbyte	2	0
160 Mbyte	2	1
192 Mbyte	3	1
256 Mbyte	5	1

**Table 2—For system maximum of 640 Mbyte (in large increments)**

Total Memory Required	Order Quantities Shown		
	MS452-UA	MS452-BA	MS452-UB
96 Mbyte	1	0	0
128 Mbyte	2	0	0
256 Mbyte	2	1	0
384 Mbyte	2	1	1
640 Mbyte	2	1	3

<b>MS452-AA</b>	32 Mbyte memory board (carrier with 8 x 4 Mbyte SIMMs)
<b>MS452-BA</b>	128 Mbyte memory board (carrier with 8 x 16 Mbyte SIMMs)
<b>MS452-UA</b>	32 Mbyte add-on memory (8 x 4 Mbyte SIMMs) for MS452-AA
<b>MS452-UB</b>	128 Mbyte add-on memory (8 x 16 Mbyte SIMMs) for MS452-BA

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#### Step 3b—Memory for 128 Mbyte systems (DN-24\*D1-J9)

- DN-24\*D1-J9 system include 128 Mbytes memory (MS-452-BA); order additional memory using the following table. **No other combinations are supported**

**Table for system maximum of 1.0 Gbyte**

Total Memory Required	Order Quantities Shown	
	MS452-BA	MS452-UB
256 Mbyte	0	1
384 Mbyte	0	2
512 Mbyte	0	3
640 Mbyte	1	3
768 Mbyte	1	4
1.0 Gbyte	1	6

<b>MS452-BA</b>	128 Mbyte memory board (carrier with 8 x 16 Mbyte SIMMs)
<b>MS452-UB</b>	128 Mbyte add-on memory (8 x 16 Mbyte SIMMs) for MS452-BA

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## Step 4—Monitors and Graphics Options

- System requires a graphics monitor to run **all** functions.
- Graphics adapter included in system supports 1024 x 768 and 1280 x 1024 resolution, 72-Hz monitors.
- Graphics monitors other than those listed below can be used if compatible with graphics adapter included with system.
- Select graphics option from Step 4a if required.

<b>VRC15-PA</b>	Northern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC15-P4</b>	Southern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRT17-PA</b>	Northern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT17-P4</b>	Southern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRC21-PA</b>	Northern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC21-P4</b>	Southern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.

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### Step 4a—Graphics Options

- Graphics options require Windows NT V3.5 or higher.
- Graphics options include ZLXp-E Support Services Software for Microsoft Windows NT license, media, and documentation.

Order Number	Description	Supported Operating System	Bus Slot Required
<b>PBXGA-AN*</b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI
<b>PBXGA-BN*</b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI
<b>PBXGA-CN*</b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI

\* ZLXp-Ex performance is not optimized for AlphaServers

## Step 5—Storage

Select storage devices as required. Refer to January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for further details on devices listed.

### Internal Disk Storage Assembly

- Included storage assembly supports eight 3.5-inch disk drives.
- Internal storage assembly is normally configured for split-bus (two SCSI buses), four drives per bus. By reversing the positions of the terminator and jumper plugs, internal storage assembly can be reconfigured for single-bus operation with a maximum of seven disk drives per storage assembly.
- Manufacturing normally configures internal storage assembly in split-bus mode. If there are not enough storage controllers to support the number of internal disk drives ordered, manufacturing will configure the internal storage assembly for single-bus mode.
- Internal storage assembly drive slots are interleaved with electrically contiguous drives in every other slot. See Storage Diagrams for details.
- Internal storage assembly supports 8-bit (**narrow**) and 16-bit (**wide**) modes of operation.
  - For **Narrow** mode, select controllers and disks from Step 5a.
  - For **Wide** mode, select controllers and disks from Step 5b.
  - Internal storage assembly can be configured for split-bus mode to support **wide** mode on one bus and **narrow** mode on other bus.
- Integral Fast SCSI-2 controller supports maximum of six devices in system enclosure (two 5.25-inch removable media devices and four 3.5-inch disk drives). All disk drives connected to this controller will operate in **narrow** mode.

**Note:** **Wide** disk drives configured on a **narrow** bus will operate in **narrow** mode. **Narrow** disk drives configured on a **wide** bus will operate in **narrow** mode. **Wide** and **narrow** devices can be mixed on a single bus.

### Storage Support Matrix Table (Windows NT)

	KZPAA	KZPSA	KZPSC	KZESC	HSD05
RZ26L-VA	Yes	Yes	Yes	Yes	No
RZ26L-VW	Yes	Yes	Yes	No	No
RZ28-VA	Yes	Yes	Yes	Yes	No
RZ28-VW	Yes	Yes	Yes	No	No
RZ29B-VA	Yes	(1)	(1)	(1)	No
RZ29B-VW	Yes	(1)	Yes	No	No

(1) Supported as of April 27, 1995

### Step 5a—Controllers and Storage Devices for 8-bit (**Narrow**) Mode (see Storage diagrams)

#### Configuration Rules

- StorageWorks RAID Array 210 (KZESC-xx) includes EISA backplane RAID controller (SWXCR-Ex) and StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- For maximum number of **each** EISA-based controller supported per system see EISA Bus IRQ Address Table.
- Each controller requires one bus slot
- One- and three-port StorageWorks RAID Array 210 controllers (KZESC-xx) support hard disk drives **only**; tape drives are **not** supported.
- Three-port StorageWorks RAID Array 210 controller (KZESC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 210 Subsystem* in January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*.
  - KZPSC-xx one- and three-port RAID controllers supported with narrow and wide disks. See Storage Support Matrix Table.
  - Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
    - Internal cables are supplied as needed for factory installed configurations.
    - External cables are **not** included and must be included on order.
    - KZESC-AA options use BC25S-2F for internal connection or BN21H-02 for external connection.
    - KZESC-BA options use one to three BC25S-2F for internal connection or BN21H-02 for port 0 and CK-SWXCR-AA cable kit plus two BN21H-02 cables for ports 1 and 2 external connection.
    - KZPAA-AA option uses BC25S-2F for internal connection or BN21H-02 for external connection.

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Step 5a—Controllers and Storage Devices for 8-bit (**Narrow**) Mode (see Storage diagrams) (*continued*)

### Storage Controllers for Narrow Mode

<b>KZESC-AA*</b>	One-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZESC-BA*</b>	Three-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPAA-AA</b>	PCI-based one port high-performance Fast SCSI-2 controller

\* See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for StorageWorks RAID Array 210 Subsystem configuration rules.

### Hard Disk Drives for Narrow Mode (see Storage Support Matrix Table)

<b>RZ26L-VA</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28 -VA</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B -VA</b>	4.3 Gbyte, 3.5-inch half-height disk drive

### Storage Option Packs for Narrow Mode

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-AA</b>	One-Port RAID Storage Option Pack includes: One KZESC-AA and Three RZ28-VA
<b>SD001-BA</b>	Three-Port RAID Storage Option Pack includes: One KZESC-BA and Five RZ28-VA

### External Disk Expansion for Narrow Mode

- External BA350 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5a.
- External BA350 supports RZ26L-VA, RZ28-VA, and RZ29B-VA (RZ29B requires BA350-KF) connected to the controllers listed in Step 5a, but limited to those listed in the Storage Support Matrix Table. Tapes are supported only on KZPAA-AA controller.
- External BA350 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable (BN21H-02) is required to connect a single BA350 modular storage pedestal to controllers
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA350 modular storage assemblies. Refer to Cabinet system order menu for ordering details

<b>BA350-KB</b>	Modular storage pedestal includes BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN21H-xx). <b>Order country specific power cord for 240 V use from Step 10.</b>
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Step 5b—Controllers and Storage Devices for 16-bit (**Wide**) Mode**Configuration Rules**

- StorageWorks RAID Array 230 includes PCI backplane RAID controller and StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- One- and three-port StorageWorks RAID Array 230 controllers (KZPSC-xx) support hard disk drives **only**; tape drives are **not** supported. See Storage Support Matrix Table.
- One-port StorageWorks RAID Array 230 controller (KZPSC-AA) supports up to 7 disk drives in RAID or non-RAID mode.
- Three-port StorageWorks RAID Array 230 controller (KZPSC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 230 Subsystem* in this Supplement.
- Maximum of four KZPSC-xx controllers supported per system.
- PCI-based Fast Wide Differential (FWD) SCSI controller (KZPSA-BB) supports externally connected KZPSA-wide disks in the BA356 using the DWZZB wide differential to wide single-ended converter, or narrow disks using the DWZZA narrow differential to narrow or single-ended converter in BA356.
- Up to three KZPSA-BB controllers supported per system, provided there are available PCI slots.
- Each controller requires one bus slot
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be ordered separately.
  - KZPSC-AA options use BC25U-2H for internal connection or BN31S-1E for external connection.
  - KZPSC-BA options use one to three BC25U-2H for internal connection or BN31S-1E for port 0 and 1, and BN31K-0E cable kit, plus one BN31S-1E for port 2 external connection (see Storage Diagrams).
  - KZPSA-BB cable type depends on application; see this Supplement for configuration rules.

**Storage Controllers for Wide Mode**

<b>KZPSC-AA*</b>	One-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSC-BA*</b>	Three-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSA-BB</b>	PCI-based Fast Wide Differential (FWD) SCSI controllers

\* See this Supplement for StorageWorks RAID Array 230 Subsystem configuration rules.

**Hard Disk Drives for Wide Mode**

<b>RZ26L-VW</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28-VW</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B-VW</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Wide Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-CA</b>	One-Port RAID Storage Option Pack includes: One KZPSC-AA and Three RZ28-VW
<b>SD001-DA</b>	Three-Port RAID Storage Option Pack includes: One KZPSC-BA and Five RZ28-VW

**External Disk Expansion for Wide Mode**

- External BA356 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5b.
- External BA356 supports hard disk drives **only** when connected to one- and three-port controllers (KZPSC-xx); tapes are not supported.
- External BA356 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable BN21K-xx for KZPSA, and BN31M-1E for KZPSC, is required to connect an external BA356 modular storage pedestal to controller.
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA356 modular storage assemblies. Refer to Cabinet system order menu for ordering details.

<b>BA356-KC</b>	Modular storage pedestal includes BA356-xx basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN31S-1E). <b>Order country specific power cord for 240 V use from Step 10.</b>
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## Step 5c—Internal Removable Media Devices

- Systems include 600 Mbyte CD-ROM; system supports one additional 5.25-inch half-height removable media devices, or one 5.25-inch, full-height removable media device.

## Removable Media Devices

RRD43-AC	600 Mbyte, 5.25-inch half-height CD-ROM
TLZ07-LG	8.0 Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive
TZK11-LG	2.0 Gbyte, 5.25-inch half-height SCSI QIC tape drive

## Step 5d—External Storage

## Tabletop Tape Expansion

- Integral Fast SCSI-2 controller, if not connected to internal storage assembly, can be extended outside the system enclosure via the SCSI-out port to support external SCSI devices. Maximum external bus length, including cable and device cannot exceed 1.0 meter. If not used for external expansion, SCSI-out port must be terminated with external terminator (12-37004-04) included with system.
- External tape drives are also supported on optional KZPAA Fast SCSI-2 (**Narrow**) controllers; maximum external bus length, including cable and tape device cannot exceed 3.0 meters. External tape drives are not supported on KZESC-xx controllers.
- Each tabletop tape device **requires** three-foot SCSI cable (BC09D-03)

TKZ09-BA	5.0 Gbyte 8mm tape drive
TKZ15-TA	5.0 Gbyte 8mm tabletop tape drive
TKZ60-xx	3480-compatible tape drive (all variants)
TLZ07-DA	8.0 Gbyte, 4mm DAT tabletop tape drive
TLZ6L-DA* <sup>†</sup>	16.0-48.0 Gbyte, 4-mm DAT autoloader
TLZ7L-DA* <sup>†</sup>	32.0-96.0 Gbyte, 4-mm DAT autoloader
TSZ07-BA/CA	1600/6250-bit/inch 9-track tabletop magtape drive
TZ87-TA	20.0 Gbyte, 5.25-inch tabletop tape drive
TZK11-DA	2.0 Gbyte 5.25-inch tabletop QIC tape drive

\* Includes four cartridge loader. Larger magazines are supported.

<sup>†</sup> Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for details.

## Step 6—Networks and Communications

- System includes PCI-based Ethernet controller (DE435-AA); uses one PCI slot
- Select networking cable:
  - BNE4G-02 for AUI
  - BN26K-xx for 10BaseT (twisted pair)
  - BC16M-xx for Thin Wire
- Maximum of three PCI-based controllers supported, one DE435-AA included with system, plus two optional
- Maximum number of **each** EISA-based network controllers supported per system
  - Four DE422-SA
  - Two DEFEA-xA
  - Five DW300-AA
  - Two CXI01-xx
- Maximum number of EISA-based network controllers of all types in combination is governed by EISA bus IRQ address assignments; see EISA Bus IRQ Address Table.

DE422-SA	EISA-based Digital Etherworks network interface card
DEFEA-AA	EISA-based DEC FDDIcontroller, Single Attachment
DEFEA-DA	EISA-based DEC FDDIcontroller, Dual Attachment
DW300-AA	EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation (Not supported by DECnet/OSI for OpenVMS)
CXI01-xx	EISA-based asynchronous multiplexer
DE435-AA	PCI-based Digital Etherworks 32-bit high-performance network interface card
DEFPA-xx	PCI to FDDI adapter

See January 1995, *Digital Systems and Options Catalog* Chapter 7, *Networks, Communications, and Cables*, and the *Network Products Guide* for more information.

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## Step 7—Additional Power Supply

- Additional power supply required if fully configured system includes two CPUs. In single CPU configurations, the additional power supply may be added for n+1 redundancy.
- Americas and Asia Pacific Area orders
  - If additional power supply is factory installed, 120 V U.S. power cord is included when alternate is not selected.
- If additional power supply is ordered as **spare**, power cord **must** be ordered separately, see Step 10.
- European orders
  - If additional power supply is factory installed or ordered as **spare**, country specific power cord **must** be ordered separately, see Step 10.
- See UPS information in System Specifications

H7895-AA            400-Watt power supply

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## Step 8—Terminals and Printers

System includes two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.

Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required for each connection. A cable must be ordered unless otherwise provided.

See January 1995, *Digital Systems and Options Catalog* Chapter 9, *Terminals, Scanners, Printers* for ordering information.

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## Step 9—Software

System includes Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package. Order documentation kit if required.

QA-23CAA-GZ        Windows NT Server documentation kit

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## Step 10—Keyboards and Power Cords

Systems ordered in the Americas and Asia Pacific Area include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.

### Keyboards

LK471-AA	U.S./English
LK471-AB	Belgian
LK471-AD	Danish
LK471-AE	United Kingdom
LK471-AG	German
LK471-AI	Italian
LK471-AK	Swiss/French
LK471-AN	Norwegian
LK471-AP	French
LK471-AS	Spanish
LK471-AV	Portuguese

### Power Cords

BN27Y-1J*	U.S., Canada, Japan, 120 V
BN19H-2E	Australia, New Zealand
BN19C-2E	Central Europe
BN19A-2E	U.K., Ireland
BN19E-2E	Switzerland
BN19K-2E	Denmark
BN19M-2E	Italy
BN19S-2E	Egypt, India, South Africa
BN18L-2E	Israel

\* Orderable as 17-00083-15

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## Step 11—Hardware and Software Supplemental Support Services

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### Step 11a—Hardware and Software Supplemental Support Services (Americas and Asia Pacific Area only)

#### Hardware

- System includes three-year hardware warranty, on-site with 5 x 9, 24-hour response time. Select optional Hardware Supplemental Support Services if required.

#### AlphaServer 2000 4/233 Systems

FM-DS4HR-36	5 x 9, 4-hour response time
FM-DS512-36	5 x 12, 4-hour response time
FM-DS616-36	6 x 16, 4-hour response time
FM-DS724-36	7 x 24, 4-hour response time

#### AlphaServer 2000 4/275 Systems

FM-S44HR-36	Years 1-3, 5 x 9, 4-hour response time
FM-S4512-36	Years 1-3, 5 x 12, 4-hour response time
FM-S4616-36	Years 1-3, 6 x 16, 4-hour response time
FM-S4724-36	Years 1-3, 7 x 24, 4-hour response time
FM-S44HR-60	Years 1-5, 5 x 9, 4-hour response time
FM-S4512-60	Years 1-5, 5 x 12, 4-hour response time
FM-S4616-60	Years 1-5, 6 x 16, 4-hour response time
FM-S4724-60	Years 1-5, 7 x 24, 4-hour response time

#### Software

- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software service upgrades for Windows NT include advisory and remedial software support for the time period indicated.

#### AlphaServer 2000 4/233 Systems

FM-DSNTS-12	12-month Software Supplemental Support for <b>Windows NT</b> AlphaServer 2000 4/233 systems
FM-DSNTS-36	36-month Software Supplemental Support for <b>Windows NT</b> AlphaServer 2000 4/233 systems

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### Step 11b—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.

## Step 1—DEC OSF/1 Server Systems

Select system.

- **Operating System media and documentation kit is required for first system on site; see Step 9.**
- Systems ordered in the Americas and Asia Pacific Area (APA) include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for all systems ordered in Europe.
- System includes DEC OSF/1 factory installed software (FIS)
- Uninterruptable Power Supplies are available; see UPS Information in System Specifications.
- Options ordered will be factory installed unless specified as spares.

### AlphaServer 2000 4/233 and 4/275 (DEC OSF/1) Systems include

- DECchip 21064
  - 233-MHz CPU with 1 Mbyte onboard cache, **or**
  - 275-MHz CPU with 4 Mbyte onboard cache.
- BA720 pedestal enclosure which includes:
  - Integral 10 Mbyte/s Fast SCSI-2 controller (8-bit)
  - Two EIA-232 asynchronous serial ports, 9-pin D-subminiature connectors
  - One bi-directional enhanced parallel port, 25-pin D-subminiature connector
  - PS/2 style keyboard port and mouse port
  - 8-slot RZxx storage assembly (8/16 bit)
  - Two 5.25-inch, half-height removable media slots
  - Seven EISA slots
  - Three PCI slots
  - 400-Watt power supply
- 2.88 Mbyte diskette drive in dedicated slot
- 600 Mbyte CD-ROM (uses one removable media slot)
- 2.0 Gbyte hard disk drive (uses one storage assembly slot)
- 1024 x 768 Video Graphics Adapter (uses one EISA slot)
- Ethernet DE435-AA Card (uses one PCI slot)
- 64 Mbytes memory
- 3-button mouse
- Keyboard (Americas and APA orders only)
- Power cord (Americas and APA orders only)
- Customer documentation
- EISA Configuration Utility (ECU)
- Hardware Warranty: Three-year, on-site, with 5 x 9, 24-hour response time\*
- Software Warranty: 90-day SPD conformance with advisory telephone support for Operating System and NAS 200\*
- DEC OSF/1 operating system base license
- NAS 200 for DEC OSF/1 license includes the following layered products: (order media and documentation separately)
  - PATHWORKS for DEC OSF/1 (kit only, no license)
  - Polycenter Advanced File System Utilities
  - Objectbroker for DEC OSF/1 Runtime
  - DECmessageQ for DEC OSF/1 Runtime
  - DCE Runtime
  - DEC OSF/1 Server Extensions
  - PrintServer software (kit only, licensed with printer)

\* Service upgrades are available; see Step 11, Hardware and Software Supplemental Services.

Order Number	Memory	Storage RZ28-VW = 2.0 Gbytes	EISA/PCI slots available for additional options
<b>AlphaServer 2000 4/233—233 MHz DEC OSF/1 Systems</b>			
DA-241D1-H9	64 Mbyte	1 x 2.0 Gbytes	6 EISA/2 PCI
DA-241D1-J9	128 Mbyte	1 x 2.0 Gbytes	6 EISA/2 PCI
<b>AlphaServer 2000 4/275—275 MHz DEC OSF/1 Systems</b>			
DA-242D1-H9	64 Mbyte	1 x 2.0 Gbytes	6 EISA/2 PCI
DA-242D1-J9	128 Mbyte	1 x 2.0 Gbytes	6 EISA/2 PCI

\*64 Mbyte system **not** available in Europe. Order for Americas and APA only.

## Step 2—CPU Symmetrical Multiprocessing (SMP) Upgrade

Order up to one additional CPU, for a maximum of two. Two CPU systems require additional power supply (see Step 7).

- **Additional CPU must match the speed of CPU in system**

455AR-AA	DEC OSF/1 upgrade includes one 233 MHz CPU processor and DEC OSF/1 SMP license
460AR-AA	DEC OSF/1 upgrade includes one 275 MHz CPU processor and DEC OSF/1 SMP license

**Step 3—Memory**

- Select memory from Step 3a for 64 Mbyte systems (DA-24\*D1-H9)
- Select memory from Step 3b for 128 Mbyte systems (DA-24\*D1-J9)

**Step 3a—Memory for 64 Mbyte systems (DA-24\*D1-H9)**

- DA-24\*D1-H9 system include 64 Mbytes memory (MS-452-AA plus one MS452-UA); order additional memory using one of the following tables. **No other combinations are supported**

**Table 1—For system maximum of 256 Mbyte (in small increments)**

Total Memory Required	Order Quantities Shown	
	MS452-UA	MS452-AA
96 Mbyte	1	0
128 Mbyte	2	0
160 Mbyte	2	1
192 Mbyte	3	1
256 Mbyte	5	1

**Table 2—For system maximum of 640 Mbyte (in large increments)**

Total Memory Required	Order Quantities Shown		
	MS452-UA	MS452-BA	MS452-UB
96 Mbyte	1	0	0
128 Mbyte	2	0	0
256 Mbyte	2	1	0
384 Mbyte	2	1	1
640 Mbyte	2	1	3

<b>MS452-AA</b>	32 Mbyte memory board (carrier with 8 x 4 Mbyte SIMMs)
<b>MS452-BA</b>	128 Mbyte memory board (carrier with 8 x 16 Mbyte SIMMs)
<b>MS452-UA</b>	32 Mbyte add-on memory (8 x 4 Mbyte SIMMs) for MS452-AA
<b>MS452-UB</b>	128 Mbyte add-on memory (8 x 16 Mbyte SIMMs) for MS452-BA

**Step 3b—Memory for 128 Mbyte systems (DA-24\*D1-J9)**

- DA-24\*D1-J9 system include 128 Mbytes memory (MS-452-BA); order additional memory using the following table. **No other combinations are supported**

**Table for system maximum of 1.0 Gbyte**

Total Memory Required	Order Quantities Shown	
	MS452-BA	MS452-UB
256 Mbyte	0	1
384 Mbyte	0	2
512 Mbyte	0	3
640 Mbyte	1	3
768 Mbyte	1	4
1.0 Gbyte	1	6

<b>MS452-BA</b>	128 Mbyte memory board (carrier with 8 x 16 Mbyte SIMMs)
<b>MS452-UB</b>	128 Mbyte add-on memory (8 x 16 Mbyte SIMMs) for MS452-BA

## Step 3c—Prestoserve Non-Volatile Random Access Memory (NVRAM)

- Supported on DEC OSF/1 systems **only**. Requires DEC OSF/1 V3.0 operating system software
- Requires one EISA slot
- Maximum one Prestoserve option per system

**PB2SX-AA** Prestoserve non-Volatile Random Access Memory option; includes Prestoserve license and documentation kit

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**Step 4—Monitors and Graphics Options**

- All console functions, including the EISA Configuration Utility (ECU) and the RAID Configuration Utility (RCU) can be performed using a standard video terminal connected to one of the system's serial ports (See Step 8).
- For graphics console functionality, order a graphics monitor. Graphics monitors other than those listed below can be used if compatible with graphics adapter included in system.
- Video adapter included in system supports 1024 x 768 resolution, 72-Hz monitors.
- Select graphics option from Step 4a if required.

<b>VRC15-PA</b>	Northern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC15-P4</b>	Southern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRT17-PA</b>	Northern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT17-P4</b>	Southern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRC21-PA</b>	Northern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC21-P4</b>	Southern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.

## Step 4a—Graphics Options

- Graphics options require DEC OSF/1 V3.2 or higher. System console requires V3.9.

Order Number	Description	Supported Operating System	Bus Slots Required
<b>PBXGA-AA†</b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1	One PCI
<b>PBXGA-BA†</b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1	One PCI
<b>PBXGA-CA†</b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1	One PCI

† ZLXp-E performance not optimized for AlphaServers

## Step 5—Storage

Select storage devices as required. Refer to January 1995, *Digital Systems and Options Catalog* Chapter 8, *Storage Devices*, for further details on devices listed.

### Internal Disk Storage Assembly

- Included storage assembly supports eight 3.5-inch disk drives.
  - Internal storage assembly is normally configured for split-bus (two SCSI buses), four drives per bus. By reversing the positions of the terminator and jumper plugs, internal storage assembly can be reconfigured for single-bus operation with a maximum of seven disk drives per storage assembly.
  - Manufacturing normally configures internal storage assembly in split-bus mode. If there are not enough storage controllers to support the number of internal disk drives ordered, manufacturing will configure the internal storage assembly for single-bus mode.
  - Internal storage assembly drive slots are interleaved with electrically contiguous drives in every other slot. See Storage Diagrams for details.
  - Internal storage assembly supports 8-bit (**narrow**) and 16-bit (**wide**) modes of operation.
- For **Narrow** mode, select controllers and disks from Step 5a.
  - For **Wide** mode, select controllers and disks from Step 5b.
  - Internal storage assembly can be configured for split-bus mode to support **wide** mode on one bus and **narrow** mode on other bus.
  - Integral Fast SCSI-2 controller supports maximum of six devices in system enclosure (two 5.25-inch removable media devices and four 3.5-inch disk drives). All disk drives connected to this controller will operate in **narrow** mode.

**Note:** **Wide** disk drives configured on a **narrow** bus will operate in **narrow** mode. **Narrow** disk drives configured on a **wide** bus will operate in **narrow** mode. **Wide** and **narrow** devices can be mixed on a single bus.

### Storage Support Matrix Table (DEC OSF/1)

	KZPAA	KZPSA	KZPSC	KZESC	HSD05
RZ26L-VA	Yes	Yes	Yes	Yes	No
RZ26L-VW	Yes	Yes	Yes	No	No
RZ28-VA	Yes	Yes	Yes	Yes	No
RZ28-VW	Yes	Yes	Yes	No	No
RZ29B-VA	Yes	(1)	(1)	(1)	No
RZ29B-VW	Yes	(1)	(1)	No	No

(1) Supported as of April 27, 1995

### Step 5a—Controllers and Storage Devices for 8-bit (**Narrow**) Mode

#### Configuration Rules

- StorageWorks RAID Array 210 (KZESC-xx) includes EISA backplane RAID controller (SWXCR-Ex) and StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
  - For maximum number of **each** EISA-based controller supported per system see EISA Bus IRQ Address Table.
  - Each controller requires one bus slot
  - One- and three-port StorageWorks RAID Array 210 controllers (KZESC-xx) support hard disk drives **only**; tape drives are **not** supported.
  - Three-port StorageWorks RAID Array 210 controller (KZESC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 210 Subsystem* in January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*.
- KZPSC-xx one- and three-port RAID controllers supported with narrow and wide disks. See Storage Support Matrix Table.
  - Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
    - Internal cables are supplied as needed for factory installed configurations.
    - External cables are **not** included and must be included on order.
    - KZESC-AA options use BC25S-2F for internal connection or BN21H-02 for external connection.
    - KZESC-BA options use one to three BC25S-2F for internal connection or BN21H-02 for port 0 and CK-SWXCR-AA cable kit plus two BN21H-02 cables for ports 1 and 2 external connection.
    - KZPAA-AA option uses BC25S-2F for internal connection or BN21H-02 for external connection.

Step 5a—Controllers and Storage Devices for 8-bit (Narrow) Mode (*continued*)**Storage Controllers for Narrow Mode**

<b>KZESC-AA*</b>	One-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZESC-BA*</b>	Three-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPAA-AA</b>	PCI-based one port high-performance Fast SCSI-2 controller

\* See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for StorageWorks RAID Array 210 Subsystem configuration rules.

**Hard Disk Drives for Narrow Mode (see Storage Support Matrix Table for support details)**

<b>RZ26L-VA</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28 -VA</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B -VA</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Narrow Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-AA</b>	One-Port RAID Storage Option Pack includes: One KZESC-AA and Three RZ28-VA
<b>SD001-BA</b>	Three-Port RAID Storage Option Pack includes: One KZESC-BA and Five RZ28-VA

**External Disk Expansion for Narrow Mode**

- External BA350 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5a.
- External BA350 supports RZ26L-VA, RZ28-VA, and RZ29B-VA (RZ29B requires BA350-KF) connected to the controllers listed in Step 5a, but limited to those listed in the Storage Support Matrix Table. Tapes are supported only on KZPAA-AA controller.
- External BA350 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable (BN21H-02) is required to connect a single BA350 modular storage pedestal to controllers
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA350 modular storage assemblies. Refer to Cabinet system order menu for ordering details

<b>BA350-KB</b>	Modular storage pedestal includes BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN21H-xx). <b>Order country specific power cord for 240 V use from Step 10.</b>
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Step 5b—Controllers and Storage Devices for 16-bit (**Wide**) Mode**Configuration Rules**

- StorageWorks RAID Array 230 includes PCI backplane RAID controller and StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- One- and three-port StorageWorks RAID Array 230 controllers (KZPSC-xx) support hard disk drives **only**; tape drives are **not** supported. See Storage Support Matrix Table.
- One-port StorageWorks RAID Array 230 controller (KZPSC-AA) supports up to 7 disk drives in RAID or non-RAID mode.
- Three-port StorageWorks RAID Array 230 controller (KZPSC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 230 Subsystem* in this Supplement.
- Maximum of four KZPSC-xx controllers supported per system.
- PCI-based Fast Wide Differential (FWD) SCSI controller (KZPSA-BB) supports externally connected KZPSA-wide disks in the BA356 using the DWZZB wide differential to wide single-ended converter, or narrow disks using the DWZZA narrow differential to narrow or single-ended converter in BA356.
- Up to three KZPSA-BB controllers supported per system, provided there are available PCI slots.
- Each controller requires one bus slot
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be ordered separately.
  - KZPSC-AA options use BC25U-2H for internal connection or BN31S-1E for external connection.
  - KZPSC-BA options use one to three BC25U-2H for internal connection or BN31S-1E for port 0 and 1, and BN31K-0E cable kit, plus one BN31S-1E for port 2 external connection (see Storage Diagrams).
  - KZPSA-BB cable type depends on application; see this Supplement for configuration rules.

**Storage Controllers for Wide Mode**

<b>KZPSC-AA*</b>	One-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSC-BA*</b>	Three-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSA-BB</b>	PCI-based Fast Wide Differential (FWD) SCSI controller

\* See this Supplement for StorageWorks RAID Array 230 Subsystem configuration rules.

**Hard Disk Drives for Wide Mode (see Storage Support Matrix Table for details)**

<b>RZ26L-VW</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28-VW</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B-VW</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Wide Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-CA</b>	One-Port RAID Storage Option Pack includes: One KZPSC-AA and Three RZ28-VW
<b>SD001-DA</b>	Three-Port RAID Storage Option Pack includes: One KZPSC-BA and Five RZ28-VW

**External Disk Expansion for Wide Mode**

- External BA356 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5b.
- External BA356 supports hard disk drives **only** when connected to one- and three-port controllers (KZPSC-xx); tapes are not supported.
- External BA356 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable BN21K-xx for KZPSA, and BN31M-1E for KZPSC, is required to connect an external BA356 modular storage pedestal to controller.
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA356 modular storage assemblies. Refer to Cabinet system order menu for ordering details.

<b>BA356-KC</b>	Modular storage pedestal includes BA356-xx basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN31S-1E). <b>Order country specific power cord for 240 V use from Step 10.</b>
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## Step 5c—Internal Removable Media Devices

- Systems include 600 Mbyte CD-ROM; system supports two additional 5.25-inch half-height removable media devices, or one 5.25-inch, full-height removable media device.

**Removable Media Devices**

<b>RRD43-AC</b>	600 Mbyte, 5.25-inch half-height CD-ROM
<b>TLZ07-LG</b>	8.0 Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive
<b>TZK11-LG</b>	2.0 Gbyte, 5.25-inch half-height SCSI QIC tape drive

## Step 5d—External Storage

**Tabletop Tape Expansion**

- Integral Fast SCSI-2 controller, if not connected to internal storage assembly, can be extended outside the system enclosure via the SCSI-out port to support external SCSI devices. Maximum external bus length, including cable and device cannot exceed 1.0 meter. If not used for external expansion, SCSI-outport must be terminated with external terminator (12-37004-04) included with system.
- External tape drives are also supported on optional Fast SCSI-2 (**Narrow**) controllers; maximum external bus length, including cable and tape device cannot exceed 3.0 meters. External tape drives are not supported on KZESC-xx controllers.
- Each tabletop tape device **requires** three-foot SCSI cable (BC09D-03)

<b>TKZ09-BA</b>	5.0 Gbyte 8mm tape drive
<b>TKZ15-TA</b>	5.0 Gbyte 8mm tabletop tape drive
<b>TKZ60-xx</b>	3480-compatible tape drive (all variants)
<b>TLZ07-DA</b>	8.0 Gbyte, 4mm DAT tabletop tape drive
<b>TLZ7L-DA*</b>	32.0-96.0 Gbyte, 4-mm DAT autoloader
<b>TSZ07-BA/CA</b>	1600/6250-bit/inch 9-track tabletop magtape drive
<b>TZ87-TA</b>	20.0 Gbyte, 5.25-inch tabletop tape drive
<b>TZK11-DA</b>	2.0 Gbyte 5.25-inch tabletop QIC tape drive

\* Includes four cartridge loader. Larger magazines are supported.

† Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for details.

**Step 6—Networks and Communications**

- System includes PCI-based Ethernet controller (DE435-AA); uses one PCI slot.
- Select networking cable:
  - BNE4G-02 for AUI
  - BN26K-xx for 10BaseT (twisted pair)
  - BC16M-xx for Thin Wire
- Maximum of three PCI-based controllers supported, one DE435-AA included with system, plus two optional.
- Maximum number of **each** EISA-based network controllers supported per system:
  - Three DE422-SA
  - Two DEFEA-xA
  - Five DNSES-AA
  - Four DW300-AA
  - Two CXI01-xx
- Maximum number of EISA-based network controllers of all types in combination is governed by EISA bus IRQ address assignments; refer to EISA Bus IRQ Address Table for further information.

<b>DE422-SA</b>	EISA-based Digital Etherworks network interface card
<b>DEFEA-AA</b>	EISA-based DEC FDDIcontroller, Single Attachment
<b>DEFEA-DA</b>	EISA-based DEC FDDIcontroller, Dual Attachment
<b>DNSES-AA</b>	EISA-based synchronous communications controller
<b>DW300-AA</b>	EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation (Not supported by DECnet/OSI for OpenVMS)
<b>CXI01-xx</b>	EISA-based asynchronous multiplexer
<b>DE435-AA</b>	PCI-based Digital Etherworks 32-bit high-performance network interface card
<b>DEFPA-xx</b>	PCI to FDDI adapter

See January 1995, *Digital Systems and Options Catalog* Chapter 7, *Networks, Communications, and Cables*, and the *Network Products Guide* for more information.

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## Step 7—Additional Power Supply

- Additional power supply required if fully configured system includes two CPUs. In single-CPU configurations, the additional power supply may be added for n+1 redundancy.
- Americas and Asia Pacific Area orders
  - If additional power supply is factory installed, 120 V U.S. power cord is included when alternate is not selected.
- If additional power supply is ordered as **spare**, power cord **must** be ordered separately, see Step 10.
- European orders
  - If additional power supply is factory installed or ordered as **spare**, country specific power cord **must** be ordered separately, see Step 10.

**H7895-AA**                    400-Watt power supply

See UPS information in System Specifications

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## Step 8—Terminals and Printers

Systems include two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.

Console terminals can either be a Graphics Monitor connected to the included video graphics adapter (See Step 4), or a Serial Video Terminal. If a Serial Video Terminal is used as the console terminal, it must be VT220, VT320, VT420, or VT520 compatible. These terminals have the graphics capability required for the EISA Configuration Utility.

Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required for each connection. A cable must be ordered unless otherwise provided.

See January 1995, *Digital System and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers* for ordering information.

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## Step 9—Software

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

**Software Processor Code = G for all software, 1-2 processors**

### DEC OSF/1 Interactive User Licenses

DEC OSF/1 Interactive User Licenses are **not** specific to a single system and can be moved from one system to another at user discretion

<b>QL-MT7A9-BB</b>	DEC OSF/1 Interactive 1-user license
<b>QL-MT7A9-BC*</b>	DEC OSF/1 Interactive 2-user license
<b>QL-MT7A9-BD*</b>	DEC OSF/1 Interactive 4-user license
<b>QL-MT7A9-BE*</b>	DEC OSF/1 Interactive 8-user license
<b>QL-MT7A9-BF*</b>	DEC OSF/1 Interactive 16-user license
<b>QL-MT7AG-AA</b>	DEC OSF/1 Interactive unlimited user license
<b>QL-MT5AG-AA</b>	DEC OSF/1 developer's extension license

\* Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

### DEC OSF/1 Media and Documentation—required for first system on site

<b>QA-MT4AA-H8</b>	DEC OSF/1 media and on-line documentation on CD-ROM
<b>QA-MT4AA-GZ</b>	DEC OSF/1 full hardcopy documentation

### DEC OSF/1 Layered Products CD-ROM

<b>QA-054AA-H8</b>	Layered products media and documentation for DEC OSF/1 on CD-ROM
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### DECnet License

<b>QL-MTJAG-AA</b>	DECnet/OSI end-system license for DEC OSF/1
<b>QL-MTKAG-AA</b>	DECnet/OSI extended function license for DEC OSF/1

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## Step 10—Keyboards and Power Cords

Systems ordered in the Americas and Asia Pacific Area include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.

### Keyboards

LK471-AA	U.S./English
LK471-AB	Belgian
LK471-AD	Danish
LK471-AE	United Kingdom
LK471-AG	German
LK471-AI	Italian
LK471-AK	Swiss/French
LK471-AN	Norwegian
LK471-AP	French
LK471-AS	Spanish
LK471-AV	Portuguese

### Power Cords

BN27Y-1J	U.S., Canada, Japan, 120 V
BN19H-2E	Australia, New Zealand
BN19C-2E	Central Europe
BN19A-2E	U.K., Ireland
BN19E-2E	Switzerland
BN19K-2E	Denmark
BN19M-2E	Italy
BN19S-2E	Egypt, India, South Africa
BN18L-2E	Israel

\* Orderable as 17-00083-15

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## Step 11—Hardware and Software Supplemental Support Services

Step 11a—Hardware and Software Supplemental Support Services (**Americas and Asia Pacific Area only**)

### Hardware

System includes three-year hardware warranty, on-site with 5 x 9, 24-hour response time. Select optional Hardware Supplemental Support Services if required.

### AlphaServer 2000 4/233 Systems

FM-DS4HR-36	5 x 9, 4-hour response time
FM-DS512-36	5 x 12, 4-hour response time
FM-DS616-36	6 x 16, 4-hour response time
FM-DS724-36	7 x 24, 4-hour response time

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 Step 11a—Hardware and Software Supplemental Support Services (**Americas and Asia Pacific Area only**) (*continued*)
**AlphaServer 2000 4/275 Systems**

<b>FM-S44HR-36</b>	Years 1-3, 5 x 9, 4-hour response time
<b>FM-S4512-36</b>	Years 1-3, 5 x 12, 4-hour response time
<b>FM-S4616-36</b>	Years 1-3, 6 x 16, 4-hour response time
<b>FM-S4724-36</b>	Years 1-3, 7 x 24, 4-hour response time
<b>FM-S44HR-60</b>	Years 1-5, 5 x 9, 4-hour response time
<b>FM-S4512-60</b>	Years 1-5, 5 x 12, 4-hour response time
<b>FM-S4616-60</b>	Years 1-5, 6 x 16, 4-hour response time
<b>FM-S4724-60</b>	Years 1-5, 7 x 24, 4-hour response time

**Software**

- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software service upgrades for DEC OSF/1 include advisory and remedial software support with new version license rights for operating system and NAS 200 for the time period indicated.

**AlphaServer 2000 4/233 Systems**

<b>FM-DSOSF-12</b>	12-month Software Supplemental Support for <b>DEC OSF/1</b> AlphaServer 2000 4/233 systems
<b>FM-DSOSF-36</b>	36-month Software Supplemental Support for <b>DEC OSF/1</b> AlphaServer 2000 4/233 systems

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 Step 11b—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.

## Step 1—OpenVMS Server Systems

Select system.

- **Operating System media and documentation kit is required for first system on site; see Step 9.**
- Systems ordered in the Americas and Asia Pacific Area (APA) include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.
- System includes OpenVMS factory installed software (FIS)
- Uninterruptable Power Supplies are available; see UPS Information in System Specifications.
- Options ordered will be factory installed unless specified as **spares**.

### AlphaServer 2000 4/233 and 4/275 (OpenVMS) Systems include

- DECchip 21064A
  - 233-MHz CPU with 1 Mbyte onboard cache, **or**
  - 275-MHz CPU with 4 Mbyte onboard cache.
- BA720 pedestal enclosure which includes:
  - Integral 10 Mbyte/s Fast SCSI-2 controller (8-bit)
  - Two EIA-232 asynchronous serial ports, 9-pin D-subminiature connectors
  - One bi-directional enhanced parallel port, 25-pin D-subminiature connector
  - PS/2 style keyboard port and mouse port
  - 8-slot RZxx storage assembly (8/16 bit)
  - Two 5.25-inch, half-height removable media slots
  - Seven EISA slots
  - Three PCI slots
  - 400-Watt power supply
- 2.88 Mbyte diskette drive in dedicated slot
- 600 Mbyte CD-ROM (uses one removable media slot)
- 2.0 Gbyte hard disk drive (uses one storage assembly slot)
- 1024 x 768 Video Graphics Adapter (uses one EISA slot)
- Ethernet DE435-AA Card (uses one PCI slot)
- 64-Mbytes memory
- 3-button mouse
- Keyboard (Americas and APA orders only)
- Power cord (Americas and APA orders only)
- Customer documentation
- EISA Configuration Utility (ECU)
- Hardware Warranty: Three-year, on-site, with 5 x 9, 24-hour response time\*
- Software Warranty: 90-day SPD conformance with advisory telephone support for Operating System and NAS 200\*
- OpenVMS operating system base license
- NAS 200 for OpenVMS license includes the following layered products: (order media and documentation separately)
  - DECnet for OpenVMS End System
  - DECnet/OSI for OpenVMS End Node
  - PATHWORKS for OpenVMS (LAN Manager), kit only, no license
  - DEC TCP/IP services for OpenVMS
  - Polycenter Software Distribution (Client)
  - DECwindows Motif for OpenVMS
  - Objectbroker for OpenVMS (ACA Services)
  - DECmessageQ for OpenVMS Runtime
  - DECprint Supervisor for OpenVMS, Base
  - DECprint Supervisor for OpenVMS, Plus
  - DECprint Supervisor for OpenVMS, Open
  - PrintServer software (kit only, licensed with printer)

\* Service upgrades are available; see Step 11, Hardware and Software Supplemental Services.

Order Number	Memory	Storage RZ28-VW = 2.0 Gbytes	EISA/PCI slots available for additional options
<b>AlphaServer 2000 4/233—233 MHz OpenVMS Systems</b>			
DY-241D1-H9	64 Mbyte	1 x 2.0 Gbytes	6 EISA/2 PCI
DY-241D1-J9	128 Mbyte	1 x 2.0 Gbytes	6 EISA/2 PCI
<b>AlphaServer 2000 4/275—275 MHz OpenVMS Systems</b>			
DY-242D1-H9	64 Mbyte	1 x 2.0 Gbytes	6 EISA/2 PCI
DY-242D1-J9	128 Mbyte	1 x 2.0 Gbytes	6 EISA/2 PCI

## Step 2—CPU Symmetrical Multiprocessing (SMP) Upgrade

Order up to one additional CPU, for a maximum of two. Two CPU systems require additional power supply (see Step 7).

- **Additional CPU must match the speed of CPU in system**

**455YR-AA** OpenVMS upgrade includes one 233 MHz CPU processor and OpenVMS SMP license.

**460YR-AA** OpenVMS upgrade includes one 275 MHz CPU processor and OpenVMS SMP license.

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### Step 3—Memory

- Select memory from Step 3a for 64 Mbyte systems (DY-24\*D1-H9)
- Select memory from Step 3b for 128 Mbyte systems (DY-24\*D1-J9)

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#### Step 3a—Memory for 64 Mbyte systems (DY-24\*D1-H9)

- DY-24\*D1-H9 system include 64 Mbytes memory (MS-452-AA plus one MS452-UA); order additional memory using one of the following tables. **No other combinations are supported**

**Table 1—For system maximum of 256 Mbyte (in small increments)**

Total Memory Required	Order Quantities Shown	
	MS452-UA	MS452-AA
96 Mbyte	1	0
128 Mbyte	2	0
160 Mbyte	2	1
192 Mbyte	3	1
256 Mbyte	5	1

**Table 2—For system maximum of 640 Mbyte (in large increments)**

Total Memory Required	Order Quantities Shown		
	MS452-UA	MS452-BA	MS452-UB
96 Mbyte	1	0	0
128 Mbyte	2	0	0
256 Mbyte	2	1	0
384 Mbyte	2	1	1
640 Mbyte	2	1	3

<b>MS452-AA</b>	32 Mbyte memory board (carrier with 8 x 4 Mbyte SIMMs)
<b>MS452-BA</b>	128 Mbyte memory board (carrier with 8 x 16 Mbyte SIMMs)
<b>MS452-UA</b>	32 Mbyte add-on memory (8 x 4 Mbyte SIMMs) for MS452-AA
<b>MS452-UB</b>	128 Mbyte add-on memory (8 x 16 Mbyte SIMMs) for MS452-BA

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#### Step 3b—Memory for 128 Mbyte systems (DY-24\*D1-J9)

- DY-24\*D1-J9 system include 128 Mbytes memory (MS-452-BA); order additional memory using the following table. **No other combinations are supported**

**Table for system maximum of 1.0 Gbyte**

Total Memory Required	Order Quantities Shown	
	MS452-BA	MS452-UB
256 Mbyte	0	1
384 Mbyte	0	2
512 Mbyte	0	3
640 Mbyte	1	3
768 Mbyte	1	4
1.0 Gbyte	1	6

<b>MS452-BA</b>	128 Mbyte memory board (carrier with 8 x 16 Mbyte SIMMs)
<b>MS452-UB</b>	128 Mbyte add-on memory (8 x 16 Mbyte SIMMs) for MS452-BA

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**Step 4—Monitors and Graphics Options**

- All console functions, including the EISA Configuration Utility (ECU) and the RAID Configuration Utility (RCU) can be performed using a standard video terminal connected to one of the system's serial ports (See Step 8).
- For graphics console functionality, order a graphics monitor. Graphics monitors other than those listed below can be used if compatible with graphics adapter included in system.
- Video adapter included in system supports 1024 x 768 resolution, 72-Hz monitors
- Select graphics option from Step 4a if required.

<b>VRC15-PA</b>	Northern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC15-P4</b>	Southern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRT17-PA</b>	Northern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT17-P4</b>	Southern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRC21-PA</b>	Northern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC21-P4</b>	Southern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.

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**Step 4a—Graphics Options**

- Graphics options require OpenVMS V6.2 or higher. System console requires V3.9.

<b>Order Number</b>	<b>Description</b>	<b>Supported Operating System</b>	<b>Bus Slots Required</b>
<b>PBXGA-AA†</b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	OpenVMS	One PCI
<b>PBXGA-BA†</b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	OpenVMS	One PCI
<b>PBXGA-CA†</b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	OpenVMS	One PCI

† ZLXp-E performance not optimized for AlphaServers

## Step 5—Storage

Select storage devices as required. Refer to January 1995, *Digital Systems and Options Catalog* Chapter 8, *Storage Devices*, for further details on devices listed.

### Internal Disk Storage Assembly

- Included storage assembly supports eight 3.5-inch disk drives.
  - Internal storage assembly is normally configured for split-bus (two SCSI buses), four drives per bus. By reversing the positions of the terminator and jumper plugs, internal storage assembly can be reconfigured for single-bus operation with a maximum of seven disk drives per storage assembly.
  - Manufacturing normally configures internal storage assembly in split-bus mode. If there are not enough storage controllers to support the number of internal disk drives ordered, manufacturing will configure the internal storage assembly for single-bus mode.
  - Internal storage assembly drive slots are interleaved with electrically contiguous drives in every other slot. See Storage Diagrams for details.
  - Internal storage assembly supports 8-bit (**narrow**) and 16-bit (**wide**) modes of operation.
- For **Narrow** mode, select controllers and disks from Step 5a.
  - For **Wide** mode, select controllers and disks from Step 5b.
  - Internal storage assembly can be configured for split-bus mode to support **wide** mode on one bus and **narrow** mode on other bus.
  - Integral Fast SCSI-2 controller supports maximum of six devices in system enclosure (two 5.25-inch removable media devices and four 3.5-inch disk drives). All disk drives connected to this controller will operate in **narrow** mode.

**Note:** **Wide** disk drives configured on a **narrow** bus will operate in **narrow** mode. **Narrow** disk drives configured on a **wide** bus will operate in **narrow** mode. **Wide** and **narrow** devices can be mixed on a single bus.

### Storage Support Matrix Table (OpenVMS)

	KZPAA	KZPSA	KZPSC	KZESC	HSD05
RZ26L-VA	Yes	(1)	(1)	Yes	Yes
RZ26L-VW	Yes	(1)	(1)	No	No
RZ28-VA	Yes	(1)	(1)	Yes	Yes
RZ28-VW	Yes	(1)	(1)	No	No
RZ29B-VA	Yes	(1)	(1)	(2)	Yes
RZ29B-VW	Yes	(1)	(1)	No	No

(1) Supported in OpenVMS V6.2

(2) Supported as of April 27, 1995

### Step 5a—Controllers and Storage Devices for 8-bit (**Narrow**) Mode

#### Configuration Rules

- StorageWorks RAID Array 210 (KZESC-xx) includes EISA backplane RAID controller (SWXCR-Ex) and StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- For maximum number of **each** EISA-based controller supported per system see EISA Bus IRQ Address Table.
- Each controller requires one bus slot
- One- and three-port StorageWorks RAID Array 210 controllers (KZESC-xx) support hard disk drives **only**; tape drives are **not** supported.
- Three-port StorageWorks RAID Array 210 controller (KZESC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 210 Subsystem* in January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*.
- KZPSC-xx one- and three-port RAID controllers supported with narrow and wide disks. See Storage Support Matrix Table.
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be included on order.
  - KZESC-AA options use BC25S-2F for internal connection or BN21H-02 for external connection.
  - KZESC-BA options use one to three BC25S-2F for internal connection or BN21H-02 for port 0 and CK-SWXCR-AA cable kit plus two BN21H-02 cables for ports 1 and 2 external connection.
  - KZPAA-AA option uses BC25S-2F for internal connection or BN21H-02 for external connection.

Step 5a—Controllers and Storage Devices for 8-bit (**Narrow**) Mode (*continued*)**Storage Controllers for Narrow Mode**

<b>KZESC-AA*</b>	One-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZESC-BA*</b>	Three-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPAA-AA†</b>	PCI-based one port high-performance Fast SCSI-2 controller

\* See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for StorageWorks RAID Array 210 Subsystem configuration rules.

**Hard Disk Drives for Narrow Mode (see Storage Support Matrix for details)**

<b>RZ26L-VA</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28-VA</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B-VA</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Narrow Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

**SD001-AA** One-Port RAID Storage Option Pack includes: One KZESC-AA and Three RZ28-VA

**SD001-BA** Three-Port RAID Storage Option Pack includes: One KZESC-BA and Five RZ28-VA

**External Disk Expansion for Narrow Mode**

- External BA350 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5a.
- External BA350 supports RZ26L-VA, RZ28-VA, and RZ29B-VA (RZ29B requires BA350-KF) connected to the controllers listed in Step 5a, but limited to those listed in the Storage Support Matrix Table. Tapes are supported only on KZPAA-AA controller.
- External BA350 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable (BN21H-02) is required to connect a single BA350 modular storage pedestal to controllers
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA350 modular storage assemblies. Refer to Cabinet system order menu for ordering details

**BA350-KB** Modular storage pedestal includes BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN21H-xx). **Order country specific power cord for 240 V use from Step 10.**

## Step 5b—Controllers and Storage Devices for 16-bit (Wide) Mode

**Configuration Rules**

- StorageWorks RAID Array 230 includes PCI backplane RAID controller and StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- One- and three-port StorageWorks RAID Array 230 controllers (KZPSC-xx) support hard disk drives **only**; tape drives are **not** supported. See Storage Support Matrix Table.
- One-port StorageWorks RAID Array 230 controller (KZPSC-AA) supports up to 7 disk drives in RAID or non-RAID mode.
- Three-port StorageWorks RAID Array 230 controller (KZPSC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 230 Subsystem* in this Supplement.
- Maximum of four KZPSC-xx controllers supported per system.
- Each controller requires one bus slot
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be ordered separately.
  - KZPSC-AA options use BC25U-2H for internal connection or BN31S-1E for external connection.
  - KZPSC-BA options use one to three BC25U-2H for internal connection or BN31S-1E for port 0 and 1, and BN31K-0E cable kit, plus one BN31S-1E for port 2 external connection (see Storage Diagrams).
  - KZPSA-BB cable type depends on application; see this Supplement for configuration rules.

**Storage Controllers for Wide Mode**

<b>KZPSC-AA*</b>	One-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSC-BA*</b>	Three-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSA-BB†</b>	PCI-based Fast Wide Differential (FWD) SCSI controllers

\* See this Supplement for StorageWorks RAID Array 230 Subsystem configuration rules.

† Supported in OpenVMS V6.2

**Hard Disk Drives for Wide Mode (see Storage Support Matrix Table for details)**

<b>RZ26L-VW</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28-VW</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B-VW</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Wide Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-CA</b>	One-Port RAID Storage Option Pack includes: One KZPSC-AA and Three RZ28-VW
<b>SD001-DA</b>	Three-Port RAID Storage Option Pack includes: One KZPSC-BA and Five RZ28-VW

**External Disk Expansion for Wide Mode**

- External BA356 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5b.
- External BA356 supports hard disk drives **only** when connected to one- and three-port controllers (KZPSC-xx); tapes are not supported.
- External BA356 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable BN21K-xx for KZPSA, and BN31M-1E for KZPSC, is required to connect an external BA356 modular storage pedestal to controller.
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA356 modular storage assemblies. Refer to Cabinet system order menu for ordering details.

<b>BA356-KC</b>	Modular storage pedestal includes BA356-xx basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN31S-1E). <b>Order country specific power cord for 240 V use from Step 10.</b>
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## Step 5c—Internal Removable Media Devices

- Systems include 600 Mbyte CD-ROM; system supports two additional 5.25-inch half-height removable media devices, or one 5.25-inch, full-height removable media device.

**Removable Media Devices**

<b>RRD43-AC</b>	600 Mbyte, 5.25-inch half-height CD-ROM
<b>TLZ07-LG</b>	8.0 Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive
<b>TZK11-LG</b>	2.0 Gbyte, 5.25-inch half-height SCSI QIC tape drive

## Step 5d—External Storage

**Tabletop Tape Expansion**

- Integral Fast SCSI-2 controller, if not connected to internal storage assembly, can be extended outside the system enclosure via the SCSI-out port to support external SCSI devices. Maximum external bus length, including cable and device cannot exceed 1.0 meter. If not used for external expansion, SCSI-outport must be terminated with external terminator (12-37004-04) included with system.
- External tape drives are also supported on optional Fast KZPAA SCSI-2 (**Narrow**) controllers; maximum external bus length, including cable and tape device cannot exceed 3.0 meters. External tape drives are not supported on KZESC-xx controllers.
- Each tabletop tape device **requires** three-foot SCSI cable (BC09D-03).

**Tabletop Tape Expansion**

<b>TKZ09-BA</b>	5.0 Gbyte 8mm tape drive
<b>TKZ15-TA</b>	5.0 Gbyte 8mm tabletop tape drive
<b>TKZ60-xx</b>	3480-compatible tape drive (all variants)
<b>TLZ07-DA</b>	8.0 Gbyte, 4mm DAT tabletop tape drive
<b>TLZ7L-DA*</b>	32.0-96.0 Gbyte, 4-mm DAT autoloader
<b>TSZ07-BA/CA</b>	1600/6250-bit/inch 9-track tabletop magtape drive
<b>TZ86-TA</b>	6.0 Gbyte, 5.25-inch tabletop tape drive
<b>TZ87-TA</b>	20.0 Gbyte, 5.25-inch tabletop tape drive
<b>TZK11-DA</b>	2.0 Gbyte 5.25-inch tabletop QIC tape drive

\* Includes four cartridge loader. Larger magazines are supported.

† Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for details.

## Step 5e—DSSI Storage (OpenVMS systems only)

**Configuration Rules**

- System supports up to two KFESA or four KFESB EISA/DSSI adapters; mix KFESA and KFESB adapters – limit is two on same system.
- Maximum number of EISA-based controllers of all types in combination is governed by EISA bus IRQ address assignments; refer to EISA Bus IRQ Address Table for further information.
- Each internal storage assembly in system in single/split-bus mode supports one/two HSD05 DSSI/SCSI converters.
- Disk drives installed "behind" HSD05 must be **narrow** mode (-VA).
- Cabling information for DSSI controllers (also see Storage Diagrams):
  - DSSI devices supported on OpenVMS only
  - DSSI cables must be ordered separately
  - KFESA uses "Micro-Ribbon" connection
  - KFESA to any external "Pin-Socket" DSSI connection (VAX 4000s, R400X) requires BC22Q-xx
  - KFESA/B to any external "Micro-Ribbon" DSSI straight connection (all other DSSI systems and storage devices requiring straight connection) requires BC21Q-xx
  - KFESA/B to any external "Micro-Ribbon" DSSI right-angle connection (all other DSSI systems and storage devices requiring right-angle connection) requires BC29S-xx DSSI cable
  - KFESA/B to HSD05 requires BC29S-xx
  - HSD05 to HSD05 (inside system) requires BC29U-02
  - HSD05 to HSD05 (between systems) requires BC29T-09
  - HSD05 to any external "Pin-Socket" DSSI connection (VAX 4000s, R400X) requires BC29R-xx
  - HSD05 to any external "Micro-Ribbon" DSSI connection (all other DSSI systems and storage devices) requires BC29S-xx for straight connection to external device; or BC29T-09 for right-angle connection to external device

Step 5e—DSSI Storage (OpenVMS systems only) (*continued*)**DSSI Adapters**

- KFESA-AA** EISA-based single-DSSI controller (OpenVMS systems only)  
**KFESB-AA** EISA-based single-DSSI controller for large configurations (OpenVMS systems only)

**DSSI Option Pack**

- OpenVMS DSSI starter option pack includes:
  - Two KFESA-AA EISA-based DSSI adapters
  - Two HSD05-AA DSSI/SCSI converter
  - Three RZ28-VA 2-Gbyte disk drives
  - Two BC29S-06 DSSI cables (KFESA to HSD05)\*
  - VMScluster license (QL-MUZAG-AA)

**SD002-AA** OpenVMS DSSI Starter Option Pack

\* Additional cables are required to connect to external DSSI storage devices or systems; see Storage Diagrams for details.

**Step 6—Networks and Communications**

- System includes PCI-based Ethernet controller (DE435-AA); uses one PCI slot
- Select networking cable:
  - BNE4G-02 for AUI
  - BN26K-xx for 10BaseT (twisted pair)
  - BC16M-xx for Thin Wire
- Maximum of three PCI-based controllers supported, one DE435-AA included with system, plus two optional.
- Maximum number of **each** EISA-based network controllers supported per system
  - Four DE422-SA
  - Two DEFEA-xA
  - Five DW300-AA
  - Five DNSES-AA
  - Maximum number of EISA-based network controllers of all types in combination is governed by EISA bus IRQ address assignments; see EISA Bus IRQ Address Table.

- DE422-SA** EISA-based Digital Etherworks network interface card  
**DEFEA-AA** EISA-based DEC FDDIcontroller, Single Attachment  
**DEFEA-DA** EISA-based DEC FDDIcontroller, Dual Attachment  
**DW300-AA** EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation (Not supported by DECnet/OSI for OpenVMS)  
**DNSES-AA** EISA-based synchronous communications controller  
**DE435-AA** PCI-based Digital Etherworks 32-bit high-performance network interface card  
**DEFPA-xx** PCI to FDDI adapter

See January 1995, *Digital Systems and Options Catalog Chapter 7, Networks, Communications, and Cables*, and the *Network Products Guide* for more

**Step 7—Additional Power Supply**

- Additional power supply required if fully configured system includes two CPUs. In single CPU configurations, the additional power supply may be added for n+1 redundancy.
- Americas and Asia Pacific Area orders
  - If additional power supply is factory installed, 120 V U.S. power cord is included when alternate is not selected.
- If additional power supply is ordered as **spare**, power cord **must** be ordered separately, see Step 10.
- European orders
  - If additional power supply is factory installed or ordered as **spare**, country specific power cord **must** be ordered separately, see Step 10.

**H7895-AA** 400-Watt power supply

See UPS information in System Specifications.

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## Step 8—Terminals and Printers

Systems include two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.

Console terminals can either be a Graphics Monitor connected to the included video graphics adapter (See Step 4), or a Serial Video Terminal. If a Serial Video Terminal is used as the console terminal, it must be VT220, VT320, VT420, or VT520 compatible. These terminals have the graphics capability required for the EISA Configuration Utility.

Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required for each connection. A cable must be ordered unless otherwise provided.

See January 1995, Digital Systems and Options Catalog, Chapter 9, Terminals, Scanners, Printers for ordering information.

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## Step 9—Software

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

**Software Processor Code = G for all software, 1-2 processors**

### OpenVMS Distributed Interactive User Licenses

OpenVMS Distributed Interactive User Licenses are **not** specific to a single system and **can** be moved between systems (all OpenVMS) at user discretion. OpenVMS Distributed Interactive User Licenses can also be shared across a **homogeneous** OpenVMS Cluster (**all OpenVMS systems**).

**Note:** OpenVMS Distributed Interactive User Licenses are architecture-specific and **cannot** be shared across a **mixed** OpenVMS Cluster (OpenVMS and OpenVMS VAX systems).

QL-MT3A9-BB	OpenVMS Distributed Interactive 1-user license
QL-MT3A9-BC*	OpenVMS Distributed Interactive 2-user license
QL-MT3A9-BD*	OpenVMS Distributed Interactive 4-user license
QL-MT3A9-BE*	OpenVMS Distributed Interactive 8-user license
QL-MT3A9-BF*	OpenVMS Distributed Interactive 16-user license
QL-MT3A9-BG*	OpenVMS Distributed Interactive 32-user license
QL-MT3A9-BH*	OpenVMS Distributed Interactive 64-user license
QL-MT3AA-BR*	OpenVMS Distributed Interactive 128-user license
QL-MT3AB-BR*	OpenVMS Distributed Interactive 256-user license
QL-MT2AG-AA	OpenVMS Distributed Interactive unlimited user license

\* Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

### OpenVMS Media and Documentation—required for first system on site

QA-MT1AA-H8	OpenVMS media and documentation on CD-ROM
QA-MT1AH-GZ	OpenVMS hardcopy documentation

### OpenVMS Layered Products CD-ROM

QA-03XAA-H8	Layered products media and documentation for OpenVMS on CD-ROM
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### DECnet Licenses

QL-MTGAG-AA	DECnet extended function license for OpenVMS
QL-MTHAG-AA	DECnet end-system to extended function upgrade license for OpenVMS

### DSSI Information

EK-410AB-MG	DSSI VMScluster Installation Guide
EK-D4AXP-TS	DSSI VMScluster Troubleshooting Guide

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## Step 10—Keyboards and Power Cords

Systems ordered in the Americas and Asia Pacific Area include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.

### Keyboards

LK471-AA	U.S./English
LK471-AB	Belgian
LK471-AD	Danish
LK471-AE	United Kingdom
LK471-AG	German
LK471-AI	Italian
LK471-AK	Swiss/French
LK471-AN	Norwegian
LK471-AP	French
LK471-AS	Spanish
LK471-AV	Portuguese

### Power Cords

BN27Y-1J*	U.S., Canada, Japan, 120 V
BN19H-2E	Australia, New Zealand
BN19C-2E	Central Europe
BN19A-2E	U.K., Ireland
BN19E-2E	Switzerland
BN19K-2E	Denmark
BN19M-2E	Italy
BN19S-2E	Egypt, India, South Africa
BN18L-2E	Israel

\* Orderable as 17-00083-15

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## Step 11—Hardware and Software Supplemental Support Services

Step 11a—Hardware and Software Supplemental Support Services (**Americas and Asia Pacific Area only**)

### Hardware

- System includes three-year hardware warranty, on-site with 5 x 9, 24-hour response time. Select optional Hardware Supplemental Support Services if required.

### AlphaServer 2000 4/233 Systems

FM-DS4HR-36	5 x 9, 4-hour response time
FM-DS512-36	5 x 12, 4-hour response time
FM-DS616-36	6 x 16, 4-hour response time
FM-DS724-36	7 x 24, 4-hour response time

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**Step 11a—Hardware and Software Supplemental Support Services (Americas and Asia Pacific Area only) (continued)****AlphaServer 2000 4/275 Systems**

<b>FM-S44HR-36</b>	Years 1-3, 5 x 9, 4-hour response time
<b>FM-S4512-36</b>	Years 1-3, 5 x 12, 4-hour response time
<b>FM-S4616-36</b>	Years 1-3, 6 x 16, 4-hour response time
<b>FM-S4724-36</b>	Years 1-3, 7 x 24, 4-hour response time
<b>FM-S44HR-60</b>	Years 1-5, 5 x 9, 4-hour response time
<b>FM-S4512-60</b>	Years 1-5, 5 x 12, 4-hour response time
<b>FM-S4616-60</b>	Years 1-5, 6 x 16, 4-hour response time
<b>FM-S4724-60</b>	Years 1-5, 7 x 24, 4-hour response time

**Software**

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

**AlphaServer 2000 4/233 Systems**

<b>FM-DSVMS-12</b>	12-month Software Supplemental Support for <b>OpenVMS</b> AlphaServer 2000 4/233 systems
<b>FM-DSVMS-36</b>	36-month Software Supplemental Support for <b>OpenVMS</b> AlphaServer 2000 4/233 systems

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**Step 11b—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 Excelsator tool; contact MCS Sales in your country for information on Hardware and Software Supplemental Support Services.

## AlphaServer 2000 4/233 and 4/275 System EISA Bus IRQ Address Table

(DEC OSF/1 and OpenVMS Systems Only)

Option	EISA Bus IRQ Addresses									Maximum of Each Supported		
	5	7	8	9	10	11	12	14	15	OpenVMS	DEC OSF/1	Windows NT
DE422	0	-	-	N	0	0	-	-	-	3	3	4
PB2GA	-	-	-	0	-	-	-	-	-	1	1	1
DEFEA	-	-	-	N	0	0	-	-	0	2	2	2
DNSES	-	-	0	N	0	0	0	0	0	5	5	0
DW300-AA	0	-	-	N	0	0	-	-	0	4	4	5
KZESC	-	-	-	-	-	0	0	0	0	2	2	2
KFESA	-	-	-	N	0	0	0	0	0	2	0	0
KFESB	-	-	-	N	0	0	0	0	0	4	0	0
PB2SX	-	-	-	-	-	-	-	-	-	0	1	0
CXI01	-	-	-	-	-	-	-	-	-	0	2	2

## Table Codes:

0 = address is available for device

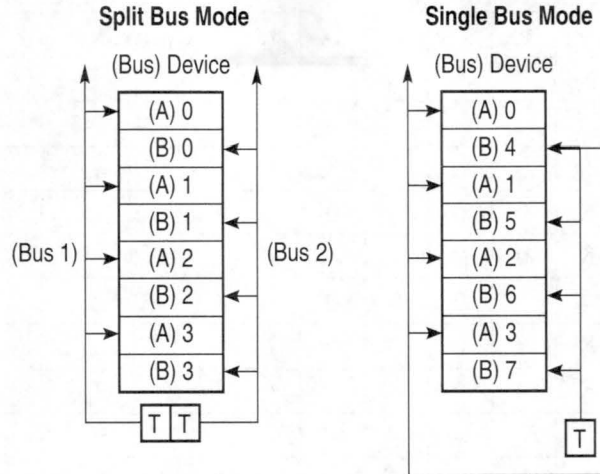
- = address not available for device

N in address location 9 = address is assigned, but its use is precluded due to presence of PB2GA-xx Video Graphics Adapter

## Configuration Rules and Information

- EISA Bus IRQ address assignments are for DEC OSF/1 and OpenVMS systems only.
- Windows NT Server operating system permits the sharing of IRQ addresses; the only limitation for these systems is the maximum number of each device supported, and the number of EISA bus slots physically available.
- Video Graphics Adapter is included in all systems listed in Step 1. It occupies one EISA bus slot, leaving seven physical slots for all other EISA-based controllers.
- In some cases, the **maximum each [device] supported** is less than the 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 be configured to **one** available address. (**Hint:** With the table as a worksheet, use a pencil to fill in an "0" for each device; fill in only one "0" per column)
- The actual IRQ address assignment will be made by the EISA Configuration Utility (ECU) which is run during system manufacture, or in the installed system if the EISA bus is re-configured.
- Prestoserve option (PB2SX) does not require an IRQ address. PB2SX is supported on DEC OSF/1 systems only.

Internal Storage Assembly Disk Drive Positions

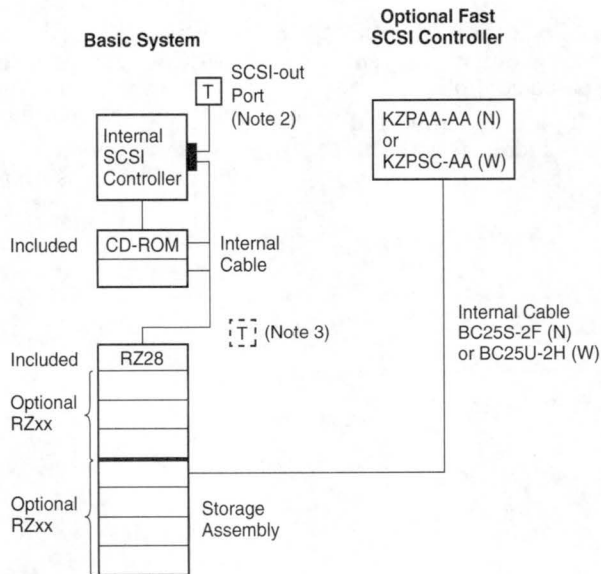


Notes:

1. Disk drive positions are physically interleaved as shown.
2. **T** represents the bus terminator.
3. Internal storage assembly is normally configured for split-bus mode. Single-bus mode is achieved by reversing the positions of the jumper plug and the terminator plug.
4. Remaining storage diagrams show internal storage assembly in split-bus mode; disk drives are shown logically grouped for simplicity.

BU-3457

Sample Configuration Based on D\*-241D\*-9 System with Storage Assembly in Split-Bus Mode

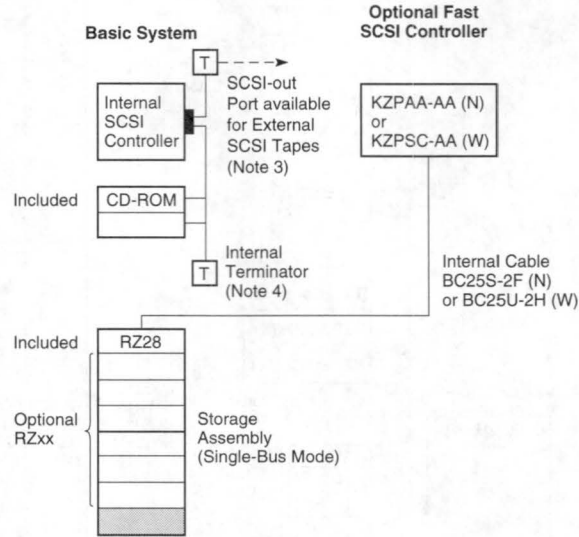


Notes:

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. SCSI-out port in this configuration cannot be used due to cable length limitations. It must be terminated with External Terminator (12-37004-04) included with system.
3. Internal Terminator (12-41296-01) is not used in this configuration, but is included with the system (loose-piece).

BU-3458

Sample Configuration Based on D\*-241D\*-\*9 System with Storage Assembly in Single-Bus Mode

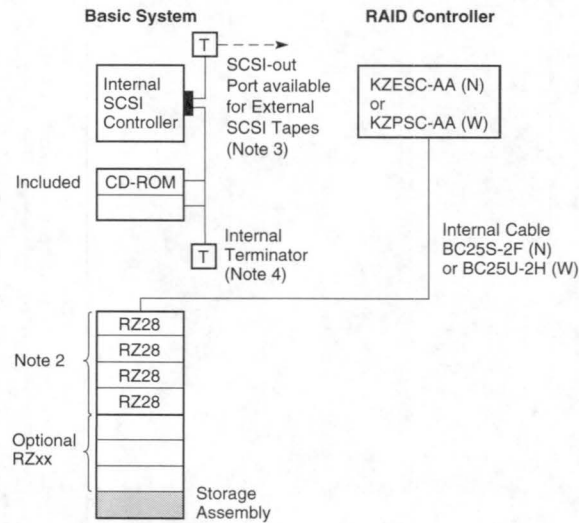


Notes:

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. Optional SCSI controller in this configuration supports a maximum of seven RZxx disk drives.
3. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5D (External Tape Expansion) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
4. Internal Terminator (12-41296-01) is included with system.

BU-3459

Sample Configuration Based on D\*-241D\*-\*9 System with One-channel RAID Option Pack (SD001-AA or CA)

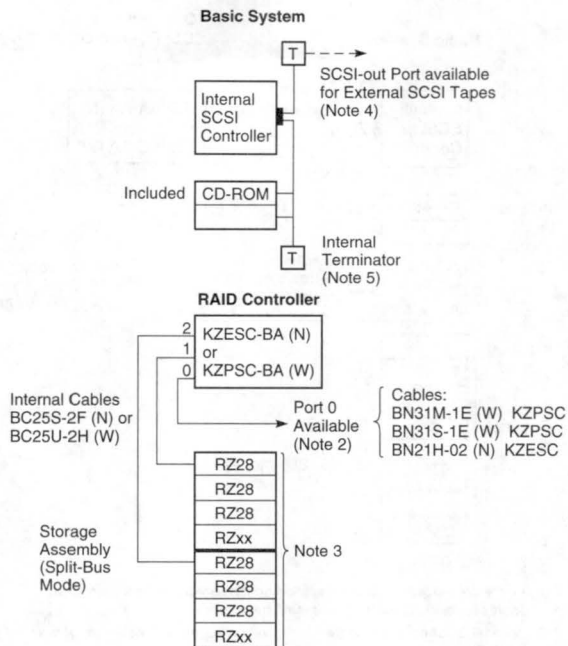


Notes:

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. One RZ28 is included with the system; three RZ28s are included with the option pack; up to three RZxx can be added.
3. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5D (External Tape Expansion) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
4. Internal Terminator (12-41296-01) is included with system.

BU-3460

Sample Configuration Based on D\*-241D\*-9 System with Three-channel Option Pack (SD001-BA or -DA)



Notes:

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. SCSI port 0 can be connected to external disk drives; See EXTERNAL DISK EXPANSION in menu step 5a (NARROW) or 5b (WIDE) for additional information.
3. One RZ28 is included with the system; five RZ28s are included with the option pack; two RZxx can be added, one to each bus.
4. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5d (External Tape Expansion) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
5. Internal Terminator (12-41296-01) is included with system.

BU-3461

## Specifications

**Shipping Dimension**

Height	109 cm (43.3 in.)
Width*	102 cm (40.0 in.)
Depth*	61 cm (24.0 in.)
Weight	79 kg (174 lb) typical 97 kg (213 lb) maximum

**Installed Dimensions**

Height	60.5 cm (23.8 in.)
Width	43 cm (16.9 in.)
Depth	65 cm (25.6 in.)
Weight	54 kg (109 lb) typical 71 kg (156 lb) maximum

Clearances	Operating	Service
Front	75 cm (29.5 in.)	75 cm (29.5 in.)
Rear	15 cm (6 in.)	75 cm (29.5 in.)
Sides	None	75 cm (29.5 in.)

**Environmental**

Temperature	Operating <sup>†</sup>	10° - 40° C (50° - 104° F)	
	Nonoperating	Not tested	
	Storage (60 days)	-40° - 66° C (-40° - 151° F)	
	Rate of change	11° C/hr (20° F/hr)	
Relative humidity	Operating	20-80%	
	Nonoperating	20-80%	
	Storage (60 days)	10-95%	
	Rate of change	20%/hr	
Maximum wet bulb temperature	Operating	28° C (82° F)	
	Storage (60 days)	46° C (115° F)	
Minimum dew point temperature	Operating	2° C (36° F)	
	Storage (60 days)	Not tested	
Maximum heat dissipation	Current		
	Single supply	2390 Btu/hr	
	Dual supply	4097 Btu/hr	
Air flow and quality	Intake location	Front	
	Exhaust location	Rear	
	Particle size	N/A	
	Concentration	N/A	
Altitude	Operating <sup>††</sup>	2000 m (6562 ft)	
	Nonoperating	3600 m (12,000 ft)	
Mechanical shock	Operating	7.5 G 10 ms	
	Nonoperating	20 G peak 30 ms	
Vibration	Operating	10-500 Hz .1 G peak	
Acoustics		Average	Declared
	Operating	6.2 LwA, B	6.5 LwAd, B
	Idle	6.0 LwA, B	6.3 LwAd, B

\* Dimensions of shipping pallet; fork-lift access is on the width dimension

<sup>†</sup> Maximum operating temperature at Sea Level. Reduce by 1 C (1.8 F) for each 600 m (2000 ft) above Sea Level.

<sup>††</sup> Higher altitudes are possible if maximum operating temperature is reduced (see Temperature, above); other restrictions may apply, such as maximum permissible altitude for hard disk drives.

Specifications (*continued*)

<b>Electrical—Power Supplies are universal 120/240 Vac</b>		
Nominal ac voltage	100-120 Vac	220-240 Vac
Operating voltage range	90-132 Vac	180-264 Vac
Power source phase	Single	Single
Nominal frequency	60 Hz	50 Hz
Frequency range	57-63 Hz	47-53 Hz
Maximum inrush current	50 Amps	50 Amps
RMS current at nominal voltage (steady state)		
Single power supply	8.0 Amps	4.0 Amps
Dual power supply	4.6 Amps each supply	2.2 Amps each supply
Power cord		
Type		IEC 320 C13
Length		190 cm (75 in.)
U.S. plug		NEMA 5-15
<b>Regulatory</b>		
Agency approvals	UL Listed to UL1950 (2nd edition) CSA Certified to CAN/CSA-C22.2 No. 950-M89 TUV EN 60950 VDE 0805 GS marked ZH1/618 FCC 15J Part 15 Class B Verified CE Class B Verified VCCI Class II ITE	
Reviewed to	AS 3260 Australian Standard SS 436 14 50 Swedish Standard NZS 6661:1989 New Zealand Standard EN 60 950: 1992 European Norm IEC 950 (2nd edition)	

**Recommended UPS**

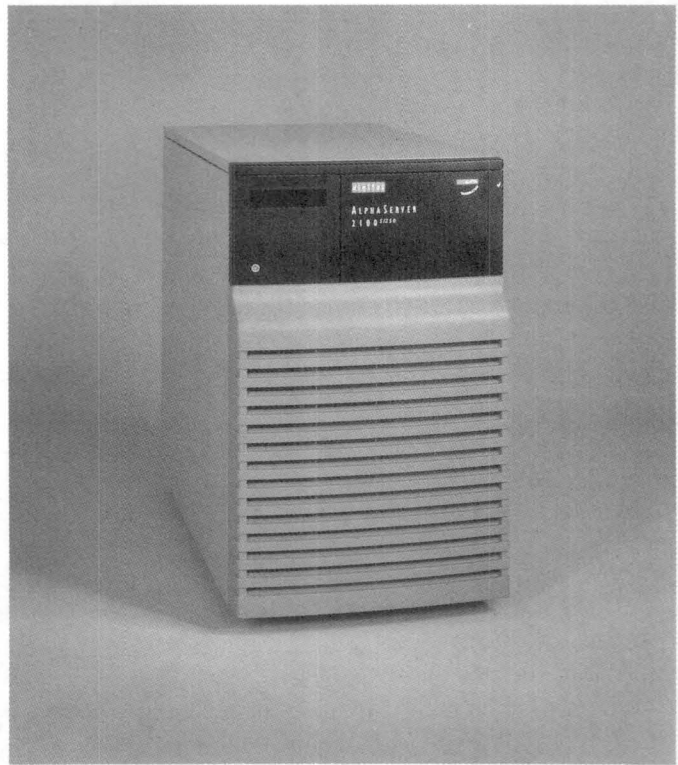
- **Rating:** Both units are rated 2000 VA/1300W and include a EIA232 port for UPS monitoring. Battery support time is 6 minutes at full load as above or 10-15 minutes for typical applications.
- **Service:** Units sold and serviced in the Continental US feature a 3 yr, full unit hot-swap 24-48 hour replacement warranty through vendor. Other locations include a one year warranty with return to certified service location. Digital on-site exchange service contract is also available.
- UPS has been sized to accommodate power requirements of future internal upgrades in fully configured systems.

<b>4N-AEAAG-AF</b>	For 120 Vac, 50 or 60Hz systems Includes detachable 6-foot input power cord with 5-20P plug and four NEMA 5-15R output receptacles.
<b>4N-AEAAG-BG</b>	For 240 Vac, 50 or 60Hz systems Features selectable 220, 230, or 240 Vac output. Uses system power cord for detachable IEC 320 input connection at UPS. Unit has four IEC 320 receptacles and comes with (2) output jumpers with IEC320 connectors for connection to system.

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

<b>4N-AEAES-AA/AB</b>	Windows NT for Alpha and Intel x86, includes cables, media and documentation
<b>4N-JBBBB-FA</b>	DEC OSF/1, includes cables, media and documentation
<b>4N-JBBBB-GA</b>	OpenVMS, includes cables, media and documentation

See January 1995, *Digital Systems and Options Catalog* Chapter 10, *Environmental Products* for ordering information.



## AlphaServer 2100 4/233, 4/275 and 5/250 Systems

### Product Description

AlphaServer 2100 systems are low-cost Alpha symmetric multiprocessing (SMP) PCI/EISA-based servers. They offer support for OpenVMS, DEC OSF/1, and Windows NT, and are suitable for general-purpose commercial, high-performance application and database, and PC LAN Superserver computing environments.

AlphaServer 2100 4/233 (Alpha 21064A microprocessor) features a 233-MHz CPU with 1 Mbyte cache; the AlphaServer 2100 4/275 (Alpha 21064A microprocessor) features a 275 MHz CPU with 4 Mbyte cache; AlphaServer 2100 5/250 (21164) features a 250-MHz CPU with 4 Mbyte cache. Each can be configured with up to four processors of the same speed for symmetric multiprocessing. The systems support up to 2 Gbytes of memory and 64 Gbytes of internal disk storage.

The system bus bandwidth is 667 Mbytes/second and the high-performance PCI I/O subsystem has a peak bandwidth of 132 Mbytes/second. The 33 Mbyte/second EISA I/O bus supports a variety of industry-standard EISA options.

AlphaServer 2100 systems supports StorageWorks storage devices. High-availability features, including internal RAID and hot swap of disks, offer data security in mission-critical environments. RAID levels supported are 0 (striping), 1 (shadowing), 0+1 (striped shadowing), and 5 (striping with parity).

AlphaServer 2100 systems are offered in a compact pedestal enclosure.

AlphaServer 2100 pedestal system menus are organized as follows:

- Windows NT Systems
- DEC OSF/1 Systems
- OpenVMS Systems
- EISA Bus IRQ Address Table (DEC OSF/1 and OpenVMS systems)
- System and Storage Diagrams
- Specifications

## Step 1—Windows NT Server Systems

Select system.

- Systems include Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package.
- Systems ordered in the Americas and Asia Pacific Area (APA) include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.
- Uninterruptable Power Supplies are available; see UPS Information following System Specifications.
- Options ordered will be factory installed unless specified as **spares**.

### AlphaServer 2100 4/233 and 4/275 Windows NT Systems include

- DECchip 21064
  - 233-MHz CPU with 1 Mbyte onboard cache, **or**
  - 275-MHz CPU with 4 Mbyte onboard cache.
- BA740 large pedestal enclosure which includes:
  - Integral 10 Mbyte/s Fast SCSI-2 controller (8-bit)
  - Integral 10-Mbit/s Ethernet controller, AUI or 10BaseT (twisted pair) selectable
  - Two EIA-232 asynchronous serial ports, 9-pin D-subminiature connectors
  - One parallel port, 25-pin D-subminiature connectors
  - 8-slot RZxx storage assembly (8/16-bit)
  - Three 5.25-inch, half-height removable media slots
  - Eight EISA slots
  - Three PCI slots
  - 602-Watt power supply
- 2.88 Mbyte diskette drive in dedicated slot
- 600 Mbyte CD-ROM (uses one removable media slot)
- 3-button mouse
- Keyboard (Americas and APA orders only)
- Power cord (Americas and APA orders only)
- Memory indicated below
- Disk drive indicated below (uses one storage slot)
- 1280 x 1024 Video Graphics Adapter (uses one EISA slot)
- Customer documentation
- EISA Configuration Utility
- Hardware Warranty: Three-year, on-site, with 5 x 9, 24-hour response time\*
- Software Warranty: 90-day SPD conformance with advisory telephone support\*
- Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package.

\* Service upgrades are available; see Step 11, Hardware and Software Supplemental Services.

Order Number	Memory	Storage RZ28-VW=2.0 Gbytes	EISA/PCI slots available for additional options
<b>AlphaServer 2100 4/233—233 MHz Windows NT Systems</b>			
DN-251P1-H9*	64 Mbytes	1 x 2.0 Gbytes	7/3
DN-251P1-J9	128 Mbytes	1 x 2.0 Gbytes	7/3
DN-251P1-K9	512 Mbytes	1 x 2.0 Gbytes	7/3
<b>AlphaServer 2100 4/275—275 MHz Windows NT Systems</b>			
DN-252P1-J9	128 Mbytes	1 x 2.0 Gbytes	7/3
DN-252P1-K9	512 Mbytes	1 x 2.0 Gbytes	7/3

\* 64 Mbyte system **not** available in Europe. Order for Americas and APA **only**.

## Step 2—CPU Symmetrical Multiprocessing (SMP) Upgrade

Order up to three additional CPUs, for a maximum of four.

- **Additional CPUs must match the speed of CPU in system**
- Four-CPU systems are restricted to two memory slots.
- Three- and four-CPU systems require additional power supply (see Step 7).

**455NR-AA** Windows NT SMP upgrade, includes one 233 MHz CPU processor; SMP license is not required.

**460NR-AA** Windows NT SMP upgrade, includes one 275 MHz CPU processor; SMP license is not required.

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### Step 3—Memory

- One to three CPU systems support a total of four memory boards in any combination.
- Four-CPU systems support total of two memory boards in any combination.
- Windows NT V3.5 supports up to 1 Gbyte memory.

<b>MS450-BA</b>	64 Mbyte memory module
<b>MS451-DA</b>	128 Mbyte memory module (replaces MS450-CA)
<b>MS451-FA</b>	512 Mbyte memory module (replaces MS451-CA)

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### Step 4—Monitors and Graphics Options

- System requires a graphics monitor to run **all** functions.
- Video adapter included in system supports 1024 x 768 and 1280 x 1024 resolution, 72-Hz monitors.
- Graphics monitors other than those listed below can be used if compatible with graphics adapter included with system.
- Select graphics option from Step 4a if required.

<b>VRC15-PA</b>	Northern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC15-P4</b>	Southern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRT17-PA</b>	Northern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT17-P4</b>	Southern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRC21-PA</b>	Northern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC21-P4</b>	Southern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.

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#### Step 4a—Graphics Options

- Graphics options require Windows NT V3.5 or higher.
- Graphics options include ZLXp-E Support Services Software for Microsoft Windows NT license, media, and documentation.

Order Number	Description	Supported Operating System	Bus Slot Required
<b>PBXGA-AN*</b>	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI
<b>PBXGA-BN*</b>	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI
<b>PBXGA-CN*</b>	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	Windows NT	One PCI

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\* ZLXp-Ex performance is not optimized for AlphaServers

## Step 5—Storage

Select storage devices as required. Refer to January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for further details on devices listed.

### Internal Disk Storage Assembly

- Included storage assembly supports eight 3.5-inch (RZ26L/RZ28) disk drives.
- One additional storage assembly in system enclosure supports an additional eight 3.5-inch (RZ26L/RZ28) disk drives. Additional storage assembly requires an additional power supply (see Step 7).
- Internal storage assemblies are normally configured for split-bus (two buses), four drives per bus. By reversing the positions of the terminator and jumper plugs, internal storage assemblies can be reconfigured for single-bus operation with a maximum of seven disk drives per storage assembly.
- Manufacturing normally configures internal storage assemblies in split-bus mode. If there are not enough storage controllers to support the number of internal disk drives ordered, manufacturing will configure the internal storage assemblies for single-bus mode.
- BA35E StorageWorks internal storage drive slots are interleaved with electrically contiguous drives in every other slot. See Storage Diagrams for details.
- Internal storage assemblies support 8-bit (**narrow**) and 16-bit (**wide**) modes of operation.
  - For **Narrow** mode, select controllers and disks from Step 5a.
  - For **Wide** mode, select controllers and disk from Step 5b.
  - Internal storage assemblies can be configured for split-bus mode to support **wide** mode on first bus and **narrow** mode on second bus.
- Integral Fast SCSI-2 controller supports maximum of seven devices in system enclosure (three 5.25-inch removable media devices and four 3.5-inch, RZ26L/RZ28 disk drives). All disk drives connected to this controller will operate in **narrow** mode.
- **Note:** **Wide** disk drives configured on a **narrow** bus will operate in **narrow** mode. **Narrow** disk drives configured on a **wide** bus will operate in **narrow** mode. **Wide** and **narrow** devices can be mixed on a single bus

### Storage Support Matrix Table (Windows NT)

	KZPAA	KZPSA	KZPSC	KZESC	HSD05
RZ26L-VA	Yes	Yes	Yes	Yes	No
RZ26L-VW	Yes	Yes	Yes	No	No
RZ28-VA	Yes	Yes	Yes	Yes	No
RZ28-VW	Yes	Yes	Yes	No	No
RZ29B-VA	Yes	(1)	Yes	(1)	No
RZ29B-VW	Yes	(1)	Yes	No	No

(1) Supported as of April 27, 1995

### Additional Storage Assembly for Internal Disk Storage

- Storage assembly supports **wide** and/or **narrow** modes (per above configuration rules).
- Requires an additional power supply (see Step 7).
- Includes SCSI cables (two BC25R-3B for **narrow** mode and two BC25T-3L for **wide** modes) for factory integration; or if ordered as **spare**, for field installation.

**BA35E-SA** Storage assembly supports eight 3.5-inch, half-height (RZ26L/RZ28) hard disk drives

Step 5a—Controllers and Storage Devices for 8-bit (**Narrow**) Mode**Configuration Rules**

- StorageWorks RAID Array 210 (KZESC-xx) includes EISA backplane RAID controller (SWXCR-Ex) and StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- For maximum number of **each** EISA-based controller supported per system see EISA Bus IRQ Address Table.
- Each controller requires one bus slot
- One- and three-port StorageWorks RAID Array 210 controllers (KZESC-xx) support hard disk drives **only**; tape drives are **not** supported.
- Three-port StorageWorks RAID Array 210 controller (KZESC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 210 Subsystem* in January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*.
- KZPSC-xx one- and three-port RAID controllers supported with narrow and wide disks. See Storage Support Matrix Table.
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be included on order.
  - KZESC-AA options use BC25S-2F for internal connection or BN21H-02 for external connection.
  - KZESC-BA options use one to three BC25S-2F for internal connection or BN21H-02 for port 0 and CK-SWXCR-AA cable kit plus two BN21H-02 cables for ports 1 and 2 external connection.
  - KZPAA-AA option uses BC25S-2F for internal connection or BN21H-02 for external connection.

Step 5a—Controllers and Storage Devices for 8-bit (**Narrow**) Mode (*continued*)**Storage Controllers for Narrow Mode**

<b>KZESC-AA*</b>	One-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZESC-BA*</b>	Three-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPAA-AA</b>	PCI-based one port high-performance Fast SCSI-2 controller

\* See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for StorageWorks RAID Array 210 Subsystem configuration rules.

**Hard Disk Drives for Narrow Mode**

<b>RZ26L-VA</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28 -VA</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B -VA</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Narrow Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-AA</b>	One-Port RAID Storage Option Pack includes: One KZESC-AA and Three RZ28-VA
<b>SD001-BA</b>	Three-Port RAID Storage Option Pack includes: One KZESC-BA and Five RZ28-VA

**External Disk Expansion for Narrow Mode**

- External BA350 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5a.
- External BA350 supports RZ26L-VA, RZ28-VA, and RZ29B-VA (RZ29B requires BA350-KF) connected to the controllers listed in Step 5a, but limited to those listed in the Storage Support Matrix Table. Tapes are supported only on KZPAA-AA controller.
- External BA350 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable (BN21H-02) is required to connect a single BA350 modular storage pedestal to controllers
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA350 modular storage assemblies. Refer to Cabinet system order menu for ordering details

<b>BA350-KB</b>	Modular storage pedestal includes BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN21H-xx). Order country specific power cord for 240 V use from Step 10.
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Step 5b—Controllers and Storage Devices for 16-bit (**Wide**) Mode**Configuration Rules**

- StorageWorks RAID Array 230 includes PCI backplane RAID controller and StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- One- and three-port StorageWorks RAID Array 230 controllers (KZPSC-xx) support hard disk drives **only**; tape drives are **not** supported. See Storage Support Matrix Table.
- One-port StorageWorks RAID Array 230 controller (KZPSC-AA) supports up to 7 disk drives in RAID or non-RAID mode.
- Three-port StorageWorks RAID Array 230 controller (KZPSC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 230 Subsystem* in this Supplement.
- Maximum of four KZPSC-xx controllers supported per system.
- PCI-based Fast Wide Differential (FWD) SCSI controller (KZPSA-BB) supports externally connected KZPSA-wide disks in the BA356 using the DWZZB wide differential to wide single-ended converter, or narrow disks using the DWZZA narrow differential to narrow or single-ended converter in BA356.
- Up to three KZPSA-BB controllers supported per system, provided there are available PCI slots.
- Each controller requires one bus slot
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be ordered separately.
  - KZPSC-AA options use BC25T-3L for internal connection or Bnxxx-xx for external connection.
  - KZPSC-BA options use one to three BC25T-3L for internal connection or BNxxx-xx for port 0 and 1, and BN31K-0E cable kit, plus one Bnxxx-xx for port 2 external connection.
  - KZPSA-BB cable type depends on application; see this Supplement for configuration rules.

**Storage Controllers for Wide Mode**

<b>KZPSC-AA*</b>	One-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSC-BA*</b>	Three-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSA-BB</b>	PCI-based Fast Wide Differential (FWD) SCSI controller

\* See this Supplement for StorageWorks RAID Array 230 Subsystem configuration rules.

**Hard Disk Drives for Wide Mode**

<b>RZ26L-VW</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28-VW</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B-VW</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Wide Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-CA</b>	One-Port RAID Storage Option Pack includes: One KZPSC-AA and Three RZ28-VW
<b>SD001-DA</b>	Three-Port RAID Storage Option Pack includes: One KZPSC-BA and Five RZ28-VW

**External Disk Expansion for Wide Mode**

- External BA356 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5b.
- External BA356 supports hard disk drives **only** when connected to one- and three-port controllers (KZPSC-xx); tapes are not supported.
- External BA356 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable BN21K-xx for KZPSA, and BN31M-1E for KZPSC, is required to connect an external BA356 modular storage pedestal to controller.
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA356 modular storage assemblies. Refer to Cabinet system order menu for ordering details.

<b>BA356-KC</b>	Modular storage pedestal includes BA356-xx basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BNxxx-xx). <b>Order country specific power cord for 240 V use from Step 10.</b>
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**Step 5c—Internal Removable Media Devices**

- Systems include 600 Mbyte CD-ROM; system supports two additional 5.25-inch half-height removable media devices, or one 5.25-inch, full-height removable media device.

**Removable Media Devices**

<b>RRD43-AC</b>	600 Mbyte, 5.25-inch half-height CD-ROM
<b>TLZ07-LG</b>	8.0 Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive
<b>TLZ6L-LG*</b> †	16.0 Gbyte, 5.25-inch full-height 4-mm DAT drive loader
<b>TLZ7L-LG*</b> †	32.0 Gbyte, 5.25-inch full-height 4-mm DAT drive loader
<b>TZK11-LG</b>	2.0 Gbyte, 5.25-inch half-height SCSI QIC tape drive

\* Includes four cartridge magazine; requires two half-height removable media device slots

† Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, Digital Systems and Options Catalog, Chapter 8, Storage Devices, for details.

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**Step 5d—External Storage****Tabletop Tape Expansion**

- Integral Fast SCSI-2 controller, if not connected to internal storage assembly, can be extended outside the system enclosure via the SCSI-out port to support external SCSI devices. Maximum external bus length, including cable and device cannot exceed 1.0 meter. If not used for external expansion, SCSI-outport must be terminated with external terminator (12-37004-04) included with system.
- External tape drives are also supported on optional Fast SCSI-2 (**Narrow**) controllers; maximum external bus length, including cable and tape device cannot exceed 3.0 meters. External tape drives are not supported on KZESC-xx controllers.
- Each tabletop tape device **requires** three-foot SCSI cable (BC09D-03)

<b>TKZ09-BA</b>	5.0 Gbyte 8mm tape drive
<b>TKZ15-TA</b>	5.0 Gbyte 8mm tabletop tape drive
<b>TKZ60-xx</b>	3480-compatible tape drive (all variants)
<b>TLZ07-DA</b>	8.0 Gbyte, 4mm DAT tabletop tape drive
<b>TLZ6L-DA*</b> †	16.0-48.0 Gbyte, 4-mm DAT autoloader
<b>TLZ7L-DA*</b> †	32.0-96.0 Gbyte, 4-mm DAT autoloader
<b>TSZ07-BA/CA</b>	1600/6250-bit/inch 9-track tabletop magtape drive
<b>TZ86-TA</b>	6.0 Gbyte, 5.25-inch tabletop tape drive
<b>TZ87-TA</b>	20.0 Gbyte, 5.25-inch tabletop tape drive
<b>TZK11-DA</b>	2.0 Gbyte 5.25-inch tabletop QIC tape drive

\* Includes four cartridge loader. Larger magazines are supported.

† Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, Digital Systems and Options Catalog, Chapter 8, Storage Devices, for details.

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**Step 6—Networks and Communications**

- Systems include integral Ethernet controller (AUI or 10BaseT selectable)
- Select networking cable:
  - BNE4G-02 for AUI
  - BN26K-xx for 10BaseT (twisted pair)
- Maximum of three PCI-based network controllers supported
- See EISA Bus IRQ Address Table for maximum number of **each** EISA-based network controller, and total number of EISA-based controllers of all types in combination, supported per system

<b>DE422-SA</b>	EISA-based Digital Etherworks network interface card
<b>DEFEA-AA</b>	EISA-based DEC FDDIcontroller Single Attachment
<b>DEFEA-DA</b>	EISA-based DEC FDDIcontroller Dual Attachment
<b>DEFEA-UA</b>	EISA-based DEC FDDIcontroller UPT Attachment

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## Step 6—Networks and Communications (*continued*)

DW300-AA	EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation (Not supported by DECnet/OSI for OpenVMS)
CXI01-xx	EISA-based asynchronous multiplexer
DE435-AA	PCI-based Digital Etherworks 32-bit high-performance network interface card

See January 1995, *Digital Systems and Options Catalog*, Chapter 7, *Networks, Communications, and Cables*, and the *Network Products Guide* for more information.

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## Step 7—Additional Power Supply

- Additional power supply is **required** if
  - Fully configured system includes second storage assembly, or
  - More than two CPUs are installed, or
  - Two CPUs and more than one memory board is installed
  - In lesser configurations, the additional power supply may be ordered for n+1 redundancy.
- Americas and Asia Pacific Area orders
  - If additional power supply is factory installed, 120 V U.S. power cord is included when alternate is not selected.
  - If additional power supply is ordered as **spare**, power cord **must** be ordered separately, see Step 10.
- European orders:
  - If additional power supply is factory installed **or** ordered as **spare**, country specific power cord **must** be ordered separately, see Step 10.

H7893-AA	602-watt power supply
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## Step 8—Terminals and Printers

Systems include two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.

Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required for each connection. A cable must be ordered unless otherwise provided.

See January 1995, *Digital Systems and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers* for ordering information.

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## Step 9—Software

Systems include Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package. Order documentation kit if required.

QA-23CAA-GZ	Windows NT Server documentation kit
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## Step 10—Keyboards and Power Cords

Systems ordered in the Americas and Asia Pacific Area include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.

### Keyboards

LK471-AA	U.S. English
LK471-AB	Belgian
LK471-AD	Danish
LK471-AE	United Kingdom
LK471-AG	German
LK471-AI	Italian
LK471-AK	Swiss/French
LK471-AN	Norwegian
LK471-AP	French
LK471-AS	Spanish
LK471-AV	Portuguese

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**Step 10—Keyboards and Power Cords (continued)****Power Cords**

<b>BN27Y-1J*</b>	U.S., Canada, Japan, 120 V
<b>BN19H-2E</b>	Australia/New Zealand
<b>BN19C-2E</b>	Central Europe
<b>BN19A-2E</b>	U.K./Ireland
<b>BN19E-2E</b>	Switzerland
<b>BN19K-2E</b>	Denmark
<b>BN19M-2E</b>	Italy
<b>BN19S-2E</b>	India/South Africa
<b>BN18L-2E</b>	Israel

\* Orderable as 17-00083-15

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**Step 11—Hardware and Software Supplemental Support Services**

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**Step 11a—Hardware and Software Supplemental Support Services (Americas and Asia Pacific Area only)****Hardware**

- Systems include three-year hardware warranty, on-site with 5 x 9, 24-hour response time.
- Select optional Hardware Supplemental Support Services if required.

**AlphaServer 2100 4/233 Systems**

<b>FM-SE4HR-36</b>	5 x 9, 4-hour response time
<b>FM-SE512-36</b>	5 x 12, 4-hour response time
<b>FM-SE616-36</b>	6 x 16, 4-hour response time
<b>FM-SE724-36</b>	7 x 24, 4-hour response time

**AlphaServer 2100 4/275 Systems**

<b>FM-454HR-36</b>	5 x 9, 4-hour response time
<b>FM-45512-36</b>	5 x 12, 4-hour response time
<b>FM-45616-36</b>	6 x 16, 4-hour response time
<b>FM-45724-36</b>	7 x 24, 4-hour response time

**AlphaServer 2100 5/250 Systems**

<b>FM-S54HR-36</b>	Years 1 - 3, 5 x 9, 4-hour response time
<b>FM-S5512-36</b>	Years 1 - 3, 5 x 12, 4-hour response time
<b>FM-S5616-36</b>	Years 1 - 3, 6 x 16, 4-hour response time
<b>FM-S5724-36</b>	Years 1 - 3, 7 x 24, 4-hour response time
<b>FM-S54HR-60</b>	Years 1 - 5, 5 x 9, 4-hour response time
<b>FM-S5512-60</b>	Years 1 - 5, 5 x 12, 4-hour response time
<b>FM-S5616-60</b>	Years 1 - 5, 6 x 16, 4-hour response time
<b>FM-S5724-60</b>	Years 1 - 5, 7 x 24, 4-hour response time

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Step 11a—Hardware and Software Supplemental Support Services (**Americas and Asia Pacific Area only**)

**Software**

- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software service upgrades for Windows NT include advisory and remedial software support for the time period indicated.

**AlphaServer 2100 4/233 Systems**

**FM-SENTS-12**      12-month Software Supplemental Support for **Windows NT** AlphaServer 2100 4/233 systems  
**FM-SENTS-36**      36-month Software Supplemental Support for **Windows NT** AlphaServer 2100 4/233 systems

**AlphaServer 2100 4/275 Systems**

**FM-45NTS-12**      12-month Software Supplemental Support for **Windows NT** AlphaServer 2100 4/275 systems  
**FM-45NTS-36**      36-month Software Supplemental Support for **Windows NT** AlphaServer 2100 4/275 systems

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Step 11b—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.

## Step 1—DEC OSF/1 Server Systems

Select system.

- **Operating system media and documentation kit is required for first system on site; see Step 9**
- Systems ordered in the Americas and Asia Pacific Area (APA) include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.
- Uninterruptable Power Supplies are available; see UPS Information following System Specifications.
- Options ordered will be factory installed unless specified as **spares**.

### AlphaServer 2100 4/233, 4/275 and 5/250 DEC OSF/1 Systems include

- DECchip 21064
  - 233-MHz CPU with 1 Mbyte onboard cache, **or**
  - 275-MHz CPU with 4 Mbyte onboard cache, **or**
- DECchip 21065
  - 250 MHz CPU with 4 Mbyte onboard cache
- BA740 large pedestal enclosure which includes:
  - Integral 10 Mbyte/s Fast SCSI-2 controller (8-bit)
  - Integral 10-Mbit/s Ethernet controller, AUI or 10BaseT (twisted pair) selectable
  - Two EIA-232 asynchronous serial ports, 9-pin D-subminiature connectors
  - One parallel port, 25-pin D-subminiature connectors
  - 8-slot RZxx storage assembly (8/16-bit)
  - Three 5.25-inch, half-height removable media slots
  - Eight EISA slots
  - Three PCI slots
  - 602-Watt power supply
- 2.88 Mbyte diskette drive in dedicated slot
- 600 Mbyte CD-ROM (uses one removable media slot)
- 3-button mouse
- Keyboard (Americas and APA orders only)
- Power cord (Americas and APA orders only)
- Memory indicated below
- Disk drive indicated below (uses one storage slot)
- 1024 x 768 Video Graphics Adapter (uses one EISA slot)
- Operating system base license and factory installed software (FIS)
- Customer documentation
- EISA Configuration Utility
- Hardware Warranty: Three-year, on-site, with 5 x 9, 24-hour response time\*
- Software Warranty: 90-day SPD conformance with advisory telephone support for Operating System and NAS 200\*
- NAS 200 for DEC OSF/1 license (QL-306AG-AA), includes the following layered products: (order media and documentation separately)
  - PATHWORKS for DEC OSF/1 (kit only, no license)
  - Polycenter Advanced File System utilities
  - Objectbroker for DEC OSF/1 Runtime
  - DECmessageQ for DEC OSF/1 Runtime
  - DCE Runtime
  - DEC OSF/1 Server Extensions
  - PrintServer software (kit only, licensed with printer)

\* Service upgrades are available; see Step 11 for Hardware and Software Supplemental Services.

Order Number	Memory	Storage RZ28-VW=2.0 Gbytes	EISA/PCI slots available for additional options
<b>AlphaServer 2100 4/233—233 MHz DEC OSF/1 systems</b>			
DA-251P1H9*	64 Mbytes	1 x 2.0 Gbytes	7/3
DA-251P1-J9	128 Mbytes	1 x 2.0 Gbytes	7/3
DA-251P1-K9	512 Mbytes	1 x 2.0 Gbytes	7/3
<b>AlphaServer 2100 4/275—275 MHz DEC OSF/1 systems</b>			
DA-252P1-J9	128 Mbytes	1 x 2.0 Gbytes	7/3
DA-252P1-K9	512 Mbytes	1 x 2.0 Gbytes	7/3
<b>AlphaServer 2100 5/250—250 MHz DEC OSF/1 systems</b>			
DA-253P1-J9	128 Mbytes	1 x 2.0 Gbytes	7/3
DA-253P1-K9	512 Mbytes	1 x 2.0 Gbytes	7/3

\* 64 Mbyte system **not** available in Europe. Order for Americas and APA **only**.

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## Step 2—CPU Symmetrical Multiprocessing (SMP) Upgrade

Order up to three additional CPUs, for a maximum of four.

- **Additional CPUs must match the speed of CPU in system.**
- Four-CPU systems are restricted to two memory slots.
- Three and four-CPU systems require additional power supply (see Step 7).

<b>455AR-AA</b>	DEC OSF/1 SMP upgrade includes one 233 MHz CPU processor and DEC OSF/1 SMP license.
<b>460AR-AA</b>	DEC OSF/1 SMP upgrade includes one 275 MHz CPU processor and DEC OSF/1 SMP license.
<b>470AR-AA</b>	DEC OSF/1 SMP upgrade includes one 250 MHz CPU processor and DEC OSF/1 SMP license.

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## Step 3—Memory

- One-to three-CPU systems support a total of four memory boards in any combination.
- Four-CPU systems support a total of two memory boards in any combination.
- DEC OSF/1 V3.2 supports up to 2.0 Gbyte memory.

<b>MS450-BA</b>	64 Mbyte memory module
<b>MS451-DA</b>	128 Mbyte memory module (replaces MS450-CA)
<b>MS451-FA</b>	512 Mbyte memory module (replaces MS451-CA)

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### Step 3a—Prestoserve Non-Volatile Random Access Memory (NVRAM)

- Supported on DEC OSF/1 systems **only**. Requires DEC OSF/1 V3.0 operating system software
- Requires one EISA slot
- Maximum one Prestoserve option per system

<b>PB2SX-AA</b>	Prestoserve non-Volatile Random Access Memory option; includes Prestoserve license and documentation kit
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## Step 4—Monitors and Graphics Options

- All console functions, including the EISA Configuration Utility (ECU) and the RAID Configuration Utility (RCU) can be performed using a standard video terminal connected to one of the system's serial ports (See Step 8).
- For graphics console functionality, order a graphics monitor. Graphics monitors other than those listed below can be used if compatible with graphics adapter included in system.
- Video adapter included in system supports 1024 x 768 resolution, 72-Hz monitors.
- Select graphics option from Step 4a if required.

<b>VRC15-PA</b>	Northern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC15-P4</b>	Southern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRT17-PA</b>	Northern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT17-P4</b>	Southern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRC21-PA</b>	Northern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC21-P4</b>	Southern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.

## Step 4a—Graphics Options

- Graphics options require DEC OSF/1 V3.2 or higher. System console requires V3.9.

Order Number	Description	Supported Operating System	Bus Slots Required
PBXGA-AA†	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1	One PCI
PBXGA-BA†	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1	One PCI
PBXGA-CA†	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	DEC OSF/1	One PCI

† ZLXp-E performance not optimized for AlphaServers

## Step 5—Storage

Select storage devices as required. Refer to January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for further details on devices listed.

## Internal Disk Storage Assembly

- Included storage assembly supports eight 3.5-inch (RZ26L/RZ28) disk drives.
- One additional storage assembly in system enclosure supports an additional eight 3.5-inch (RZ26L/RZ28) disk drives. Additional storage assembly requires an additional power supply (see Step 7).
- Internal storage assemblies are normally configured for split-bus (two buses), four drives per bus. By reversing the positions of the terminator and jumper plugs, internal storage assemblies can be reconfigured for single-bus operation with a maximum of seven disk drives per storage assembly.
- Manufacturing normally configures internal storage assemblies in split-bus mode. If there are not enough storage controllers to support the number of internal disk drives ordered, manufacturing will configure the internal storage assemblies for single-bus mode.
- BA35E StorageWorks internal storage drive slots are interleaved with electrically contiguous drives in every other slot. See Storage Diagrams for details.
- Internal storage assemblies support 8-bit (**narrow**) and 16-bit (**wide**) modes of operation.
  - For **Narrow** mode, select controllers and disks from Step 5a.
  - For **Wide** mode, select controllers and disk from Step 5b.
  - Internal storage assemblies can be configured for split-bus mode to support **wide** mode on first bus and **narrow** mode on second bus.
  - Note:** **Wide** disk drives configured on a **narrow** bus will operate in **narrow** mode. **Narrow** disk drives configured on a **wide** bus will operate in **narrow** mode.
- Integral Fast SCSI-2 controller supports maximum of seven devices in system enclosure (three 5.25-inch removable media devices and four 3.5-inch, RZ26L/RZ28 disk drives). All disk drives connected to this controller will operate in **narrow** mode.

## Storage Support Matrix Table (DEC OSF/1)

	KZPAA	KZPSA	KZPSC	KZESC	HSD05
RZ26L-VA	Yes	Yes	Yes	Yes	No
RZ26L-VW	Yes	Yes	Yes	No	No
RZ28-VA	Yes	Yes	Yes	Yes	No
RZ28-VW	Yes	Yes	Yes	No	No
RZ29B-VA	Yes	(1)	(1)	(1)	No
RZ29B-VW	Yes	(1)	(1)	No	No

(1) Supported as of April 27, 1995

## Additional Storage Assembly for Internal Disk Storage

- Storage assembly supports **wide** and/or **narrow** modes (per above configuration rules).
- Requires an additional power supply (see Step 7).
- Includes SCSI cables (two BC25R-3B for **narrow** mode and two BC25T-3L for **wide** mode) for factory integration; or if ordered as **spare**, for field installation.

BA35E-SA Storage assembly supports eight 3.5-inch, half-height (RZ26L/RZ28) hard disk drives

## Step 5a—Controllers and Storage Devices for 8-bit (Narrow) Mode

**Configuration Rules**

- StorageWorks RAID Array 210 (KZESC-xx) includes EISA backplane RAID controller (SWXCR-Ex) and StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- For maximum number of **each** EISA-based controller supported per system see EISA Bus IRQ Address Table.
- Each controller requires one bus slot
- One- and three-port StorageWorks RAID Array 210 controllers (KZESC-xx) support hard disk drives **only**; tape drives are **not** supported.
- Three-port StorageWorks RAID Array 210 controller (KZESC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 210 Subsystem* in January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*.
- KZPSC-xx one- and three-port RAID controllers supported with narrow and wide disks. See Storage Support Matrix Table.
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be included on order.
  - KZESC-AA options use BC25S-2F for internal connection or BN21H-02 for external connection.
  - KZESC-BA options use one to three BC25S-2F for internal connection or BN21H-02 for port 0 and CK-SWXCR-AA cable kit plus two BN21H-02 cables for ports 1 and 2 external connection.
  - KZPAA-AA option uses BC25S-2F for internal connection or BN21H-02 for external connection.

**Storage Controllers for Narrow Mode**

<b>KZESC-AA*</b>	One-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZESC-BA*</b>	Three-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPAA-AA</b>	PCI-based one port high-performance Fast SCSI-2 controller

\* See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for StorageWorks RAID Array 210 Subsystem configuration rules.

**Hard Disk Drives for Narrow Mode**

<b>RZ26L-VA</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28 -VA</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B -VA</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Narrow Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-AA</b>	One-Port RAID Storage Option Pack includes: One KZESC-AA and Three RZ28-VA
<b>SD001-BA</b>	Three-Port RAID Storage Option Pack includes: One KZESC-BA and Five RZ28-VA

**External Disk Expansion for Narrow Mode**

- External BA350 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5a.
- External BA350 supports RZ26L-VA, RZ28-VA, and RZ29B-VA (RZ29B requires BA350-KF) connected to the controllers listed in Step 5a, but limited to those listed in the Storage Support Matrix Table. Tapes are supported only on KZPAA-AA controller.
- External BA350 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable (BN21H-02) is required to connect a single BA350 modular storage pedestal to controllers
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA350 modular storage assemblies. Refer to Cabinet system order menu for ordering details

<b>BA350-KB</b>	Modular storage pedestal includes BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN21H-xx). <b>Order country specific power cord for 240 V use from Step 10.</b>
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## Step 5b—Controllers and Storage Devices for 16-bit (Wide) Mode

**Configuration Rules**

- StorageWorks RAID Array 230 includes PCI backplane RAID controller and StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- One- and three-port StorageWorks RAID Array 230 controllers (KZPSC-xx) support hard disk drives **only**; tape drives are **not** supported. See Storage Support Matrix Table.
- One-port StorageWorks RAID Array 230 controller (KZPSC-AA) supports up to 7 disk drives in RAID or non-RAID mode.
- Three-port StorageWorks RAID Array 230 controller (KZPSC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 230 Subsystem* in this Supplement.
- Maximum of four KZPSC-xx controllers supported per system.
- PCI-based Fast Wide Differential (FWD) SCSI controller (KZPSA-BB) supports externally connected KZPSA-wide disks in the BA356 using the DWZZB wide differential to wide single-ended converter, or narrow disks using the DWZZA narrow differential to narrow or single-ended converter in BA356.
- Up to three KZPSA-BB controllers supported per system, provided there are available PCI slots.
- Each controller requires one bus slot
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be ordered separately.
  - KZPSC-AA options use BC25T-3L for internal connection or Bnxxx-xx for external connection.
  - KZPSC-BA options use one to three BC25T-3L for internal connection or BNxxx-xx for port 0 and 1, and BN31K-0E cable kit, plus one Bnxxx-xx for port 2 external connection.
  - KZPSA-BB cable type depends on application; see this Supplement for configuration rules.

**Storage Controllers for Wide Mode**

<b>KZPSC-AA*</b>	One-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSC-BA*</b>	Three-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSA-BB</b>	PCI-based Fast Wide Differential (FWD) SCSI controller

\* See this Supplement for StorageWorks RAID Array 230 Subsystem configuration rules.

**Hard Disk Drives for Wide Mode**

<b>RZ26L-VW</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28-VW</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B-VW</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Wide Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-CA</b>	One-Port RAID Storage Option Pack includes: One KZPSC-AA and Three RZ28-VW
<b>SD001-DA</b>	Three-Port RAID Storage Option Pack includes: One KZPSC-BA and Five RZ28-VW

**External Disk Expansion for Wide Mode**

- External BA356 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5b.
- External BA356 supports hard disk drives **only** when connected to one- and three-port controllers (KZPSC-xx); tapes are not supported.
- External BA356 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable BN21K-xx for KZPSA, and BN31M-1E for KZPSC, is required to connect an external BA356 modular storage pedestal to controller.
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA356 modular storage assemblies. Refer to Cabinet system order menu for ordering details.

<b>BA356-KC</b>	Modular storage pedestal includes BA356-xx basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BNxxx-xx). Order country specific power cord for 240 V use from Step 10.
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## Step 5c—Internal Removable Media Devices

- Systems include 600 Mbyte CD-ROM; system supports two additional 5.25-inch half-height removable media devices, or one 5.25-inch, full-height removable media device.

## Removable Media Devices

<b>RRD43-AC</b>	600 Mbyte, 5.25-inch half-height CD-ROM
<b>TLZ07-LG</b>	8.0 Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive
<b>TLZ6L-LG*</b>	16.0 Gbyte, 5.25-inch full-height 4-mm DAT drive loader
<b>TLZ7L-LG*</b>	32.0 Gbyte, 5.25-inch full-height 4-mm DAT drive loader
<b>TZK11-LG</b>	2.0 Gbyte, 5.25-inch half-height SCSI QIC tape drive

\* Includes four cartridge magazine; requires two half-height removable media device slots

† Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for details.

## Step 5d—External Storage

## Tabletop Tape Expansion

- Integral Fast SCSI-2 controller, if not connected to internal storage assembly, can be extended outside the system enclosure via the SCSI-out port to support external SCSI devices. Maximum external bus length, including cable and device cannot exceed 1.0 meter. If not used for external expansion, SCSI-outport must be terminated with external terminator (12-37004-04) included with system.
- External tape drives are also supported on optional Fast SCSI-2 (**Narrow**) controllers; maximum external bus length, including cable and tape device cannot exceed 3.0 meters. External tape drives are not supported on KZESC-xx controllers.
- Each tabletop tape device **requires** three-foot SCSI cable (BC09D-03)

<b>TKZ09-BA</b>	5.0 Gbyte 8mm tape drive
<b>TKZ15-TA</b>	5.0 Gbyte 8mm tabletop tape drive
<b>TKZ60-xx</b>	3480-compatible tape drive (all variants)
<b>TLZ07-DA</b>	8.0 Gbyte, 4mm DAT tabletop tape drive
<b>TLZ6L-DA*</b>	16.0-48.0 Gbyte, 4-mm DAT autoloader
<b>TLZ7L-DA*</b>	32.0-96.0 Gbyte, 4-mm DAT autoloader
<b>TSZ07-BA/CA</b>	1600/6250-bit/inch 9-track tabletop magtape drive
<b>TZ86-TA</b>	6.0 Gbyte, 5.25-inch tabletop tape drive
<b>TZ87-TA</b>	20.0 Gbyte, 5.25-inch tabletop tape drive
<b>TZK11-DA</b>	2.0 Gbyte 5.25-inch tabletop QIC tape drive

\* Includes four cartridge loader. Larger magazines are supported.

† Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for details.

## Step 6—Networks and Communications

- Systems include integral Ethernet controller (AUI or 10BaseT selectable).
- Select networking cable:
  - BNE4G-02 for AUI
  - BN26K-xx for 10BaseT (twisted pair)
- Maximum of three PCI-based network controllers supported.
- See EISA Bus IRQ Address Table for maximum number of **each** EISA-based network controller, and total number of EISA-based controllers of all types in combination, supported per system

<b>DE422-SA</b>	EISA-based Digital Etherworks network interface card
<b>DEFEA-AA</b>	EISA-based DEC FDDIcontroller Single Attachment
<b>DEFEA-DA</b>	EISA-based DEC FDDIcontroller Dual Attachment
<b>DEFEA-UA</b>	EISA-based DEC FDDIcontroller UPT Attachment
<b>DNSES-AA</b>	EISA-based synchronous communications controller

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## Step 6—Networks and Communications (*continued*)

DW300-AA	EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation (Not supported by DECnet/OSI for OpenVMS)
CXI01-xx	EISA-based asynchronous multiplexer
DE435-AA	PCI-based Digital Etherworks 32-bit high-performance network interface card

See January 1995, Digital Systems and Options Catalog, Chapter 7, Networks, Communications, and Cables, and the Network Products Guide for more information.

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## Step 7—Additional Power Supply

- Additional power supply is required if
  - Fully configured system includes second storage assembly, or
  - More than two CPUs are installed, or
  - Two CPUs and more than one memory board is installed
  - In lesser configurations, the additional power supply may be ordered for n+1 redundancy.
- Americas and Asia Pacific Area orders
  - If additional power supply is factory installed, 120 V U.S. power cord is included when alternate is not selected.
  - If additional power supply is ordered as **spare**, power cord **must** be ordered separately, see Step 10.
- European orders
  - If additional power supply is factory installed or ordered as **spare**, country specific power cord **must** be ordered separately, see Step 10.

H7893-AA            602-Watt power supply

**Note:** Refer to System Specifications for UPS information.

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## Step 8—Terminals and Printers

Systems include two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.

Console terminals can either be a Graphics Monitor connected to the included video graphics adapter (See Step 4), or a Serial Video Terminal. If a Serial Video Terminal is used as the console terminal, it must be VT220, VT320, VT420, or VT520 compatible. These terminals have the graphics capability required for the EISA Configuration Utility.

Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required for each connection. A cable must be ordered unless otherwise provided.

See January 1995, *Digital System and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers* for ordering information.

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## Step 9—Software

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

**Software Processor Code = G for all software, 1-4 processors**

### DEC OSF/1 Interactive User Licenses

DEC OSF/1 Interactive User Licenses are **not** specific to a single system and can be moved from one system to another at user discretion

QL-MT7A9-BB	DEC OSF/1 Interactive 1-user license
QL-MT7A9-BC*	DEC OSF/1 Interactive 2-user license
QL-MT7A9-BD*	DEC OSF/1 Interactive 4-user license
QL-MT7A9-BE*	DEC OSF/1 Interactive 8-user license
QL-MT7A9-BF*	DEC OSF/1 Interactive 16-user license
QL-MT7AG-AA	DEC OSF/1 Interactive unlimited user license
QL-MT5AG-AA	DEC OSF/1 developer's extension license

\* Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

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**Step 9—Software** (*continued*)**DEC OSF/1 Media and Documentation—required for first system on site**

QA-MT4AA-H8	DEC OSF/1 media and on-line documentation on CD-ROM
QA-MT4AA-GZ	DEC OSF/1 full hardcopy documentation

**DEC OSF/1 Layered Products CD-ROM**

QA-054AA-H8	Layered products media and documentation for DEC OSF/1 on CD-ROM
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**DECnet Licenses**

QL-MTJAG-AA	DECnet/OSI end-system license for DEC OSF/1
QL-MTKAG-AA	DECnet/OSI extended function license for DEC OSF/1

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**Step 10—Keyboards and Power Cords**

Systems ordered in the Americas and Asia Pacific Area include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.

**Keyboards**

LK471-AA	U.S./English
LK471-AB	Belgian
LK471-AD	Danish
LK471-AE	United Kingdom
LK471-AG	German
LK471-AI	Italian
LK471-AK	Swiss/French
LK471-AN	Norwegian
LK471-AP	French
LK471-AS	Spanish
LK471-AV	Portuguese

**Power Cords**

BN27Y-1J*	U.S., Canada, Japan, 120 V
BN19H-2E	Australia/New Zealand
BN19C-2E	Central Europe
BN19A-2E	U.K./Ireland
BN19E-2E	Switzerland
BN19K-2E	Denmark
BN19M-2E	Italy
BN19S-2E	India/South Africa
BN18L-2E	Israel

\* Orderable as 17-00083-15

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## Step 11—Hardware and Software Supplemental Support Services

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### Step 11a—Hardware and Software Supplemental Support Services (Americas and Asia Pacific Area only)

#### Hardware

- Systems include three-year hardware warranty, on-site with 5 x 9, 24-hour response time. Select optional Hardware Supplemental Support Services if required

#### AlphaServer 2100 4/233 Systems

FM-SE4HR-36	5 x 9, 4-hour response time
FM-SE512-36	5 x 12, 4-hour response time
FM-SE616-36	6 x 16, 4-hour response time
FM-SE724-36	7 x 24, 4-hour response time

#### AlphaServer 2100 4/275 Systems

FM-454HR-36	5 x 9, 4-hour response time
FM-45512-36	5 x 12, 4-hour response time
FM-45616-36	6 x 16, 4-hour response time
FM-45724-36	7 x 24, 4-hour response time

#### AlphaServer 2100 5/250 Systems

FM-S54HR-36	Years 1 - 3, 5 x 9, 4-hour response time
FM-S5512-36	Years 1 - 3, 5 x 12, 4-hour response time
FM-S5616-36	Years 1 - 3, 6 x 16, 4-hour response time
FM-S5724-36	Years 1 - 3, 7 x 24, 4-hour response time
FM-S54HR-60	Years 1 - 5, 5 x 9, 4-hour response time
FM-S5512-60	Years 1 - 5, 5 x 12, 4-hour response time
FM-S5616-60	Years 1 - 5, 6 x 16, 4-hour response time
FM-S5724-60	Years 1 - 5, 7 x 24, 4-hour response time

#### Software

- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software service upgrades for DEC OSF/1 include advisory and remedial software support with new version license rights for operating system and NAS 200 for the time period indicated.

#### AlphaServer 2100 4/233 Systems

FM-SEOSF-12	12-month Software Supplemental Support for <b>DEC OSF/1</b> AlphaServer 2100 4/233 systems
FM-SEOSF-36	36-month Software Supplemental Support for <b>DEC OSF/1</b> AlphaServer 2100 4/233 systems

#### AlphaServer 2100 4/275 Systems

FM-45OSF-12	12-month Software Supplemental Support for <b>DEC OSF/1</b> AlphaServer 2100 4/275 systems
FM-45OSF-36	36-month Software Supplemental Support for <b>DEC OSF/1</b> AlphaServer 2100 4/275 systems

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### Step 11b—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 Excelsator tool; contact MCS Sales in your country for information on Hardware and Software Supplemental Support Services.

## Step 1—OpenVMS Server Systems

Select system.

- **Operating system media and documentation kit is required for first system on site; see Step 9.**
- Systems ordered in the Americas and Asia Pacific Area (APA) include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.
- Uninterruptable Power Supplies are available; see UPS Information following System Specifications.
- Options ordered will be factory installed unless specified as **spares**.

### AlphaServer 2100 4/233, 4/275 and 5/250 OpenVMS Systems include

- DECchip 21064
  - 233-MHz CPU with 1 Mbyte onboard cache, **or**
  - 275-MHz CPU with 4 Mbyte onboard cache, **or**
- DECchip 21065
  - 250 MHz CPU with 4 Mbyte onboard cache
- BA740 large pedestal enclosure which includes:
  - Integral 10 Mbyte/s Fast SCSI-2 controller (8-bit)
  - Integral 10-Mbit/s Ethernet controller, AUI or 10BaseT (twisted pair) selectable
  - Two EIA-232 asynchronous serial ports, 9-pin D-subminiature connectors
  - One parallel port, 25-pin D-subminiature connectors
  - 8-slot RZxx storage assembly (8/16-bit)
  - Three 5.25-inch, half-height removable media slots
  - Eight EISA slots
  - Three PCI slots
  - 602-Watt power supply
- 2.88 Mbyte diskette drive in dedicated slot
- 600 Mbyte CD-ROM (uses one removable media slot)
- 3-button mouse
- Keyboard (Americas and APA orders only)
- Power cord (Americas and APA orders only)
- Memory indicated below
- Disk drive indicated below (uses one storage slot)
- 1024 x 768 Video Graphics Adapter (uses one EISA slot)
- Operating system base license and factory installed software
- Customer documentation
- EISA Configuration Utility
- Hardware Warranty: Three-year, on-site, with 5 x 9, 24-hour response time\*
- Software Warranty: 90-day SPD conformance with advisory telephone support for Operating System and NAS 200\*
- NAS 200 for OpenVMS license (QL-23EAG-AA), includes the following layered products: (order media and documentation separately)
  - DECnet for OpenVMS End System
  - DECnet/OSI for OpenVMS End Node
  - PATHWORKS for OpenVMS (LAN Manager), kit only, no license
  - DEC TCP/IP services for OpenVMS
  - Polycenter Software Distribution (Client)
  - DECwindows Motif for OpenVMS
  - Objectbroker for OpenVMS (ACA Services)
  - DECmessageQ for OpenVMS Runtime
  - DECprint Supervisor for OpenVMS, Base
  - DECprint Supervisor for OpenVMS, Plus
  - DECprint Supervisor for OpenVMS, Open
  - PrintServer software (kit only, licensed with printer)

\* Service upgrades are available; see Step 11 for Hardware and Software Supplemental Services.

Order Number	Memory	Storage RZ28-VW=2.0 Gbytes	EISA/PCI slots available for additional options
<b>AlphaServer 2100 4/233—233 MHz OpenVMS systems</b>			
DY-251P1H9*	64 Mbytes	1 x 2.0 Gbytes	7/3
DY-251P1-J9	128 Mbytes	1 x 2.0 Gbytes	7/3
DY-251P1-K9	512 Mbytes	1 x 2.0 Gbytes	7/3
<b>AlphaServer 2100 4/275—275 MHz OpenVMS systems</b>			
DY-252P1-J9	128 Mbytes	1 x 2.0 Gbytes	7/3
DY-252P1-K9	512 Mbytes	1 x 2.0 Gbytes	7/3
<b>AlphaServer 2100 5/250—250 MHz OpenVMS systems</b>			
DY-253P1-J9	128 Mbytes	1 x 2.0 Gbytes	7/3
DY-253P1-K9	512 Mbytes	1 x 2.0 Gbytes	7/3

\* 64 Mbyte system **not** available in Europe. Order for Americas and APA only.

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## Step 2—CPU Symmetrical Multiprocessing (SMP) Upgrade

Order up to three additional CPUs, for a maximum of four.

- **Additional CPUs must match the speed of CPU in system**
- Four-CPU systems are restricted to two memory slots.
- Three and four-CPU systems require additional power supply (see Step 7).

<b>455YR-AA</b>	OpenVMS SMP upgrade includes one 233 MHz CPU processor and OpenVMS SMP license.
<b>460YR-AA</b>	OpenVMS SMP upgrade includes one 275 MHz CPU processor and OpenVMS SMP license.
<b>470YR-AA</b>	OpenVMS SMP upgrade includes one 250 MHz CPU processor and OpenVMS SMP license.

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## Step 3—Memory

- One-to three-CPU systems support a total of four memory boards in any combination.
- Four-CPU systems support a total of two memory boards in any combination.
- OpenVMS V6.1 supports up to 1 Gbyte memory. OpenVMS V6.2 will support up to 2 Gbytes memory.

<b>MS450-BA</b>	64 Mbyte memory module
<b>MS451-DA</b>	128 Mbyte memory module (replaces MS450-CA)
<b>MS451-FA</b>	512 Mbyte memory module (replaces MS451-CA)

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## Step 4—Monitors and Graphics Options

- All console functions, including the EISA Configuration Utility (ECU) and the RAID Configuration Utility (RCU) can be performed using a standard video terminal connected to one of the system's serial ports (See Step 8).
- For graphics console functionality, order a graphics monitor. Graphics monitors other than those listed below can be used if compatible with graphics adapter included in system.
- Video adapter included in system supports 1024 x 768 resolution, 72-Hz monitors.
- Select graphics option from Step 4a if required.

<b>VRC15-PA</b>	Northern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC15-P4</b>	Southern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRT17-PA</b>	Northern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT17-P4</b>	Southern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRC21-PA</b>	Northern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC21-P4</b>	Southern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.

## Step 4a—Graphics Options

- Graphics options require OpenVMS V6.2 or higher. System console requires V3.9.

Order Number	Description	Supported Operating System	Bus Slots Required
PBXGA-AA†	ZLXp-E1 8-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	OpenVMS	One PCI
PBXGA-BA†	ZLXp-E2 24-plane, PCI graphics accelerator, 2 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	OpenVMS	One PCI
PBXGA-CA†	ZLXp-E3 24-plane, PCI graphics accelerator, 24-bit Z-buffer, 4 Mpixels, 1280 x 1024 x 256 colors, 72 Hz	OpenVMS	One PCI

† ZLXp-E performance not optimized for AlphaServers

## Step 5—Storage

Select storage devices as required. Refer to January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for further details on devices listed.

## Internal Disk Storage Assembly

- Included storage assembly supports eight 3.5-inch (RZ26L/RZ28) disk drives, and HSD05 DSSI/SCSI controller (see Step 5e).
- One additional storage assembly in system enclosure supports an additional eight 3.5-inch (RZ26L/RZ28) disk drives. Additional storage assembly requires an additional power supply (see Step 7).
- Internal storage assemblies are normally configured for split-bus (two buses), four drives per bus. By reversing the positions of the terminator and jumper plugs, internal storage assemblies can be reconfigured for single-bus operation with a maximum of seven disk drives per storage assembly. Eighth slot can be used for HSD05 DSSI/SCSI controller **only** (see Step 5e).
- Manufacturing normally configures internal storage assemblies in split-bus mode. If there are not enough storage controllers to support the number of internal disk drives ordered, manufacturing will configure the internal storage assemblies for single-bus mode.
- BA35E StorageWorks internal storage drive slots are interleaved with electrically contiguous drives in every other slot. See Storage Diagrams for details.
- Internal storage assemblies support 8-bit (**narrow**) and 16-bit (**wide**) modes of operation.
  - For **Narrow** mode, select controllers and disks from Step 5a.
  - For **Wide** mode, select controllers and disk from Step 5b.
  - Internal storage assemblies can be configured for split-bus mode to support **wide** mode on first bus and **narrow** mode on second bus.
  - Note:** **Wide** disk drives configured on a **narrow** bus will operate in **narrow** mode. **Narrow** disk drives configured on a **wide** bus will operate in **narrow** mode.
- Integral Fast SCSI-2 controller supports maximum of seven devices in system enclosure (three 5.25-inch removable media devices and four 3.5-inch, RZ26L/RZ28 disk drives). All disk drives connected to this controller will operate in **narrow** mode.

## Storage Support Matrix Table (OpenVMS)

	KZPAA	KZPSA	KZPSC	KZESC	HSD05
RZ26L-VA	Yes	(1)	(1)	Yes	Yes
RZ26L-VW	Yes	(1)	(1)	No	No
RZ28-VA	Yes	(1)	(1)	Yes	Yes
RZ28-VW	Yes	(1)	(1)	No	No
RZ29B-VA	Yes	(1), (2)	(1), (2)	(1)	Yes
RZ29B-VW	Yes	(1), (2)	(1), (2)	No	No

(1) Supported on OpenVMS V6.2

(2) Supported as of April 27, 1995

## Additional Storage Assembly for Internal Disk Storage

- Storage assembly supports **wide** and/or **narrow** modes (per above configuration rules).
- Requires an additional power supply (see Step 7).
- Includes SCSI cables (two BC25R-3B for **narrow** mode and two BC25T-3L for **wide** mode) for factory integration; or if ordered as **spare**, for field installation.

**BA35E-SA** Storage assembly supports eight 3.5-inch, half-height (RZ26L/RZ28) hard disk drives

Step 5a—Controllers and Storage Devices for 8-bit (**Narrow**) Mode**Configuration Rules**

- StorageWorks RAID Array 210 (KZESC-xx) includes EISA backplane RAID controller (SWXCR-Ex) and StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- For maximum number of **each** EISA-based controller supported per system see EISA Bus IRQ Address Table.
- Each controller requires one bus slot
- One- and three-port StorageWorks RAID Array 210 controllers (KZESC-xx) support hard disk drives **only**; tape drives are **not** supported.
- Three-port StorageWorks RAID Array 210 controller (KZESC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 210 Subsystem* in January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*.
- KZPSC-xx one- and three-port RAID controllers supported with narrow and wide disks. See Storage Support Matrix Table.
- Additional configuration information:
  - KFESA has dual (in/out) termination to allow connection in middle of DSSI bus
  - OpenVMS Volume Shadowing does not support KZESC-xx controllers; KZESC-xx controllers support RAID 1 (hardware-based shadowing)
  - HSZ40-xx StorageWorks array controller is **not** supported on PCI-based KZPAA-AA controller
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be included on order.
  - KZESC-AA options use BC25S-2F for internal connection or BN21H-02 for external connection.
  - KZESC-BA options use one to three BC25S-2F for internal connection or BN21H-02 for port 0 and CK-SWXCR-AA cable kit plus two BN21H-02 cables for ports 1 and 2 external connection.
  - KZPAA-AA option uses BC25S-2F for internal connection or BN21H-02 for external connection.

**Storage Controllers for Narrow Mode**

<b>KZESC-AA*</b>	One-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZESC-BA*</b>	Three-port EISA backplane RAID controller; includes StorageWorks RAID Array 210 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPAA-AA</b>	PCI-based one port high-performance Fast SCSI-2 controller

\* See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for StorageWorks RAID Array 210 Subsystem configuration rules.

**Hard Disk Drives for Narrow Mode**

<b>RZ26L-VA</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28 -VA</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B -VA</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Narrow Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-AA</b>	One-Port RAID Storage Option Pack includes: One KZESC-AA and Three RZ28-VA
<b>SD001-BA</b>	Three-Port RAID Storage Option Pack includes: One KZESC-BA and Five RZ28-VA

**External Disk Expansion for Narrow Mode**

- External BA350 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5a.
- External BA350 supports RZ26L-VA, RZ28-VA, and RZ29B-VA (RZ29B requires BA350-KF) connected to the controllers listed in Step 5a, but limited to those listed in the Storage Support Matrix Table. Tapes are supported only on KZPAA-AA controller.
- External BA350 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable (BN21H-02) is required to connect a single BA350 modular storage pedestal to controllers.
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA350 modular storage assemblies. Refer to Cabinet system order menu for ordering details.

<b>BA350-KB</b>	Modular storage pedestal includes BA350-SB basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BN21H-xx). Order country specific power cord for 240 V use from Step 10.
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Step 5b—Controllers and Storage Devices for 16-bit (**Wide**) Mode**Configuration Rules**

- StorageWorks RAID Array 230 includes PCI backplane RAID controller and StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1 and Windows NT.
- One- and three-port StorageWorks RAID Array 230 controllers (KZPSC-xx) support hard disk drives **only**; tape drives are **not** supported. See Storage Support Matrix Table.
- One-port StorageWorks RAID Array 230 controller (KZPSC-AA) supports up to 7 disk drives in RAID or non-RAID mode.
- Three-port StorageWorks RAID Array 230 controller (KZPSC-BA) supports up to 21 disk drives in up to eight logical groups; RAID sets must be created to support more than eight physical disk drives; for additional information see *StorageWorks RAID Array 230 Subsystem* in this Supplement.
- OpenVMS Volume Shadowing does not support KZPSC-xx controllers; KZPSC-xx controllers do support RAID 1 (hardware-based shadowing).
- Maximum of four KZPSC-xx controllers supported per system.
- Each controller requires one bus slot
- Cabling information for Fast-SCSI-2 controllers (also see Storage Diagrams):
  - Internal cables are supplied as needed for factory installed configurations.
  - External cables are **not** included and must be ordered separately.
  - KZPSC-AA options use BC25T-3L for internal connection or Bxxxx-xx for external connection.
  - KZPSC-BA options use one to three BC25T-3L for internal connection or BNxxx-xx for port 0 and 1, and BN31K-0E cable kit, plus one Bxxxx-xx for port 2 external connection.
  - KZPSA-BB cable type depends on application; see this Supplement for configuration rules.

**Storage Controllers for Wide Mode**

<b>KZPSC-AA*</b>	One-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSC-BA*</b>	Three-port PCI backplane RAID controller; includes StorageWorks RAID Array 230 Subsystem family software and documentation kit for OpenVMS, DEC OSF/1, and Windows NT
<b>KZPSA-BB†</b>	PCI-based Fast Wide Differential (FWD) SCSI controllers

\* See this Supplement for StorageWorks RAID Array 230 Subsystem configuration rules.

† Supported in OpenVMS V6.2

**Hard Disk Drives for Wide Mode**

<b>RZ26L-VW</b>	1.05 Gbyte, 3.5-inch half-height disk drive
<b>RZ28-VW</b>	2.0 Gbyte, 3.5-inch half-height disk drive
<b>RZ29B-VW</b>	4.3 Gbyte, 3.5-inch half-height disk drive

**Storage Option Packs for Wide Mode**

- Storage option packs are factory installed only
- Additional RZxx disk drives may be added; see Storage Diagrams for details.

<b>SD001-CA</b>	One-Port RAID Storage Option Pack includes: One KZPSC-AA and Three RZ28-VW
<b>SD001-DA</b>	Three-Port RAID Storage Option Pack includes: One KZPSC-BA and Five RZ28-VW

**External Disk Expansion for Wide Mode**

- External BA356 StorageWorks modular storage pedestals are supported on all Fast SCSI-2 controllers listed in Step 5b.
- External BA356 supports hard disk drives **only** when connected to one- and three-port controllers (KZPSC-xx); tapes are not supported.
- External BA356 is not supported on integral Fast SCSI-2 controller due to insufficient remaining external bus length.
- SCSI cable BN21K-xx for KZPSA, and BN31M-1E for KZPSC, is required to connect an external BA356 modular storage pedestal to controller.
- AlphaServer 2100 cabinet system is recommended for larger configurations using multiple external BA356 modular storage assemblies. Refer to Cabinet system order menu for ordering details.

<b>BA356-KC</b>	Modular storage pedestal includes BA356-xx basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord; requires SCSI cable (BNxxx-xx). <b>Order country specific power cord for 240 V use from Step 10.</b>
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## Step 5c—Internal Removable Media Devices

- Systems include 600 Mbyte CD-ROM; system supports two additional 5.25-inch half-height removable media devices, or one 5.25-inch, full-height removable media device.

## Removable Media Devices

RRD43-AC	600 Mbyte, 5.25-inch half-height CD-ROM
TLZ07-LG	8.0 Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive
TLZ6L-LG*†	16.0 Gbyte, 5.25-inch full-height 4-mm DAT drive loader
TLZ7L-LG*†	32.0 Gbyte, 5.25-inch full-height 4-mm DAT drive loader
TZK11-LG	2.0 Gbyte, 5.25-inch half-height SCSI QIC tape drive

\* Includes four cartridge magazine; requires two half-height removable media device slots

† Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for details.

## Step 5d—External Storage

## Tabletop Tape Expansion

- Integral Fast SCSI-2 controller, if not connected to internal storage assembly, can be extended outside the system enclosure via the SCSI-out port to support external SCSI devices. Maximum external bus length, including cable and device cannot exceed 1.0 meter. If not used for external expansion, SCSI-outport must be terminated with external terminator (12-37004-04) included with system.
- External tape drives are also supported on optional Fast SCSI-2 (**Narrow**) controllers; maximum external bus length, including cable and tape device cannot exceed 3.0 meters. External tape drives are not supported on KZESC-xx controllers.
- Each tabletop tape device **requires** three-foot SCSI cable (BC09D-03)

## Tabletop Tape Expansion

TKZ09-BA	5.0 Gbyte 8mm tape drive
TKZ15-TA	5.0 Gbyte 8mm tabletop tape drive
TKZ60-xx	3480-compatible tape drive (all variants)
TLZ07-DA	8.0 Gbyte, 4mm DAT tabletop tape drive
TLZ6L-DA*†	16.0-48.0 Gbyte, 4-mm DAT autoloader
TLZ7L-DA*†	32.0-96.0 Gbyte, 4-mm DAT autoloader
TSZ07-BA/CA	1600/6250-bit/inch 9-track tabletop magtape drive
TZ86-TA	6.0 Gbyte, 5.25-inch tabletop tape drive
TZ87-TA	20.0 Gbyte, 5.25-inch tabletop tape drive
TZK11-DA	2.0 Gbyte 5.25-inch tabletop QIC tape drive

\* Includes four cartridge loader. Larger magazines are supported.

† Base operating systems support sequential back-up mode only; additional software is required for random access backup. See January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for details.

## Step 5e—DSSI Storage (OpenVMS systems only)

**Configuration Rules**

- System supports up to two KFESA or four KFESB EISA/DSSI adapters; KFESA and KFESB adapters cannot be mixed on the same system.
- Maximum number of EISA-based controllers of all types in combination is governed by EISA bus IRQ address assignments; refer to EISA Bus IRQ Address Table on page n.mm for further information.
- Each internal storage assembly in system in single/split-bus mode supports one/two HSD05 DSSI/SCSI converters.
- Disk drives installed "behind" HSD05 can be either type (**narrow** or **wide**), but all will operate in **narrow** mode.
- Cabling information for DSSI controllers (also see Storage Diagrams):
  - DSSI devices supported on OpenVMS only
  - DSSI cables must be ordered separately
  - KFESA uses "Micro-Ribbon" connection
  - KFESA to any external "Pin-Socket" DSSI connection (VAX 4000s, R400X) requires BC22Q-xx
  - KFESA to any external "Micro-Ribbon" DSSI straight connection (all other DSSI systems and storage devices requiring straight connection) requires BC21Q-xx
  - KFESA to any external "Micro-Ribbon" DSSI right-angle connection (all other DSSI systems and storage devices requiring right-angle connection) requires BC29S-xx DSSI cable
  - KFESA to HSD05 requires BC29S-xx
  - HSD05 to HSD05 (inside system) requires BC29U-02
  - HSD05 to HSD05 (between systems) requires BC29T-09
  - HSD05 to any external "Pin-Socket" DSSI connection (VAX 4000s, R400X) requires BC29R-xx
  - HSD05 to any external "Micro-Ribbon" DSSI connection (all other DSSI systems and storage devices) requires BC29S-xx for straight connection to external device; or BC29T-09 for right-angle connection to external device

**DSSI Adapters**

**KFESA-AA** EISA-based single-DSSI controller (OpenVMS systems only)

**KFESB-AA** EISA-based single-DSSI controller (OpenVMS systems only)

**DSSI Option Pack**

- OpenVMS DSSI starter option pack includes:
  - Two KFESA-AA EISA-based DSSI adapters
  - Two HSD05-AA DSSI/SCSI converter
  - Three RZ28-VA 2-Gbyte disk drives
  - Two BC29S-06 DSSI cables (KFESA to HSD05)\*
  - VMScluster license (QL-MUZAG-AA)

**SD002-AA** OpenVMS DSSI Starter Option Pack

\* Additional cables are required to connect to external DSSI storage devices or systems; see Storage Diagrams for details.

**Step 6—Networks and Communications**

- Systems include integral Ethernet controller (AUI or 10BaseT selectable).
- Select networking cable:
  - BNE4G-02 for AUI
  - BN26K-xx for 10BaseT (twisted pair)
- Maximum of three PCI-based network controllers supported
- See EISA Bus IRQ Address Table for maximum number of **each** EISA-based network controller, and total number of EISA-based controllers of all types in combination, supported per system

**DE422-SA** EISA-based Digital Etherworks network interface card

**DEFEA-AA** EISA-based DEC FDDIcontroller Single Attachment

**DEFEA-DA** EISA-based DEC FDDIcontroller Dual Attachment

**DEFEA-UA** EISA-based DEC FDDIcontroller UPT Attachment

**DNSES-AA** EISA-based synchronous communications controller

**DW300-AA** EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation (Not supported by DECnet/OSI for OpenVMS)

**DE435-AA** PCI-based Digital Etherworks 32-bit high-performance network interface card

See January 1995, Digital Systems and Options Catalog, Chapter 7, Networks, Communications, and Cables, and the Network Products Guide for more information.

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## Step 7—Additional Power Supply

- Additional power supply is required if
  - Fully configured system includes second storage assembly, or
  - More than two CPUs are installed, or
  - Two CPUs and more than one memory board is installed
  - In lesser configurations, the additional power supply may be ordered for n+1 redundancy.
- Americas and Asia Pacific Area orders
  - If additional power supply is factory installed, 120 V U.S. power cord is included when alternate is not selected.
  - If additional power supply is ordered as **spare**, power cord **must** be ordered separately, see Step 10.
- European orders
  - If additional power supply is factory installed or ordered as **spare**, country specific power cord **must** be ordered separately, see Step 10.

**H7893-AA**                      602-Watt power supply

**Note:** Refer to System Specifications for UPS information.

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## Step 8—Terminals and Printers

Systems include two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.

Console terminals can either be a Graphics Monitor connected to the included video graphics adapter (See Step 4), or a Serial Video Terminal. If a Serial Video Terminal is used as the console terminal, it must be VT220, VT320, VT420, or VT520 compatible. These terminals have the graphics capability required for the EISA Configuration Utility.

Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required for each connection. A cable must be ordered unless otherwise provided.

See January 1995, *Digital System and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers* for ordering information.

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## Step 9—Software

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

**Software Processor Code = G for all software, 1-4 processors**

### OpenVMS Distributed Interactive User Licenses

OpenVMS Distributed Interactive User Licenses are **not** specific to a single system and **can** be moved between systems (all OpenVMS) at user discretion. OpenVMS Distributed Interactive User Licenses can also be shared across a **homogeneous** OpenVMS Cluster (**all OpenVMS systems**)

**Note:** OpenVMS Distributed Interactive User Licenses are architecture-specific and **cannot** be shared across a **mixed** OpenVMS Cluster (OpenVMS and OpenVMS VAX systems)

<b>QL-MT3A9-BB</b>	OpenVMS Distributed Interactive 1-user license
<b>QL-MT3A9-BC*</b>	OpenVMS Distributed Interactive 2-user license
<b>QL-MT3A9-BD*</b>	OpenVMS Distributed Interactive 4-user license
<b>QL-MT3A9-BE*</b>	OpenVMS Distributed Interactive 8-user license
<b>QL-MT3A9-BF*</b>	OpenVMS Distributed Interactive 16-user license
<b>QL-MT3A9-BG*</b>	OpenVMS Distributed Interactive 32-user license
<b>QL-MT3A9-BH*</b>	OpenVMS Distributed Interactive 64-user license
<b>QL-MT3AA-BR*</b>	OpenVMS Distributed Interactive 128-user license
<b>QL-MT3AB-BR*</b>	OpenVMS Distributed Interactive 256-user license
<b>QL-MT2AG-AA</b>	OpenVMS Distributed Interactive unlimited user license

\* Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

### OpenVMS Media and Documentation—required for first system on site

<b>QA-MT1AA-H8</b>	OpenVMS media and documentation on CD-ROM
<b>QA-MT1AH-GZ</b>	OpenVMS hardcopy documentation

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**Step 9—Software** *(continued)***OpenVMS Layered Products CD-ROM**

QA-03XAA-H8 Layered products media and documentation for OpenVMS on CD-ROM

**DECnet Licenses**

QL-MTGAG-AA DECnet extended function license for OpenVMS

QL-MTHAG-AA DECnet end-system to extended function upgrade license for OpenVMS

**DSSI Information**

EK-410AB-MG DSSI VMScluster Installation Guide

EK-D4AXP-TS DSSI VMScluster Troubleshooting Guide

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**Step 10—Keyboards and Power Cords**

Systems ordered in the Americas and Asia Pacific Area include 120 V U.S. power cord and keyboard unless alternate is specified. Select country specific power cord and keyboard for **all** systems ordered in Europe.

**Keyboards**

LK471-AA	U.S./English
LK471-AB	Belgian
LK471-AD	Danish
LK471-AE	United Kingdom
LK471-AG	German
LK471-AI	Italian
LK471-AK	Swiss/French
LK471-AN	Norwegian
LK471-AP	French
LK471-AS	Spanish
LK471-AV	Portuguese

**Power Cords**

BN27Y-1J*	U.S., Canada, Japan, 120 V
BN19H-2E	Australia/New Zealand
BN19C-2E	Central Europe
BN19A-2E	U.K./Ireland
BN19E-2E	Switzerland
BN19K-2E	Denmark
BN19M-2E	Italy
BN19S-2E	India/South Africa
BN18L-2E	Israel

\* Orderable as 17-00083-15

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## Step 11—Hardware and Software Supplemental Support Services

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### Step 11a—Hardware and Software Supplemental Support Services (Americas and Asia Pacific Area only)

#### Hardware

- Systems include three-year hardware warranty, on-site with 5 x 9, 24-hour response time.
- Select optional Hardware Supplemental Support Services if required.

#### AlphaServer 2100 4/233 Systems

FM-SE4HR-36	5 x 9, 4-hour response time
FM-SE512-36	5 x 12, 4-hour response time
FM-SE616-36	6 x 16, 4-hour response time
FM-SE724-36	7 x 24, 4-hour response time

#### AlphaServer 2100 4/275 Systems

FM-454HR-36	5 x 9, 4-hour response time
FM-45512-36	5 x 12, 4-hour response time
FM-45616-36	6 x 16, 4-hour response time
FM-45724-36	7 x 24, 4-hour response time

#### AlphaServer 2100 5/250 Systems

FM-S54HR-36	Years 1 - 3, 5 x 9, 4-hour response time
FM-S5512-36	Years 1 - 3, 5 x 12, 4-hour response time
FM-S5616-36	Years 1 - 3, 6 x 16, 4-hour response time
FM-S5724-36	Years 1 - 3, 7 x 24, 4-hour response time
FM-S54HR-60	Years 1 - 5, 5 x 9, 4-hour response time
FM-S5512-60	Years 1 - 5, 5 x 12, 4-hour response time
FM-S5616-60	Years 1 - 5, 6 x 16, 4-hour response time
FM-S5724-60	Years 1 - 5, 7 x 24, 4-hour response time

#### Software

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

#### AlphaServer 2100 4/233 Systems

FM-SEVMS-12	12-month Software Supplemental Support for <b>OpenVMS</b> AlphaServer 2100 4/233 systems
FM-SEVMS-36	36-month Software Supplemental Support for <b>OpenVMS</b> AlphaServer 2100 4/233 systems

#### AlphaServer 2100 4/275 Systems

FM-45VMS-12	12-month Software Supplemental Support for <b>OpenVMS</b> AlphaServer 2100 4/275 systems
FM-45VMS-36	36-month Software Supplemental Support for <b>OpenVMS</b> AlphaServer 2100 4/275 systems

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### Step 11b—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.

## AlphaServer 2100 4/233 and 4/275 EISA Bus IRQ Address Table

(DEC OSF/1 and OpenVMS Systems Only)

Option	EISA Bus IRQ Addresses									Maximum of Each Supported		
	5	7	8	9	10	11	12	14	15	OpenVMS	DEC OSF/1	Windows NT
DE422	0	-	-	N	0	0	-	-	-	3	3	4
PB2GA	-	-	-	0	-	-	-	-	-	1	1	1
DEFEA	-	-	-	N	0	0	-	-	0	2	2	2
DNSES	-	-	0	N	0	0	0	0	0	5	5	0
DW300	0	-	-	N	0	0	-	-	0	4	4	5
PB2HA	-	-	-	N	0	0	0	0	0	1	1	1
KZESC	-	-	-	-	-	0	0	0	0	4	4	4
KFESA	-	-	-	N	0	0	0	0	0	2	0	0
KFESB	-	-	-	N	0	0	0	0	0	4	0	0
PB2SX	-	-	-	-	-	-	-	-	-	0	1	0
CXI01	-	-	-	-	-	-	-	-	-	0	2	2

## Table Codes:

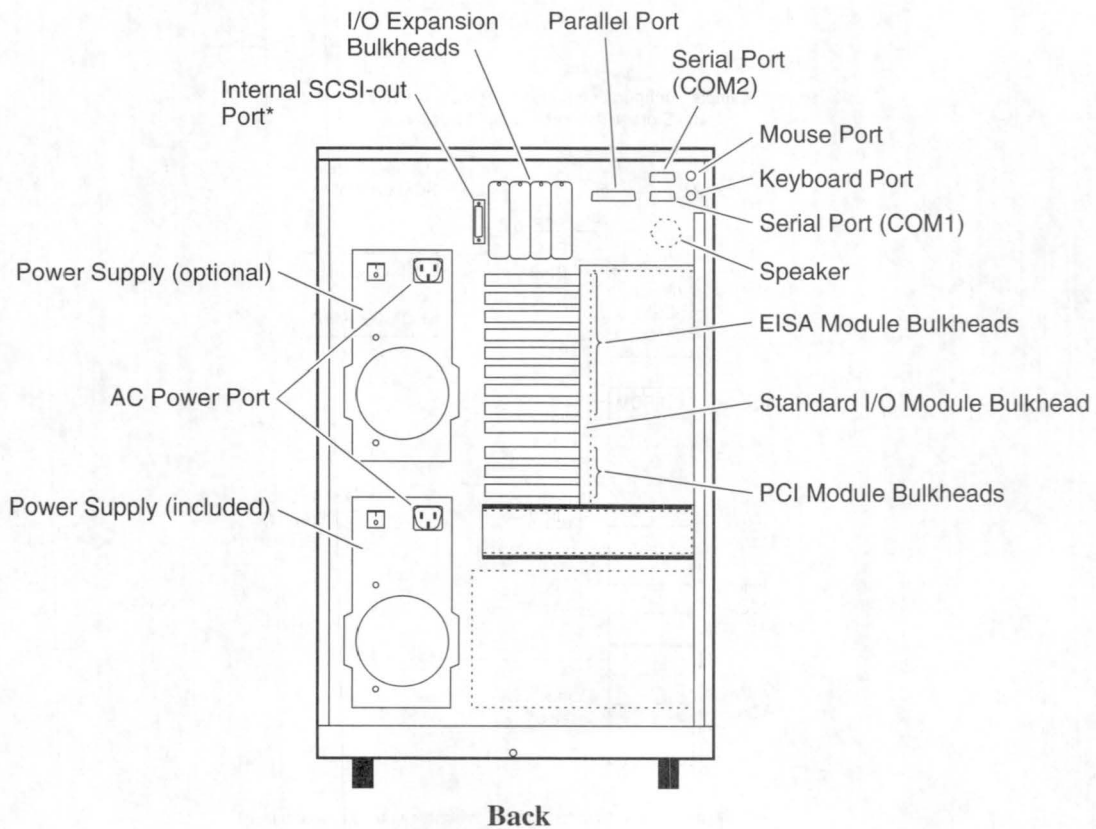
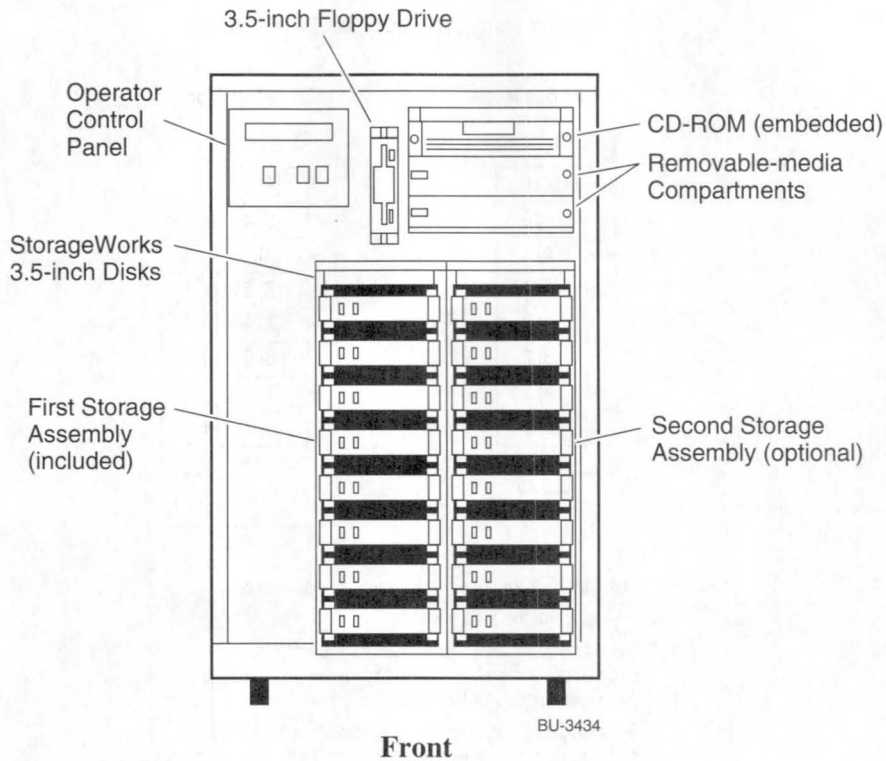
0 = address is available for device

- = address not available for device

N in address location 9 = address is assigned, but its use is precluded due to presence of PB2GA-xx Video Graphics Adapter

## Configuration Rules and Information

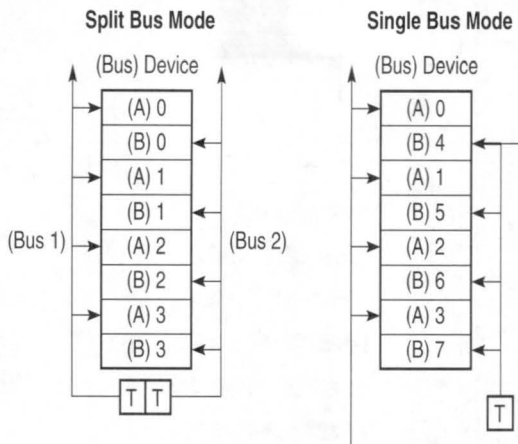
- EISA Bus IRQ address assignments are for DEC OSF/1 and OpenVMS systems only
- Windows NT Server operating system permits the sharing of IRQ addresses; the only limitation for these systems is the maximum number of each device supported, and the number of EISA bus slots physically available.
- Video Graphics Adapter is included in all systems listed in Step 1. It occupies one EISA bus slot, leaving seven physical slots for all other EISA-based controllers.
- In some cases, the **maximum each [device] supported** is less than the 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 be configured to ONE available address. (**Hint:** With the table as a worksheet, use a pencil to fill in an "0" for each device; fill in only one "0" per column)
- The actual IRQ address assignment will be made by the EISA Configuration Utility (ECU) which is run during system manufacture, or in the installed system if the EISA bus is re-configured.
- PB2SX and CXI01 do not use any IRQ address.



\* If not used, internal SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.

BU-3435

Internal Storage Assembly Disk Drive Positions

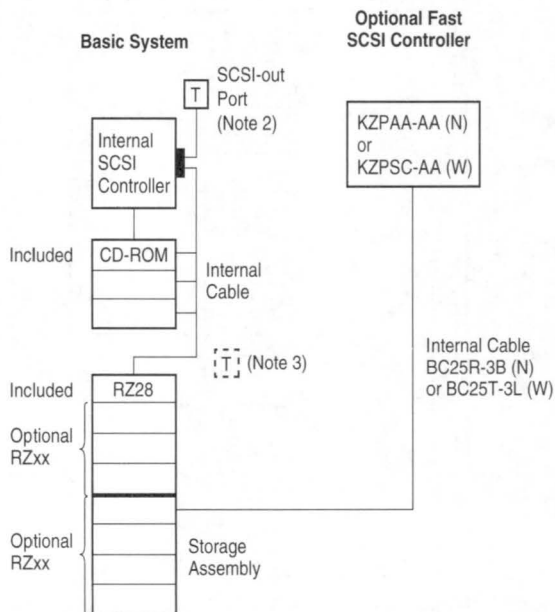


Notes:

1. Disk drive positions are physically interleaved as shown.
2. represents the bus terminator.
3. Internal storage assembly is normally configured for split-bus mode. Single-bus mode is achieved by reversing the positions of the jumper plug and the terminator plug.
4. Remaining storage diagrams show internal storage assembly in split-bus mode; disk drives are shown logically grouped for simplicity.

BU-3457

Sample Configuration Based on D\*25\*P1\*9 System with Storage Assembly in Split-Bus Mode

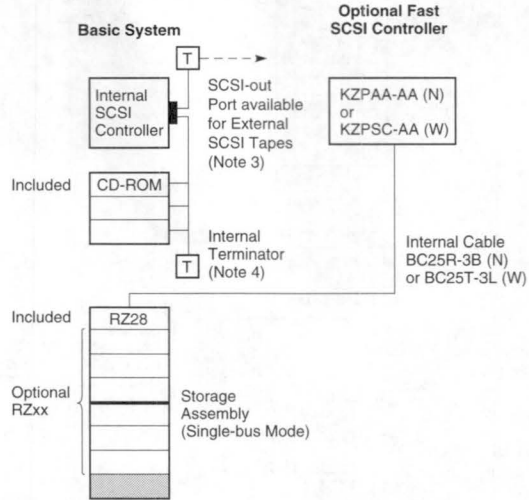


Notes:

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. SCSI-out port in this configuration is not used. It must be terminated with External Terminator (12-37004-04) included with system.
3. Internal Terminator (12-41296-01) is not used in this configuration, but is included with the system (loose-piece).

BU-3436

Sample Configuration Based on D\*-25\*P1-\*9 System with Storage Assembly in Single-Bus Mode

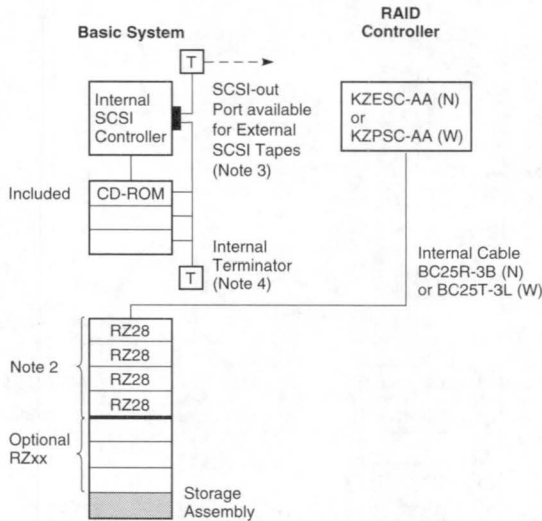


Notes:

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. Optional SCSI controller in this configuration supports a maximum of seven RZxx disk drives.
3. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5d (External Tape Expansion) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
4. Internal Terminator (12-41296-01) is included with system.

BU-3473

Sample Configuration Based on D\*-25\*P1-\*9 System with One-channel RAID Option Pack (SD001-AA or -CA)



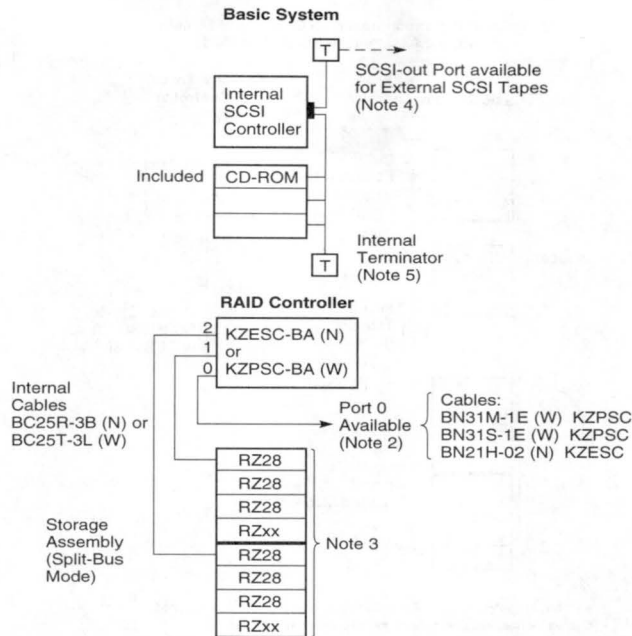
Notes:

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. One RZ28 is included with the system; three RZ28s are included with the option pack; up to three RZxx can be added.
3. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5D (External Tape Expansion) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
4. Internal Terminator (12-41296-01) is included with system.

BU-3472

# AlphaServer 2100 4/233, 4/275 and 5/250 Storage Diagram

## Sample Configuration Based on D\*-25\*D1-\*9 System with Three-channel Option Pack (SD001-BA or -DA)

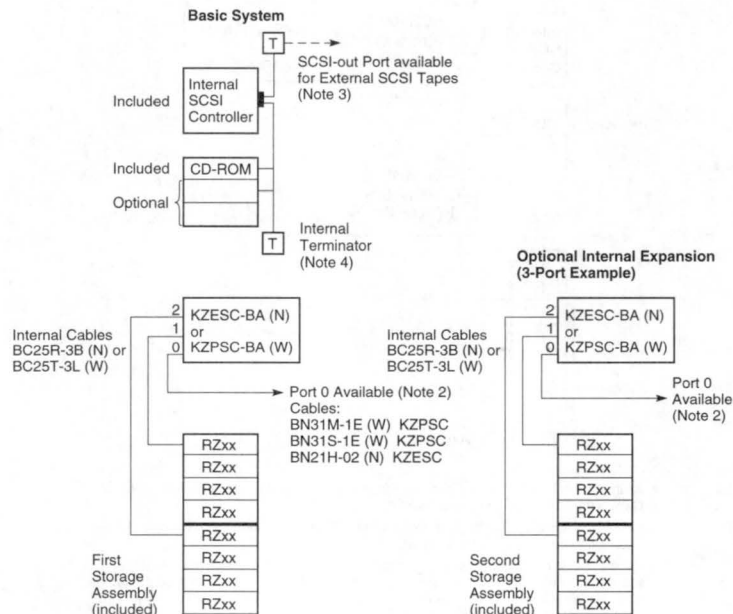


**Notes:**

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. SCSI port 0 can be connected to second internal storage assembly, or to external disk drives; see EXTERNAL DISK EXPANSION in Menu Step 5a (NARROW) or 5b (WIDE) for additional information.
3. One RZ28 is included with the system; five RZ28s are included with the option pack; two RZxx can be added, one to each bus.
4. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5d (External Tape Expansion) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
5. Internal Terminator (12-41296-01) is included with system.

BU-3474

## Sample Configuration Based on D\*-25P1-\*9 System Maximum RAID Configuration

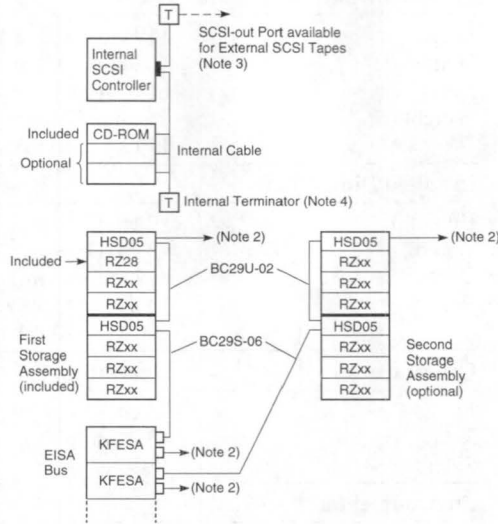


**Notes:**

1. All internal cables for factory installed options are included as required. Cables for field installed options must be ordered.
2. SCSI port 0 can be connected to external disk drives; See EXTERNAL DISK EXPANSION in Menu Step 5a (NARROW) or 5b (WIDE) for additional information. Other arrangements are possible. For example, port 0 on included controller can be internally connected to optional (second) internal storage assembly if optional controller is not present.
3. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5d (EXTERNAL TAPE EXPANSION) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
4. Internal Terminator (12-41296-01) is included with system.

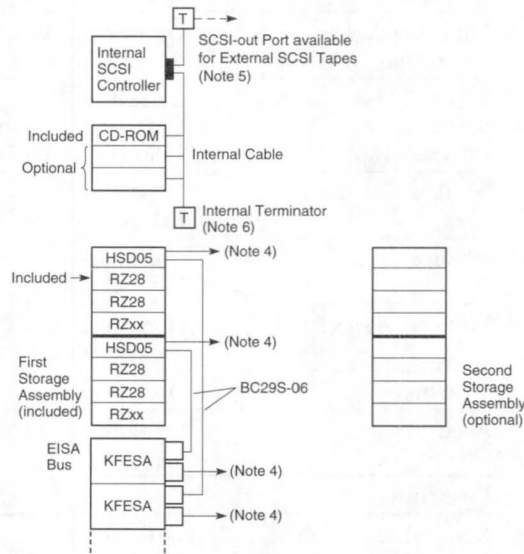
BU-3479

Sample Configuration Based on DY-25\*P1-\*9 System  
with Maximum Internal DSSI/SCSI and External DSSI Connections  
(When Optional HSD05 Controllers are Ordered)



- Notes:
1. Each HSD05 counts as one DSSI node; current DSSI configuration rules and bus lengths apply.
  2. KFESA and HSD05 adapters, in addition to being internally connected as shown, can be connected to external DSSI storage or system(s). See Menu Step 5e for cable information.
  3. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5d (EXTERNAL TAPE EXPANSION) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
  4. Internal Terminator (12-41296-01) is included with system.
- BU-3439

Sample Configuration Based on DY-25\*P1-\*9 System  
with DSSI Option Starter Pack (SD002-AA)



- Notes:
1. System includes one RZ28; SD002-AA option pack includes two KFESAs, two HSD05s, three RZ28s, and two BC29S-06 cables (all items shown); two RZxx disks can be added, as indicated.
  2. Second storage assembly can be added to further expand the configuration, provided in this diagram as a blank template.
  3. Each HSD05 counts as one DSSI node; current DSSI configuration rules and bus lengths apply.
  4. KFESA and HSD05 adapters, in addition to being internally connected as shown, can be connected to external DSSI storage or system(s). See Menu Step 5e for cable information.
  5. Internal SCSI-out port in this configuration can be connected to external SCSI tapes. Maximum external bus length cannot exceed 1.0 meter. See Menu Step 5d (EXTERNAL TAPE EXPANSION) for additional information. If not used, SCSI-out port must be terminated with External Terminator (12-37004-04) included with system.
  6. Internal Terminator (12-41296-01) is included with system.
- BU-3438

## Specifications

<b>Shipping Dimension</b>			
Height	119 cm (46.9 in.)		
Width*	102 cm (40.0 in.)		
Depth*	61 cm (24.0 in.)		
Weight	85 kg (187 lb) typical 114 kg (250 lb) maximum		
<b>Installed Dimensions</b>			
Height	70 cm (27.6 in.)		
Width	43 cm (16.9 in.)		
Depth	81 cm (31.9 in.)		
Weight	75 kg (165 lb) typical 100 kg (220 lb) maximum		
<b>Clearances</b>	<b>Operating</b>	<b>Service</b>	
Front	75 cm (29.5 in.)	75 cm (29.5 in.)	
Rear	15.2 cm (6 in.)	76.2 cm (30 in.)	
Sides	None	76.2 cm (30 in.)	
<b>Environmental</b>			
Temperature	Operating**	10°-35° C (50°-95° F)	
	Nonoperating		
	Storage (60 days)	-40°-66° C (-40°-151° F)	
	Rate of change	11° C/hr (20° F/hr)	
Relative humidity	Operating	20-80%	
	Nonoperating	20-80%	
	Storage (60 days)	10-95%	
	Rate of change	20%/hr	
Maximum wet bulb temperature	Operating	28° C (82° F)	
	Storage (60 days)	46° C (115° F)	
Minimum dew point temperature	Operating	2° C (36° F)	
	Storage (60 days)	Not tested	
Maximum heat dissipation	Current	Theoretical	
	Single supply	800 Watt, 3005 Btu/hr	920 Watt, 3142 Btu/hr
	Dual supply	1280 Watt, 4371 Btu/hr	1675 Watt, 5720 Btu/hr
Air flow and quality	Intake location	Front	
	Exhaust location	Rear	
Altitude	Operating <sup>†</sup>	2000 m (6562 ft)	
	Nonoperating	3600 m (12,000 ft)	
Mechanical shock	Operating	7.5 G 10 ms	
	Nonoperating	20 G peak 30 ms	
Vibration	Operating	10-500 Hz .1 G peak	
Acoustics	Operating	LNPEc (Bels) 6.6 maximum per ISO 7779	
<b>Electrical</b>			
Nominal ac voltage	100-120 Vac	220-240 Vac	
Voltage range (Vac)	88-132 Vac	180-264 Vac	
Power source phase	Single	Single	
Nominal frequency (Hz)	60 Hz	50 Hz	
Frequency range (Hz)	47-63 Hz	47-63 Hz	
Maximum inrush current	50 Amps	50 Amps	
RMS current at nominal voltage (steady state)	8.5 Amps	4.0 Amps	
Power cord	Type	IEC 320 C16	
	Length	240 cm (113 in.)	
	U.S. plug	NEMA 5-15, Socket EIC 320 Sheet, C-15	

\* Dimensions of shipping pallet; fork-lift access is on the width dimension.

\*\* Maximum operating temperature at Sea Level. Reduce by 1° C (1.8° F) for each 600 m (2000 ft) above Sea Level.

<sup>†</sup> Higher altitudes are possible if maximum operating temperature is reduced (see Temperature, above); other restrictions may apply, such as maximum permissible altitude for hard disk drives.

## Specifications (continued)

Regulatory	
Agency approvals	UL Listed to UL1950 CSA Certified to CAN/ C22.2 No. 950-M89 TUV EN 60950 GS VDE 0805 Gsmarke ZH1/61 IEC 950 FCC 15J Part 15 (Class A) CE
Reviewed to	AS 3260 Australian Standard SS 436 14 50 Swedish Standard NZS 6661:1989 New Zealand Standard EN 60 950: 1992 European Norm

## Recommended UPS

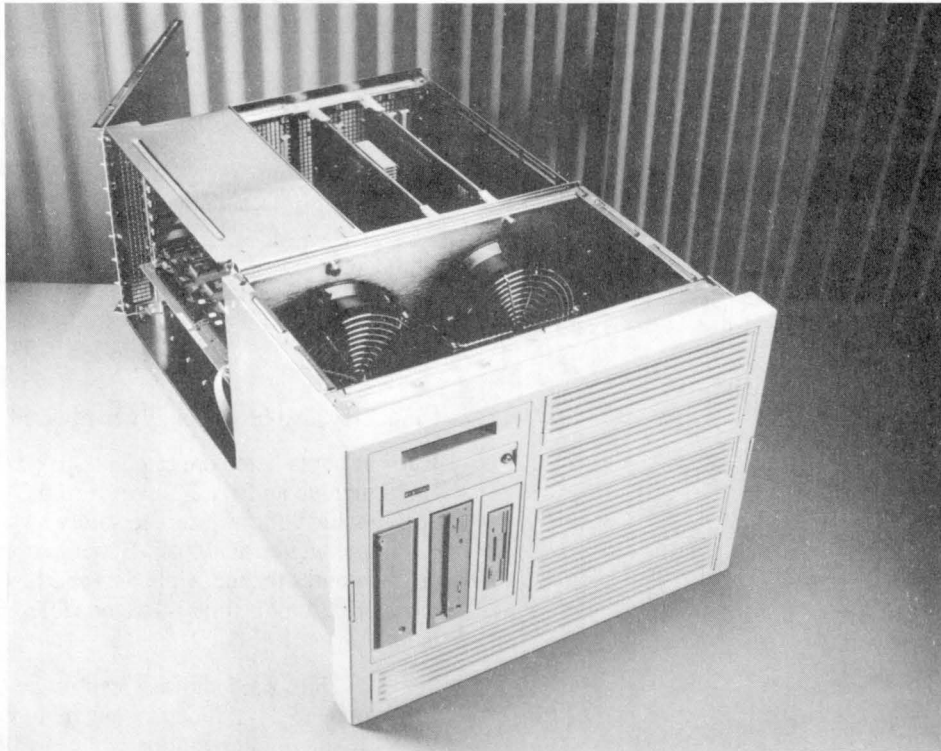
- Units may also be optionally hardwired on the input or output
- **Rating:** Units listed are rated 3000 VA/2000W (2100W for 240 V model). Units include an EIA 232 port for UPS monitoring and feature modular design which allows users to safely swap out components without disconnecting critical load. Battery support time is seven minutes at full load, or 14 minutes for the AlphaServer 2100 system with two power supplies and monitor. Support time is extendable via add-on "plug & play battery modules.
- **Service:** Units sold and serviced in the Continental US feature a 3 year, full unit hot-swap 24-48 hour replacement warranty through vendor. A five-year, 5 x 8 on-site upgrade option is also available (see below). Other locations include a one-year warranty with return to certified service location. Digital on-site exchange service contract is also available.

4N-AEAAH-AM	Prestige UPS for 120 Vac, 60Hz systems; wired for 208Vac single-phase input (can be wired for 240Vac single-phase input if specified). Includes 6-foot input power cord with L6-30P plug, two 5-15R2 (duplex) and one L5-30R output receptacle (can be optionally extended).
4N-AEWAR-G2	Prestige UPS five-year on-site exchange warranty upgrade for Prestige UPS 4N-AEAAH.
4N-AEAAH-AR	Prestige UPS for 240 Vac, 50-60Hz systems; wired for 220/240 Vac single-phase input. Includes 6-foot detachable power cord with VDE stripped pigtail connection for attachment of country specific plug (order plug separately). Unit has an IEC 32020A output receptacle for connection to choice of output modules listed below.
4N-AEACH-DA	Power strip with 6 SCHUKO 16amp receptacles
4N-AEACH-DB	Power strip with 6 French 16amp receptacles
4N-AEACH-DC	Power strip with 6 British 13amp receptacles

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

4N-AEAES-AA/AB	Windows NT for Alpha and Intel x86, includes cables, media and documentation
4N-AEAES-ED	DEC OSF/1, includes cables, media and documentation
4N-JBBBB-GG	OpenVMS, includes cables, media and documentation

See January 1995, *Digital Systems and Options Catalog*, Chapter 10, *Environmental Products* for additional information.



## AlphaServer 2100 4/233, 4/275 and 5/250 Rackmount Systems

### Product Description

The AlphaServer 2100 4/233 Rackmount, AlphaServer 2100 4/275 Rackmount, and AlphaServer 5/250 Rackmount systems are Rackmountable versions of the respective Alphaserver 2100 pedestal systems having the same features and capacities as the pedestal systems, but with minimal internal storage capacity.

The AlphaServer 2100 Rackmount system unit is designed to be installed in a 30-inch deep cabinet equipment with standard RETMA or METRIC rails with mounting holes 19-inches apart, using only 14-inches of vertical space. It is an ideal building block for custom configurations suitable for those installations where floor space is at a premium, where large disk storage arrays and/or other expansion is required, or when high availability systems are required. The AlphaServer 2100 Rackmount is used as the basic building block for the AlphaServer 2100 4/233 and 4/275 cabinet packaged systems.

The ordering menus and diagrams that follow provide the information necessary to configure devices inside the Rackmountable system unit with guidelines for cabling to external storage. For more external configuration information refer to the AlphaServer 2100 Cabinet system menus.

**Step 1—Systems**

Select system.

- Systems include U.S. power cord. Select country-specific power cord for 240 V use. Selected power cord ships in lieu of U.S. variants.
- All systems include keyboard. Select country-specific keyboard for 240 V use. Selected keyboard ships in lieu of U.S. variants.
- All systems ship with two coiled extender cables for use with mouse and keyboard.
- Options ordered will be factory installed unless specified as **spares**.
- See AlphaServer 2100 Cabinet system for UPS information or call for specific Rackmount configuration support.

**AlphaServer 2100 Systems include**

- BA741 Rackmountable enclosure which includes:
  - Integral 10-Mbyte/s Fast SCSI controller
  - Integral 10-Mbit/s Ethernet controller, AUI or 10BaseT (twisted pair) selectable
  - Two EIA-232 asynchronous serial ports, 9-pin D-subminiature connectors
  - One parallel port, 25-pin D-subminiature connectors
  - Two RZxx hard disk drives slots
  - Two 5.25-inch, half-height removable media slots
  - Eight EISA slots
  - Three PCI slots
  - 840-Watt power supply
- 2.0 Gbyte hard disk drive (uses one RZxx disk slot)
- 2.88-Mbyte diskette drive in dedicated slot
- 600-Mbyte CD-ROM (uses one removable media slot)
- VGA controller
- Three-button mouse
- Keyboard (Americas and APA orders only)
- Power cord (Americas and APA orders only)
- Memory indicated below
- Customer documentation
- EISA configuration utility
- Hardware Warranty Three-year, on-site with 5 x 9, 24-hour response time\*
- Operating System Warranty 90-day SPD conformance with advisory telephone support\*

**Windows NT Rackmount servers include**

- DECchip 21064 233-Mhz CPU with 1-Mbyte onboard cache, **or** DECchip 21064 275-Mhz CPU with 4-Mbyte onboard cache
- 1280 x 1024 Video Graphics Adapter (uses one EISA slot)
- Windows NT Server plus 5-client access, V3.5 media (CD-ROM) and license in shrink-wrapped package.

Order Number	Model	Memory	EISA/PCI slots available for additional options
<b>Windows NT Rackmount Systems</b>			
DN-251W1-H9	4/233	64 Mbytes*	7/3
DN-251W1-J9	4/233	128 Mbytes	7/3
DN-251W1-K9	4/233	512 Mbytes	7/3
DN-252W1-J9	4/275	128 Mbytes	7/3
DN-252W1-K9	4/275	512 Mbytes	7/3

\* 64 Mbyte system not available in Europe. Order for Americas and APA only.

**Step 1—Systems (continued)****DEC OSF/1 Rackmount Servers include**

- DECchip 21064 233-MHz CPU with 1-Mbyte onboard cache, **or**  
DECchip 21064275-MHz CPU with 4-Mbyte onboard cache, **or**  
DECchip 21065 250-Mhz CPU with 4-Mbyte onboard cache
- 1024 x 768 Video Graphics Adapter (uses one EISA slot)
- NAS 200 for DEC OSF/1 license (QL-306AG-AA); includes the following layered products (order media and documentation separately):
  - PATHWORKS for DEC OSF/1 (kit only, no license)
  - Polycenter Advanced File System utilities
  - Objectbroker for DEC OSF/1 Runtime
  - DECmessageQ for DEC OSF/1 Runtime
  - DCE Runtime
  - DEC OSF/1 Server Extensions
  - PrintServer software (kit only, licensed with printer)
- Base operating system is factory installed

**Note:** Operating system media and documentation is **required** for first system on site; see Step 9.

Order Number	Model	Memory	EISA/PCI slots available for additional options
<b>DEC OSF/1 Rackmount Systems</b>			
DA-251W1-H9	4/233	64 Mbytes*	7/3
DA-251W1-J9	4/233	128 Mbytes	7/3
DA-251W1-K9	4/233	512 Mbytes	7/3
DA-252W1-J9	4/275	128 Mbytes	7/3
DA-252W1-K9	4/275	512 Mbytes	7/3
DA-253W1-J9	5/250	128 Mbytes	7/3
DA-253W-K9	5/520	512 Mbytes	7/3

\* 64 Mbyte system not available in Europe. Order for Americas and APA only.

**OpenVMS Rackmount servers include**

- DECchip 21064 233-Mhz CPU with 1-Mbyte onboard cache, **or**  
DECchip 21064 275-Mhz CPU with 4-Mbyte onboard cache, **or**  
DECchip 21065 250-Mhz CPU with 4-Mbyte onboard cache
- 1024 x 768 Video Graphics Adapter (uses one EISA slot)
- NAS 200 for OpenVMS license (QL-23EAG-AA), includes the following layered products (order media and documentation separately):
  - DECnet for OpenVMS End System
  - DECnet/OSI for OpenVMS End Node
  - PATHWORKS for OpenVMS (LAN Manager); kit only, no license
  - DEC TCP/IP services for OpenVMS
  - Polycenter Software Distribution (Client)
  - DECwindows Motif for OpenVMS
  - Objectbroker for OpenVMS (ACA Services)
  - DECmessageQ for OpenVMS Runtime
  - DECprint Supervisor for OpenVMS , Base
  - DECprint Supervisor for OpenVMS , Plus
  - DECprint Supervisor for OpenVMS , Open
  - PrintServer software (kit only, licensed with printer)
- Base operating system is factory installed

**Note:** Operating system media and documentation is **required** for first system on site; see Step 9.

Order Number	Model	Memory	EISA/PCI slots available for additional options
<b>OpenVMS Rackmount Systems</b>			
DY-251W1-H9	4/233	64 Mbytes*	7/3
DY-251W1-J9	4/233	128 Mbytes	7/3
DY-251W1-K9	4/233	512 Mbytes	7/3
DY-252W1-J9	4/275	128 Mbytes	7/3
DY-252W1-K9	4/275	512 Mbytes	7/3
DY-253W1-J9	5/250	128 Mbytes	7/3
DY-253W1-K9	5/250	512 Mbytes	7/3

\* 64 Mbyte system not available in Europe. Order for Americas and APA only.

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## Step 2—CPU Symmetrical Multiprocessing (SMP) Upgrade

Order up to three additional CPUs, for a maximum of four.

- **Additional CPUs must match the speed of CPU in system**
- Four-CPU systems are restricted to two memory slots.

<b>450NR-AA</b>	<b>Windows NT SMP</b> upgrade, includes one 233 MHz CPU processor; SMP license is not required.
<b>460NR-AA</b>	<b>Windows NT SMP</b> upgrade, includes one 275 MHz CPU processor; SMP license is not required.
<b>450AR-AA</b>	<b>DEC OSF/1 SMP</b> upgrade includes one 190 MHz CPU processor and DEC OSF/1 SMP license.
<b>460AR-AA</b>	<b>DEC OSF/1 SMP</b> upgrade includes one 275 MHz CPU processor and DEC OSF/1 SMP license.
<b>470AR-AA</b>	<b>DEC OSF/1 SMP</b> upgrade includes one 250 Mhz CPU processor and DEC OSF/1 SMP license
<b>450YR-AA</b>	<b>OpenVMS SMP</b> upgrade includes one 233 MHz CPU processor and OpenVMS SMP license.
<b>460YR-AA</b>	<b>OpenVMS SMP</b> upgrade includes one 275 MHz CPU processor and OpenVMS SMP license.
<b>470-YR-AA</b>	<b>OpenVMS SMP</b> upgrade includes one 250 MHz CPU processor and OpenVMS SMP license.

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## Step 3—Memory

- One- to three- CPU systems support a total of four memory boards in any combination.
- Four CPU systems support total of two memory boards in any combination.
- DEC OSF/1 V 3.2 systems support a maximum of 2 Gbytes memory.
- Windows NT V 3.5 systems support up to 1 Gbyte memory.
- OpenVMS V6.1 systems support up to 2 Gbytes memory. OpenVMS V6.2 supports up to 2 Gbytes memory.

<b>MS450-BA</b>	64-Mbyte memory module
<b>MS450-DA</b>	128-Mbyte memory module (replaces MS450-CA)
<b>MS451-FA</b>	512-Mbyte memory module (replaces MS-451-CA)

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### Step 3a—Prestoserve Non-Volatile Random Access Memory (NVRAM) for DEC OSF/1 systems only

- Supported on DEC OSF/1 systems only. Requires DEC OSF/1 V3.0 operating system software
- Requires one EISA slot
- Maximum one Prestoserve option per system

<b>PB2SX-AA</b>	Prestoserve non-Volatile Random Access Memory (NVRAM) option; includes Prestoserve license and documentation kit
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## Step 4—Monitors

- Windows NT systems require a graphics monitor to run all functions.
- Number 9 GXE video adapter included in Windows NT server systems support 1280 x 1024 and 1024 x 768 resolution, 72-Hz monitors.
- DEC OSF/1 and OpenVMS Graphics Console
  - Video adapter included in DEC OSF/1 and OpenVMS systems support 1024 x 768 resolution, 72-Hz monitors, uses one EISA slot
- Graphics monitors other than those listed below can be used if compatible with graphics adapter included with system.

<b>VRT15-PA</b>	Northern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT15-P4</b>	Southern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRT17-PA</b>	Northern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.

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**Step 4—Monitors (continued)**

<b>VRT17-P4</b>	Southern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRC21-PA</b>	Northern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC21-P4</b>	Southern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.

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**Step 5—Storage**

Select storage devices as required. Refer to Chapter 9 *Storage Devices*, for further details on devices listed.

- Integral Fast SCSI-2 controller supports maximum of seven devices (CD-ROM, one additional 5.25-inch half-height removable media device and two hard disk drives inside base chassis), and three external devices via SCSI-out port.
- External devices must be mounted next to chassis since maximum external SCSI bus length, including cable and device, **cannot** exceed 1.0 meter.
- If external expansion is not used, SCSI-out port must be terminated with external terminator (12-37004-04) included with system..

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**Step 5a—Internal Storage**

Systems include one internal RZ28 disk drive, and one CD-ROM drive.

**Removable Media Devices (select one additional device)**

<b>RRD43-AC</b>	600-Mbyte, 5.25-inch half-height CD-ROM
<b>TZK11-LG</b>	2.0-Gbyte, 5.25-inch half-height SCSI QIC tape drive
<b>TLZ06-LG</b>	4.0-Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive
<b>TLZ07-LG</b>	8.0-Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive

**Hard Disk Drives (select one additional hard disk drive)**

<b>RZ26L-MY</b>	1.05-Gbyte, 3.5-inch half-height disk drive
<b>RZ28 -MY</b>	2.0-Gbyte, 3.5-inch half-height disk drive

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**Step 5b—External Storage**

Additional storage is supported outside AlphaServer 2100 Rackmount system unit. BA35R-SF/-SR rackmountable StorageWorks shelves are recommended.

**Storage Controller Configuration Rules**

- Each PCI-based controller occupies one PCI bus slot
- Maximum of three PCI-based storage controllers supported per system
- Each EISA-based controller occupies one EISA-bus slot
- KZESC-xA controllers support **only** RZ26L/RZ28 disk drives; they do not support tape drives
- KZESC-BA Three-port controller supports up to 21 disk drives in eight logical groupings. RAID sets must be created to support more than eight physical disk drives

Step 5b—External Storage (*continued*)**Windows NT systems support**

- Maximum number of EISA-based controllers of all types in combination is limited to the total number of available EISA slots.
  - Maximum of two KZESC-xA..

**DEC OSF/1 systems support**

- Maximum number of EISA-based controllers of all types in combination is governed by EISA bus IRQ address assignments; refer to EISA Bus IRQ Address Table.
- Maximum number of each EISA-based storage controllers supported per system:
  - Four KZESC-xA

**OpenVMS systems support**

- Maximum number of EISA-based controllers of all types in combination is governed by EISA bus IRQ address assignments; refer to EISA Bus IRQ Address Table.
- Maximum number of each EISA-based storage controllers supported per system:
  - Four KZESC-xA
  - Two KFESA-AA
- KFESA-AA has dual termination, allowing it to be connected in middle of DSSI bus.
- OpenVMS Volume Shadowing does **not** support KZESC-xA controllers. KZESC-xA controllers do not support RAID 1 hardware shadowing.

**Storage Controllers**

<b>KZESC-AA*</b>	EISA-based One-port Fast SCSI high-performance controller with RAID capability; includes RAID media kit (StorageWorks RAID software, license and documentation) for all operating systems
<b>KZESC-BA*</b>	EISA-based Three-port Fast SCSI high-performance controller with RAID capability; includes RAID media kit (StorageWorks RAID software, license and documentation) for all operating systems
<b>KZPAA-AA</b>	PCI-based one port high-performance Fast SCSI controller
<b>KFESA-AA</b>	EISA-based single-DSSI controller (supported on OpenVMS systems only)

\* See Chapter 8, *Storage Devices*, for StorageWorks RAID Array 210 Subsystem configuration rules

**Storage Option Pack**

<b>SD001-AA</b>	One-port RAID Storage Option Pack; includes one KZESC-AA and three RZ28-VA
<b>SD001-BA</b>	Three-port RAID Storage Pack; includes one KZESC-AA and five RZ28-VA

**Note:** With the above Packs, the internal disk is changed to a RZ28-VA.

**Rackmountable StorageWorks Shelves**

<b>BA35R-SF</b>	Rackmountable BA350 StorageWorks Shelf; front accessible
<b>BA35R-SR</b>	Rackmountable BA350 StorageWorks Shelf; rear accessible

**SCSI Cabling Information**

External cables are **not** included and must be ordered separately

- Order BN21H-03 SCSI cable for BA35R-Sx shelves in positions 1, 3, 5, 7, 9 (see 'A' on SCSI-based Storage diagram)
- Order BN21H-02 SCSI cable for BA35R-Sx shelves in positions 2, 4, 6, 8 (see 'B' on SCSI-based Storage Diagram)
- Three-port controller (KZESC-BA) requires 2T-SWXCK-AA cable kit for Ports 1 and 2 for external connection
  - CK-SWXRK-AA internal cable kit is required for first two KZESC-BA Three-port controllers
  - CK-SWXRK-BA internal cable kit is required for third and fourth KZESC-BA Three-port controllers (DEC OSF/1 and OpenVMS systems only)

**DSSI Cabling Information (OpenVMS systems only)**

External cables are **not** included and must be ordered separately

- Order BC29S-09 DSSI cable for HSD05-AA in BA35R-Sx shelves (see 'A' on DSSI-based Storage Diagram)
- Order BC29U-02 DSSI cable for HSD05-AA in adjacent BA35R-Sx shelves (see 'B' DSSI-based on Storage Diagram)
- Order BC29V-06 DSSI cable for HSD05-AA in non-adjacent BA35R-Sx shelves (see 'C' DSSI-based on Storage Diagram)

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## Step 6—Networks and Communications

- Systems include integral Ethernet controller (AUI or 10BaseT selectable).
- Select networking cable:
  - BNE4G-02 for AUI connection
  - BN26K-xx for 10BaseT (twisted pair) connection to integral Ethernet controller
- Maximum of three PCI-based network controllers supported (DE435-AA)
- Maximum number of each EISA-based network controllers supported per system:
  - two DEFEA-xA
  - five DNSES-AA
  - four DW300-AA (five in Windows NT system)

### Windows NT Systems

- Maximum number of EISA-based controllers of all types in combination is limited to the total number of EISA slots.

### DEC OSF/1 and OpenVMS Systems

- Maximum number of EISA-based network controllers is governed by EISA bus IRQ address assignments; refer to the EISA bus IRQ Address Table.

<b>DEFEA-AA</b>	EISA-based DEC FDDIcontroller; Single Attachment
<b>DEFEA-DA</b>	EISA-based DEC FDDIcontroller;Dual Attachment (requires two EISA slots)
<b>DW300-AA</b>	EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation
<b>CXI01-xx</b>	EISA-based asynchronous multiplexer
<b>DNSES-AA</b>	EISA-based synchronous communications controller
<b>DE435-AA</b>	PCI-based Digital Etherworks 32-bit high-performance network interface card

See Chapter 8 Networks, Communications, and Cables, and the Network Products Guide for more information.

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## Step 7—Additional Power Supply

- The standard power supply in an AlphaServer 2100 Rackmount system is sufficient for a fully configured system.
- An additional power supply for n+1 redundancy may be ordered

<b>H7804-AA</b>	Additional power supply with 120 VAC cord
<b>H7804-AB</b>	Additional power supply with 240 VAC cord

Note: The H7893-AA power supply for AlphaServer 2100 pedestal is **not** compatible with, and will not mount in the Rackmount system.

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## Step 8—Terminals and Printers

- System includes two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.
- Console terminal can either be a Graphics Console Subsystem (see Step 4) or a Serial Video Terminal. If a Serial Video Terminal is used as the console terminal, it **must** be a VT320-xx or VT420-xx; these terminals have the graphics capability required for the EISA Configuration Utility.
- Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required (included with system) for each connection. A cable must be ordered unless otherwise provided.

See Chapter 10, *Terminals, Scanners, Printers* for ordering information.

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## Step 9—Software

### Windows NT Systems

Systems include Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package. Order documentation kit if required.

<b>QA-23CAA-GZ</b>	Windows NT Server documentation kit
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## Step 9—Software (*continued*)

### DEC OSF/1 Systems

Software processor code = G for all software, one to four processors.

#### DEC OSF/1 Interactive User Licenses

DEC OSF/1 Interactive User Licenses are **not** specific to a single system and can be moved from one system to another at user discretion

QL-MT7A9-BB	DEC OSF/1 1-user license
QL-MT7A9-BC*	DEC OSF/1 2-user license
QL-MT7A9-BD*	DEC OSF/1 4-user license
QL-MT7A9-BE*	DEC OSF/1 8-user license
QL-MT7A9-BF*	DEC OSF/1 16-user license
QL-MT7AG-AA	DEC OSF/1 unlimited user license
QL-MT5AG-AA	DEC OSF/1 developer's extension license

\*Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

#### DEC OSF/1 Media and Documentation—required for first system on site

QA-MT4AA-H8	DEC OSF/1 media and on-line documentation on CD-ROM
QA-MT4AA-GZ	DEC OSF/1 full hardcopy documentation

#### DEC OSF/1 Layered Products CD-ROM

QA-054AA-H8	Layered products media and documentation for DEC OSF/1 on CD-ROM
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#### DECnet Licenses

QL-MTJAG-AA	DECnet/OSI end-system license for DEC OSF/1
QL-MTKAG-AA	DECnet/OSI extended function license for DEC OSF/1

### OpenVMS Systems

Software processor code = **G** for **all** software, one to four processors

#### OpenVMS Distributed Interactive User Licenses

OpenVMS Distributed Interactive User Licenses are **not** specific to a single system and **can** be moved between systems (all OpenVMS ) at user discretion. OpenVMS Distributed Interactive User Licenses can also be shared across a **homogeneous** OpenVMS Cluster (all OpenVMS systems)

**Note:** OpenVMS Distributed Interactive User Licenses are architecture-specific and **cannot** be shared across a **mixed** OpenVMS Cluster (OpenVMS and OpenVMS VAX systems)

QL-MT3A9-BB	OpenVMS 1-user license
QL-MT3A9-BC*	OpenVMS 2-user license
QL-MT3A9-BD*	OpenVMS 4-user license
QL-MT3A9-BE*	OpenVMS 8-user license
QL-MT3A9-BF*	OpenVMS 16-user license
QL-MT3A9-BG*	OpenVMS 32-user license
QL-MT3A9-BH*	OpenVMS 64-user license
QL-MT3AA-BR*	OpenVMS 128-user license
QL-MT3AB-BR*	OpenVMS 256-user license
QL-MT2AG-AA	OpenVMS unlimited user license

\*Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

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## Step 9—Software (*continued*)

**OpenVMS Media and Documentation—required for first system on site**

QA-MT1AA-H8	OpenVMS media and documentation on CD-ROM
QA-MT1AH-GZ	OpenVMS hardcopy documentation

**OpenVMS Layered Products CD-ROM**

QA-03XAA-H8	Layered products media and documentation for OpenVMS on CD-ROM
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**DECnet Licenses**

QL-MTGAG-AA	DECnet extended function license for OpenVMS
QL-MTHAG-AA	DECnet end-system to extended function upgrade license for OpenVMS

**DSSI Information (OpenVMS systems only)**

EK-410AB-MG	DSSI VMScluster Installation Guide
EK-D4-TS	DSSI VMScluster Troubleshooting Guide

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**Step 10—Power Cords and Keyboards****System Power Cords**

- Systems ordered include U.S. power cord and keyboard. Select country-specific power cord and keyboard for 240 V use. Selected power cord and keyboard ships in lieu of U.S. variants.
- Select power cord for each power supply installed in AlphaServer Rackmount system.

<b>Included*</b>	U.S., Canada, Japan, 120 V
<b>BN19J-2E</b>	Australia, New Zealand
<b>BN19D-2E</b>	Central Europe
<b>BN19B-2E</b>	U.K., Ireland
<b>BN04B-2E</b>	Switzerland
<b>BN19L-2E</b>	Denmark
<b>BN19N-2E</b>	Italy
<b>BN19T-2E</b>	Egypt, India, South Africa
<b>BN18Y-2E</b>	Israel

\* Orderable as 17-00083-51

**Monitor Power Cords**

- Select country-specific power cord for 240 V use.

<b>BN27S-03</b>	U.S., Canada, Japan, 120 V
<b>BN19H-2E</b>	Australia, New Zealand
<b>BN19C-2E</b>	Central Europe
<b>BN19A-2E</b>	U.K., Ireland
<b>BN19E-2E</b>	Switzerland
<b>BN19K-2E</b>	Denmark
<b>BN19M-2E</b>	Italy
<b>BN19S-2E</b>	Egypt, India, South Africa
<b>BN18L-2E</b>	Israel

**Step 10—Power Cords and Keyboards (continued)****Keyboards**

LK471-AA*	U.S. English
LK471-AB	Belgian
LK471-AD	Danish
LK471-AE	United Kingdom
LK471-AG	German
LK471-AI	Italian
LK471-AK	Swiss/French
LK471-AN	Norwegian
LK471-AP	French
LK471-AS	Spanish
LK471-AV	Portuguese

\* Included if alternate not selected

**AlphaServer 2100 4/233, 4/275 and 5/250 EISA Bus IRQ Address Table**

(DEC OSF/1 and OpenVMS Systems Only)

Option	EISA Bus IRQ Addresses									Maximum of Each Supported		
	5	7	8	9	10	11	12	14	15	OpenVMS	DEC OSF/1	Windows NT
DE422	0	-	-	N	0	0	-	-	-	3	3	4
PB2GA	-	-	-	0	-	-	-	-	-	1	1	1
DEFEA	-	-	-	N	0	0	-	-	0	2	2	2
DNSES	-	-	0	N	0	0	0	0	0	5	5	0
DW300-AA	0	-	-	N	0	0	-	-	0	4	4	5
PB2HA	-	-	-	N	0	0	0	0	0	1	1	1
KZESC	-	-	-	-	-	0	0	0	0	2	2	2
KFESA	-	-	-	N	0	0	0	0	0	2	0	0
PB2SX	-	-	-	-	-	-	-	-	-	0	1	0
CXI01	-	-	-	-	-	-	-	-	-	0	2	2

## Table Codes:

0 = address is available for device

- = address not available for device

N in address location 9 = address is assigned, but its use is precluded due to presence of PB2GA-xx Video Graphics Adapter

**Configuration Rules and Information**

- EISA Bus IRQ address assignments are for DEC OSF/1 and OpenVMS systems only
- Windows NT Server operating system permits the sharing of IRQ addresses; the only limitation for these systems is the maximum number of each device supported, and the number of EISA bus slots physically available.
- Video Graphics Adapter is included in all systems listed in Step 1. It occupies one EISA bus slot, leaving seven physical slots for all other EISA-based controllers.
- In some cases, the **maximum each [device] supported** is less than the 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 be configured to **one** available address. (**Hint:** With the table as a worksheet, use a pencil to fill in an "0" for each device; fill in only one "0" per column)
- The actual IRQ address assignment will be made by the EISA Configuration Utility (ECU) which is run during system manufacture, or in the installed system if the EISA bus is re-configured.
- PB2SX and CXI01 do not use any IRQ address.

## Specifications

<b>Shipping Dimension</b>		
Height	35 cm (14 in.)	
Width	45 cm (19 in.)	
Depth	66 cm (26 in.)	
Weight	45.5kg (100 lb)	
<b>Clearances</b>	<b>Operating</b>	<b>Service</b>
Front	20.3 cm (8 in.)	100 cm (39.4 in.)
Rear	20.3 cm (8 in.)	61 cm (24 in.)
Sides	None	61 cm (24 in.)
<b>Environmental</b>		
Temperature	Operating	10°-40° C (50°-104° F)
	Nonoperating	-40°-66° C (-40°-151° F)
	Storage (60 days)	-40°-66° C (-40°-151° F)
	Rate of change	11° C/hr (20° F/hr)
Relative humidity	Operating	20-80% noncondensing
	Nonoperating	10-95% noncondensing
	Storage (60 days)	10-95% noncondensing
	Rate of change	20% / hr
Maximum heat dissipation	Operating	1200 Watt AC, 4095 BTU/hr
Air flow and quality	Operating	200 CFM
	Intake location	Front
	Exhaust location	Rear
Altitude	Operating	2000 m (6562 ft)
	Nonoperating	3600 m (12,000 ft)
Mechanical shock	Operating	10 g pk for 10 ± 3 ms
	Nonoperating	20 g pk for 10 ± 3 ms
Vibration	Operating	5-16 Hz @ 0.02-in da min
		16-200 Hz @ 0.25 g max
		200-500 Hz @ 0.10 g max
		1 hr per axis
Acoustics	Operating	LNPEc (Bels) 6.5 maximum per ISO 7779
<b>Electrical</b>		
Voltage range (AVS)	100-120 / 220 - 240 Vac	
Power source phase	Single	
Nominal frequency (Hz)	50 - 60 Hz	
Frequency range (Hz)	49 - 61 Hz	
Maximum rated current	10 a / 5 a	
Maximum power consumption (Watts)	1,200 W (PFC = 0.99, 10A @ 120 V)	
Power cord	Type	IEC 320 C16
	Length	452 cm (178 in.)
	U.S. plug	NEMA 5-15, Socket EIC 320 Sheet, C-15
Agency approvals	UL 114 (office equipment) UL 478 (EDP units) VDE 0875 (RFI suppression) Australian AS C 100 IEC Publication 950 FCC Part 15 Docket 20780 CSA C22.2 No. 134 (office equipment) CSA C22.2 No. 154 (data processing)	

14  
44  
28  
28  
49

59.5  
35.5  
240



BA 3SR-SF



## AlphaServer 2100 4/233, 4/275, and 5/250 Cabinet Systems

### Product Description

The AlphaServer 2100 4/233, AlphaServer 2100 4/275, and AlphaServer 5/250 Cabinet systems are the cabinet versions of the AlphaServer 2100 Rackmount, low-cost Alpha symmetric multiprocessing (SMP) PCI/EISA-based servers. The AlphaServer 2100 Rackmount is used as the basic building block for the AlphaServer 2100 Cabinet packaged systems. The AlphaServer 2100 Cabinet is designed for office, satellite equipment room, and shop-floor installations where floor space is at a premium, where large disk storage arrays and/or other expansion is required, or when high-availability systems are required.

Points to consider when selecting an AlphaServer 2100 4/233, 4/275, and 5/250 packaged Cabinet system:

- Storage:
  - Rackmount unit installed in Cabinet system supports two removable media devices and two hard disk drives. Rackmount unit includes CD-ROM drive and one RZ28.
  - Additional disks, controllers, and cables **must** be ordered as separate line items as detailed below.
  - AlphaServer Rackmount unit and other rackmountable options on same purchase order as AlphaServer Cabinet ship with correct power cords for that configuration.
- Each AlphaServer 2100 Rackmount requires 14 inches of vertical space when mounted in the AlphaServer 2100 Cabinet.
- Each BA35R-SF/-SR StorageWorks shelf requires seven inches of vertical space, although an -SF and an -SR can be mounted back-to-back, front and rear, in the same seven-inch spacing.
- Power controller as well as voltage and total current requirements.

The photograph shows an AlphaServer 2100 Cabinet system including one AlphaServer Rackmountable unit and two StorageWorks shelves.

## Step 1—Systems

Select system.

- AlphaServer 2100 Cabinet systems ship with the following power cord (power supply to cabinet)
  - 120 VAC systems: NEMA Locking, 4.57 m (15 feet), NEMA 5-30P, Socket NEMA 5-30R
  - 240 VAC systems: NEMA Locking 4.57 m (15 feet), NEMA 6-20P, Socket NEMA 6-20R
- Systems include U.S. keyboard; order country-specific keyboard separately.
- All systems ship with two coiled extender cables for use with mouse and keyboard.
- AlphaServer Rackmount unit and other rackmountable options on same purchase order as AlphaServer Cabinet ship with correct power cords for that configuration.
- Options ordered will be factory installed unless specified as spares.

### AlphaServer 2100 Cabinet Systems include

- One H9A10-Cx Cabinet Enclosure
- One BA35R-SF (front mounted) and one BA35R-SR (rear mounted) StorageWorks shelves, leaving 35 inches of rack One H9A10-Cx Cabinet space available.
- One AlphaServer 2100 4/233, 4/275, or 5/250 BA74 rackmountable enclosure includes
  - Integral 10-Mbyte/s Fast SCSI controller
  - Integral 10-Mbit/s Ethernet controller, AUI or 10BaseT (twisted pair) selectable
  - Two EIA-232 asynchronous serial ports, 9-pin D-subminiature connectors
  - One parallel port, 25-pin D-subminiature connectors
  - Two RZxx hard disk drive slots
  - Two 5.25-inch, half-height removable media slots
  - Eight EISA slots
  - Three PCI slots
  - 840-Watt power supply
  - 2.88-Mbyte diskette drive in dedicated slot
  - 2.0 Gbyte hard disk drive (uses one RZxx disk slot)
  - 600-Mbyte CD-ROM (uses one removable media slot)
  - VGA controller
  - Three-button mouse
  - Keyboard (Americas and APA orders only)
  - Power cord (Americas and APA orders only)
  - Memory indicated below
  - Customer documentation
  - EISA configuration utility
  - Hardware Warranty
  - Operating System Warranty

### Windows NT Cabinet Systems include

- DECchip 21064 233-Mhz CPU with 1-Mbyte onboard cache **or**
- DECchip 21064 275-Mhz CPU with 4-Mbyte onboard cache
- 1280 x 1024 Video Graphics Adapter (uses one EISA slot)
- Windows NT Server plus 5-client access, V3.5 media (CD-ROM) and license in shrink-wrapped package.

Order Number	Model	Memory	EISA/PCI slots available	Cabinet Power Required
<b>Windows NT Cabinet Systems</b>				
DN-261C1-J4	4/233	128 Mbytes	7/3	120 VAC
DN-261C1-J5	4/233	128 Mbytes	7/3	240 VAC
DN-261C1-K4	4/233	512 Mbytes	7/3	120 VAC
DN-261C1-K5	4/233	512 Mbytes	7.3	240 VAC
DN-262C1-J4	4/275	128 Mbytes	7/3	120 VAC
DN-262C1-J5	4/275	128 Mbytes	7/3	240 VAC
DN-262C1-K4	4/275	512 Mbytes	7/3	120 VAC
DN-262C1-K5	4/275	512 Mbytes	7/3	240 VAC

**Step 1—Systems (continued)****DEC OSF/1 Cabinet Systems include**

- DECchip 21064 233-MHz CPU with 1-Mbyte onboard cache **or**
- DECchip 21064 275-MHz CPU with 4-M-byte onboard cache **or**
- DECchip 21065 250-Mhz CPU with 4-Mbyte onboard cache
- 1024 x 768 Video Graphics Adapter (uses one EISA slot)
- NAS 200 for DEC OSF/1 license (QL-306AG-AA); includes the following layered products (order media and documentation separately):
  - PATHWORKS for DEC OSF/1 (kit only, no license)
  - Polycenter Advanced File System utilities
  - Objectbroker for DEC OSF/1 Runtime
  - DECmessageQ for DEC OSF/1 Runtime
  - DCE Runtime
  - DEC OSF/1 Server Extensions
  - PrintServer software (kit only, licensed with printer)
- Base operating system is factory installed

**Note:** Operating system media and documentation is **required** for first system on site; see Step 9

Order Number	Model	Memory	EISA/PCI slots available	Cabinet Power Required
<b>DEC OSF/1 Cabinet Systems</b>				
A-261C1-J4	4/233	128 Mbytes	7/3	120 VAC
DA-261C1-J5	4/233	128 Mbytes	7/3	240 VAC
DA-261C1-K4	4/233	512 Mbytes	7/3	120 VAC
DA-261C1-K5	4/233	512 Mbytes	7/3	240 VAC
DA-262C1-J4	4/275	128 Mbytes	7/3	120 VAC
DA-262C1-J5	4/275	128Mbytesd	7/3	240 VAC
DA-262C1-K4	4/275	512 Mbytes	7/3	120 VAC
DA-262C1-K5	4/275	512 Mbytes	7/3	240VAC
DA-263C1-J4	5/250	128 Mbytes	7/3	120 VAC
DA-263C1-J5	5/250	128Mbytesd	7/3	240 VAC
DA-263C1-K4	5/250	512 Mbytes	7/3	120 VAC
DA-263C1-K5	5/250	512 Mbytes	7/3	240VAC

**OpenVMS Rackmount servers include**

- DECchip 21064 233-Mhz CPU with 1-Mbyte onboard cache **or**
- DECchip 21064 275-Mhz CPU with 4-Mbyte onboard cache **or**
- DECchip 21065 250-Mhz CPU with 4-Mbyte onboard cache
- 1024 x 768 Video Graphics Adapter (uses one EISA slot)
- NAS 200 for OpenVMS license (QL-23EAG-AA), includes the following layered products (order media and documentation separately):
  - DECnet for OpenVMS End System
  - DECnet/OSI for OpenVMS End Node
  - PATHWORKS for OpenVMS (LAN Manager); kit only, no license
  - DEC TCP/IP services for OpenVMS
  - Polycenter Software Distribution (Client)
  - DECwindows Motif for OpenVMS
  - Objectbroker for OpenVMS (ACA Services)
  - DECmessageQ for OpenVMS Runtime
  - DECprint Supervisor for OpenVMS , Base
  - DECprint Supervisor for OpenVMS , Plus
  - DECprint Supervisor for OpenVMS , Open
  - PrintServer software (kit only, licensed with printer)
- Base operating system is factory installed

**Note:** Operating system media and documentation is **required** for first system on site; see Step 9

Order Number	Model	Memory	EISA/PCI slots available	Cabinet Power Required
<b>OpenVMS Cabinet Systems</b>				
DY-261C1-J4	4/233	128 Mbytes	7/3	120 VAC
DY-261C1-J5	4/233	128 Mbytes	7/3	240 VAC
DY-261C1-K4	4/233	512 Mbytes	7/3	120 VAC
DY-261C1-K5	4/233	512 Mbytes	7/3	240 VAC
DY-262C1-J4	4/233	128 Mbytes	7/3	120 VAC
DY-262C1-J5	4/233	128 Mbytes	7/3	240 VAC
DY-262C1-K4	4/233	512 Mbytes	7/3	120 VAC
DY-262C1-K5	4/233	512 Mbytes	7/3	240 VAC

**Step 1—Systems (continued)**

Order Number	Model	Memory	EISA/PCI slots available	Cabinet Power Required
<b>OpenVMS Cabinet Systems</b>				
DY-263C1-J4	4/233	128 Mbytes	7/3	120 VAC
DY-263C1-J5	4/233	128 Mbytes	7/3	240 VAC
DY-263C1-K4	4/233	512 Mbytes	7/3	120 VAC
DY-263C1-K5	4/233	512 Mbytes	7/3	240 VAC

**Step 2—CPU Symmetrical Multiprocessing (SMP) Upgrade**

Order up to three additional CPUs, for a maximum of four.

- Additional CPUs must match the speed of CPU in system
- Four-CPU systems are restricted to two memory slots.

450NR-AA	Windows NT SMP upgrade, includes one 233 MHz CPU processor; SMP license is not required
460NR-AA	Windows NT SMP upgrade, includes one 275 MHz CPU processor; SMP license is not required
450AR-AA	DEC OSF/1 SMP upgrade includes one 233 MHz CPU processor and DEC OSF/1 SMP license
460AR-AA	DEC OSF/1 SMP upgrade includes one 275 MHz CPU processor and DEC OSF/1 SMP license
470AR-AA	DEC OSF/1 SMP upgrade includes one 250 MHz CPU processor and DEC OSF/1 SMP license
450YR-AA	OpenVMS SMP upgrade includes one 233 MHz CPU processor and OpenVMS SMP license
460YR-AA	OpenVMS SMP upgrade includes one 275 MHz CPU processor and OpenVMS SMP license
470-YR-AA	OpenVMS SMP upgrade includes one 250 MHz CPU processor and OpenVMS SMP license

**Step 3—Memory**

- One- to three- CPU systems support a total of four memory boards in any combination.
- Four CPU systems support total of two memory boards in any combination.
- DEC OSF/1 V3.2 systems support up to of 2 Gbytes memory
- Windows NT V3.5 systems support up to 1 Gbyte memory
- OpenVMS V6.1 supports up to 1 Gbyte memory. Version 6.2 supports up to 2 Gbytes memory

MS450-BA	64-Mbyte memory module
MS450-DA	128-Mbyte memory module (replaces MS450-CA)
MS451-FA	512-Mbyte memory module (replaces MS-451-CA)

**Step 3a—Prestoserve Non-Volatile Random Access Memory (NVRAM) for DEC OSF/1 systems**

- Supported on **DEC OSF/1** systems **only**. Requires DEC OSF/1 V3.0 operating system software
- Requires one EISA slot
- Maximum one Prestoserve option per system

PB2SX-AA	Prestoserve non-Volatile Random Access Memory (NVRAM) option; includes Prestoserve license and documentation kit
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## Step 4—Monitors

- Windows NT systems require a graphics monitor to run **all** functions.
- Number 9 GXE video adapter included in Windows NT server systems support 1280 x 1024 and 1024 x 768 resolution, 72-Hz monitors.
- DEC OSF/1 and OpenVMS Graphics Console
- Video adapter included in DEC OSF/1 and OpenVMS systems supports 1024 x 768 resolution, 72-Hz monitors, uses one EISA slot
- Graphics monitors other than those listed below can be used if compatible with graphics adapter included with system.

<b>VRT15-PA</b>	Northern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT15-P4</b>	Southern Hemisphere 15-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRT17-PA</b>	Northern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRT17-P4</b>	Southern Hemisphere 17-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.
<b>VRC21-PA</b>	Northern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10) and 120 V North American power cord. Order country specific power cord for 240 V use from Step 10.
<b>VRC21-P4</b>	Southern Hemisphere 21-inch high-resolution color monitor 120 or 240 V, 1024 x 768, 1280 x 1024 resolution, multi-sync; MPR2, Energy Star compliant, includes video cable (BC13L-10). Order country specific power cord from Step 10.

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## Step 5—Storage

Select storage devices as required. Refer to Chapter 9 *Storage Devices*, for further details on devices listed

- Integral Fast SCSI-2 controller supports maximum of seven devices (CD-ROM, one 5.25-inch half-height optional removable media device and two hard disk drives inside the base chassis), and three external devices via the SCSI-out port.
- External devices must be mounted next to chassis since maximum external SCSI bus length, including cable and device, **cannot** exceed 1.0 meter.
- If external expansion is not used, SCSI-out port must be terminated with external terminator (12-37004-04) included with system.

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### Step 5a—Internal Storage

Systems include one internal RZ28 disk drive, and one CD-ROM drive.

#### Removable Media Devices (select one additional device)

<b>RRD43-AC</b>	600-Mbyte, 5.25-inch half-height CD-ROM
<b>TZK11-LG</b>	2.0-Gbyte, 5.25-inch half-height SCSI QIC tape drive
<b>TLZ06-LG</b>	4.0-Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive
<b>TLZ07-LG</b>	8.0-Gbyte, 5.25-inch half-height SCSI 4-mm DAT drive

#### Hard Disk Drives (select one additional hard disk drive)

<b>RZ26L-MY</b>	1.05-Gbyte, 3.5-inch half-height disk drive
<b>RZ28 -MY</b>	2.0-Gbyte, 3.5-inch half-height disk drive

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### Step 5b—External Storage

- Additional storage is supported outside AlphaServer 2100 Rackmount system unit. BA35R-SF/-SR rackmountable StorageWorks shelves are recommended.
- AlphaServer 2100 Cabinet systems include one BA34R-SF (front mounted) and one BA34R-SR (rear mounted) StorageWorks selves. A controller is **required** to support installed StorageWorks shelves.

### Storage Controller Configuration Rules

- Each PCI-based controller occupies one PCI bus slot
- Maximum of three PCI-based storage controllers supported per system
- Each EISA-based controller occupies one EISA-bus slot
- KZESC-xA controllers support **only** RZ26L/RZ28 disk drives; they do not support tape drives
- KZESC-BA Three-port controller supports up to 21 disk drives in eight logical groupings. RAID sets must be created to support more than eight physical disk drives

### Windows NT systems support

- Maximum number of EISA-based controllers of all types in combination is limited to the total number of available EISA slots.
  - Maximum of two KZESC-xA..

### DEC OSF/1 systems support

- Maximum number of EISA-based controllers of all types in combination is governed by EISA bus IRQ address assignments; refer to EISA Bus IRQ Address Table.
- Maximum number of each EISA-based storage controllers supported per system:
  - Four KZESC-xA

### OpenVMS systems support

- Maximum number of EISA-based controllers of all types in combination is governed by EISA bus IRQ address assignments; refer to EISA Bus IRQ Address Table.
- Maximum number of each EISA-based storage controllers supported per system:
  - Four KZESC -xA
  - Two KFESA-AA
- KFESA-AA has dual termination, allowing it to be connected in middle of DSSI bus.
- OpenVMS Volume Shadowing does **not** support KZESC-xA controllers. KZESC-xA controllers do not support RAID 1 hardware shadowing.

### Storage Controllers

<b>KZESC-AA*</b>	EISA-based One-port Fast SCSI high-performance controller with RAID capability; includes RAID media kit (StorageWorks RAID software, license and documentation) for all operating systems
<b>KZESC-BA*</b>	EISA-based Three-port Fast SCSI high-performance controller with RAID capability; includes RAID media kit (StorageWorks RAID software, license and documentation) for all operating systems
<b>KZPAA-AA</b>	PCI-based one port high-performance Fast SCSI controller
<b>KFESA-AA</b>	EISA-based single-DSSI controller (supported on OpenVMS systems only)

\* See Chapter 8, Storage Devices, for StorageWorks RAID Array 210 Subsystem configuration rules

### Storage Option Pack

<b>SD001-AA</b>	One-port RAID Storage Option Pack; includes one KZESC-AA and three RZ28-VA
<b>SD001-BA</b>	Three-port RAID Storage Pack; includes one KZESC-AA and five RZ28-VA

**Note:** With the above Packs, the internal disk is changed to a RZ28-VA.

### Rackmountable StorageWorks Shelves

<b>BA35R-SF</b>	Rackmountable BA350 StorageWorks Shelf; front accessible
<b>BA35R-SR</b>	Rackmountable BA350 StorageWorks Shelf; rear accessible

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**Step 5b—External Storage (continued)****SCSI Cabling Information**

External cables are **not** included and must be ordered separately

- Order BN21H-03 SCSI cable for BA35R-Sx shelves in positions 1, 3, 5, 7, 9 (see 'A' on SCSI-based Storage diagram)
- Order BN21H-02 SCSI cable for BA35R-Sx shelves in positions 2, 4, 6, 8 (see 'B' on SCSI-based Storage Diagram)
- Three-port controller (KZESC-BA) requires 2T-SWXCK-AA cable kit for Ports 1 and 2 for external connection
  - CK-SWXRK-AA internal cable kit is required for first two KZESC-BA Three-port controllers
  - CK-SWXRK-BA internal cable kit is required for third and fourth KZESC-BA Three-port controllers (DEC OSF/1 and OpenVMS systems only)

**DSSI Cabling Information (OpenVMS systems only)**

- External cables are **not** included and must be ordered separately
- Order BC29S-09 DSSI cable for HSD05-AA in BA35R-Sx shelves (see 'A' on DSSI-based Storage Diagram)
- Order BC29U-02 DSSI cable for HSD05-AA in adjacent BA35R-Sx shelves (see 'B' DSSI-based on Storage Diagram)
- Order BC29V-06 DSSI cable for HSD05-AA in non-adjacent BA35R-Sx shelves (see 'C' DSSI-based on Storage Diagram)

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**Step 6—Networks and Communications**

- Systems include integral Ethernet controller (AUI or 10BaseT selectable).
- Select networking cable:
  - BNE4G-02 for AUI connection
  - BN26K-xx for 10BaseT (twisted pair) connection to integral Ethernet controller
- Maximum of three PCI-based network controllers supported (DE435-AA)
- Maximum number of each EISA-based network controllers supported per system:
  - Two DEFEA-xA
  - Five DNSES-AA
  - Four DW300-AA (five in Windows NT system)

**Windows NT Systems**

- Maximum number of EISA-based controllers of all types in combination is limited to *the total number of EISA slots*.

**DEC OSF/1 and OpenVMS Systems**

- Maximum number of EISA-based network controllers is governed by EISA bus IRQ address assignments; refer to the EISA bus IRQ Address Table.

<b>DE422-SA</b>	EISA-based Digital Etherworks network interface card
<b>DEFEA-AA</b>	EISA-based DEC FDDIcontroller; Single Attachment
<b>DEFEA-DA</b>	EISA-based DEC FDDIcontroller;Dual Attachment (requires two EISA slots)
<b>DW300-AA</b>	EISA-based Token-Ring adapter includes NetWare V2.15 driver, LAN Manager Driver, and documentation
<b>CXI01-xx</b>	EISA-based asynchronous multiplexer
<b>DNSES-AA</b>	EISA-based synchronous communications controller
<b>DE435-AA</b>	PCI-based Digital Etherworks 32-bit high-performance network interface card

See Chapter 8 Networks, Communications, and Cables, and the Network Products Guide for more information.

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## Step 7—Additional Power Supply

- There are no power supplies in the H9A10-xx Cabinets. Dual power distribution is provided to internal, mounted equipment.
- The standard power supply in AlphaServer 2100 Rackmount system is sufficient for a fully configured system.
- An additional power supply for n+1 redundancy may be ordered

**H7804-AA** Additional power supply with 120 VAC cord

**H7804-AB** Additional power supply with 240 VAC cord

**Note:** The H7893-AA power supply for AlphaServer 2100 pedestal is **not** compatible with, and will not mount in the Rackmount system.

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## Step 8—Terminals and Printers

- System includes two EIA-232 asynchronous serial ports with 9-pin D-subminiature connectors.
- Console terminal can either be a Graphics Console Subsystem (see Step 4) or a Serial Video Terminal. If a Serial Video Terminal is used as the console terminal, it **must** be a VT320-xx or VT420-xx; these terminals have the graphics capability required for the EISA Configuration Utility.
- Select terminals and serial printers as required. A 9-pin to MMJ adapter (H8571-J) is required (included with system) for each connection. A cable must be ordered unless otherwise provided.

See Chapter 10, *Terminals, Scanners, Printers* for ordering information.

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## Step 9—Software

Select user licences as required.

### Windows NT systems

Systems include Windows NT Server plus 5-client access V3.5 media (CD-ROM) and license in shrink-wrapped package. Order documentation kit if required.

**QA-23CAA-GZ** Windows NT Server documentation kit

### DEC OSF/1 Systems

Software processor code = **G** for **all** software, one to four processors.

### DEC OSF/1 Interactive User Licenses

DEC OSF/1 Interactive User Licenses are **not** specific to a single system and can be moved from one system to another at user discretion

<b>QL-MT7A9-BB</b>	DEC OSF/1 1-user license
<b>QL-MT7A9-BC*</b>	DEC OSF/1 2-user license
<b>QL-MT7A9-BD*</b>	DEC OSF/1 4-user license
<b>QL-MT7A9-BE*</b>	DEC OSF/1 8-user license
<b>QL-MT7A9-BF*</b>	DEC OSF/1 16-user license
<b>QL-MT7AG-AA</b>	DEC OSF/1 unlimited user license
<b>QL-MT5AG-AA</b>	DEC OSF/1 developer's extension license

\*Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

### DEC OSF/1 Media and Documentation—required for first system on site

<b>QA-MT4AA-H8</b>	DEC OSF/1 media and on-line documentation on CD-ROM
<b>QA-MT4AA-GZ</b>	DEC OSF/1 full hardcopy documentation

### DEC OSF/1 Layered Products CD-ROM

<b>QA-054AA-H8</b>	Layered products media and documentation for DEC OSF/1 on CD-ROM
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**Step 9—Software (continued)****DECnet Licenses**

QL-MTJAG-AA	DECnet/OSI end-system license for DEC OSF/1
QL-MTKAG-AA	DECnet/OSI extended function license for DEC OSF/1

**OpenVMS systems**

Software processor code = **G** for **all** software, one to four processors.

**OpenVMS Interactive User Licenses**

OpenVMS Distributed Interactive User Licenses are **not** specific to a single system and **can** be moved between systems (all OpenVMS ) at user discretion. OpenVMS Distributed Interactive User Licenses can also be shared across a **homogeneous** OpenVMS Cluster (all OpenVMS systems)

**Note:** OpenVMS Distributed Interactive User Licenses are architecture-specific and **cannot** be shared across a **mixed** OpenVMS Cluster (OpenVMS and OpenVMS VAX systems)

QL-MT3A9-BB	OpenVMS 1-user license
QL-MT3A9-BC*	OpenVMS 2-user license
QL-MT3A9-BD*	OpenVMS 4-user license
QL-MT3A9-BE*	OpenVMS 8-user license
QL-MT3A9-BF*	OpenVMS 16-user license
QL-MT3A9-BG*	OpenVMS 32-user license
QL-MT3A9-BH*	OpenVMS 64-user license
QL-MT3AA-BR*	OpenVMS 128-user license
QL-MT3AB-BR*	OpenVMS 256-user license
QL-MT2AG-AA	OpenVMS unlimited user license

\*Not available in Europe. European customers may select as many 1-user licenses as required, or the unlimited user license.

**OpenVMS Media and Documentation—required for first system on site**

QA-MT1AA-H8	OpenVMS media and documentation on CD-ROM
QA-MT1AH-GZ	OpenVMS hardcopy documentation

**OpenVMS Layered Products CD-ROM**

QA-03XAA-H8	Layered products media and documentation for OpenVMS on CD-ROM
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**DECnet Licenses**

QL-MTGAG-AA	DECnet extended function license for OpenVMS
QL-MTHAG-AA	DECnet end-system to extended function upgrade license for OpenVMS

**DSSI Information (OpenVMS systems only)**

EK-410AB-MG	DSSI VMScluster Installation Guide
EK-D4-TS	DSSI VMScluster Troubleshooting Guide

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## Step 10—Power Cords and Keyboards

### System Power Cords

- Power connection to the HA910-xx Cabinet is site-specific.
- AlphaServer 2100 Cabinet systems ship with the following power cord for power to the Cabinet:
  - 120 VAC systems: NEMA Locking, 4.57 m (15 feet), NEMA 5-30P, Socket NEMA 5-30R
  - 240 VAC systems: NEMA Locking 4.57 m (15 feet), NEMA 6-20P, Socket NEMA 6-20R
- AlphaServer Rackmount unit and other rackmountable options on same purchase order as AlphaServer Cabinet ship with correct power cords for that configuration.

### Monitor Power Cords

- Select country-specific power cord for 240 V use.

<b>BN27S-03</b>	U.S., Canada, Japan, 120 V
<b>BN19H-2E</b>	Australia, New Zealand
<b>BN19C-2E</b>	Central Europe
<b>BN19A-2E</b>	U.K., Ireland
<b>BN19E-2E</b>	Switzerland
<b>BN19K-2E</b>	Denmark
<b>BN19M-2E</b>	Italy
<b>BN19S-2E</b>	Egypt, India, South Africa
<b>BN18L-2E</b>	Israel

### Keyboards

All systems include U.S English keyboard. Select country-specific keyboard. Selected keyboard ships in lieu of U.S variants.

<b>LK471-AA*</b>	U.S. English
<b>LK471-AB</b>	Belgian
<b>LK471-AD</b>	Danish
<b>LK471-AE</b>	United Kingdom
<b>LK471-AG</b>	German
<b>LK471-AI</b>	Italian
<b>LK471-AK</b>	Swiss/French
<b>LK471-AN</b>	Norwegian
<b>LK471-AP</b>	French
<b>LK471-AS</b>	Spanish
<b>LK471-AV</b>	Portuguese

\* Included if alternate not selected

## AlphaServer 2100 4/233, 4/275 and 5/250 EISA Bus IRQ Address Table

(DEC OSF/1 and OpenVMS Systems Only)

Option	EISA Bus IRQ Addresses									Maximum of Each Supported		
	5	7	8	9	10	11	12	14	15	OpenVMS	DEC OSF/1	Windows NT
DE422	0	-	-	N	0	0	-	-	-	3	3	4
PB2GA	-	-	-	0	-	-	-	-	-	1	1	1
DEFEA	-	-	-	N	0	0	-	-	0	2	2	2
DNSES	-	-	0	N	0	0	0	0	0	5	5	0
DW300-AA	0	-	-	N	0	0	-	-	0	4	4	5
PB2HA	-	-	-	N	0	0	0	0	0	1	1	1
KZESC	-	-	-	-	-	0	0	0	0	2	2	2
KFESA	-	-	-	N	0	0	0	0	0	2	0	0
PB2SX	-	-	-	-	-	-	-	-	-	0	1	0
CXI01	-	-	-	-	-	-	-	-	-	0	2	2

## Table Codes:

0 = address is available for device

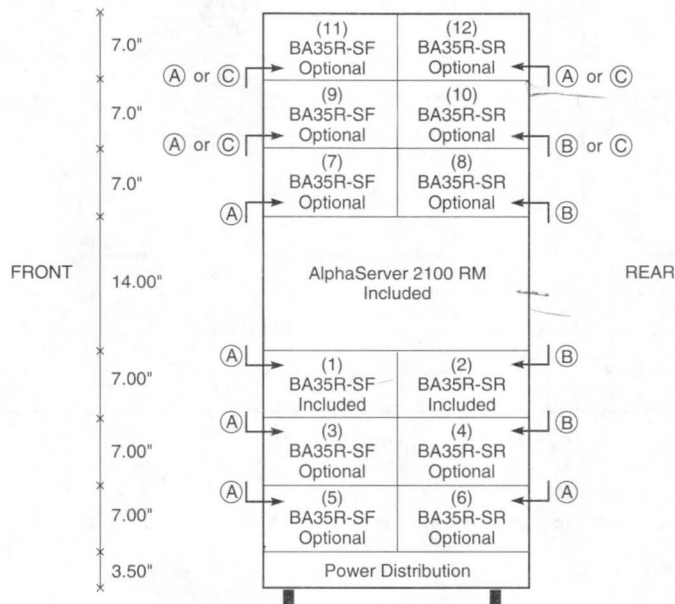
- = address not available for device

N in address location 9 = address is assigned, but its use is precluded due to presence of PB2GA-xx Video Graphics Adapter

## Configuration Rules and Information

- EISA Bus IRQ address assignments are for DEC OSF/1 and OpenVMS systems only.
- Windows NT Server operating system permits the sharing of IRQ addresses; the only limitation for these systems is the maximum number of each device supported, and the number of EISA bus slots physically available.
- Video Graphics Adapter is included in all systems listed in Step 1. It occupies one EISA bus slot, leaving seven physical slots for all other EISA-based controllers.
- In some cases, the **maximum each** [device] **supported** is less than the 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 be configured to **one** available address. (**Hint:** With the table as a worksheet, use a pencil to fill in an "0" for each device; fill in only one "0" per column)
- The actual IRQ address assignment will be made by the EISA Configuration Utility (ECU) which is run during system manufacture, or in the installed system if the EISA bus is re-configured.
- PB2SX and CXI01 do not use any IRQ address.

**Cabinet Assembly and External Storage Cabling Guide  
for SCSI-based Systems  
56.00" Total Mounting Space**



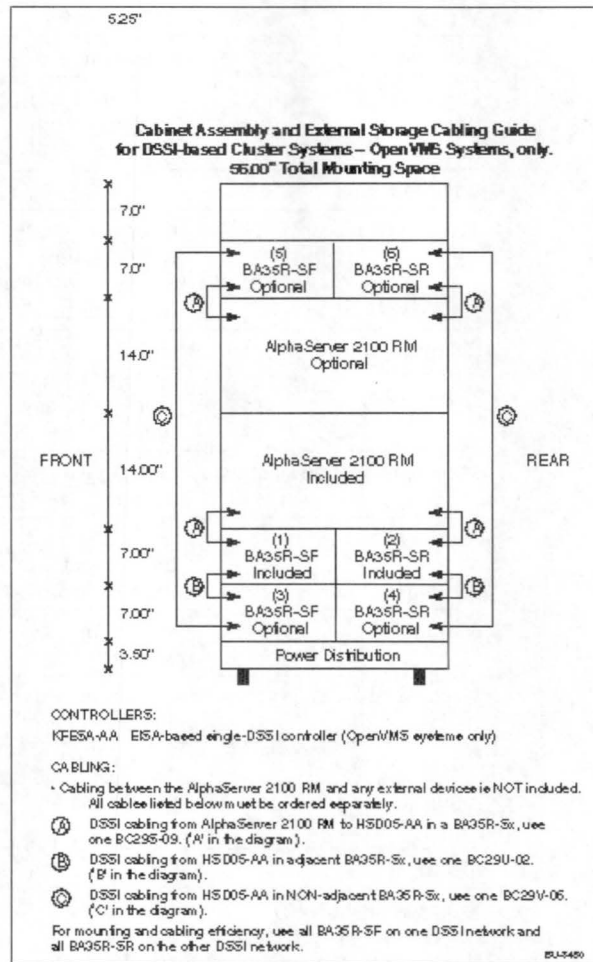
**CONTROLLERS:**

- KZESC-AA one channel EISA RAID controller supports one BA35R-Sx
- KZESC-BA three channel EISA RAID controller supports maximum of three BA35R-Sx  
Note: AlphaServer 2100 Rackmount system supports maximum of four KZESC-xA controllers
- KZPAA-AA one channel PCI controller supports one BA35R-Sx  
Note: AlphaServer 2100 Rackmount system supports maximum of three KZPAA-AA controllers

**CABLING:**

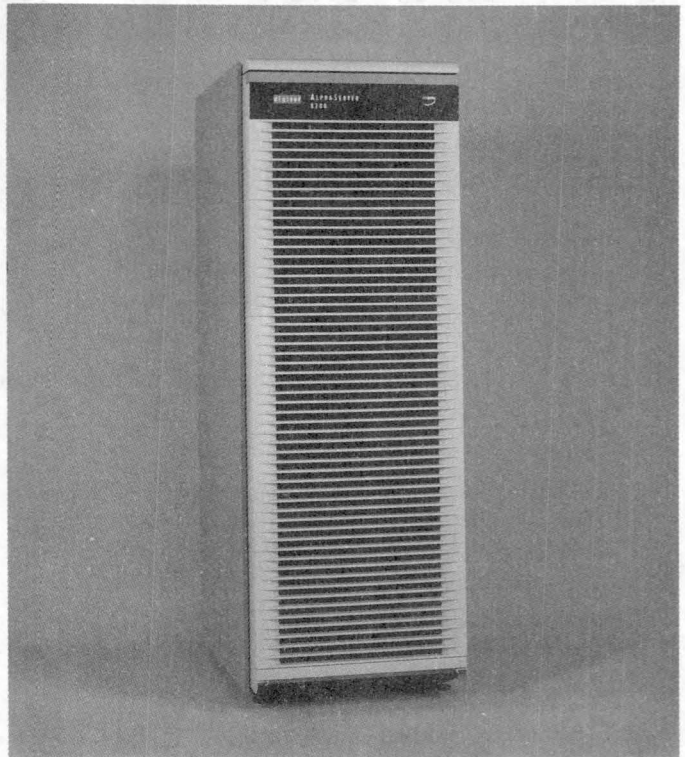
- External cable for AlphaServer 2100 Rackmount and included BA35R-SF/-SR is included when storage controller is ordered.
  - Internal cable to additional BA35R-SF/-SR are not included and MUST be ordered separately.
  - (A) Cabling from AlphaServer 2100 RM to BA35R-Sx in positions 3, 5, 6, 7, 9, 11, 12 use BN21H-03, one for each BA35R-Sx. ('A' in diagram).
  - (B) Cabling from AlphaServer 2100 RM to BA35R-Sx in positions 4, 6, 8, 10 use BN21H-02, one for each BA35R-Sx. ('B' in diagram).
  - (C) Cabling from AlphaServer 2100 RM 3rd and 4th KZESC-BA use CK-KZESC-BA to BA35R-Sx in positions 9, 11 and 10, 12. ('C' in diagram).
- First two KZESC-BA three channel SCSI RAID controllers use one CK-SWXRK-AA cable kit each; use CK-SWXRK-BA for 3rd and 4th.

BU-3448



## Specifications

Shipping Dimension		
Height	170 cm (66.9 in.)	
Width	60 cm (23.6 in.)	
Depth	85 cm (34 in.)	
Weight	286 kg (630 lb)	
Clearances		
	Operating	Service
Front	20.3 cm (8 in.)	100 cm (39.4 in.)
Rear	20.3 cm (8 in.)	61 cm (24 in.)
Sides	None	61 cm (24 in.)
Environmental		
Temperature	Operating	10°-35° C (50°-95° F)
	Nonoperating	-40°-66° C (-40°-151° F)
	Storage (60 days)	-40°-66° C (-40°-151° F)
	Rate of change	11° C/hr (20° F/hr)
Relative humidity	Operating	10-90% noncondensing
	Nonoperating	10-95% noncondensing
	Storage (60 days)	10-95% noncondensing
	Rate of change	20% / hr
Maximum heat dissipation	Operating	3450 Watt AC, 11,730 BTU/hr
Air flow and quality	Operating	400 CFM
	Intake location	Front
	Exhaust location	Rear and top
Altitude	Operating	2000 m (6562 ft)
	Nonoperating	3600 m (12,000 ft)
Mechanical shock	Operating	5 g pk for 10 ± 3 ms
	Nonoperating	20 g pk for 10 ± 3 ms
Vibration	Operating	10-500 Hz 0.1G peak
Acoustics	Operating	LNPEc (Bels) 6.5 maximum per ISO 7779
Electrical		
Voltage range (AVS)	100-120 / 220 - 240 Vac	
Power source phase	Single	
Nominal frequency (Hz)	50 - 60 Hz	
Frequency range (Hz)	49 - 61 Hz	
Maximum rated current	16 a / 8 a	
Maximum power consumption (Watts)	1,200 W (PFC = 0.99, 10A @ 120 V)	
Power cord	Type	NEMA Locking
	Length	4.57 m (15 ft..)
	U.S. plugs	NEMA 5-30P, Socket
	240V plugs	NEMA 5-30R
		NEMA 6-20P, Socket NEMA 6-20R
Agency approvals	UL 114 (office equipment) UL 478 (EDP units) VDE 0875 (RFI suppression) Australian AS C 100 IEC Publication 950 FCC Part 15 Docket 20780 CSA C22.2 No. 134 (office equipment) CSA C22.2 No. 154 (data processing)	



## Digital AlphaServer 8200 Systems

### Product Description

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 (DECchip 21164). With the enormous capacity of the Alpha 64-bit architecture, up to 6 Gbytes of memory, and PCI I/O of up to 108 slots, this server offers room for growth for the largest and most complex applications.

AlphaServer 8200 runs OpenVMS or DEC OSF/1 operating systems and offers the reliability and availability features customers require for bet-your-business environments. Clusters, hot swap disks, RAID, redundant power, ECC memory and data paths, fault management, and uninterruptible power system 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 a few examples of the kinds of applications the AlphaServer 8200 can support with ease. And, with up to 6 Gbytes of memory, this office server can provide all the benefits that Very Large Memory/Very Large Database (VML/VLDB) systems have provided in the past.

For technical/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.

### Step 1—Select Base Server System

- Systems require DEC OSF/1 V3.2B or later, and OpenVMS V6.2 or later.
- Console terminal required unless available on site.
- System consists of 5 slot backplane, with three slots used by CPU module, memory module, and KFTIA-AA system I/O module.
- Two slots available for additional modules (CPU modules, memory modules, or system I/O modules).
- CD-ROM and RZ28-VA SCSI disk which reside in BA656 Internal Storage Drawer, are connected via single-ended SCSI-2 port on KFTIA-AA system I/O module.
- Four additional 3.5-inch StorageWorks devices can be added to BA656 Internal Storage Drawer.
- Universal single phase power supply will supply necessary power for system.
- Redundant power supply (N+1) can be added if required.

**Note:** See Step 17 for System Building Blocks without memory and I/O.

### AlphaServer 8200 Base Server Systems include

- Processor module with one DECchip 21164/300 MHz CPU, **or** two DECchip 21164/300 MHz CPUs; each DECchip 21164 has 4-Mbyte Backup cache
- System I/O module (KFTIA-AA) includes, I/O channel, two twisted-pair 802.3/Ethernet, single-ended SCSI-2 port, and three FWD (Fast Wide Differential) SCSI-2 ports
- 128, 256, 512 Mbytes, or 2 Gbytes of memory
- BA656 Internal Storage Drawer
- RZ28-VA 2-Gbyte 3.5-inch SCSI disk
- 600-Mbyte CD-ROM drive
- Universal single phase power
- 48 VDC power supply
- Factory Installed Software
- DEC OSF/1 base license **or** OpenVMS base license
- NAS 200 software
- One year hardware product warranty
- 90 day software product warranty

#### Uni-CPU Systems

Order Number	Operating System	Memory
DA-281AB-A9	DEC OSF/1	128 Mbytes
DA-281AD-A9	DEC OSF/1	512 Mbytes
DY-281AB-A9	OpenVMS	128 Mbytes
DY-281AD-A9	OpenVMS	512 Mbytes

#### Dual-CPU Systems

Order Number	Operating System	Memory
DA-281BB-A9	DEC OSF/1	128 Mbytes
DA-281BC--A9	DEC OSF/1	256 Mbytes
DA-281BD-A9	DEC OSF/1	512 Mbytes
DA-281BF-A9	DEC OSF/1	2 Gbytes
DY-281BB-A9	OpenVMS	128 Mbytes
DY-281BC--A9	OpenVMS	256 Mbytes
DY-281BD-A9	OpenVMS	512 Mbytes
DY-281BF-A9	OpenVMS	2 Gbytes

### Step 2—Select Power Cord

- BN23H-4E**      **60 Hz**—AC line cord for Single Phase Power, one per cabinet
- BN20P-4E**      **50 Hz**—AC line cord for Single Phase Power, one per cabinet

**Note:** See Specifications for information on which power cord to order. If redundant supply (H7266-AD/AE) is ordered, power cord is included and does not have to be ordered.

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### Step 3—CPU Symmetric MultiProcessing (SMP) Expansion

- Order up to two additional CPU modules, for maximum of three.
- For more than two processor modules in a system, a minimum of two separate memory modules should be considered for optimal system performance.

<b>751P2-AX</b>	<b>DEC OSF/1 SMP upgrade—Uni-CPU</b> , includes processor module with DECchip 21164/300 MHz CPU, DEC OSF/1 SMP extension license, and end user product warranty.
<b>751P1-AX</b>	<b>OpenVMS SMP upgrade—Uni-CPU</b> , includes processor module with DECchip 21164/300 MHz CPU, OpenVMS SMP extension license, and end user product warranty.
<b>752P2-AX</b>	<b>DEC OSF/1 SMP upgrade—Dual-CPU</b> , includes processor module with two DECchip 21164/300 MHz CPUs, DEC OSF/1 SMP extension license, and end user product warranty.
<b>752P1-AX</b>	<b>OpenVMS SMP upgrade—Dual-CPU</b> , includes processor module with two DECchip 21164/300 MHz CPUs, OpenVMS SMP extension license, and end user product warranty.

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### Step 4—AlphaServer Expansion Packages

AlphaServer Expansion Packages are designed to be added to Base AlphaServers to create fully functional high availability systems. They contain all necessary hardware (excluding console terminal) and software to make these systems complete and operational.

#### DEC OSF/1 Base AlphaServer Systems:

<b>8YFEA-EX</b>	<b>DECsafe High Availability SCSI Package</b> , includes: Six RZ28-VA 2.1-Gbyte, 3.5-inch disk drives in BA350-JB shelf TZ87 20-Gbyte, 5.25-inch SCSI tape drive in second BA350-JB shelf Two DWZZA-VAs to convert FWD (Fast Wide Differential) SCSI signals from KFTIA-AA and KZPSA-BB for use in BA350-JB StorageWorks shelf PCI Plug-in unit (DWLPA-CA), with KZPSA-BB FWD (Fast Wide Differential) SCSI adapter BN21K cables and CK-KFTIA-AA cable kit DECsafe Available Server software license kit
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### Step 5—Memory

- Select additional memory if required; maximum 6 Gbytes per system.
- Order up to two additional memory modules, for maximum of three.
- Each memory module has built in two-way interleaving. Additional interleaving is accomplished by adding more memory modules.
- Maximum of three memory modules is reduced by one for each additional CPU module added from Step 3 and each system I/O module added from Step 7.

**Note:** A short term memory size restriction is currently in effect; Memory modules **must** be in quantity of one or two memory modules of the same size. This means that maximum memory configuration is temporarily two 2-Gbyte memory modules, resulting in system maximum memory size of 4 Gbytes.

<b>MS7CC-BA</b>	128-Mbyte memory module
<b>MS7CC-CA</b>	256-Mbyte memory module
<b>MS7CC-DA</b>	512-Mbyte memory module
<b>MS7CC-EA</b>	1073-Mbyte memory module
<b>MS7CC-FA</b>	2147-Mbyte memory module

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#### Step 5a—Memory Upgrades

- Field installation only (not configurable in manufacturing).
- |                 |   |
|-----------------|---|
| <b>MS7CC-UA</b> | 128-Mbyte memory upgrade (8-Mbyte SIMMs); upgrades 128-Mbyte (-BA) module to 256-Mbyte (-CA) module |
| <b>MS7CC-UB</b> | 512-Mbyte memory upgrade (32-Mbyte SIMMs); upgrades 512-Mbyte (-DA) module to 1-Gbyte (-EA) module  |

Step 5b—Prestoserve Non-Volatile Random Access Memory (NVRAM) (DEC OSF/1 systems only)

- Provides I/O performance enhancement.
- Maximum one Prestoserve option per system.

<b>DJ-ML200-BA</b>	4-Mbyte Prestoserve I/O performance enhancement option, PCI option, requires DWLPA-CA/CB; includes Prestoserve license and documentation kit.
<b>DJ-ML200-CA</b>	8-Mbyte Prestoserve I/O performance enhancement option, PCI option, requires DWLPA-CA/CB; includes Prestoserve license and documentation kit.
<b>DJ-ML300-BA</b>	4-Mbyte Prestoserve I/O performance enhancement option, KFTIA-AA daughter card mounting, requires KFTIA-AA; includes Prestoserve license and documentation kit.

**Step 6—I/O Expansion Buses**

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

- Each DWLPA-CA/CB (PCI shelf mount box) contains 12 PCI slots.
- Each PCI shelf mount box requires one I/O channel connection to KFTHA-AA or KFTIA-AA, see Step 7.
- Maximum of nine I/O channels available on base AlphaServer 8200 (requires adding two KFTHA-AA System I/O modules).

<b>DWLPA-CA</b>	<b>PCI shelf mount box;</b> AlphaServer 8200 system cabinet only, maximum three per cabinet
<b>DWLPA-CB</b>	<b>PCI shelf mount box;</b> AlphaServer 8200 expander cabinet only, maximum four per cabinet
<b>KFE70-BA</b>	<b>EISA Bridge option;</b> PCI to EISA bridge module set must reside in first DWLPA-CA in system cabinet only. Converts 12-slot PCI bus to 2 EISA, 6 PCI/EISA, and 2 PCI slots. Includes RX26 floppy drive, mounting hardware, and cables to mount RX26 in Processor System Unit. Maximum one EISA Bridge option supported per system.

**Step 7—System I/O Modules**

- One KFTIA-AA system I/O module included with base system.
- Maximum nine I/O channels available on base AlphaServer 8200 (requires addition of two KFTHA-AA system I/O modules).
- System I/O modules can be added in following configurations (maximum of three):
  - One KFTIA-AA
  - Two KFTIA-AA
  - One KFTIA-AA, one KFTHA-AA
  - One KFTHA-AA
  - Two KFTHA-AA

<b>KFTHA-AA</b>	System I/O module with four I/O channels for DWLPA-CA/CB boxes.	
<b>KFTIA-AA</b>	System I/O module with one I/O channel for DWLPA-CA/CB box, two 802.3 twisted-pair Ethernet ports, one single-ended SCSI-2 port, three FWD (Fast Wide Differential) SCSI-2 ports. Optional FDDI daughter card can be added to KFTIA-AA (maximum of one); —Single attachment station multi-mode fiber card (DEFPZ-AA) <b>or</b> —Twisted-pair copper card (DEFPZ-UA).	
<b>BN26M-xx</b>	Ethernet twisted-pair cable; 8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable.	
<b>BN21H-xx</b>	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.	
<b>CK-KFTIA-AA</b>	Cabinet kit for FWD (Fast Wide Differential) SCSI-2 port. One cabinet kit required for each used port on KFTIA-AA, maximum three per KFTIA-AA. Cabinet kit includes Y-cable and FWD terminator.	
<b>BN21K-xx</b>	SCSI-2 Fast Wide Differential cable; 68-pin male straight to 68-pin male right-angle. Connects KFTIA-AA Fast Wide Differential SCSI-2 ports to DWZZA-VA.	
<b>BN21K-01</b>	From KFTIA Fast Wide Differential port	To BA350-JB System cabinet (front)
<b>BN21K-03</b>	From KFTIA Fast Wide Differential port	To BA350-JB System cabinet (rear)
<b>BN21K-05</b>	From KFTIA Fast Wide Differential port	To BA350-JB Expander cabinet (front or rear)

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## Step 8—Storage Controllers

- KFTIA-AA included with each system.
- DWZZA-VA requires minimum revision F02 for connecting FWD (Fast Wide Differential) signals from KFTIA-AA and KZPSA-BB to BA350-JB StorageWorks shelf.
- DWZZA-AA requires minimum revision E02 for connecting any FWD (Fast Wide Differential) SCSI-2 port from KFTIA-AA or KZPSA-BB to TZ8xx tape loaders.

### Storage Controllers—PCI-based

- System maximum of two KZPSC-AA/BA SCSI RAID controllers.

<b>KZPSA-BB</b>	<b>PCI Fast Wide Differential SCSI Adapter.</b> OpenVMS supports eight per PCI, maximum eight per system. DEC OSF/1 supports eight per PCI, maximum 32 per system. Requires one PCI slot. Provides one SCSI-2 bus. The KZPSA supports DECsafe Available Server. See <i>January 1995, Digital Systems and Options Catalog</i> , Chapter 6, <i>High Availability and High Performance Products</i> , for details.
<b>BN21K-xx</b>	SCSI-2 Fast Wide Differential cable; 68-pin male straight to 68-pin male right-angle. Connects KZPSA-BB Fast Wide Differential SCSI-2 port to DWZZA-VA..
<b>BN21K-02</b>	From PCI Fast Wide Differential SCSI adapter      To BA350-JB System cabinet (front or rear)
<b>BN21K-03</b>	From PCI Fast Wide Differential SCSI adapter      To BA350-JB Expander cabinet (front or rear)
<b>KZPSC-AA</b>	<b>PCI SCSI RAID Controller with 1 port.</b> OpenVMS and DEC OSF/1 support two per PCI, maximum two per system. Requires one PCI slot, and KFE70-AA (EISA Bridge option). Provides one Fast/wide/single-ended connection. Allows RAID levels 0,1, and 5.
<b>BN31L-1E</b>	1.5 meter single-ended narrow cable. For connections from PCI RAID controller to BA350-JB System Cabinet (front only).
<b>KZPSC-BA</b>	<b>PCI SCSI RAID Controller with 3 ports.</b> OpenVMS and DEC OSF/1 support two per PCI, maximum two per system. Requires two PCI slots, and KFE70-AA (EISA Bridge option). Provides three Fast/wide/single-ended connections. Allows RAID levels 0,1, and 5.
<b>BN31K-0E</b>	<b>Required for KZPSC-BA to use third port on module.</b> Connects internally from KZPSC-BA module to second PCI slot/bulkhead. One required per KZPSC-BA option.
<b>BN31L-1E</b>	1.5 meter single-ended narrow cable. For connections from PCI RAID controller to BA350-JB System Cabinet (front only). One <b>required</b> for each used port on KZPSC-BA module.

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## Step 9—Storage

Select storage devices as required. See *January 1995 Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for detailed ordering information.

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### Step 9a—Internal Storage (System Cabinet)

System cabinet provides space for up to six BA350 StorageWorks shelves; each shelf holds maximum of two 5.25-inch devices and one 3.5-inch device or seven 3.5-inch devices. Most configurations will require DWZZA-VA which counts as one 3.5-inch device. **Note:** Cables can be single-ended or Fast Wide Differential with DWZZA-VA; SCSI controller will determine required cable type.

- BA656 Internal Storage Drawer is included in base system and has space to accommodate four additional 3.5-inch devices.

<b>BA350-JB</b>	<b>SCSI-2 StorageWorks Shelf</b> —includes 48 V/131 W DC power supply, DC fans, and rackmounting hardware. See configuration limitations in Step 13a.
<b>RZ26L-VA</b>	1.05-Gbyte, 3.5-inch SCSI disk drive
<b>RZ28-VA</b>	2.1-Gbyte, 3.5-inch SCSI disk drive

Step 9a—Internal Storage (System Cabinet) *(continued)*

<b>TLZ07-VA</b>	8.0-Gbyte, 3.5-inch SCSI tape drive
<b>TZ87-VA</b>	20-Gbyte, 5.25-inch SCSI tape drive
<b>TZ86-VA</b>	6.0-Gbyte, 5.25-inch SCSI tape drive
<b>EZ54R-VA</b>	428-Mbyte, SCSI solid state disk
<b>EZ51R-VA</b>	107-Mbyte, SCSI solid state disk

Step 9b—External Storage (I/O Expansion Cabinet)

I/O expansion cabinet (H9B10-EA) provides space for maximum of 16 BA350-JB SCSI StorageWorks shelves and maximum of four DWLPA-CB PCI shelf mount boxes. See configuration limitations in Step 13b.

Step 9c—External Storage

The following list describes available disk storage devices, capacities, and components. These supported options can be added as required. See *January 1995 Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for detailed ordering information.

Storage Arrays	Capacity	Storage Array Disk Drive Components
SW5XX, SW8XX	6–227 Gbytes	RZ26L/RZ28 SCSI-2 disk drives
<b>Disk Drives</b>		
RZ28 SCSI	2.1 Gbytes	
RZ26L SCSI	1.05 Gbytes	
EZ54R SCSI solid state	428 Mbytes	
EZ51R SCSI solid state	107 Mbytes	
<b>Tape Drives</b>		
TZ85, TZ86, TZ87, TZ857*, TZ867*, TZ877, TSZ07, TLZ07, TKZ09, TKZ60	See <i>January 1995 Digital Systems and Options Catalog</i> , Chapter 8, <i>Storage Devices</i> , for ordering information.	

\* Loader support for DEC OSF/1 is available via DECnsr.

## Step 10—Networks and Communications

Two twisted-pair 802.3/Ethernet controllers on KFTIA-AA system I/O module are included with each system. See Step 7 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 *January 1995 Digital Systems and Options Catalog*, Chapter 7, *Networks, Communications, and Cables*, and *Network Products Guide* for details.

### LAN Communications Controllers—KFTIA-AA daughter cards

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

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

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**Step 10—Networks and Communications (continued)**
**LAN Communications Controllers—PCI based**

- Requires DWLPA-CA/CB, PCI shelf mount box.
- System maximum of four DEFPA-AA/DA/UA FDDI controllers.

<b>DE435-AA</b>	<b>Digital Etherworks 32-bit High Performance Network Interface Card</b> —supports twisted-pair, thick wire and ThinWire, requires one PCI slot. OpenVMS and DEC OSF/1 support eight per PCI, maximum eight per system.
<b>DEFPA-AA</b>	<b>FDDI controller Fiber - Single attachment station MultiMode Fiber</b> —requires one PCI slot. OpenVMS and DEC OSF/1 support four per PCI, maximum four per system. Requires “SC” type connecting cable.
<b>DEFPA-DA</b>	<b>FDDI controller Fiber - Dual attachment station MultiMode Fiber</b> —requires one PCI slot. OpenVMS and DEC OSF/1 support four per PCI, maximum four per system. Requires “SC” type connecting cable.
<b>BN34A-xx</b>	MultiMode Fiber Optic Duplex cable—“SC” connector to “ST” connector
<b>BN34B-xx</b>	MultiMode Fiber Optic Duplex cable—“SC” connector to “SC” connector
<b>BN34D-xx</b>	MultiMode Fiber Optic Duplex cable—“SC” connector to “MIC” connector
<b>DEFPA-UA</b>	<b>FDDI controller Fiber - Single attachment station UTP</b> —requires one PCI slot. OpenVMS and DEC OSF/1 support four per PCI, maximum four per system.
<b>BN26M-xx</b>	8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable
<b>BN26S-xx</b>	8-pin MP to 8-pin MP, screened, crossover, EIA/TIA Category 5 cable

**LAN Communications Controllers—EISA based**

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

<b>DNSES-AA</b>	<b>Synchronous Communications Controller</b> —requires one EISA slot. OpenVMS and DEC OSF/1 support one per EISA, maximum one per system.
<b>BC19B-02</b>	EIA-422-A/V.11 adapter cable; can be extended with BC55D-33.
<b>BC19D-02</b>	EIA-232-D/V.24 adapter cable; can be extended with BC22F-xx.
<b>BC19E-02</b>	EIA-423-A/V.10 adapter cable; can be extended with BC55D-33.
<b>BC19F-02</b>	V.35 adapter cable; can be extended with BC19L-25.
<b>DW300-AA</b>	<b>Token Ring Adapter</b> —requires one EISA slot. OpenVMS and DEC OSF/1 support one per EISA, maximum one per system.
<b>BN26M-xx</b>	802.5/Token Ring twisted-pair cable; 8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable.
<b>CXI01-AA</b>	<b>Digiboard Asynchronous Xem/ISA Multiport Serial Card with 16 RJ45 PORTS/Xem Port</b> —requires one EISA slot. DEC OSF/1 only, supports one per EISA, maximum one CXI01-AA/AD per system.
<b>CXI01-AB</b>	<b>Digiboard PORTS/Xem, 16 RJ45 Port Concentrator</b> —mounts separately from PCI bus. Maximum of three CXI01-AB can be attached to CXI01-AA; provides up to 48 additional ports. DEC OSF/1 only.
<b>CXI01-AD</b>	<b>Digiboard Asynchronous EPC/X Multiport Serial Card with 16 RJ45 Port EPC/CON-16 Concentrator</b> —requires one EISA slot. DEC OSF/1 only, supports one per EISA, maximum one CXI01-AA/AD per system.
<b>CXI01-AE</b>	<b>Digiboard EPC/CON-16 Concentrator</b> —mounts separately from PCI bus. Maximum of three CXI01-AE can be attached to CXI01-AD; provides up to 48 additional ports. DEC OSF/1 only.
<b>CXI01-AC</b>	Digiboard RJ45 to DB25 Male Converter
<b>CXI01-AF</b>	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 descriptions in *January 1995 Digital Systems and Options Catalog*, Chapter 7, *Networks, Communications, and Cables*, for ordering information.

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## Step 10—Networks and Communications (*continued*)

### DECserver 90M, 90L+, 90TL, 900TM, 700, 250, and MUXserver 90, 320, 380 Communications and Printer Servers

Select terminal or printer server to provide users with multiple session access to systems on a LAN, to minimize cabling complexity and costs, and to conserve host resources such as backplane slots.

### DEC WANrouter 90, 250; DECbrouter 90; and DECNIS 500, 600 Multiprotocol Routers

Select a router to cost-effectively link LAN to remote system or another LAN and to offload routing overhead from application host system.

### Network Connectivity Products

See *January 1995 Digital Systems and Options Catalog*, Chapter 7, *Networks, Communications, and Cables*, and *Network Products Guide* for details.

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## Step 11—Console Terminal

Console terminal with EIA-232 25-pin DSUB connector and printer required unless otherwise available. See *January 1995 Digital Systems and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers*, for ordering information.

VT510-xx	VT510 terminal.
LA75S-xx	LA75 Plus printer.
LAXXS-AD	VT510/LA75 table for both VT510 and LA75.

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## Step 12—Terminals, Scanners, Printers

See *January 1995 Digital Systems and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers*, for ordering information.

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## Step 13—Expansion (System Cabinet and I/O Expansion Cabinet)

### Step 13a—System Cabinet

- System cabinet includes, one single phase power supply, CPU module, memory module, KFTIA-AA, BA656-AA (Internal Storage Drawer), RZ28-VA, and CD-ROM drive.
- Provides space for additional redundant (N+1) power supply.
- BA656 Internal Storage Drawer is included in system cabinet and has space to accommodate four additional 3.5-inch devices including one tape device.
- Space for up to six BA350-JB (SCSI StorageWorks Shelves), three DWLPA-CA (PCI shelf mount boxes) or combination of both.
- For each DWLPA-CA placed in system cabinet, subtract two BA350-JB shelves from maximum available. Example: One DWLPA-CA in system cabinet would allow for maximum of four BA350-JB shelves.

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Shelf Mount Boxes	Quantity
StorageWorks shelf (BA350-JB)	6 maximum (see limits above)
PCI box (DWLPA-CA)	3 maximum

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Step 13b—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 allowed in each I/O expansion cabinet.
- Space for up to 16 BA350-JB (SCSI StorageWorks Shelves), four DWLPA-CB (PCI Rack mount boxes) or combination of both.
- For each DWLPA-CB placed in expansion cabinet, subtract two BA350-JB shelves from maximum available.  
Example: Three DWLPA-CB in expansion cabinet would allow for maximum of ten BA350-JB shelves.

Shelf Mount Boxes	Quantity
StorageWorks shelf (BA350-JB)	16 maximum (see limits above)
PCI box (DWLPA-CB)	4 maximum

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

**Note:** See Step 2 for selection of proper power cord—one per I/O expansion cabinet. If redundant supply (H7266-AD/AE) is ordered, power cord is included and does not have to be ordered.

**Step 14—Power Options**

- Base system cabinet and expansion cabinets include one power supply (H7266-AA)—200-240 VAC input voltage, 48VDC, 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 no longer required.

- H7266-AD Single Phase 48V redundant power supply**—60 Hz power connector, maximum one per cabinet.  
**H7266-AE Single Phase 48V redundant power supply**—50 Hz power connector, maximum one per cabinet.

**Note:** See Specifications for information on which power supply to order.

Step 14a—Battery Backup Options

- Optional battery backup requires addition of H7267-AA to each power supply in system cabinet and expander cabinets.
- Battery backup provides up to 5 minutes of capacity to power everything in system and expander 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.  
**H7239-AA Battery Pack replacement option**—Includes two battery packs for replacement of batteries in power supply (H7266-AA, H7266-AD, H7266-AE). Field install only.

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## Step 15—Software

Select user licenses and additional software as required. Media and documentation are recommended for first system on site.

### Software Processor Code = Q

#### DEC OSF/1 Interactive User Licenses

DEC OSF/1 Interactive User licenses are **not** specific to a single system and can be moved from one system to another at user discretion.

QL-MT7A9-BB	DEC OSF/1 Interactive 1-user license
QL-MT7A9-BC*	DEC OSF/1 Interactive 2-user license
QL-MT7A9-BD*	DEC OSF/1 Interactive 4-user license
QL-MT7A9-BE*	DEC OSF/1 Interactive 8-user license
QL-MT7A9-BF*	DEC OSF/1 Interactive 16-user license
QL-MT7A9-BG*	DEC OSF/1 Interactive 32-user license
QL-MT7A9-BH*	DEC OSF/1 Interactive 64-user license
QL-MT7AQ-AA	DEC OSF/1 unlimited user license
QL-MT5AQ-AA	DEC OSF/1 developer's extension license
QL-MT6AQ-AA	DEC OSF/1 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 (DEC OSF/1 only). Media available on layered product CD-ROM. KZMSA or KZPSA adapter required. See *January 1995 Digital Systems and Options Catalog*, Chapter 6, *High Availability and High Performance Products*, for configuration information.

\* Not available in Europe. European customers must purchase as many 1-user licenses as necessary, or unlimited user license.

#### DEC OSF/1 Media and Documentation

QA-MT4AA-H8	DEC OSF/1 media and on-line documentation (base system and complementary products) on CD-ROM
QA-MT4AA-GZ	DEC OSF/1 full hardcopy documentation
QA-MT4AB-GZ	DEC OSF/1 end user hardcopy documentation subkit
QA-MT5AA-GZ	DEC OSF/1 developer's extension hardcopy documentation subkit
QA-MT6AA-GZ	DEC OSF/1 server extension hardcopy documentation subkit

#### OpenVMS Distributed Interactive User Licenses

OpenVMS Distributed Interactive User licenses are **not** specific to a single system and can be moved between systems at user discretion. OpenVMS Distributed Interactive User licenses can also be shared across an OpenVMS Cluster.

**Note:** OpenVMS Distributed Interactive User Licenses are architecture specific and **cannot** be shared across a **mixed** OpenVMS Cluster (OpenVMS Alpha and OpenVMS VAX systems).

QL-MT3A9-BB	OpenVMS Distributed Interactive 1-user license
QL-MT3A9-BC*	OpenVMS Distributed Interactive 2-user license
QL-MT3A9-BD*	OpenVMS Distributed Interactive 4-user license
QL-MT3A9-BE*	OpenVMS Distributed Interactive 8-user license
QL-MT3A9-BF*	OpenVMS Distributed Interactive 16-user license
QL-MT3A9-BG*	OpenVMS Distributed Interactive 32-user license
QL-MT3A9-BH*	OpenVMS Distributed Interactive 64-user license

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## Step 15—Software (*continued*)

### OpenVMS Distributed Interactive User Licenses

- QL-MT3AA-BR\* OpenVMS Distributed Interactive 128-user license  
 QL-MT3AB-BR\* OpenVMS Distributed Interactive 256-user license  
 QL-MT2AQ-AA OpenVMS unlimited user license  
 QL-MTFAQ-AA DECnet/OSI end-system license  
 QL-MTHAQ-AA DECnet/OSI extended function license

\* Not available in Europe. European customers must purchase as many 1-user licenses as necessary, or unlimited user license.

### OpenVMS Media and Documentation

- QA-MT1AA-H8 OpenVMS media and documentation on CD-ROM  
 QA-MT1AB-GZ OpenVMS base hardcopy documentation  
 QA-MT1AA-GZ OpenVMS extended hardcopy documentation

### Layered Products CD-ROM

- QA-054AA-H8 Layered products media and documentation for DEC OSF/1  
 QA-03XAA-H8 Layered products media and documentation for OpenVMS

### NAS 200 Software

NAS 200 software included with base AlphaServer 8200 systems. Media available on layered product CD-ROM.

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## Step 16—Environmental Power Products

See Digital AlphaServer 8400 menu for On-Line UPS solutions for Digital AlphaServer 8200 and 8400 systems

Refer to *January 1995 Digital Systems and Options Catalog*, Chapter 10, *Environmental Products*, and to *Digital's Environmental Power Products Catalog*.

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## Step 17—AlphaServer 8200 System Building Blocks

**Note:** These system offerings provide flexibility in building the AlphaServer 8200 with memory and I/O options of your choice. System Building Blocks are an alternative to standard Base Server Systems listed in Step 1. Memory module(s) and system I/O module(s) **must** be ordered separately with these configurations.

- Systems require DEC OSF/1 V3.2B or later, and OpenVMS V6.2 or later
- Console terminal required unless available on site.
- System consists of 5 slot backplane, with three slots used by CPU module, memory module, and system I/O module.
- Two slots available for additional modules (CPU modules, memory modules, or system I/O modules).
- CD-ROM is included in BA656 Internal Storage Drawer, SCSI controller **must** be ordered separately.
- BA656 SCSI bus is restricted to CD-ROM drive only if KFTHA I/O is selected.
- If Factory Installed Software is required, BA350-JB and RZ28-VA **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.
- Minimum of one memory module and one system I/O module **must** be ordered separately.

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**Step 17—AlphaServer 8200 System Building Blocks (continued)**
**AlphaServer 8200 System Building Blocks**

- Processor module with one DECchip 21164/300 MHz CPU, **or** two DECchip 21164/300 MHz CPUs; each DECchip 21164 has 4-Mbyte Backup cache
  - BA656 Internal Storage Drawer
  - 600-Mbyte CD-ROM drive
  - Universal single phase power
  - 48 VDC power supply
  - DEC OSF/1 base license **or** OpenVMS base license
  - NAS 200 software
  - One year hardware product warranty
  - 90 day software product warranty
- 

Order Number	Operating System	CPU	Memory	I/O Module
DA-281AY-A9	DEC OSF/1	Uni-CPU Systems	Required	Required
DY-281AY-A9	OpenVMS	Uni-CPU Systems	Required	Required
DA-281BY-A9	DEC OSF/1	Dual-CPU Systems	Required	Required
DY-281BY-A9	OpenVMS	Dual-CPU Systems	Required	Required

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**Step 17a—Memory**

First memory module **must** be selected. Refer to Step 5 for ordering information.

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**Step 17b—System I/O**

System I/O module **must** be selected, Refer to Step 7 for ordering information.

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**Step 17c—SCSI controller**

- If KFTHA-AA I/O module is selected the following system components must be selected to provide interface to CD-ROM in BA656 internal storage drawer.
- If KFTIA-AA I/O module is selected these components are **not** required.

**Components required if KFTHA-AA I/O Module is selected:**

<b>DWLPA-CA</b>	PCI shelf mount box; AlphaServer 8200 system cabinet only, maximum three per cabinet
<b>KZPAA-AA*</b>	PCI single-ended SCSI controller
<b>BN21H-02</b>	SCSI cable

\* No other SCSI device can be installed in BA656 internal storage drawer if KZPAA-AA is used as CD-ROM interface

**Note:** Complete system configuration beginning with Step 2.

**Optional Controller Configuration Table**

With multiple adapters that provide the same interface available on different I/O buses (PCI, XMI, or Futurebus+), it is possible to exceed operating system limit on number of ports supported for that interface. Follow these guidelines for maximum number of ports that each operating system will support. Fill in this table under the relevant area, add up number of controllers/ports available, and verify 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)	DEC OSF/1 Limit	OpenVMS Limit
<b>SCSI Options</b>					
Included <b>KFTIA-AA</b> System I/O module, one single-ended and three FWD SCSI ports	4	1	4		
Additional <b>KFTIA-AA</b> System I/O module, one single-ended and three FWD SCSI ports	4				
<b>KZPSA-BB</b> PCI fast wide differential SCSI adapter	1				
<b>Add column "C"</b> , must be less than or equal to value listed under operating system to be used.				<b>32</b>	<b>24</b>
<b>802.3/Ethernet Options</b>					
Included <b>KFTIA-AA</b> System I/O module, two 802.3/Ethernet ports	2	1	2		
Additional <b>KFTIA-AA</b> System I/O module, two 802.3/Ethernet ports	2				
<b>DE435-AA</b> PCI 802.3/Ethernet controller	1				
<b>Add column "C"</b> , must be less than or equal to value listed under operating system to be used.				<b>8</b>	<b>8</b>
<b>FDDI Options</b>					
Included <b>KFTIA-AA</b> system I/O module, optional FDDI daughter card installed ( <b>DEFPZ-AA/UA</b> )	1				
Additional <b>KFTIA-AA</b> system I/O module, optional FDDI daughter card installed ( <b>DEFPZ-AA/UA</b> )	1				
<b>DEFPA-AA/DA/UA</b> PCI FDDI controller, one port each	1				
<b>Add column "C"</b> , must be less than or equal to value listed under operating system to be used.				<b>8</b>	<b>8</b>

**EISA Bus IRQ Address Table**

Option	EISA Bus IRQ Addresses									Maximum of Each Supported	
	5	7	8	9	10	11	12	14	15	OpenVMS	DEC OSF/1
<b>KFESB-AA</b>	0	-	-	0	0	0	-	-	-	2	0
<b>DNSES-AA</b>	-	-	0	0	0	0	0	0	0	1	1
<b>DW300-AA</b>	0	-	-	0	0	0	-	-	0	1	1
<b>CXI01-AA</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1
<b>CXI01-AD</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1

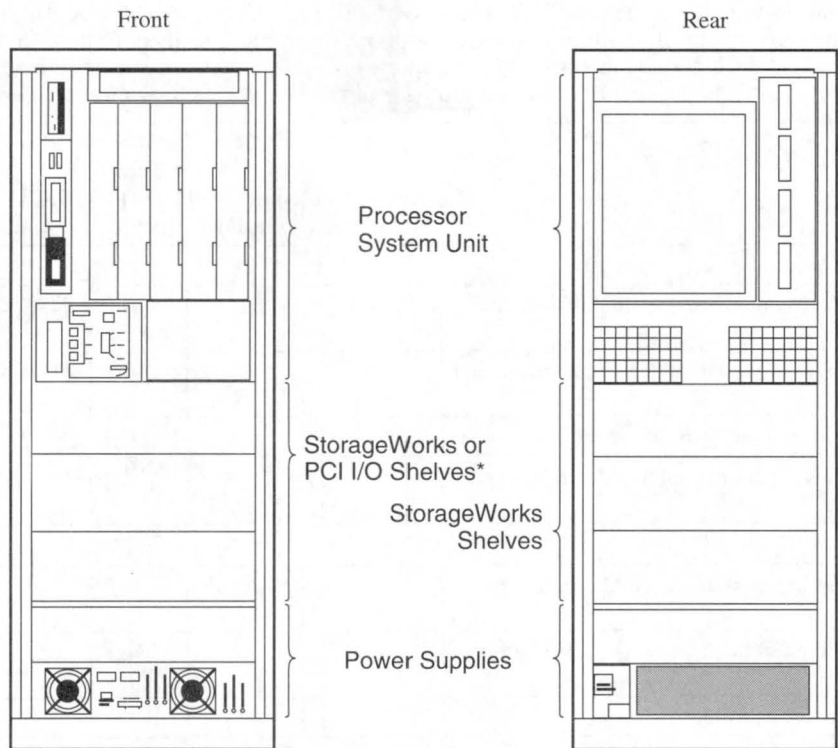
Table Codes:

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

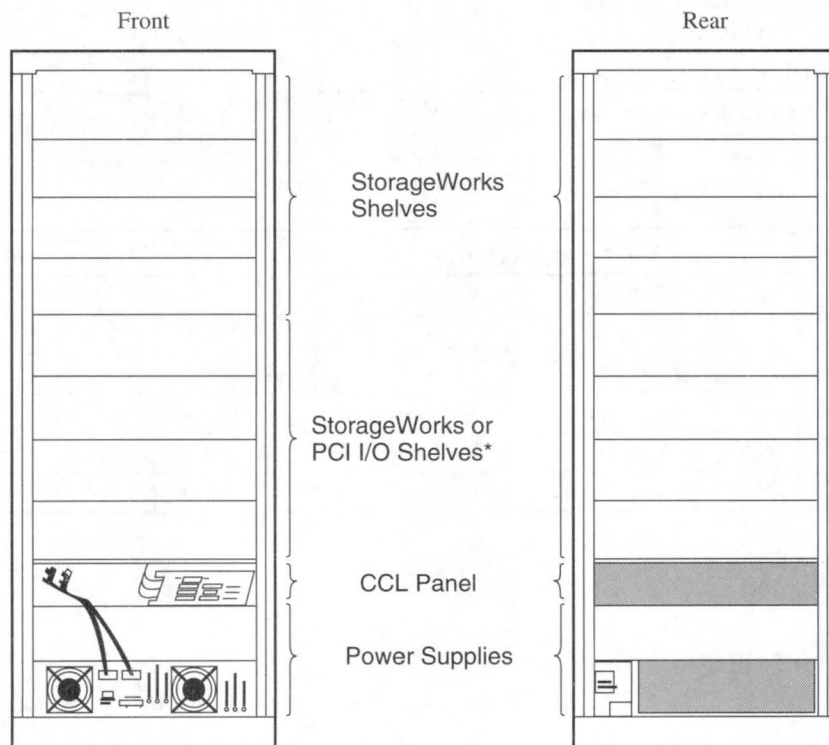
**Configuration Rules and Information**

- EISA Bus IRQ address assignments are for DEC OSF/1 and OpenVMS systems only
- In some cases, the maximum each [device] supported 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 device are configured, each device occupies separate address.
- Match each device to one available address. (Hint: 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 installed system if EISA bus is reconfigured.

# Digital AlphaServer 8200 System Diagram



BU-3480



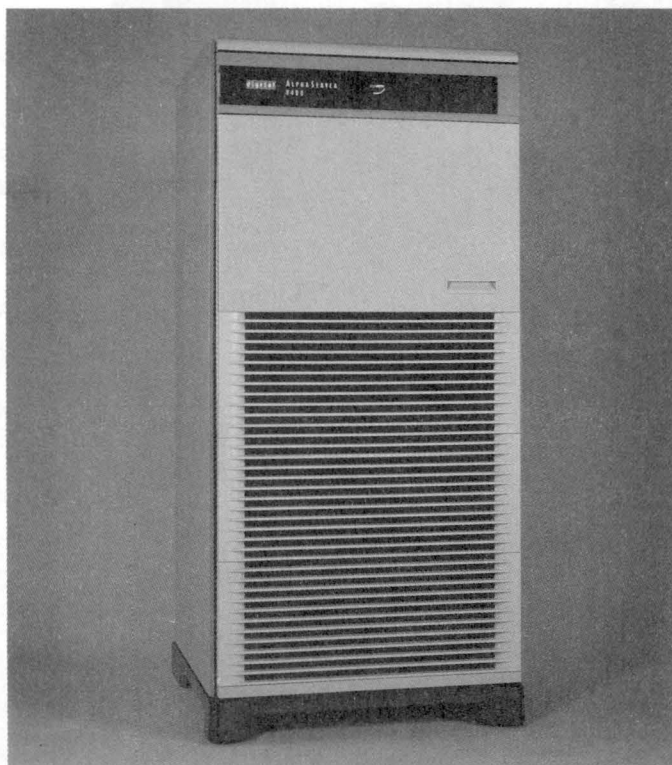
\* A PCI I/O shelf extends into the rear of the cabinet.  
A StorageWorks shelf cannot be located behind a PCI shelf.

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 (500 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° to 35°C (50° to 95°F)	-40° to 66°C (-40° 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 max.
Heat dissipation <sup>1</sup>	<b>Minimally configured system<sup>1</sup></b> (system cabinet) 3200 Btu/hr, 930 W  <b>Fully configured system<sup>2</sup></b> (system cabinet) 9100 Btu/hr, 2647 W  <b>Fully configured system<sup>3</sup></b> (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 TUV EN 60950 GS marked IEC950, 2nd Ed., 2nd Amend. FCC Part 15 (Class A) CE	
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	
Power Requirements <sup>4</sup>	US/Canada/Japan	Europe/AP
Nominal AC input line voltage	202-240 (208) V	Japan (202) V 202-240 (240) V
Frequency range	50-60 Hz	50-60 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 meters (15 feet)	4.5 meters (15 feet)
Power cap (system)	DEC 12-16886-00 NEMA L6-30P	DEC 12-30333-03
Receptacle	NEMA L6-30R	IEC 309 (32A) <sup>5</sup> 2 Pole/3-Wire (220-240V)
PCS/PDS/PDU/UPS cable	BC26E	

- 1 Minimally configured system contains one power supply, one CPU module, one memory module, 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 expander cabinets consists of the above "fully configured system" and two expander 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.



## Digital AlphaServer 8400 Systems

### Product Description

The Digital AlphaServer 8400 is the first implementation of the world's fastest microprocessor, the DECchip 21164. The AlphaServer 8400 is the world's fastest and highest capacity enterprise server. It is the solution for the most demanding business problems, at the best price.

The AlphaServer 8400 supports up to 12 processors, 14 Gigabytes of memory, and 1.2 GB/sec (peak) of I/O. The balanced system design and fast processors allow the AlphaServer 8400 to deliver over 2,800 transactions per second and Linpack 1000 x 1000 of more than 2 GFLOPS in a single platform. This makes the AlphaServer 8400 the industry's best commercial and technical server.

The AlphaServer 8400 supports OpenVMS and DEC OSF/1. For investment protection, the DEC and VAX 7000 products can be upgraded to the AlphaServer 8400 in a few hours, giving them unsurpassed performance today and the room to grow into the future. The AlphaServer 8400 platform has been designed to take full advantage of future generations of Alpha microprocessors, with scalable performance.

The AlphaServer 8400 enterprise servers join the AlphaServer line, with low cost, high performance PCI I/O, providing up to 144 PCI slots on 12 different physical PCI buses. With over 1.2 GB/sec of I/O, customers can build the large database servers with commodity components and have the reliability and availability of expensive mainframes.

The AlphaServer 8400 includes a 1 year hardware warranty, on-site, 4 hour response, five days per week.

## Step 1—Select Base Server System

- Systems require DEC OSF/1 V3.2B or later, and OpenVMS V6.2 or later.
- Console terminal required unless available on site.
- System consists of 9 slot centerplane, with three slots used by the CPU module, memory module, and KFTIA-AA system I/O module.
- Six slots available for additional modules (CPU modules, memory modules, or system I/O modules).
- CD-ROM connected via single-ended SCSI-2 port on KFTIA-AA system I/O module.
- RZ28-VA SCSI disk drive and DWZZA-VA reside in BA655-AB StorageWorks shelf and is connected via FWD (fast/wide/differential) port on KFTIA-AA system I/O module.
- **Note:** See Step 17 for System Building Blocks without memory and I/O.

### AlphaServer 8400 Base Server Systems include

- Processor module with one DECchip 21164/300 MHz CPU, **or** two DECchip 21164/300 MHz CPUs; each DECchip 21164 has 4-Mbyte Backup cache
- System I/O module (KFTIA-AA) includes, I/O channel, two twisted-pair 802.3/Ethernet, single-ended SCSI-2 port, and three FWD (fast/wide/differential) SCSI-2 ports
- 256, 512 Mbytes, or 2 Gbytes of memory
- BA655-AB StorageWorks PIU
- RZ28-VA 2-Gbyte 3.5-inch SCSI disk
- 600-Mbyte CD-ROM drive
- DWZZA-VA SCSI signal converter
- Three-Phase Power Subsystem **or** Single Phase Power Subsystem
- 48 VDC power regulator
- Factory Installed Software
- DEC OSF/1 base license or OpenVMS base license
- NAS 200 software
- One year hardware product warranty
- 90 day software product warranty

### Uni-CPU Systems

Order Number	Power	Operating System	Memory
DA-291AC-AA/AB/AC	Three Phase <sup>1</sup>	DEC OSF/1	256 Mbytes
DA-291AC-A9	Single Phase <sup>2</sup>	DEC OSF/1	256 Mbytes
DA-291AD-AA/AB/AC	Three Phase <sup>1</sup>	DEC OSF/1	512 Mbytes
DA-291AD-A9	Single Phase <sup>2</sup>	DEC OSF/1	512 Mbytes
DA-291AF-AA/AB/AC	Three Phase <sup>1</sup>	DEC OSF/1	2 Gbytes
DA-291AF-A9	Single Phase <sup>2</sup>	DEC OSF/1	2 Gbytes
DY-291AC-AA/AB/AC	Three Phase <sup>1</sup>	OpenVMS	256 Mbytes
DY-291AC-A9	Single Phase <sup>2</sup>	OpenVMS	256 Mbytes
DY-291AD-AA/AB/AC	Three Phase <sup>1</sup>	OpenVMS	512 Mbytes
DY-291AD-A9	Single Phase <sup>2</sup>	OpenVMS	512 Mbytes
DY-291AF-AA/AB/AC	Three Phase <sup>1</sup>	OpenVMS	2 Gbytes
DY-291AF-A9	Single Phase <sup>2</sup>	OpenVMS	2 Gbytes

### Dual-CPU Systems

Order Number	Power	Operating System	Memory
DA-291BC-AA/AB/AC	Three Phase <sup>1</sup>	DEC OSF/1	256 Mbytes
DA-291BC-A9	Single Phase <sup>2</sup>	DEC OSF/1	256 Mbytes
DA-291BD-AA/AB/AC	Three Phase <sup>1</sup>	DEC OSF/1	512 Mbytes
DA-291BD-A9	Single Phase <sup>2</sup>	DEC OSF/1	512 Mbytes
DA-291BF-AA/AB/AC	Three Phase <sup>1</sup>	DEC OSF/1	2 Gbytes
DA-291BF-A9	Single Phase <sup>2</sup>	DEC OSF/1	2 Gbytes
DY-291BC-AA/AB/AC	Three Phase <sup>1</sup>	OpenVMS	256 Mbytes
DY-291BC-A9	Single Phase <sup>2</sup>	OpenVMS	256 Mbytes
DY-291BD-AA/AB/AC	Three Phase <sup>1</sup>	OpenVMS	512 Mbytes
DY-291BD-A9	Single Phase <sup>2</sup>	OpenVMS	512 Mbytes
DY-291BF-AA/AB/AC	Three Phase <sup>1</sup>	OpenVMS	2 Gbytes
DY-291BF-A9	Single Phase <sup>2</sup>	OpenVMS	2 Gbytes

<sup>1</sup> xA = 60 Hz, 208 V; xB = 50 Hz, 380/416 V; xC = 50/60 Hz, 202 V Japan. All Three Phase power variations include an attached power cord.

<sup>2</sup> A9 = Single Phase Power; requires selection of correct power cord in Step 2. Single Phase Power is **not** available in Europe.

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## Step 2—Select Power Cord for Single Phase Power

**BN21P-4E**      **60 Hz** —AC line cord for Single Phase Power, one per cabinet

**BN22P-4E**      **50 Hz** —AC line cord for Single Phase Power, one per cabinet

**Note:** See Specifications for information on which power cord to order for your location.

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## Step 3—CPU Symmetric MultiProcessing (SMP) Expansion

- Order up to five additional CPU modules, for maximum of six.
- For more than three processors in a system, a minimum of two separate memory modules should be considered for optimal system performance.

**751P2-AX**      **DEC OSF/1 SMP upgrade—Uni-CPU**, includes processor module with DECchip 21164/300 MHz CPU, DEC OSF/1 SMP extension license, and end user product warranty.

**751P1-AX**      **OpenVMS SMP upgrade—Uni-CPU**, includes processor module with DECchip 21164/300 MHz CPU, OpenVMS SMP extension license, and end user product warranty.

**752P2-AX**      **DEC OSF/1 SMP upgrade—Dual-CPU**, includes processor module with two DECchip 21164/300 MHz CPUs, DEC OSF/1 SMP extension license, and end user product warranty.

**752P1-AX**      **OpenVMS SMP upgrade—Dual-CPU**, includes processor module with two DECchip 21164/300 MHz CPUs, OpenVMS SMP extension license, and end user product warranty.

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## Step 4—AlphaServer Expansion Packages

AlphaServer Expansion Packages are designed to be added to Base AlphaServers to create fully functional DECsafe high availability and CI cluster systems. They contain all the necessary hardware (excluding console terminal) and software to make these systems complete and operational.

### DEC OSF/1 Base AlphaServer Systems:

**8YFKB-EA/EB**      **DECsafe High Availability SCSI Package**, includes:  
 SW800-AA/AB StorageWorks cabinet with  
 HSZ40-AD StorageWorks array controller in BA350-MB  
 Six RZ28-VA 2.1-Gbyte, 3.5-inch disk drives in BA350-JA shelf  
 TZ87-VA 20-Gbyte, 5.25-inch SCSI tape drive in BA350-JA shelf  
 PCI Plug-in unit (DWLPA-AA), with KZPSA-BB Fast/Wide/Differential SCSI adapter  
 BN21K 10-meter cable for connecting HSZ40 to KZPSAs in system cabinet  
 Two BN21H 1-meter cable from HSZ40 to BA350-JA shelves  
 DECsafe Available Server software license kit

### OpenVMS Base AlphaServer Systems:

**8YCKA-AA/AB**      **Cluster Starter Package**, includes:  
 SW800-AA/AB StorageWorks cabinet with  
 HSJ40-AD StorageWorks array controller in BA350-MB  
 Six RZ28-VA 2.1-Gbyte, 3.5-inch disk drives in BA350-JA shelf  
 TZ87-VA 20-Gbyte, 5.25-inch SCSI tape drive in BA350-JA shelf  
 DWLMA-AA XMI Plug-in unit with one CIXCD-AC XMI CI controller  
 Two BNCIA-10 cables  
 SC008-AC Star Coupler  
 OpenVMScluster License

**8YCAA-AX**      **Cluster Add-on Package**, includes:  
 DWLMA-AA XMI plug-in unit  
 CIXCD-AC XMI CI controller  
 One BNCIA 10-meter cable  
 OpenVMScluster License

**Note:** AA/EA = 60 Hz, 120/208 V; AB/EB = 50 Hz, 220-240/380-415V.

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## Step 5—Memory

- Select additional memory if required; maximum 14 Gbytes per system.
- Order up to six additional memory modules, for maximum of seven.
- Each memory module has built in two-way interleaving. Additional interleaving is accomplished by adding more memory modules.
- Maximum of seven memory modules is reduced by one for each additional CPU module added from Step 3, and for each additional System I/O module added from Step 7.

**Note:** A short term memory size restriction is currently in effect; Memory modules must be in quantity of one, two, or four memory modules of the same size. This means that maximum memory configuration is temporarily four 2-Gbyte memory modules, resulting in system maximum memory size of 8 Gbytes.

<b>MS7CC-BA</b>	128-Mbyte memory module
<b>MS7CC-CA</b>	256-Mbyte memory module
<b>MS7CC-DA</b>	512-Mbyte memory module
<b>MS7CC-EA</b>	1073-Mbyte memory module
<b>MS7CC-FA</b>	2147-Mbyte memory module

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### Step 5a—Memory Upgrades

- Field installation only (not configurable in manufacturing).

<b>MS7CC-UA</b>	128-Mbyte memory upgrade (8-Mbyte SIMMs); upgrades 128-Mbyte (-BA) module to 256-Mbyte (-CA) module
<b>MS7CC-UB</b>	512-Mbyte memory upgrade (32-Mbyte SIMMs); upgrades 512-Mbyte (-DA) module to 1-Gbyte (-EA) module

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### Step 5b—Prestoserve Non-Volatile Random Access Memory (NVRAM) (DEC OSF/1 systems only)

- Provides I/O performance enhancement
- Maximum of one Prestoserve option per system.

<b>DJ-ML200-BA</b>	4-Mbyte Prestoserve I/O performance enhancement option, PCI option, requires DWLPA-AA/BA; includes Prestoserve license and documentation kit.
<b>DJ-ML200-CA</b>	8-Mbyte Prestoserve I/O performance enhancement option, PCI option, requires DWLPA-AA/BA; includes Prestoserve license and documentation kit.
<b>DJ-ML300-BA</b>	4-Mbyte Prestoserve I/O performance enhancement option, KFTIA-AA daughter card mounting, requires KFTIA-AA; includes Prestoserve license and documentation kit.

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## Step 6—I/O Expansion Buses

PCI, XMI, and Futurebus+ I/O expansion buses are all available. Application and system configuration constraints will determine maximum configuration. Configuration limits exist at I/O bus level and controller level. With different I/O buses present in the system, verify maximum number of allowed controllers as listed on the Controller Configuration Table.

- Each DWLPA-AA/AB (PCI plug-in unit) contains a 12-slot PCI bus. Each DWLPA-AA/AB uses one rear expansion bay. SCSI disks in BA655-AB plug-in unit can occupy the corresponding front expansion bay.
- Each DWLPA-AA/AB (PCI plug-in unit) has one open space for addition of DWLPA-BA/BB (second PCI expansion box) or BA658-AA (SCSI StorageWorks shelf).
- Each DWLMA-AA/BA (XMI plug-in unit) contains one 12-slot XMI channel and uses two expansion bays, front and back.
- Each DWLAA-AA/BA (Futurebus+ plug-in unit) contains, one Futurebus+ 9-slot channel, and uses one expansion bay in the back.
- Each PCI, XMI, and Futurebus+ requires one I/O channel connection to either the KFTHA-AA or KFTIA-AA, see Step 7.
- Maximum of nine I/O channels available on base AlphaServer 8400 (requires adding two KFTHA-AA system I/O modules).

<b>DWLPA-AA</b>	<b>PCI plug-in unit</b> , with one PCI box, AlphaServer 8400 system cabinet only, maximum of two per system cabinet, two per system. Requires one I/O channel connection on either KFTIA-AA or KFTHA-AA.
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**Step 6—I/O Expansion Buses** (*continued*)

<b>DWLPA-AB</b>	<b>PCI plug-in unit</b> , with one PCI box, AlphaServer 8400 expander cabinet only, maximum of two per expander cabinet, four per system. A total maximum of six DWLPA-AA and DWLPA-AB (PCI plug-in units) per system. Requires one I/O channel connection on either KFTIA-AA or KFTHA-AA.
<b>DWLPA-BA</b>	<b>Second PCI expansion box</b> for mounting in DWLPA-AA, maximum of one per DWLPA-AA. Requires one I/O channel connection on either KFTIA-AA or KFTHA-AA.
<b>DWLPA-BB</b>	<b>Second PCI expansion box</b> for mounting in DWLPA-AB, maximum of one per DWLPA-AB. Requires one I/O channel connection on either KFTIA-AA or KFTHA-AA.
<b>BA658-AA</b>	<b>SCSI StorageWorks Shelf</b> (BA350-LB). Can be added to DWLPA-AA/AB in place of second PCI expansion box (DWLPA-BA/BB). Maximum one BA658-AA per DWLPA-AA/AB, and maximum of six BA658-AA per system.
<b>KFE70-AA</b>	<b>EISA Bridge option</b> ; PCI to EISA bridge module set. Must reside in first DWLPA-AA in system cabinet only. Converts PCI bus from 12-slot bus to 2 EISA, 6 PCI/EISA, and 2 PCI slots. Includes RX26 floppy drive, mounting hardware, and cables to mount RX26 below CD-ROM in the system cabinet. Maximum of one EISA Bridge option per system.
<b>DWLMA-AA</b>	<b>XMI plug-in unit</b> for system cabinet. Maximum two per system. Requires one I/O channel connection on either KFTIA-AA or KFTHA-AA.
<b>DWLMA-BA</b>	<b>XMI plug-in unit</b> for I/O expansion cabinet. Maximum two per cabinet, four per system. Total maximum of six DWLMA-AA and DWLMA-BA (XMI plug-in units) per system. Requires one I/O channel connection on either KFTIA-AA or KFTHA-AA.
<b>DWLAA-AA</b>	<b>Futurebus+ plug-in unit</b> for system cabinet. Maximum one DWLAA-AA/BA per system. Requires one I/O channel connection on either KFTIA-AA or KFTHA-AA.
<b>DWLAA-BA</b>	<b>Futurebus+ plug-in unit</b> for I/O expansion cabinet. Maximum one DWLAA-AA/BA per system. Requires one I/O channel connection on either KFTIA-AA or KFTHA-AA.

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**Step 7—System I/O Modules**

- One KFTIA-AA system I/O module included with base system.
  - Maximum nine I/O channels available on base AlphaServer 8400 (requires addition of two KFTHA-AA system I/O modules).
  - System I/O modules can be added in following configurations (maximum of three):
    - One KFTIA-AA
    - Two KFTIA-AA
    - One KFTIA-AA, one KFTHA-AA
    - One KFTHA-AA
    - Two KFTHA-AA
- |                    |   |  |
|--------------------|---|--|
| <b>KFTHA-AA</b>    | System I/O module with four I/O channels for PCI, XMI, or Futurebus+ plug-in units  |  |
| <b>KFTIA-AA</b>    | Integrated System I/O module with I/O channel for PCI, XMI, or Futurebus+ plug-in units, two 802.3 twisted-pair Ethernet ports, single-ended SCSI-2 port, three FWD (fast/wide/differential) SCSI-2 ports. Optional FDDI daughter card can be added to the KFTIA-AA (maximum of one);<br>—Single attachment station multi-mode fiber card (DEFPZ-AA) <b>or</b><br>—Twisted-pair copper card (DEFPZ-UA). |  |
| <b>BN26M-xx</b>    | Ethernet twisted-pair cable; 8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable.  |  |
| <b>BN21H-xx</b>    | 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.  |  |
| <b>CK-KFTIA-AA</b> | Cabinet kit for FWD (fast/wide/differential) SCSI-2 port. One cabinet kit required for each used port on KFTIA-AA, maximum three per KFTIA-AA. Cabinet kit includes Y-cable and FWD terminator.   |  |
| <b>BN21K-xx</b>    | SCSI-2 Fast Wide Differential cable; 68-pin male straight to 68-pin male right-angle. Connects KFTIA-AA Fast Wide Differential SCSI-2 ports to DWZZA-VA.  |  |
| <b>BN21K-02</b>    | From KFTIA Fast Wide Differential port  | To BA655-AB System cabinet (rear)            |
| <b>BN21K-03</b>    | From KFTIA Fast Wide Differential port  | To BA655-AB System cabinet (front)           |
| <b>BN21K-05</b>    | From KFTIA Fast Wide Differential port  | To BA655-AB Expander cabinet (front or rear) |

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## Step 8—Storage Controllers

- KFTIA-AA included with each system; PCI, EISA, and XMI storage controllers can be installed.
- Requires corresponding PCI plug-in unit (DWLPA-AA/AB/BA/BB) or XMI plug-in unit (DWLMA-AA/BA).
- EISA storage controllers require DWLPA-AA/AB (PCI plug-in unit) and KFE70-AA (EISA Bridge option).
- DWZZA-VA requires minimum revision F02 for connecting FWD (Fast Wide Differential) signals from KFTIA-AA and KZPSA-BB to BA655-AB and BA658-AA StorageWorks shelves.
- DWZZA-AA requires minimum revision E02 for connecting any FWD (Fast Wide Differential) SCSI-2 port from KFTIA-AA or KZPSA-BB to TZ8xx tape loaders.

### Storage Controllers—PCI-based

- System maximum of two KZPSC-AA/BA SCSI RAID controllers.

<b>KZPSA-BB</b>	<b>PCI Fast Wide Differential SCSI Adapter.</b> OpenVMS supports eight per PCI, maximum eight per system. DEC OSF/1 supports eight per PCI, maximum 32 per system. Requires one PCI slot. Provides one SCSI-2 bus. The KZPSA supports DECsafe Available Server. See <i>January 1995, Digital Systems and Options Catalog</i> , Chapter 6, <i>High Availability and High Performance Products</i> , for details.	
<b>BN21K-xx</b>	SCSI-2 Fast Wide Differential cable; 68-pin male straight to 68-pin male right-angle. Connects KZPSA-BB Fast Wide Differential SCSI-2 port to DWZZA-VA..	
<b>BN21K-01</b>	From PCI Fast Wide Differential SCSI adapter	To BA655-AB System cabinet (rear)
<b>BN21K-02</b>	From PCI Fast Wide Differential SCSI adapter	To BA655-AB System cabinet (front)
<b>BN21K-05</b>	From PCI Fast Wide Differential SCSI adapter	To BA655-AB Expander cabinet (front or rear)
<b>KZPSC-AA</b>	<b>PCI SCSI RAID Controller with 1 port.</b> OpenVMS and DEC OSF/1 support two per PCI, maximum two per system. Requires one PCI slot, and KFE70-AA (EISA Bridge option). Provides one Fast/wide/single-ended connection. Allows RAID levels 0,1, and 5.	
<b>BN31L-1E</b>	1.5 meter single-ended narrow cable. For connections from PCI RAID controller to BA655-AB System Cabinet (rear only) and BA658-AA.	
<b>KZPSC-BA</b>	<b>PCI SCSI RAID Controller with 3 ports.</b> OpenVMS and DEC OSF/1 support two per PCI, maximum two per system. Requires two PCI slots, and KFE70-AA (EISA Bridge option). Provides three Fast/wide/single-ended connections. Allows RAID levels 0,1, and 5.	
<b>BN31K-0E</b>	<b>Required for KZPSC-BA to use third port on module.</b> Connects internally from KZPSC-BA module to second PCI slot/bulkhead. One required per KZPSC-BA option.	
<b>BN31L-1E</b>	1.5 meter single-ended narrow cable. For connections from PCI RAID controller to BA655-AB System Cabinet (rear only) and BA658-AA. One <b>required</b> for each used port on KZPSC-BA module.	

### Storage Controllers—XMI-based

<b>KZMSA-AB</b>	<b>Fast single-ended SCSI-2 Disk/Tape Adapter.</b> OpenVMS supports six per XMI, maximum 12 per system. DEC OSF/1 supports 10 per XMI, maximum 16 per system. Requires one XMI slot. Provides two single-ended SCSI-2 buses. The KZMSA supports DECsafe Available Server. See <i>January 1995, Digital Systems and Options Catalog</i> , Chapter 6, <i>High Availability and High Performance Products</i> , for details.
<b>CK-KZMSA-LA</b>	Two 30-inch internal cabinet cables. One kit per KZMSA required.
<b>KFMSB-AA</b>	<b>DSSI Adapter.</b> OpenVMS only, supports six per XMI, maximum 12 per system. Requires one XMI slot. Provides two DSSI buses; each bus provides seven ports for DSSI Integrated Storage Element (ISE) devices; no more than two tapes per bus.
<b>CK-KFMSB-LC</b>	Two 8-foot internal cabinet cables and two DSSI terminators. One kit per KFMSB required.
<b>KFMSB-UA</b>	<b>DSSI Controller Upgrade.</b> Upgrades KFMSA-** to KFMSB-AA. Includes KFMSB-AA, CK-KFMSB-LC, and requires return of KFMSA-**

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## Step 8—Storage Controllers

### Storage Controllers—XMI-based (*continued*)

<b>CIXCD-AC</b>	<b>XMI CI Controller.</b> OpenVMS supports four per XMI, maximum 10 per system. DEC OSF/1 supports one per XMI, maximum one per system. Requires one XMI slot. The CIXCD requires one BNCIA cable set to connect system to Star Coupler. OpenVMS Cluster software license required for each system when multiple OpenVMS systems are used in cluster environment. <b>Note:</b> One CIXCD is supported on DEC OSF/1 systems for expanded disk interconnect capability only.
<b>BNCIA-xx</b>	<b>Computer interconnect cable sets.</b> Connect Star Coupler to system and SW800. Choose required length—10, 20, or 45 m (10 m = 32.8 ft, 20 m = 65.6 ft, 45 m = 147.6 ft).

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## Step 9—Storage

Select storage devices as required. See *January 1995 Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for detailed ordering information.

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### Step 9a—Internal Storage (System Cabinet)

The system cabinet provides space for four disk plug-in units (PIU) if no PCI, XMI or Futurebus+ plug-in units (PIU) are installed. Each of the two pairs of expansion bays (front to back) in the bottom of the system cabinet can hold one Battery PIU, one XMI PIU, one Futurebus+ PIU, one PCI PIU, one PCI PIU plus one SCSI disk PIU, one SCSI disk PIU, or two SCSI disk PIUs.

The system cabinet provides space for up to seven BA350 StorageWorks shelves; each shelf holds maximum of two 5.25-inch devices and one 3.5-inch device or seven 3.5-inch devices. Typical configurations will require DWZZA-VA which counts as one 3.5-inch device. **Note:** Cables can be single-ended or fast/wide/differential with DWZZA-VA; the SCSI controller will determine required cable type.

<b>BA655-AB</b>	<b>SCSI-2 disk plug-in unit</b> —includes two BA350-LB modular expansion shelves. Each shelf includes 48VDC power supply.
<b>BA658-AA</b>	<b>SCSI StorageWorks Shelf</b> —includes one BA350-LB with 48VDC power supply. Can be added to DWLPA-AA/AB in place of second PCI expansion box (DWLPA-BA/BB). Maximum of one BA658-AA per DWLPA-AA/AB. Maximum of six BA658-AA per system.
<b>DWZZA-VA</b>	<b>StorageWorks SCSI Signal Converter</b> —required to convert FWD (fast/wide/differential) signals from KFTIA-AA and KZPSA-BB for use in the BA655-AB and BA658-AA StorageWorks shelves.
<b>RZ26L-VA</b>	1.05-Gbyte, 3.5-inch SCSI disk drive
<b>RZ28-VA</b>	2.1-Gbyte, 3.5-inch SCSI disk drive
<b>TLZ07-VA</b>	8.0-Gbyte, 3.5-inch SCSI tape drive
<b>TZ87-VA</b>	20-Gbyte, 5.25-inch SCSI tape drive
<b>TZ86-VA</b>	6.0-Gbyte, 5.25-inch SCSI tape drive
<b>EZ54R-VA</b>	428-Mbyte, SCSI solid state disk
<b>EZ51R-VA</b>	107-Mbyte, SCSI solid state disk

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### Step 9b—External Storage (I/O Expansion Cabinet)

The I/O expansion cabinet (H9F00-BA/BB/BC/BD) provides space for up to six SCSI disk plug-in units (PIU) if no other PCI/XMI/Futurebus+ plug-in unit (PIU) is configured in the expansion cabinet. Each of the two pairs of expansion bays in the bottom of the cabinet can hold one Battery PIU, one PCI PIU, one XMI PIU, one Futurebus+ PIU, or two SCSI disk PIUs. The two expansion bays in the top of the expansion cabinet can hold up to two SCSI disk PIUs.

## Step 9c—External Storage

The following list describes available disk storage devices, capacities, and components. These supported options can be added as required. See *January 1995 Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for detailed ordering information.

Storage Arrays	Capacity	Storage Array Disk Drive Components
SW5XX, SW8XX	6–227 Gbytes	RZ26L/RZ28 SCSI-2 disk drives
<b>Disk Drives</b>		
RZ28 SCSI	2.1 Gbytes	
RZ26L SCSI	1.05 Gbytes	
ESE50 SDI solid state	120–600 Mbytes	
EZ54R SCSI solid state	428 Mbytes	
EZ51R SCSI solid state	107 Mbytes	
<b>Tape Drives</b>		
TZ85, TZ86, TZ87, TZ857*, TZ867*, TZ877, TSZ07, TLZ07, TKZ09, TKZ60	See <i>January 1995 Digital Systems and Options Catalog</i> , Chapter 8, <i>Storage Devices</i> , for ordering information.	

\* Loader support for DEC OSF/1 is available via DECnsr.

## Step 10—Networks and Communications

Two twisted-pair 802.3/Ethernet controllers on KFTIA-AA system I/O module are included with each system. See Step 7 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 *January 1995 Digital Systems and Options Catalog*, Chapter 7, *Networks, Communications, and Cables*, and *Network Products Guide* for details.

## LAN Communications Controllers—KFTIA-AA Daughter Cards

- Maximum of one FDDI controller fiber daughter card per KFTIA-AA I/O module.

DEFPZ-AA	<b>FDDI controller Fiber - Single Attachment Station</b> —daughter card mounting onto KFTIA-AA
BN24E-xx	Fiber-Optic Cable, Dual 2.5mm Bayonet “ST” type connectors,
BN24D-xx	Fiber-Optic Cable, Dual 2.5mm Bayonet “ST” type connector to FDDI “MIC” connector
DEFPZ-UA	<b>FDDI controller Fiber - Twisted-pair Copper</b> —daughter card mounting onto KFTIA-AA
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 DWLPA-AA/AB/BA/BB
- System maximum of four DEFPA-AA/DA/UA FDDI controllers.

DE435-AA	<b>Digital Etherworks 32-bit High Performance Network Interface Card</b> —supports twisted-pair, thick wire and ThinWire, requires one PCI slot. OpenVMS and DEC OSF/1 support eight per PCI, maximum eight per system.
DEFPA-AA	<b>FDDI controller Fiber - Single Attachment Station MultiMode Fiber</b> —requires one PCI slot. OpenVMS and DEC OSF/1 support four per PCI, maximum four per system. Requires “SC” type connecting cable.
DEFPA-DA	<b>FDDI controller Fiber - Dual Attachment Station MultiMode Fiber</b> —requires one PCI slot. OpenVMS and DEC OSF/1 support four per PCI, maximum four per system. Requires “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

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**Step 10—Networks and Communications (continued)**
**LAN Communications Controllers—EISA based**

- Requires DWLPA-AA and KFE70-AA, EISA bridge module set.
- See EISA Bus IRQ Address Table.

<b>DEFPA-UA</b>	<b>FDDIcontroller Fiber - Single Attachment Station UTP</b> —requires one PCI slot. OpenVMS and DEC OSF/1 support four per PCI, maximum four per system.
<b>BN26M-xx</b>	8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable
<b>BN26S-xx</b>	8-pin MP to 8-pin MP, screened, crossover, EIA/TIA Category 5 cable
<b>DNSES-AA</b>	<b>Synchronous Communications Controller</b> —requires one EISA slot. OpenVMS supports one per EISA, maximum one per system. DEC OSF/1 supports one per EISA, maximum one per system.
<b>BC19B-02</b>	EIA-422-A/V.11 adapter cable, can be extended with BC55D-33.
<b>BC19D-02</b>	EIA-232-D/V.24 adapter cable, can be extended with BC22F-xx.
<b>BC19E-02</b>	EIA-423-A/V.10 adapter cable, can be extended with BC55D-33.
<b>BC19F-02</b>	V.35 adapter cable, can be extended with BC19L-25.
<b>DW300-AA</b>	<b>Token Ring Adapter</b> —requires one EISA slot. OpenVMS and DEC OSF/1 support one per EISA, maximum one per system.
<b>BN26M-xx</b>	802.5/Token Ring twisted-pair cable; 8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable.
<b>CXI01-AA</b>	<b>Digiboard Asynchronous Xem/ISA Multiport Serial Card with 16 RJ45 PORTS/Xem Port</b> —requires one EISA slot. DEC OSF/1 only, supports one per EISA, maximum one CXI01-AA/AD per system.
<b>CXI01-AB</b>	<b>Digiboard PORTS/Xem, 16 RJ45 Port Concentrator</b> —mounts separate from PCI bus. Maximum of three CXI01-AB can be attached to CXI01-AA, provides up to 48 additional ports. DEC OSF/1 only.
<b>CXI01-AD</b>	<b>Digiboard Asynchronous EPC/X Multiport Serial Card with 16 RJ45 Port EPC/CON-16 Concentrator</b> —requires one EISA slot. DEC OSF/1 one per EISA, maximum one CXI01-AA/AD per system. DEC OSF/1 only.
<b>CXI01-AE</b>	<b>Digiboard EPC/CON-16 Concentrator</b> —mounts separate from PCI bus. Maximum three CXI01-AE can be attached to the CXI01-AD provides up to 48 additional ports. DEC OSF/1 only.
<b>CXI01-AC</b>	Digiboard RJ45 to DB25 Male Converter
<b>CXI01-AF</b>	Digiboard RJ45 to DECMJ11 Adapter—8 per package

**LAN Communications Controllers—XMI based**

<b>DEMNA-M</b>	<b>802.3/Ethernet controller</b> —XMI-to-Ethernet adapter, requires one XMI slot. OpenVMS supports four per XMI, maximum six per system. DEC OSF/1 supports six per XMI, maximum eight per system.
<b>CK-DEMNA-KN</b>	DEMNA cabinet kit, required with DEMNA-M.
<b>DEMFA-AA</b>	<b>DEC FDDIcontroller 400</b> —XMI-to-FDDI adapter, Single attachment station with fiber MIC connector; requires one XMI slot. OpenVMS supports four per XMI, maximum four per system. DEC OSF/1 supports seven per XMI, maximum eight per system.

**LAN Communications Controllers—Futurebus+ based**

<b>DEFAA-AA</b>	<b>DEC FDDIcontroller/Futurebus+</b> —Futurebus+ to FDDI adapter single attachment station; requires one Futurebus+ slot. OpenVMS and DEC OSF/1 support two DEFAA-xx per system.
<b>DEFAA-DA</b>	<b>DEC FDDIcontroller/Futurebus+</b> —Futurebus+ to FDDI adapter dual attachment station; requires one Futurebus+ slot. OpenVMS and DEC OSF/1 support two DEFAA-xx per system.
<b>DEFAA-YA</b>	<b>DEC FDDIcontroller/Futurebus+</b> —Futurebus+ to FDDI adapter without PMDs. OpenVMS and DEC OSF/1 support two DEFAA-xx adapters per system. Requires one single attachment station or two dual attachment stations, PMD connectors.
<b>DEFXS-AA</b>	<b>Single-mode fiber PMD</b> —for DEFAA-YA (supports up to 40 km between stations)
<b>DEFXM-AA</b>	<b>Multi-mode fiber PMD</b> —for DEFAA-YA (supports up to 40 km between stations)
<b>DEFXU-AA</b>	<b>Twisted pair PMD</b> —for DEFAA-YA

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## Step 10—Networks and Communications (*continued*)

### Local and Wide Area Communications Servers

Each communications server requires 802.3/Ethernet connection. Depending on the 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 descriptions in *January 1995 Digital Systems and Options Catalog*, Chapter 7, *Networks, Communications, and Cables*, for ordering information.

### DECserver 90M, 90L+, 90TL, 900TM, 700, 250, and MUXserver 90, 320, 380 Communications and Printer Servers

Select terminal or printer server to provide users with multiple session access to systems on a LAN, to minimize cabling complexity and costs, and to conserve host resources such as backplane slots.

### DEC WANrouter 90, 250; DECbrouter 90; and DECNIS 500, 600 Multiprotocol Routers

Select a router to cost-effectively link a LAN to a remote system or another LAN and to offload routing overhead from the application host system.

### Network Connectivity Products

See *January 1995 Digital Systems and Options Catalog*, Chapter 7, *Networks, Communications, and Cables*, and *Network Products Guide* for details.

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## Step 11—Console Terminal

Console terminal with EIA-232 25-pin DSUB connector and printer required unless otherwise available. See *January 1995 Digital Systems and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers*, for ordering information.

VT510-xx	VT510 terminal.
LA75S-xx	LA75 Plus printer.
LAXXS-AD	VT510/LA75 table for both VT510 and LA75.

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## Step 12—Terminals, Scanners, Printers

See *January 1995 Digital Systems and Options Catalog*, Chapter 9, *Terminals, Scanners, Printers*, for ordering information.

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## Step 13—Expansion (System Cabinet and I/O Expansion Cabinet)

### Step 13a—System Cabinet Expansion

The **system cabinet** includes one power regulator (single phase or three phase), CPU module, memory module, system I/O module (KFTIA-AA), BA655-AB, RZ28-VA, DWZZA-VA, and one CD-ROM drive. It provides space for one additional single phase power regulator or two additional three phase power regulators.

- Maximum four I/O channels per cabinet allowed. PCI, XMI, and Futurebus+ plug-in units each require one I/O channel connection.
- Four lower expansion bays are available for plug-in units. The lower bays accommodate plug-in units as follows.

### AlphaServer 8400 System Cabinet

Expansion Bay Location	Plug-In Unit	Quantity	Expansion Bays Occupied
Lower	Disk plug-in unit (BA655-AB)	Four maximum (one included)	Front or Rear
Lower	XMI plug-in unit (DWLMA-AA)	One maximum	Front and Rear
Lower	Battery plug-in unit (H7237-AA)	One maximum	Front and Rear
Lower	PCI plug-in unit (DWLPA-AA)	Two maximum	Rear only
Lower	Futurebus+ plug-in unit (DWLAA-AA)	One maximum	Rear only

Step 13b—I/O Expansion Cabinet

The **I/O expansion cabinet** includes one power regulator (single phase or three phase) and space for one additional single phase power regulator or two additional three phase power regulators.

**H9F00-BA/BB/BC I/O expansion cabinet**—Three phase power, maximum two per system.  
**Note:** -BA = 60 Hz, 208V, -BB = 50 Hz, 380/416V, -BC = 50/60 Hz, 202V.

**H9F00-BD I/O expansion cabinet**—Single phase power, maximum two per system.  
**Note:** Requires selection of correct power cord, see Step 2.  
 Single Phase Power is **not** available in Europe

- The expander cabinet can be configured to hold all disk plug-in units or combination of disk plug-in units and PCI, XMI, or FutureBus+ plug-in units.
- Six expansion bays—two upper and four lower—are available for plug-in units. The two upper bays accommodate maximum of two disk plug-in units. The four lower bays accommodate plug-in units as follows:

**I/O Expansion Cabinets**

Expansion Bay Location	Plug-In Unit	Quantity	Expansion Bays Occupied
Upper	Disk plug-in unit (BA655-AB)	Two maximum	Front or Rear
Lower	Disk plug-in unit (BA655-AB)	Four maximum	Front or Rear
Lower	PCI plug-in unit (DWLPA-AB)	Two maximum	Rear only
Lower	XMI plug-in unit (DWLMA-BA)	Two maximum	Front and Rear
Lower	Battery plug-in unit (H7237-AA)	One maximum	Front and Rear
Lower	Futurebus+ plug-in unit (DWLAA-AA)	One maximum	Rear only

**Step 14—Power Expansion Components**

- System cabinet and expansion cabinets must be same type; either three phase or single phase. Mixing of three phase and single phase cabinets in same system configuration is not allowed.
- Three phase power provides optional N+1 redundant power regulator and option battery backup/UPS capability.
- Single phase power does not support N+1 power redundancy or battery backup/UPS capability.
- Determine the need for adding second power regulator (either single phase or three phase) by filling in the EPU- Power Configuration Table. **Note:** The Power Configuration Table provides a manual method for determining the need of second power regulator. Equivalent power unit (EPU) is an equivalent value of power used at 48 VDC by each option.

Step 14a—Three Phase Expansion Components

- H9B00-AF Battery option for I/O expansion cabinet**—fully loaded battery cabinet supports three power regulators, provides for 60 minutes uninterruptible power (UPS). Maximum one per H9F00-BA/BB/BC expansion cabinet.
- H7237-AA Battery plug-in unit** with batteries for battery backup/UPS capability—maximum one per cabinet. Use in system cabinet and/or H9F00-BA/BB/BC expansion cabinet. Includes four batteries to support 48 V power regulator and cabling for additional H7238-AA battery options.
- H7263-AA/AB Three Phase 48 VDC power regulator**—maximum three per cabinet (one included). Second regulator may be required to supply adequate power depending on configuration. Third regulator assures N+1 power redundancy and higher availability in the event of power regulator failure. See Power Configuration Table.
- H7238-AA 4-pack battery option**—one required per optional 48 V power regulator to support battery backup/UPS capability. For use only with the H7237-AA.

Step 14b—Single Phase Expansion Components

- H7264-AA Single Phase 48 V power regulator**—maximum two per cabinet (one included). Second regulator may be required to supply adequate power depending on configuration. See Power Configuration Table.

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**Step 14c—Single Phase to Three Phase Power Upgrade**

- Includes new AC distribution box with attached line cord, DC subrack, one three-phase 48VDC power regulator.
- If single phase power system has two power regulators, an additional three phase 48VDC power regulator must be ordered.

**H7268-AA/AB/AC Single Phase to Three Phase Upgrade Kit**, Converts system to three-phase power subsystem.  
 -AA= 60 Hz, 208V, -AB = 50 Hz, 380/416V, -AC = 50/60 Hz, 202V.

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**Step 15—Software**

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

**Software Processor Code = Q****DEC OSF/1 Interactive User Licenses**

DEC OSF/1 Interactive User licenses are **not** specific to a single system and can be moved from one system to another at user discretion.

<b>QL-MT7A9-BB</b>	DEC OSF/1 Interactive 1-user license
<b>QL-MT7A9-BC*</b>	DEC OSF/1 Interactive 2-user license
<b>QL-MT7A9-BD*</b>	DEC OSF/1 Interactive 4-user license
<b>QL-MT7A9-BE*</b>	DEC OSF/1 Interactive 8-user license
<b>QL-MT7A9-BF*</b>	DEC OSF/1 Interactive 16-user license
<b>QL-MT7A9-BG*</b>	DEC OSF/1 Interactive 32-user license
<b>QL-MT7A9-BH*</b>	DEC OSF/1 Interactive 64-user license
<b>QL-MT7AQ-AA</b>	DEC OSF/1 unlimited user license
<b>QL-MT5AQ-AA</b>	DEC OSF/1 developer's extension license
<b>QL-MT6AQ-AA</b>	DEC OSF/1 server extension license
<b>QL-MTJAQ-AA</b>	DECnet/OSI end-system license
<b>QL-MTKAQ-AA</b>	DECnet/OSI extended function license

**QB-05SAQ-AA** DECsafe Available Server license and documentation (DEC OSF/1 only). Media available on layered product CD-ROM. KZMSA or KZPSA adapter required. See *January 1995 Digital Systems and Options Catalog*, Chapter 6, *High Availability and High Performance Products*, for details.

\* Not available in Europe. European customers must purchase as many 1-user licenses as necessary, or unlimited user license.

**DEC OSF/1 Media and Documentation**

<b>QA-MT4AA-H8</b>	DEC OSF/1 media and on-line documentation (base system and complementary products) on CD-ROM
<b>QA-MT4AA-GZ</b>	DEC OSF/1 full hardcopy documentation
<b>QA-MT4AB-GZ</b>	DEC OSF/1 end user hardcopy documentation subkit
<b>QA-MT5AA-GZ</b>	DEC OSF/1 developer's extension hardcopy documentation subkit
<b>QA-MT6AA-GZ</b>	DEC OSF/1 server extension hardcopy documentation subkit

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## Step 15—Software (*continued*)

**OpenVMS Distributed Interactive User Licenses**

OpenVMS Distributed Interactive User licenses are not specific to a single system and can be moved between systems at user discretion. OpenVMS Distributed Interactive User licenses can also be shared across an OpenVMS Cluster.

**Note:** OpenVMS Distributed Interactive User Licenses are architecture specific and cannot be shared across a mixed OpenVMS Cluster (OpenVMS Alpha and OpenVMS VAX systems).

QL-MT3A9-BB	OpenVMS Distributed Interactive 1-user license
QL-MT3A9-BC*	OpenVMS Distributed Interactive 2-user license
QL-MT3A9-BD*	OpenVMS Distributed Interactive 4-user license
QL-MT3A9-BE*	OpenVMS Distributed Interactive 8-user license
QL-MT3A9-BF*	OpenVMS Distributed Interactive 16-user license
QL-MT3A9-BG*	OpenVMS Distributed Interactive 32-user license
QL-MT3A9-BH*	OpenVMS Distributed Interactive 64-user license
QL-MT3AA-BR*	OpenVMS Distributed Interactive 128-user license
QL-MT3AB-BR*	OpenVMS Distributed Interactive 256-user license
QL-MT2AQ-AA	OpenVMS unlimited user license

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

QL-MTHAQ-AA DECnet/OSI extended function license

QL-MUZAQ-AA OpenVMS cluster software license. Required with each system that connects to an OpenVMS cluster.

\* Not available in Europe. European customers must purchase as many 1-user licenses as necessary, or unlimited user license.

**OpenVMS Media and Documentation**

QA-MT1AA-H8 OpenVMS media and documentation on CD-ROM

QA-MT1AB-GZ OpenVMS base hardcopy documentation

QA-MT1AA-GZ OpenVMS extended hardcopy documentation

**Layered Products CD-ROM**

QA-054AA-H8 Layered products media and documentation for DEC OSF/1

QA-03XAA-H8 Layered products media and documentation for OpenVMS

**NAS 200 Software**

NAS 200 software included with base AlphaServer 8400 systems. Media available on layered product CD-ROM.

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## Step 16—Environmental Power Products

See system specifications for recommended On-Line UPS Solutions for Digital AlphaServer 8200 and 8400 systems. Refer to *January 1995 Digital Systems and Options Catalog*, Chapter 10, *Environmental Products*, and to *Digital's Environmental Power Products Catalog*.

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## Step 17—AlphaServer 8400 System Building Blocks

**Note:** These system offerings provide flexibility in building the AlphaServer 8400 with memory and I/O options of your choice. System Building Blocks are an alternative to the standard Base Server Systems listed in Step 1. Memory module(s) and system I/O module(s) **must** be ordered separately with these configurations.

- Systems require DEC OSF/1 V3.2B or later, and OpenVMS V6.2 or later
- Console terminal required unless available on site.
- System consists of 9 slot backplane, with three slots used by CPU module, memory module, and system I/O module. (Memory and I/O modules **must** be ordered separately.
- Six slots available for additional modules (CPU modules, memory modules, or system I/O modules).
- CD-ROM is required and **must** be ordered separately.
- If Factory Installed Software is required, BA655-AB, RZ28-VA 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.
- Minimum of one memory module and one system I/O module **must** be ordered separately.

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### AlphaServer 8400 System Building Blocks

- Processor module with one DECchip 21164/300 MHz CPU, **or** two DECchip 21164/300 MHz CPUs; each DECchip 21164 has 4-Mbyte Backup cache
- Three-Phase Power Subsystem or Single-Phase Power Subsystem
- 48 VDC power regulator
- DEC OSF/1 base license **or** OpenVMS base license
- NAS 200 software
- One year hardware product warranty
- 90 day software product warranty

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#### Uni-CPU Systems

Order Number	Power Subsystem	Operating System	Memory	I/O Module
DA-291AY-AA/AB/AC	Three Phase <sup>1</sup>	DEC OSF/1	Required	Required
DA-291AY-A9	Single Phase <sup>2</sup>	DEC OSF/1	Required	Required
DY-291AY-AA/AB/AC	Three Phase <sup>1</sup>	OpenVMS	Required	Required
DY-291AY-A9	Single Phase <sup>2</sup>	OpenVMS	Required	Required

#### Dual-CPU Systems

DA-291BY-AA/AB/AC	Three Phase <sup>1</sup>	DEC OSF/1	Required	Required
DA-291BY-A9	Single Phase <sup>2</sup>	DEC OSF/1	Required	Required
DA-291BY-AA/AB/AC	Three Phase <sup>1</sup>	OpenVMS	Required	Required
DA-291BY-A9	Single Phase <sup>2</sup>	OpenVMS	Required	Required

<sup>1</sup> xA = 60 Hz, 208 V; xB = 50 Hz, 380/416 V; xC = 50/60 Hz, 202 V Japan. All Three Phase power variations include an attached power cord.

<sup>2</sup> A9 = Single Phase Power **requires** selection of correct power cord in Step 2. Single Phase Power is **not** available in Europe.

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#### Step 17a—Memory

First memory module **must** be selected. Refer to Step 5 for ordering information.

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#### Step 17b—CD-ROM Drive

CD-ROM drive **must** be selected.

**RRDCD-AA**      600 Mbyte 5.25-inch in cabinet CD-ROM drive

Step 17c—I/O Modules

System I/O module must be selected. Refer to Step 7 for ordering information.

- If KFTHA-AA I/O module is selected the following PCI or XMI components must be ordered to provide the interface to CD-ROM drive.

**Required for PCI systems:**

<b>DWLPA-AA</b>	PCI plug-in unit. See Step 6 for details
<b>KZPAA-AA*</b>	PCI single-ended SCSI controller
<b>BN21H-02</b>	SCSI cable

\* KZPAA is restricted as CD-ROM controller only. Maximum one per system.

**Required for XMI systems:**

<b>DWLMA-AA</b>	XMI plug-in unit. See Step 6 for details
<b>KZMSA-AB</b>	XMI single-ended SCSI controller
<b>BN21H-02</b>	SCSI cable

**Note:** Complete system configuration beginning with Step 2.

## Digital AlphaServer 8400 Power Configuration Table

### AlphaServer 8400 EPU (Equivalent Power Units)—Power Configuration Table

- Second power regulator (either three phase or single phase) may be needed to supply additional 48V power to the system.
- Mixing of three phase and single phase power regulators in system configuration is not allowed.
- Use chart as guide to determine need for second power regulator.
- If EPU is greater than 80, order second power regulator (three phase regulator—H7263-AA/AB) or (single phase regulator—H7264-AA).
- EPU must not exceed 180.

Options	EPU Values System Cabinet Options	Quantity	Total EPU (Qty times EPU)	EPU Values Expansion Cabinet Options	Quantity	Total EPU (Qty times EPU)
Base system includes power regulator, CPU module, system I/O module, memory module	30	1	30			
I/O expansion cabinet (H9F00-BA/BB/BC/BD) includes one power regulator					1	0
Additional CPU modules—751P1-AX, 751P2-AX	11					
Additional CPU modules—752P1-AX, 752P2-AX	13					
KFTIA-AA System I/O module	4					
KFTHA-AA System I/O module	3					
MS7CC-BA 128-Mbyte memory	5					
MS7CC-CA 256-Mbyte memory	5					
MS7CC-DA 512-Mbyte memory	5					
MS7CC-EA 1-Gbyte memory	5					
MS7CC-FA 2-Gbyte memory	5					
DWLPA-AA/AB/BA/BB						
Add PCI options						
KZPSA-BB	1					
KZPSC-AA	1					
KZPSC-BA	1					
DE435-AA	1					
DEFPA-AA	1					
DEFPA-DA	1					
DEFPA-UA	1					
KFE70-AA	1					
Add EISA options						
KFESB-AA	1					
DNSES-AA	1					
DW300-AA	1					
CXI01-AA	1					
CXI01-AD	1					
DWLMA XMI plug-in unit	4					
KZMSA-AB XMI SCSI controller	3					
KFMSB-AA DSSI disk/tape adapter	3					
CIXCD-AC XMI CI controller	4					
DEMNA-M XMI Ethernet controller	3					
DEMFA-AA XMI FDDI adapter	5			6		
DWLAA Futurebus+ plug-in unit	4					
DEFAA-AA	1					
DEFAA-DA	1					
DEFAA-YA	1					

AlphaServer 8400 EPU (Equivalent Power Units)—Power Configuration Table (continued)

Options	EPU Values System Cabinet Options	Quantity	Total EPU (Qty times EPU)	EPU Values Expansion Cabinet Options	Quantity	Total EPU (Qty times EPU)
RZ26L-VA SCSI disk drive	1					
RZ28-VA SCSI disk drive	1					
TLZ07-VA SCSI tape drive	1					
DWZZA-VA SCSI signal converter	0					
<b>Total</b>						

**Note:** Depending on the configuration, the system offers integral UPS capability that supports all in-cabinet components for at least 11 minutes. If UPS support is required for external devices, e.g., console terminals, terminal servers, printers, and modems, a universal UPS can be ordered separately. See January 1995 Digital Systems and Options Catalog, Chapter 10, Environmental Products and Digital's Environmental Power Products Catalog.

Optional Controller Configuration Table

With multiple adapters that provide the same interface available on different I/O buses (PCI, XMI, or Futurebus+), it is possible to exceed operating system limit on number of ports supported for that interface. Follow these guidelines for maximum number of ports that each operating system will support. Fill in this table under the relevant area, add up the number of controllers/ports available, and verify the 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)	DEC OSF/1 Limit	OpenVMS Limit
<b>SCSI Options</b>					
Included <b>KFTIA-AA</b> system I/O module, one single-ended and three FWD SCSI ports	4	1	4		
Additional <b>KFTIA-AA</b> System I/O module, one single-ended and three FWD SCSI ports	4				
<b>KZPSA-BB</b> PCI fast wide differential SCSI adapter	1				
<b>KZMSA-AB</b> XMI fast single-ended SCSI adapter	2				
Add column "C", must be less than or equal to value listed under operating system to be used.				32	24
<b>802.3/Ethernet Options</b>					
Included <b>KFTIA-AA</b> system I/O module, two 802.3/Ethernet ports	2	1	2		
Additional <b>KFTIA-AA</b> system I/O module, two 802.3/Ethernet ports	2				
<b>DE435-AA</b> PCI 802.3/Ethernet controller	1				
<b>DEMNA-M</b> XMI 802.3/Ethernet controller	1				
Add column "C", must be less than or equal to value listed under operating system to be used.				8	8
<b>FDDI Options</b>					
Included <b>KFTIA-AA</b> system I/O module, optional FDDI daughter card installed ( <b>DEFPZ-AA/UA</b> )	1				
Additional <b>KFTIA-AA</b> system I/O module, optional FDDI daughter card installed ( <b>DEFPZ-AA/UA</b> )	1				
<b>DEFPA-AA/-DA/-UA</b> PCI FDDIcontroller, one port each	1				
<b>DEMFA-AA</b> XMI FDDIcontroller	1				
<b>DEFPA-AA/-DA/-UA</b> Futurebus+ FDDIcontroller, one port each	1				
Add column "C", must be less than or equal to value listed under operating system to be used.				8	8

## EISA Bus IRQ Address Table

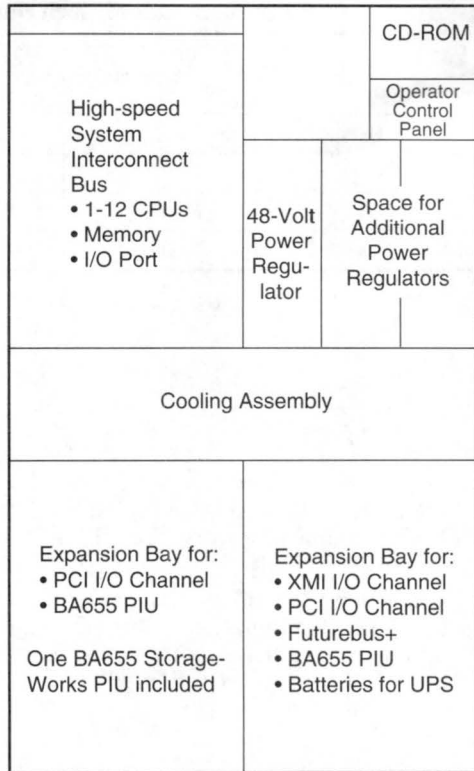
Option	EISA Bus IRQ Addresses									Maximum of Each Supported	
	5	7	8	9	10	11	12	14	15	OpenVMS	DEC OSF/1
KFESB-AA	0	–	–	0	0	0	–	–	–	2	0
DNSES-AA	–	–	0	0	0	0	0	0	0	1	1
DW300-AA	0	–	–	0	0	0	–	–	0	1	1
CXI01-AA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1
CXI01-AD	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1

## Table Codes:

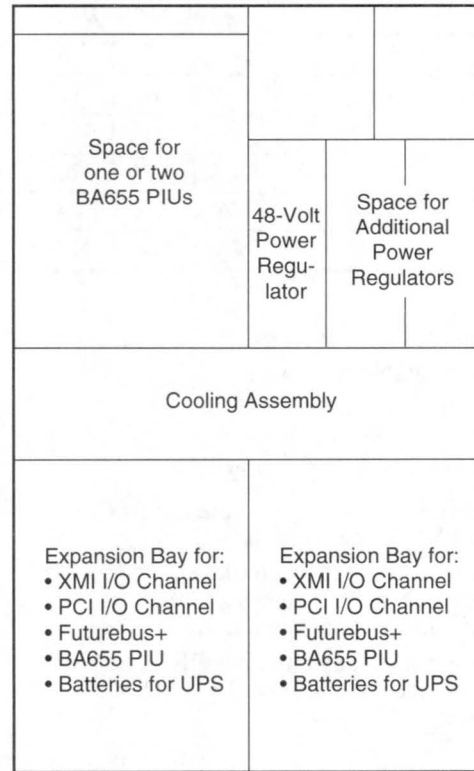
- 0 = address is available for device  
 – = address not available for device  
 NA = Not Applicable

## Configuration Rules and Information

- EISA Bus IRQ address assignments are for DEC OSF/1 and OpenVMS systems only
- In some cases, the maximum each [device] supported is less than the number of EISA bus addresses available; this is due to other limitations.
- Only one device can occupy any given IRQ address; if multiples of device are configured, each device occupies separate address.
- Match each device to one available address. (Hint: With the table as a worksheet, fill in “0” for each device; fill in only one “0” per column).
- The actual IRQ address assignment will be made by the EISA Configuration Utility (ECU), which is run during system manufacture, or in the installed system if the EISA bus is reconfigured.



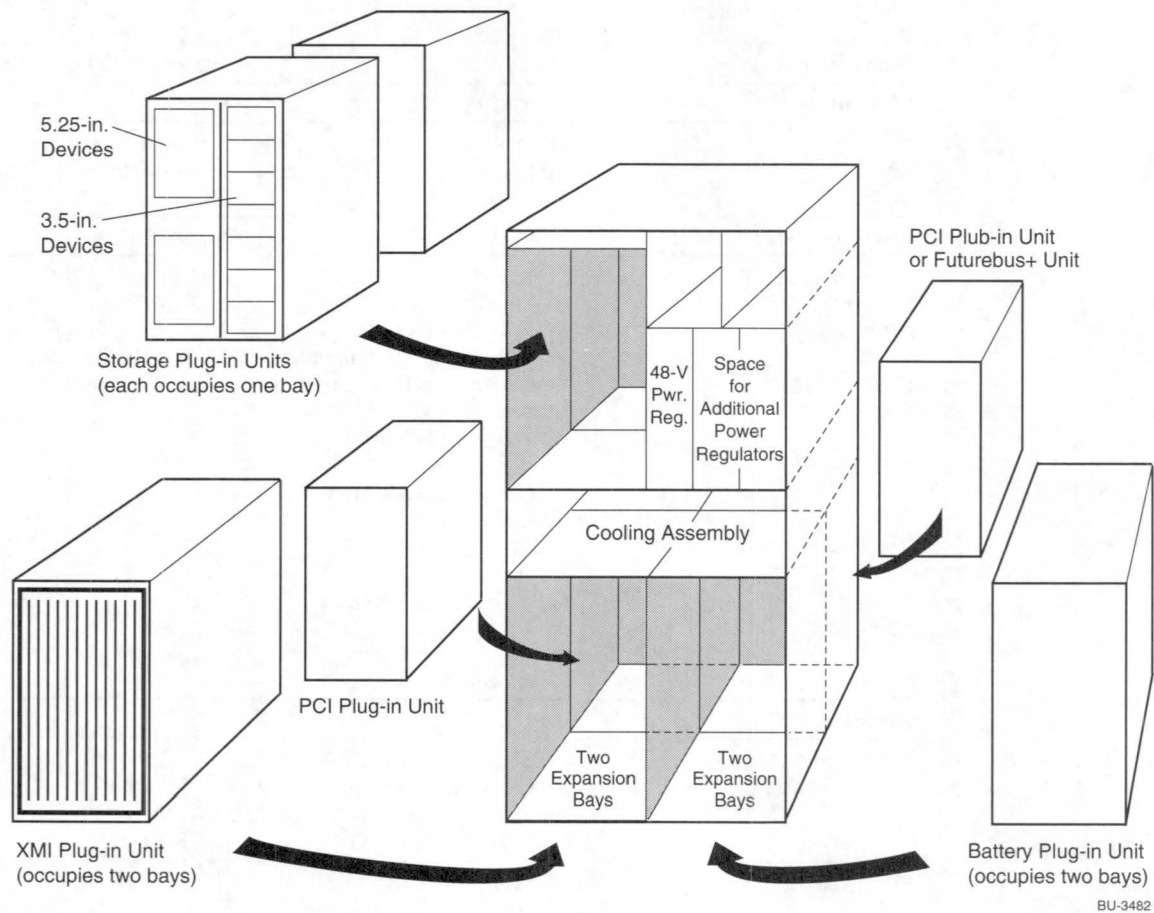
System Cabinet



BU-3310A

I/O Expansion Cabinet

**Note:** Three-Phase Power Systems can have up to three Power Regulators.  
 Single-Phase Power Systems can have up to two Power Regulators.



Specifications

Physical Characteristics	Operating	Shipping
Height	170.0 cm (67.0 in.)	195.0 cm (76.7 in.)
Width	80.0 cm (31.5 in.)	109.5 cm (43.1 in.)
Depth	87.5 cm (34.4 in.)	121.0 cm (47.5 in.)
Weight, full configuration		
Without batteries	408 kg (900 lb.)	448 kg (1000 lb.)
With batteries	545 kg (1200 lb.)	585 kg (1300 lb.)
Clearances	Operating	Service
Front	1.0 m (40 in.)	1.5 m (59 in.)
Rear	1.0 m (40 in.)	1.0 m (40 in.)
Sides	0	0
Environmental	Operating	Non-Operating
Temperature	15° to 28°C (59° to 82°F)	-40° to 66°C (-40° to 151°F)
Humidity	20% to 80%	10% to 95%
Altitude	0-2.4 km (0-8000 ft)	9,100 m (30,000 ft)
Vibration	2-22 Hz @ 0.01"da minimum	22-500 Hz @ 0.25g max.
Heat dissipation <sup>1</sup>	<b>Minimally configured system<sup>1</sup></b> (system cabinet) 3,400 Btu/hr, 1,000 W  <b>Fully configured system<sup>2</sup></b> (system cabinet) 15,700 Btu/hr, 4,600 W  <b>Fully configured system<sup>3</sup></b> (system cabinet with two I/O expansion cabinets) 30,600 Btu/hr, 9,000 W	
Regulatory		
Agency approvals	UL Listed to UL1950 UL Classified to IEC950 CSA Certified to CAN/CSA-C22.2, No. 950-M89 FCC Part 15 (Class A)	
Reviewed to	AS 3260, Australian Standard EN 60950, European Norm	

- 1 Minimally configured system contains one regulator, one CPU module, one memory module, one KFTIA-AA module, CD-ROM, and RZ28 disk drive.
- 2 Fully configured system contains two power regulators, four CPU modules, three memory modules, two System I/O modules, one DWLPA-AA, one DWLPA-BA, three BA655-AB, CD-ROM, 36 RZ28 drives.
- 3 A fully configured system and expander cabinets consist of the above "fully configured system" and two expander cabinets which each contain one DWLPA-AB, one DWLPA-BB, six KZPSA-BB, five BA655-AB, and 60 RZ28 drives.

Specifications (continued)

Power Requirements <sup>1</sup>			
Three-Phase Power Subsystem <sup>2</sup>	US/Canada	Europe/AP	Japan
Nominal voltage	120/208 V	380–415 V	202 V
Frequency range	50–60 Hz	50–60 Hz	50–60 Hz
Phases	3-phase star 4-wire N-GND	3-phase star 4-wire N-GND	3-phase delta 4-wire mid-GND or 3-wire junction GND
Maximum input current/phase	24 A rms	12.8 A rms	24 A rms
Surge current	50 A peak	50 A peak	50 A peak
Rating	30 A	16 A	30 A
Power cap (system)	DEC 12-12314-00	DEC 12-30333-02	DEC 12-12314-00
Receptacle (site)	DEC 12-12315-01	See footnote 5	DEC 12-12315-01
(Industry equivalent)	NEMA L21-30R	IEC 309	NEMA L21-30R
PCS/PDS/PDU/UPS cable	BC24W	BN29X	BC24W

Power Requirements <sup>1</sup>			
Single-Phase Power Subsystem <sup>3</sup>	US/Canada	Europe/AP	Japan
Nominal voltage	208V	240V	202V
Frequency range	50–60 Hz	50–60 Hz	50-60 Hz
Maximum input current/phase	24 A rms	12.8 A rms	24 A rms
Surge current	50 A peak	50 A peak	50 A peak
Rating	30 A	16 A	30 A
Power cap (system)	DEC 12-16886-00	DEC 12-30333-03	DEC 12-16886-00
Receptacle (site)	DEC 12-17076-00	See footnote 5	DEC 12-17076-00
(Industry equivalent)	NEMA L6-30R	IEC 309 (32A)	NEMA L6-30R
PCS/PDS/PDU/UPS cable	BC26E		BC26E

- 1 The power system provides unity power factor which allows full utilization of the input line current (Watts = VA). Approximate BTUs for a given system configuration can be calculated by multiplying the “EPU” value per cabinet by 85.4.
- 2 Three-phase power subsystem has an attached line cord on system cabinet and each I/O expansion cabinet.
- 3 Power cord required and must be ordered as a separate line item. Required for system cabinet and each I/O expansion cabinet.
- 4 Receptacle type is Hubbell 516R6 or equivalent.
- 5 Receptacle type is Hubbell 332R6 or equivalent

**Recommended On-Line UPS Solutions for Digital AlphaServer 8200 and 8400 systems**

6kVA Prestige Modular “On-line” UPS For 1 Phase Systems: PUPS plus UPS for one or more fully configured expansion cabinet.

Prestige models feature modular design to allow hot-swapping components without disconnecting critical load (hot swap is optional on 50 Hz models). Battery support time: 7 minutes at full rated load, or about 15 minutes with typical configurations. Support time is extendable via add-on “plug and play” battery modules. Models include comprehensive LED display. All models include EIA232 port for UPS monitoring

Service: Units sold and serviced in Continental U.S. feature a 3 year, full unit hot-swap 24-48 hour replacement warranty through vendor. A five-year, 5 x 8 on-site upgrade option is also available (see below). Other locations include a one-year warranty with return to certified service location. Digital on-site exchange service contract is also available.

<b>4N-AEWAR-G3</b>	Prestige 6000 UPS 5-year on-site exchange warranty upgrade (Continental U.S. only)
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<b>4N-AEWAR-G4</b>	Same as -G3 except on-site with start-up service
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Optional PUPS plus models available in 1 or 3 phase configurations. Features include programmable communications port for UPS monitoring,

Service: Units purchased with Standard Warranty include a 1-year, on-site Digital warranty. A 5-year on-site package option is available for 1 phase models without Standard Warranty. Continental U.S. only. Digital installation includes system start-up including training, set up and verification Note: Electrical installation must be by licensed electrical contractor.

**Recommended On-Line UPS Solutions for Digital AlphaServer 8200 and 8400 systems (continued)**

**4N-AEWAR-P1** PUPS plus 8 and 10kVA UPS 5-year on-site warranty package includes start-up and onsite service through vendor. Continental U.S. only.

**UPS Configuration Chart for Digital AlphaServer 8200 and 8400 Systems**

<b>System with 1-phase input</b>	<b>Required Receptacle</b>	<b>Load VA &amp; W</b>	<b>UPS System<sup>2</sup></b>		<b>Optional PDM**</b>
System only*	(1) L6-30R	2860	4N-AEAAJ-CL <sup>3</sup>	6Kva/4kw Prestige	Not Required
System with up to 1 expansion cabinet	(2) L6-30R	4650	4N-AEAAK-BA	8kVA/6kW	4N-AEACK-BN
System with up to 2 expansion cabinet	(3) L6-30R	6450	4N-AEAAL-BA	10kVA/7kW PUPS plus	4N-AEACK-BN
<b>System with 3-phase input<sup>1</sup></b>					
System only	(3)L21-30R	4600	4N-AEAAN-BA	15kVA/10kW	4N-AEACM-BK
System with up to 1 expansion cabinet	(3)L21-30R	6800	4N-AEAAN-BA	(PUPS plus)	4N-AEACM-BK or -BN
System with up to 2 expansion cabinet	(3)L21-30R	9000	4N-AEAAN-BA		4N-AEACM-BK or BN 4N-AEACM-BJ or BH

\* Allows up to one partially configured expansion cabinet

\*\*PDM's for North American applications. Other PDM configurations available.

1 3-phase models with optional redundant power supplies require (2)L21-30R per cabinet.

2 Additional battery packs available.

3 Prestige for international applications 4N-AEAAJ-CK

**4N-AEAAJ-CL** Prestige 60 Hz package; 208Vac, 1 phase, 6 foot input cord with L6-30P. includes (2)L6-30R and (4)5-15R2 (extention PDM options available). Unit may be hardwired on output via optional hw output extention module. Note: field rewirable to 240Vac

**4N-AEAAJ-CK** Prestige 50 Hz package: 220-240 Vac, 1 phase, 50 & 60hz systems. Includes terminal strip for hardwired in/out connections. Plug in applications available.

**4N-AEAAK/L-BA** PUPS plus 1 phase output models; hardwired in and out

**4N-AEAAN-BA** PUPS plus 3 phase output models; hardwired in and out

The units are rated for 176-276 (1ph) and 176- 256 (3ph) vac input; 120/200-240V output. Connections are hardwired in and may be hardwired out or plug-in via optional output power distribution receptacle module. NOTE: International Applications will require an external step-up transformer to be wired on the output.

**PDM Options Configurations Listed**

**4N-AEACM-BK** PDM option = (2)L21-30R &(3)5-15R2

**4N-AEACM-BN** PDM option = (2)L21-30R &(2)L6-30R & (1)5-20R2

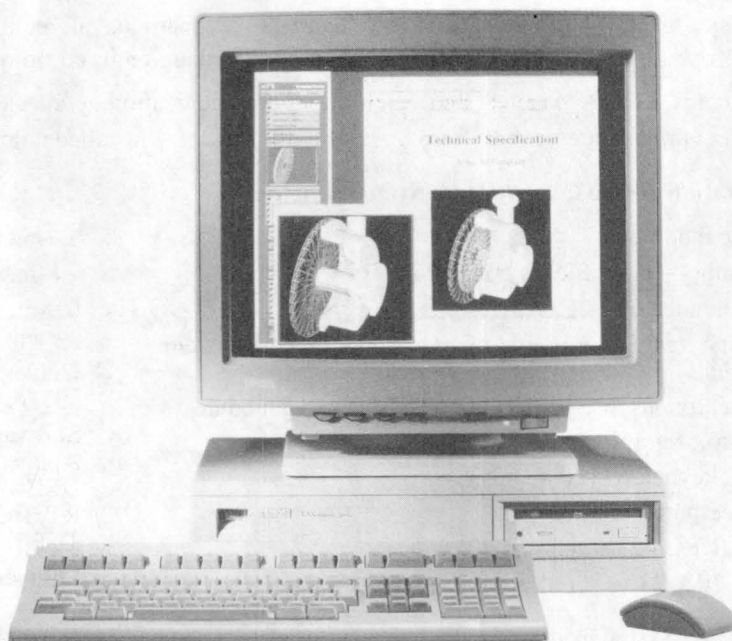
**4N-AEACM-BJ** PDM option = (1)L21-30R &(1)5-20R2 with mounting conduit kit

**4N-AEACM-BH** PDM option = (3) 5-20R2 with mounting conduit kit

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

Includes cables, media and documentation. Part numbers are for one Alpha system. Networking software for multiple unit shutdown and SNMP adaptors are available, see Midrange "On-Line" systems in January 1995, *Digital Systems and Options Catalog*, Chapter 10, *Environmental Products*.

<b>Windows NT</b>	<b>DEC OSF/1</b>	<b>OpenVMS</b>	<b>UPS System</b>
<b>4N-AEAES-AA</b>	<b>4N-AEAES-AK</b>	<b>4N-JBBBB-GG</b>	Prestige
<b>4N-AEAES-AA</b>	<b>4N-AEAES-AK</b>	<b>4N-JBBBB-GE</b>	PUPS plus



## VAXstation 4000 Model 96 Systems

### Product Description

The VAXstation 4000 Model 96 system is a high-performance, 45.6 SPECmark89, OpenVMS VAX workstation offering more than five times the performance of the VAXstation 4000 Model 60 system.

The VAXstation 4000 Model 96 system supports three graphic options: LCSPX (accelerated 2D); SPXg (8-plane 3D with 16-bit Z-Buffer); and SPXgt (24-plane 3D with 24-bit Z-Buffer). SPXg graphics provide hardware acceleration for 2D and 3D vectors and solid fill. SPXgt is most useful in accelerating the performance of applications that make extensive use of smooth-shaded graphics and true-color imaging.

Main memory can be configured at 16, 32, 64, 80, or 128 Mbytes, and the system includes 256 Kbytes of writeback cache. A TURBOchannel adapter option provides direct connectivity to Digital-supported TURBOchannel options, including thick wire Ethernet, additional SCSI, or FDDI controllers.

The VAXstation 4000 Model 96 system enclosure is the same as the VAXstation 4000 Model 60 enclosure; memory modules, internal storage devices, and graphics option upgrades are customer installable. Internal storage permits a maximum of two 3.5-inch hard disks and one removable media device (diskette, compact disc, or tape drive). External expansion is supported in StorageWorks BA353 and BA350 modular storage units.

VAXstation 4000 Model 96 Base System software licenses include the OpenVMS operating system and Network Application Support (NAS 150) for VAXstations. Systems ordered with a factory-installed disk will have OpenVMS and DECwindows Motif factory installed.

The VAXstation 4000 Model 96 system is ideal for applications such as CAD/CAM/CAE, medical and other forms of imaging, econometrics, process control/CIM, mapping, geophysical analysis, scientific visualization, and is suitable as a trader workstation. It provides a level of VAXstation performance that enables users to run the most computationally demanding applications.

To allow VAXstation 3100 and VAXstation 4000 Model 60 users to take full advantage of the processing performance of the VAXstation 4000 Model 96 system, upgrade kits are available. To provide investment protection, SPXg and SPXgt color graphics cards and monitors can be transferred from a VAXstation 4000 Model 60 system to an upgraded VAXstation 4000 Model 96 system.

### Step 1—Systems

Select system. 120-V Base Systems include a U.S. keyboard and all required power cords. If a 240 V system is selected, the appropriate country kit or keyboard and power cord are required from Step 14.

- Graphics, TURBOchannel, and synchronous communication options are customer installable and will ship as SPARES.
- Other options ordered with Base Systems will be factory installed unless specified as SPARES.

#### VAXstation 4000 Model 96 Base Systems include

- Base module
- Memory—eight SIMM connectors
- Cache memory: 256 Kbytes
- ThinWire/thick wire Ethernet controller on base system module
- Synchronous SCSI controller on base system module
- 2D color/grayscale graphics board (LCSPX)
- U.S. keyboard (120 V only)
- Three-button mouse
- One DEC-423 serial line
- One EIA-232D serial line with modem control
- 2.7-meter (9-foot) color/monochrome video cable
- 1.8-meter (6-foot) power cord (120-V systems only)
- 0.9-meter (3-foot) monitor power cord (monitor to system box)
- Universal power supply that automatically adjusts to 88–132 Vac or 176–264 Vac
- Software licenses: OpenVMS VAX and Network Applications Support (NAS 150) for VAXstations DECwindows Motif, DECmessageQ RT, ObjectBroker RT, DECnet End Node, DECnet/OSI End System, DEC TCP/IP Client, VMScluster Client
- English-language user documentation

**Note:** Base Systems ordered with a factory-installed disk include factory-installed software (FIS).

Order Number	Memory	Monitor	Hz	Hard Disk Drive: 1.0 Gbyte	CD-ROM: 600 Mbyte
PV71A-BA/BB	16 MB	Required	72		
PV71A-BC/BD	64 MB	Required	72	Included	Included

**Note:** BA,BC = 120/240 V Northern Hemisphere; BB,BD = 240 V Southern Hemisphere

### Step 2—Monitor (Required for Base Systems)

**Note:** VAXstation 4000 Model 96 does not support dual-and quad-monitor configurations.

- VRT17-HA/H4** 17-inch color, 1280 x 1024 refresh rate, 66/72 Hz multi-synch
- VRC21-HA/H4** 21-inch color, 1280 x 1024 refresh rate, 66/72 Hz multi-synch

**Note:** xA = 120/240 V Northern Hemisphere; x4 = 240V Southern Hemisphere

### Step 3—Storage

Select storage devices if required. Factory-installed variants (-EM) include factory-installed software (FIS) which includes OpenVMS and DECwindows MOTIF.

- System disk must be ordered if the system is not being booted over the network by a server.
- Maximum of seven SCSI devices, not to exceed two internal hard drives, one removable media device, and four external devices; or up to six external SCSI devices (with only one internal drive).

**Note:** FIS is not a substitute for a software load device; media and documentation are required for first system on site.

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**Step 3a—Internal Storage (Factory/Field Installed)**

Systems have three internal storage cavities.

Slot 1—Removable media (RX26, RRD43, TLZ07, TZK11)

Slot 2—3.5-inch disk RZ25M, RZ26L, or RZ28B

Slot 3—3.5-inch disk RZ25M, RZ26L, or RZ28B

Select up to one half-height removable media device.

<b>RX26 -ES/UL</b>	2.8 Mbyte 3.5-inch internal diskette drive
<b>RRD43-JM/JL</b>	600 Mbyte internal, dual speed compact disk drive
<b>TLZ07-GF/GG</b>	8.0 Gbyte 4-mm Digital Audio Tape (DAT)
<b>TZK11-GF/GG</b>	2.0 Gbyte Quarter-Inch Cartridge (QIC) tape

Select up to two 3.5-inch half-height disk drives. Factory-installed variants (-EM) include factory-installed software (FIS).

<b>RZ25M-EM/EL</b>	535-Mbyte internal disk drive
<b>RZ26L-EM/EL</b>	1.05-Gbyte internal disk drive
<b>RZ28B-EM/EL</b>	2.1-Gbyte internal disk drive

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**Step 3b—External Storage (Expansion Box)**

<b>TZ85-TA</b>	2.6-Gbyte cartridge tape drive; requires SCSI cable
<b>TSZ07-CA</b>	1600/6250-bit/inch 9-track tape drive; requires country kit TSZK7-xx. See Chapter 8, <i>Storage Devices</i> , for more information.
<b>TZK11-DA</b>	2-Gbyte Quarter-Inch Cartridge (QIC) tape

For StorageWorks BA350 and BA353 modular storage expansion box information, see Chapter 8, *Storage Devices*.

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**Step 3c—Workstands**

<b>BA46X-AA</b>	Vertical floor stand for one VAXstation 4000 system.
<b>H9855-AA</b>	Horizontal workstand for one VAXstation 4000 system.

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**Step 4—Memory**

Systems include 16 Mbytes (4 x 4-Mbyte SIMMs) or 32\* Mbytes (8 x 4-Mbyte SIMMs). Additional memory may be added in 16-or 64-Mbyte increments if four memory slots are available. Eight SIMM memory slots total; 16-and 64-Mbyte modules may be combined.

<b>MS44L-BC</b>	16 Mbytes parity (4 x 4-Mbyte, 100-ns SIMMs)
<b>MS44-DC</b>	64 Mbytes parity (4 x 16-Mbyte, 100-ns SIMMs)

\* Increasing memory in 32-Mbyte systems requires removal of 4 x 4-Mbyte SIMMs.

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**Step 5—TURBOchannel Adapter (Customer Installable)**

- TURBOchannel adapter provides one single-width bus slot for Digital or third-party options.
- Adapter requires OpenVMS VAX V5.5-2HW or higher.
- Required for TURBOchannel options (Step 5a).

<b>DWCTX-BX</b>	TURBOchannel adapter module
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**Step 5a—TURBOchannel Options (Customer Installable)**

- Requires a TURBOchannel adapter.
- Each option requires one TURBOchannel slot.
- The following TURBOchannel options have OpenVMS VAX/driver support.

<b>PMAD-AB</b>	Thick wire Ethernet TURBOchannel option card
<b>PMAZ-AB</b>	Additional SCSI TURBOchannel option card
<b>DEFTA-AA</b>	DEC FDDIcontroller 700 (fiber optic) option card. Requires DEC LAN device driver kit V1.0 (QA-0PAAA-H5/H8) with OpenVMS VAX V5.5-2.

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**Step 6—Synchronous Communication Options**

Select synchronous communication option if TURBOchannel adapter was not selected from Step 5.

VAX Wide Area Network (WAN) device driver license is required before adding asynchronous communication controller. Order license, media (TK50 or magtape), and documentation.

<b>QL-VAWA9-AA</b>	VAX WAN V1.2 device driver license
<b>QA-VAWAA-H5</b>	VAX WAN V1.2 device driver media (TK50)and documentation
<b>QA-VAWAA-HM</b>	VAX WAN V1.2 device driver media (magtape)and documentation
<b>QA-VAWAA-GZ</b>	VAX WAN V1.2 device driver documentation

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**Step 6a—Synchronous Communication Controller (Customer Installable)**

<b>DSW21-AA</b>	One-line synchronous communication controller and EIA-232 V.24 synchronous modem cable
<b>DSW21-AB</b>	One-line synchronous communication controller and EIA-423 V.10 synchronous modem cable
<b>DSW21-AC</b>	One-line synchronous communication controller and EIA-422 V.36 synchronous modem cable
<b>DSW21-AD</b>	One-line synchronous communication controller and V.35 synchronous modem cable
<b>DSW21-AE</b>	One-line synchronous communication controller and EIA-530 synchronous modem cable
<b>DSW21-AF</b>	One-line synchronous communication controller and X.21 synchronous modem cable

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**Step 7—Video and Keyboard/Mouse Extender Cables**

Systems include a 9-foot (2.7-meter) color/monochrome video cable; if additional video cable is required, order below.

<b>BC29G-09</b>	Video cable (9-foot) for color/monochrome monitors
<b>VSXXX-KA</b>	10-foot keyboard/mouse extender cable and power cord

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**Step 8—Networking Cables**

<b>BC16M-xx</b>	ThinWire Ethernet cable (xx = 06/15/30 feet in length)
<b>BNE3H-xx</b>	Thick wire transceiver cable with straight connector (PVC)(xx = 05/10/20/40 meters in length)
<b>BNE3L-xx</b>	Thick wire transceiver cable with straight connector (Teflon)(xx = 05/10/20/40 meters in length)

**Note:** Right-angle Ethernet cables are not supported.

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## Step 9—Optional Input/Output Devices

The tablet can be used in place of the mouse. The Lighted Programmable Function Keyboard (LPGK) and Programmable Function Dials (PFD) can be ordered as a pair or separately. The LPGK and PFD packages listed below include a Peripheral Control Module (PCM) which provides multiplexing of both LPGK and PFD into a single EIA-232 port. In addition, each package includes a power supply, cables, and user documentation.

VSXXX-AB	11-inch x 11-inch tablet
VSXXX-GA	Three-button ergonomic rectangular mouse (included with system)
VSXXX-JA	Audio headset
VSX10-AA/A3	Combination LPGK and PFD package, 120 V/240 V
VSX20-AA/A3	LPGK package, 120 V/240 V
VSX30-AA/A3	PFD package, 120 V/240 V

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## Step 10—Printers

Refer to Chapter 9, *Terminals, Scanners, Printers*, for ordering information.

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## Step 11—Hardware Documentation

Information kits ship with every system. Information kits include the following documents: *VAXstation 4000 Model 60 or 90 Quick Installation Card*, *Owners and System Installation Guide*, and *Options Installation Guide*.

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## Step 12—Graphics Options (Customer Installable)

- Graphics options are listed with compatible monitors.
- Upgrades include video cables.
- Recommended configurations for SPXg/gt are 24--32 Mbytes of memory and 1-Gbyte internal disk.

**Note:** Model 96 will not support dual-or quad-monitor configurations.

### VAXstation 4000 Model 96 Graphics

Order Number	Description	Compatible Monitor	Hz
PV71G-AA	LCSPX 8-plane 2D color/grayscale graphics 1280 x 1024 resolution, 72 Hz	17-inch C VRT17-HA/H4 21-inch C VRC21-HA/H4	66/72 multi-synch 66/72 multi-synch
PV71G-BA <sup>1</sup>	SPXg 8-plane 3D color graphics with 16-bit Z-Buffer, 1280 x 1024 resolution, 72 Hz		
PV71G-CA <sup>1</sup>	SPXgt 24-plane 3D color graphics with 24-bit Z-Buffer, 1280 x 1024 resolution, 72 Hz		

<sup>1</sup> SPXg and SPXgt options include DEC PHIGS Runtime license and require DECwindows Motif V1.1 media.

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## Step 13—Software Media and Documentation

VAXstation 4000 Model 96 systems require OpenVMS VAX V5.5-2HW or higher; a media and documentation kit is recommended for the first system on site.

- VAXstation 4000 Model 96 systems include the following Base System license PAKs: OpenVMS VAX operating system and NAS 150 for VAXstations (DECwindows Motif, DECmessageQ RT, ObjectBroker RT, DECnet End Node, DECnet/OSI End System, DEC TCP/IP Client, VMScluster Client)

### OpenVMS VAX and DECwindows Media and Documentation

QA-09SAA-H5	OpenVMS VAX and DECwindows media (TK50) and documentation
QA-09SAA-H8	OpenVMS VAX and DECwindows media (CD-ROM) and documentation
QA-09SAA-GZ	OpenVMS VAX and DECwindows documentation

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**Step 13—Software Media and Documentation (continued)**
**NAS 150 Software**

- QA-36PAA-H5** NAS 150 for VAXstations media (TK50) and documentation (CD-ROM)  
**QA-36PAA-H8** NAS 150 for VAXstations media and documentation on CD-ROM

**DEC PHIGS Runtime License**

Included with SPXg and SPXgt options. Order media and documentation separately.

- QA-VK1AA-H5** DEC PHIGS Runtime for OpenVMS VAX media (TK50) and documentation  
**QA-VK1AA-HM** DEC PHIGS Runtime for OpenVMS VAX media (magtape) and documentation NAS 150 for VAXstations media (magtape) and documentation (CD-ROM)

**DEC SoftPC**

DEC SoftPC, an optional layered product, allows a VAXstation 4000 system to run MS-DOS programs with no added hardware. Order license, media, and documentation.

- QL-YNWAA-3B** DEC SoftPC for OpenVMS VAX single-user license  
**QA-YNWAA-H5** DEC SoftPC for OpenVMS VAX media (TK50)  
**QA-YNWAA-HM** DEC SoftPC for OpenVMS VAX media (magtape)  
**QA-YNWAA-GZ** DEC SoftPC for OpenVMS VAX documentation

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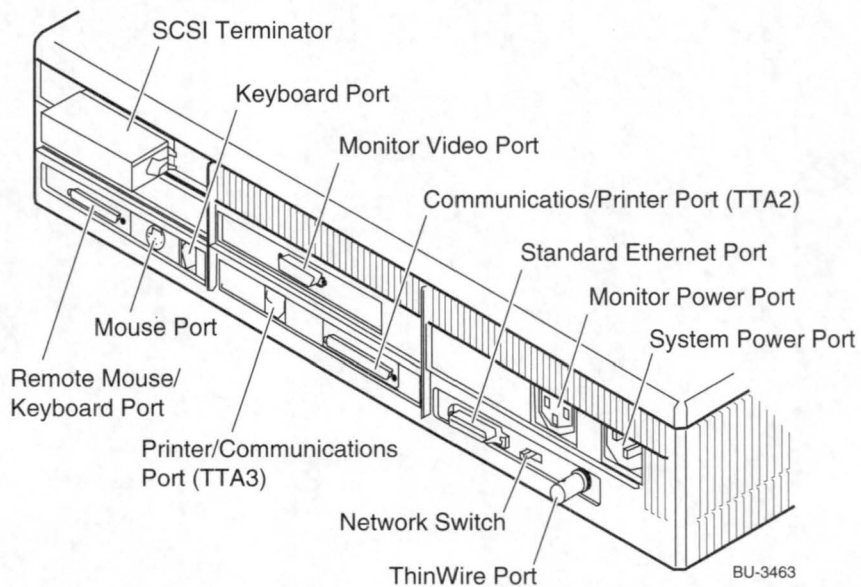
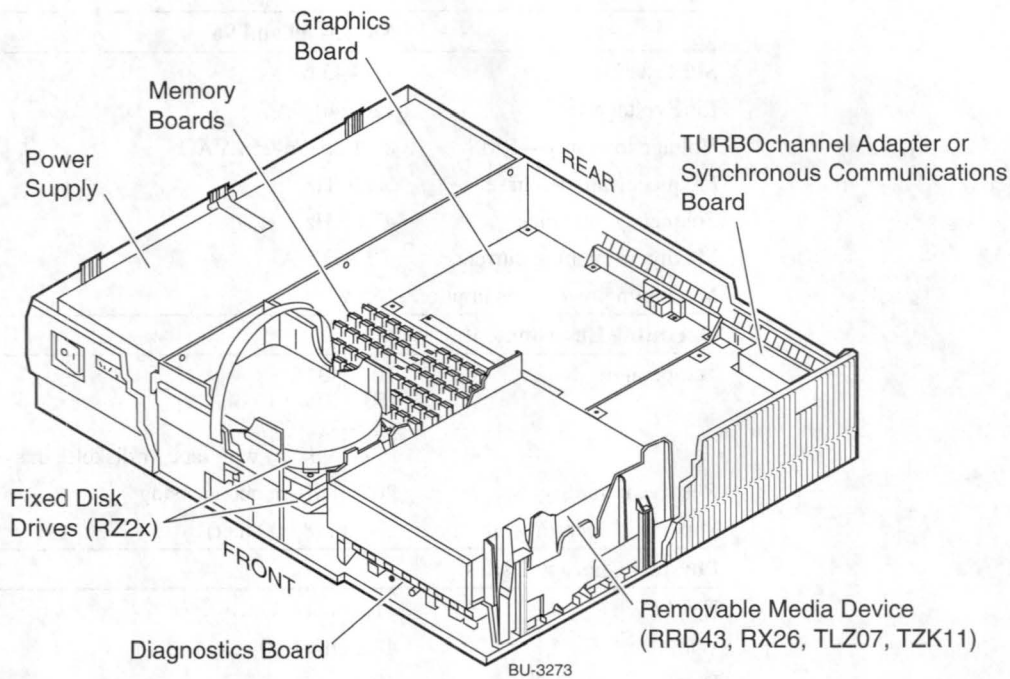


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**Step 14—Country Kits, Power Cords, Keyboards (Not Required for 120 V Systems)**

Country Kit	Power Cord	Keyboard	Country	Language
FCP01-AG	BN19C-2E	LK401-AG	Austria	German/Austrian
FCP01-AB	BN19C-2E	LK401-AB	Belgium	Flemish
FCP01-AD	BN19K-2E	LK401-AD	Denmark	Danish
FCP01-AF	BN19C-2E	LK401-AF	Finland	Suomi
FCP01-AP	BN19C-2E	LK401-AP	France	French
FCP01-AG	BN19C-2E	LK401-AG	Germany	German
FCP01-AH	BN19C-2E	LK401-AH	Holland	Dutch
FCP01-AT	BN18L-2E	LK401-AT	Israel	Hebrew
FCP01-AI	BN19Z-2E	LK401-AI	Italy	Italian
FCP01-AN	BN19C-2E	LK401-AN	Norway	Norwegian
FCP01-AV	BN19C-2E	LK401-AV	Portugal	Portuguese
FCP01-AS	BN19C-2E	LK401-AS	Spain	Spanish
FCP01-AM	BN19C-2E	LK401-AM	Sweden	Swedish
FCP01-AK	BN19E-2E	LK401-AK	Switzerland	French
FCP01-AL	BN19E-2E	LK401-AL	Switzerland	German
FCP01-AE	BN19A-2E	LK401-AA	U.K./Ireland	English
	BN19H-2E	LK401-AA	Australia/NZ	English
	BN19P-1K	LK401-AA	U.S./Canada	English
	BN19P-1K	LK401-AC	Canada	French
	BN19S-2E	LK401-AA	India	English
	BN19P-1K	LK401-CA	China	Chinese
		LK401-AJ	Japan	Katakana
		LK402-AA	WPS keyboard	English
		LK402-AQ	WPS keyboard	French

VAXstation 4000 Models 60 and 96 System Diagram



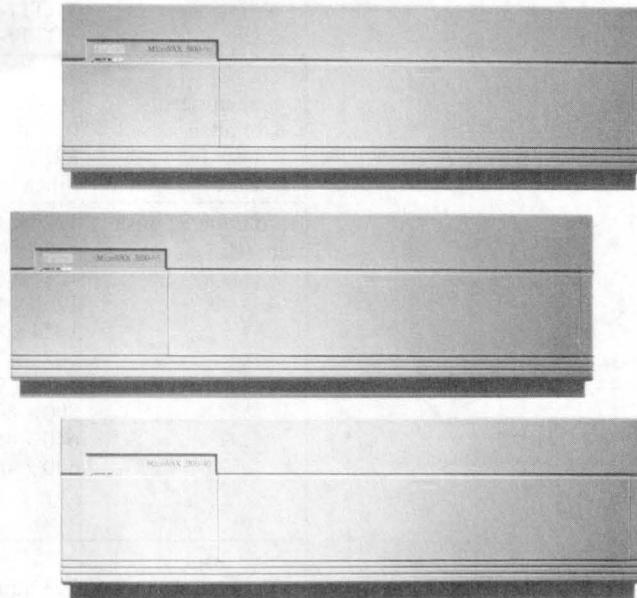
## Specifications

<b>Power Requirements</b>	
	<b>Models 60 and 96</b>
SPECmark89	12.0/45.6
Line voltage	120/240 VAC
Voltage tolerance—RMS	88-132/176-264 VAC
Frequency/single phase	50/60 Hz
Frequency tolerance	47-65 Hz
Maximum running current	6.2 A/3.1 A
Maximum power consumption	465 W
<b>Operating Environment</b>	
Temperature	10 °–40 °C (50 °–104 ° F) or 15 °–32 ° C (59 °–90 ° F) with tape or diskette in system box
Relative humidity	20%–80% noncondensing
Maximum operating altitude	2.4 km (8,000 feet)
<b>Physical Characteristics</b>	
Height	11.3 cm (4.4 in.)
Width	48.2 cm (19.0 in.)
Depth	40.0 cm (15.5 in.)
Weight (diskless)	4.5 kg (10 lb)

Monitor Specifications

Workstation Color Monitors		
Product N.H. S.H.	VRT17-HA/ VRT17-H4	VRC21-HA VRC21-H4
CRT Screen size Dot pitch Phosphor Surface treatment	16 V/17-in. FS 0.26 mm P22 Silica	20 V/21-in. FS 0.31 mm EBU type Conductive AR
Resolution/Refresh Rate (Hz)	1280 x 1024 (75) 1280 x 1024 (72) 1280 x 1024 (66) 1280 x 1024 (60) 1024 x 864 (60) 1024 x 768 (72) 1024 x 768 (70) 800 x 600 (72) 640 x 480 (72) 640 x 480 (60)	1280 x 1024 (72) 1280 x 1024 (66) 1280 x 1024 (60) 1152 x 900 (76) 1152 x 900 (66) 1280 x 512 (140 stereo) 1024 x 864 (60) 1024 x 768 (72) 800 x 600 (72) 800 x 600 (72) 640 x 480 (72) 640 x 480 (60)
Active display Horizontal (max) Vertical (max)	293 mm (11.6 in.) 234 mm (9.2 in.)	356 mm (14.0 in.) 285 mm (15.2 in.)
Connectors Signal Power	BNC (5) IEC receptacle	BNC (5) IEC receptacle
Signal cable for VAXstation	Included with system	Included with system
Power supply AC Auto ranging Consumption	90–132, 180–264 V, 47–63 Hz Yes 140 W maximum	100–120/240V, 47–63 Hz Yes 150 W maximum
Dimensions Height Width Depth	414 mm (16.3 in.) 406 mm (16.0 in.) 450 mm (17.7 in.)	493 mm (19.6 in.) 494 mm (19.6 in.) 543 mm (21.5 in.)
Weight	22.5kg (49.5 lb)	36 kg (79.2 lb)
MPRII low-emission monitor		Yes
FCC/VDE/VCCI Class A Class B	— Yes	— Yes
UL/CSA/TUV	Yes	Yes
DHHS/HWC/PTB	Yes	Yes

## MicroVAX 3100 Systems and Servers



### MicroVAX 3100 Systems and Servers

#### Product Description

MicroVAX 3100 systems offer enhanced distributed computing capabilities and flexibility. They support more than 10,000 commercial and technical applications across local or wide area networks.

MicroVAX 3100 systems offer communications interfaces to support distributed applications. MicroVAX 3100 systems support add-on synchronous options for wide area communications and asynchronous options, including modem options for terminal and printer connections. Networking allows communications in a variety of environments, including DECnet, TCP/IP, OSI, SNA, and X.25.

PC clients based on MS-DOS, OS/2, and Macintosh can be connected to the MicroVAX 3100 system, enabling the entire business to share information. Digital's advanced client/server computing, based on NAS (Network Application Support), delivers a wide range of solutions to help integrate desktop workstations and PCs in an organization.

MicroVAX 3100 systems support synchronous and asynchronous SCSI transmission, providing more balanced and higher performance systems.

The MicroVAX 3100 Model 40 system supports a broad range of computing needs and a large number of users. Additional internal SCSI storage can be added to meet future application needs. The MicroVAX 3100 Model 40 system is board upgradable to MicroVAX 3100 Model 85 and 96 systems.

The MicroVAX 3100 Model 85 and 96 systems offer enhanced Ethernet performance and twice the storage capacity of the Model 40 on an optional SCSI-2 card that provides support for seven additional external SCSI devices. ECC memory can be expanded to 128 Mbytes for additional user and application support.

MicroVAX 3100 systems are designed for sustained reliability and ease of serviceability. Their compact size provides mid-range systems performance at entry-level system prices.

## MicroVAX 3100 Systems and Servers

### MicroVAX 3100 Comparison Chart

	Model 40	Model 85	Model 96
Performance (TPS)	32	110	200e
Enclosures	BA42-B	BA42-B	BA42-B
Mbytes of memory: Included	8	16 or 64	16 or 64
Mbytes of memory: Maximum	32	80 or 128	80 or 128
Storage Devices (internal maximum)	5	5	5
Storage Devices (total internal and external)	7 <sup>1</sup>	14 <sup>2</sup>	14 <sup>2</sup>
Storage Capacity	14.7 Gbytes <sup>3</sup>	29.4 Gbytes <sup>4</sup>	29.4 Gbytes <sup>4</sup>

<sup>1</sup> Maximum two BA353 expansion enclosures can be configured with Model 40.

<sup>2</sup> SCSI card option (KZDDA-xx) supports seven additional external SCSI devices.

<sup>3</sup> Five internal 2.1-Gbyte (RZ28B) disks plus two 2.1-Gbyte disks in BA353 expansion enclosure.

<sup>4</sup> Same as footnote 3, plus SCSI option card (KZDDA) and one BA350-SA expansion shelf with seven 2.1-Gbyte (RZ28B) disks.

### Step 1—Systems

Select system. Note that disk and tape are not included with base systems and must be ordered separately. OpenVMS user licenses may be ordered as needed.

#### MicroVAX 3100 Model 40, 85, and 96 Systems include

- BA42 large enclosure with CPU/FPU
- **Model 40:** 8-Mbyte base memory on CPU, maximum 32-Mbyte parity memory, NAS 200
- **Models 85 and 96:** 64-Mbyte memory in DSIM slot, maximum 128-Mbyte ECC memory, NAS 200
- 802.3/Ethernet interface (ThinWire/thick wire) with terminators
- Ethernet kit; includes ThinWire T-connector with BNC terminators and 15-pin thick wire terminator
- Synchronous SCSI-2 interface for connecting internal and external SCSI devices; external connection via a 50-pin external SCSI-2 connector
- Three DEC-423 asynchronous serial lines (MMJ data leads only)
  - EIA-232 asynchronous serial line with modem control (25-pin D-subminiature connector)
  - H8575-A 25-pin-to-MMJ DEC-423 to EIA-232 adapter
  - 7.6-meter (25-foot) console terminal cable
  - 120 V power cord (country-specific power cord required for 240 V use; see Step 9)
  - Universal power supply that automatically adjusts to 88–132 Vac or 176–264Vac
  - Hardware documentation (QZ-K44AB-GZ for Model 40; QZ-A05AA-GZ for Model 85; QZ-001AA-GZ for Model 96)
  - OpenVMS base license (with POSIX)
  - Factory-installed software\*
  - One-year product warranty (standard warranty recommended)

\* Delivery of the software on a system disk is not warranted. It is provided as a convenience to the customer. Customers are encouraged to purchase the necessary media and documentation kits that include complete installation instructions. See Step 8 for details.

#### Advantage-Server Systems

Order Number	MicroVAX 3100	Memory	NAS Software	Disk Drive	CD-ROM
DV-31GCB-CA	Model 40	16 Mbyte	NAS 200	RZ26L (1.05 GB)	RRD43 (600 MB)
DV-31JCB-EA	Model 85	64 Mbyte	NAS 200	RZ26L (1.05 GB)	RRD43 (600 MB)
DV-31SCA-EA	Model 96	64 Mbyte	NAS 200	RZ26L (1.05 GB)	RRD43 (600 MB)

**Note:** NAS 200 software includes DECnet, TCP/IP, PATHWORKS, Polycenter Software Distribution Client, DECwindows Motif, ObjectBroker, DECmessageQ, and DECprint

#### OpenVMS Base Servers

Order Number	MicroVAX 3100	Memory	NAS Software
DV-31GAB-B9	Model 40	8 Mbytes	NAS 200

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## Step 2—Storage

Select storage devices as required. See Chapter 8, *Storage Devices*, for further details.

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### Step 2a—Internal Storage

#### Configuration Rules

- System supports maximum of five internal drives in any one of the following combinations:
  - Five RZ2x half-height disk drives, or
  - Four RZ2x half-height disk drives and one removable media device
  - Three RZ2x half-height disk drives and two removable media devices (RX26, RRD43, TLZ07, or TZK11)
- One factory-installed RZ26L or RZ28B is required for factory-installed software.
- Order a load device (TLZ07) if necessary
- OpenVMS Cluster satellite members or systems being loaded over the network do not require a load device.
- Field-installed options require Customer Services installation.

#### Removable Media Devices

**RRD43-EN/EK** 600-Mbyte CD-ROM drive for Models 40, 85, and 96 systems; factory/field installed

**RX26 -EN/EL** 2.8-Mbyte diskette drive; factory/field installed

**TLZ07-HF/HG** 8.0-Gbyte 4-mm 3.5-inch DAT drive

**TZK11-HF/HG** 2-Gbyte cartridge (QIC) tape drive; factory/field installed

#### Fixed Disk Drives

**RZ26L-EN/EK** 1.0-Gbyte, 3.5-inch, half-height disk drive

**RZ28B-EN/EK** 2.1-Gbyte, 3.5-inch, half-height disk drive

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### Step 2b—External Storage

#### Configuration Rules

- Model 40:
  - Maximum seven SCSI-2 devices
  - Maximum two BA353 expansion boxes or one BA350-SA StorageWorks expansion shelf
- Models 85 and 96:
  - Maximum 14 SCSI devices; with additional SCSI card option

Use the following table to calculate external SCSI bus length.

Maximum SCSI Bus Length	Model 40	Models 85 and 96
Internal	2 m (78.7 inches)	2.25 m (88.6 inches)
External	4 m (157.4 inches)	3.75 m (148.0 inches)
KZDDA internal	N/A	0.73 m (29.0 inches)
KZDDA external	N/A	5.27 m (207.5 inches)

External Enclosure	External Cable Length
<b>SZ12</b>	0.6 m (24 inches)
<b>RRD43</b>	0.45 m (18 inches)
<b>TK50Z</b>	0.45 m (18 inches)
<b>TLZ06</b>	0.91 m (36 inches)
<b>TZ85</b>	0.28 m (11 inches)
<b>TLZ6L</b>	0.91 m (36 inches) or 1.82 m (72 inches)
<b>BA353</b>	1.82 m (72 inches)
<b>BA350</b>	1.82 m (72 inches)

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Step 2b—External Storage (*continued*)

<b>KZDDA-AA/AF</b>	SCSI controller card supports seven additional external SCSI devices, factory/field installed (Models 85 and 96 only)
<b>TK50Z-GA/G3*</b>	95-Mbyte, 5.25-inch tabletop streaming cartridge tape drive; 120 V/240 V
<b>RRD43-FA/DG*</b>	600-Mbyte, 5.25-inch tabletop CD-ROM drive; 120 V/240 V
<b>TLZ07-FA*</b>	8.0-Gbyte, 3.5-inch tabletop DAT drive with universal power supply; includes 120 V power cord
<b>TSZ07-CA*</b>	140-Mbyte, 1600/6250-bit-inch SCSI 9-track tape with universal power supply; requires TSZK7-xx country kit; see January 1995, <i>Digital Systems and Options Catalog</i> , Chapter 8, <i>Storage Devices</i> , for details.
<b>TZ86-TA*</b>	6.0-Gbyte, 5.25-inch tabletop tape drive; requires BC06P cable
<b>BC06P-2F</b>	TZ8x cable, 2.5 ft (0.8 m)
<b>BC06P-06</b>	TZ8x cable, 6 ft (1.8 m)
<b>BC06P-09</b>	TZ8x cable, 9 ft (2.7 m)

**StorageWorks Desktop Expansion Box (BA353)**

BA353 supports three 3.5-inch, half-height or two 3.5-inch, half-height and one 5.25-inch half-height drive. 120 V power cord included; order country specific power cord for 240 V use. Requires SCSI cable (BC09D-xx).

<b>BA353-AA*</b>	StorageWorks desktop expansion box
<b>BA353-AE*</b>	StorageWorks desktop expansion box with one RRD43 5.25-inch, half-height CD-ROM drive

\* Country-specific power cord required for 240 V use.

SCSI devices may be purchased separately and are customer installable.

<b>RZ26L-VA</b>	1.0-Gbyte, 3.5-inch, half-height disk drive
<b>RZ28B-VA</b>	2.1-Gbyte, 3.5-inch, half-height disk drive
<b>TLZ07-VA</b>	8.0-Gbyte, 3.5-inch, half-height 4-mm DAT drive
<b>TLZ6L-VA</b>	4.0-Gbyte 3.5-inch, half-height 4-mm DAT drive with snap in carrier
<b>TZK11-VA</b>	2.0-Gbyte 5.25-inch QIC tape with snap in carrier

Refer to January 1995, *Digital Systems and Options Catalog*, Chapter 8, *Storage Devices*, for additional BA35x expansion information.

**StorageWorks Deskside Expansion Unit (BA350)**

<b>BA350-SB†</b>	StorageWorks single-height shelf, configured for seven 3.5-inch devices, or four 3.5-inch devices and one 5.25-inch full-height device, or one 3.5-inch device and two 5.25-inch full-height devices. Supported devices are RZ26L-VA, RZ28B-VA, TLZ07-VA, TLZ6L-VA, TZK11-VA. See Chapter 8, <i>Storage Devices</i> , for details.
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† One BA350-SB expansion unit is supported per single ended SCSI bus; no other external device can be connected to system with BA350-SB unit.

**Step 3—Memory****Model 40**

Systems include 8 Mbytes of base memory on CPU; systems support maximum 32-Mbyte parity memory.

<b>MS44L-BA</b>	8 Mbytes parity memory modules for Model 40
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**Model 85 and 96**

Systems include 64-Mbyte base memory in first DSIM slot; systems support maximum 128 Mbytes of ECC memory.

<b>MS44L-BC</b>	16 Mbytes ECC memory modules for Models 85 and 96
<b>MS44-DC</b>	64 Mbytes ECC memory modules for Models 85 and 96

**Step 3—Memory (continued)****MicroVAX 3100 Memory Configuration Chart**

Required Memory	Model 40 (8 Mbyte systems)	Models 85 and 96 (64 Mbyte systems)
16 Mbytes	1 x MS44L-BA	N/A
24 Mbytes	2 x MS44L-BA	N/A
32 Mbytes	3 x MS44L-BA	N/A
40 Mbytes	N/A	N/A
48 Mbytes	N/A	N/A
72 Mbytes	N/A	N/A
80 Mbytes	N/A	1 x MS44L-BC
128 Mbytes	N/A	1 x MS44-DC

**Step 4—Networks and Communications**

Select devices as required. Systems support one asynchronous and one synchronous communication option. An 8-line DEC-423 to 16-line DEC-423 upgrade option is available for the MicroVAX 3100 Models 40/85/96. See Chapter 7, *Networks, Communications, and Cables*, and the *Network Products Guide* for more information.

**Host-Based Communications Controllers**

Select host-based communications controllers for standalone systems (without LAN connectivity), or for other requirements.

**Asynchronous Multiplexer Options**

Select **one** asynchronous multiplexer for communications expansion

<b>DHW42-AA</b>	Provides eight DEC-423 lines for a system total of 12 asynchronous lines (11 data only and one with modem control). Includes internal logic module with cable, DEC-423 I/O assembly, external 36-pin BC16C-10 3-m (10-ft) cable, and H3104-00 eight-line distribution harmonica; factory or field installed.
<b>DHW42-CA</b>	Provides eight EIA-232 lines for a system total of 12 asynchronous lines (three data only and nine with modem control). Includes internal logic module with cable, EIA-232 I/O assembly, and two external 50-pin to 4-way 25-pin BC29J-06 1.8-m (6-ft) cables; factory or field installed.
<b>DHW42-BA</b>	Provides 16 DEC-423 lines for a system total of 20 asynchronous lines (19 data only and one with modem control). Includes internal logic module with cable, DEC-423 I/O assembly, two external 36-pin BC16C-10 3-m (10-ft) cables, and two H3104-00 eight-line distribution harmonica; factory or field installed.
<b>DHW42-UP</b>	Upgrades DHW42-AA to DHW42-BA; field installed only.

**Note:** Addition of DHW4x options increases number of users; an OpenVMS license upgrade may be required.

**Synchronous Communications Options**

- Select **one** synchronous option
- EIA-232/V.24 cable (BC19D-02) is included—select alternate cables for EIA-423/V.10 and EIA-422/V.11 connection
- Synchronous communication option requires VAX WAN Device Driver V1.2 or higher required. VAX WAN Device Driver media included in OpenVMS Consolidated Software Disk CD-ROM media. See Step 8 for details.

<b>DSW42-AA</b>	EIA-232 synchronous controller provides two lines). Includes synchronous logic module, I/O assembly, and external EIA-232 0.6-m (2-ft) adapter cable
<b>BC19B-02</b>	EIA-422/V.11 0.6-m (2-ft) adapter cable
<b>BC19E-02</b>	EIA-423/V.10 0.6-m (2-ft) adapter cable
<b>QL-VAWA9-AA</b>	One-time single-user VAX WAN Device Driver license for use of synchronous port
<b>QA-VAWAA-H5</b>	VAX WAN Device Drivers media (TK50) and documentation

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## Step 4—Networks and Communications (*continued*)

### LAN Communications Controller

802.3/Ethernet Interface (ThinWire/thick wire selectable) included with system. Connection of system to Ethernet requires a ThinWire BNC connection (e.g., BC16M cable) or a thick wire 15-pin AUI transceiver cable (e.g., BNE3x).

### Local and Wide Area Communications Servers

Each communications server requires an 802.3/Ethernet connection. Depending on the server selected, either a ThinWire BNC connection (e.g., BC16M cable) or a thick wire 15-pin AUI transceiver cable is required (e.g., BNE3x). Software media and documentation and cables are also required. See description in Chapter 7, *Networks, Communications, and Cables*, for ordering information.

### DECserver 90M, 90TL, 900TM, 90L+, 700, and MUXserver 90, 320, 380 Communications and Printer Servers

Select a terminal or printer server to provide users with multiple session access to systems on a LAN, to minimize on a LAN, to minimize cabling complexity and costs, and to conserve host resources such as backplane slots.

### DEC WANrouter 90, 250, DECbrouter 90; and DECnis 500, 600 MultiProtocol Routers

Select a router to cost-effectively link a LAN to a remote system or another LAN and to offload routing overhead from the application host system.

### InfoServer 1000 Network Storage Server

To provide initial system load (ISL) capabilities order InfoServer Local Area Compact Disk. Other configurations are offered for tape/backup and for serving more CD-ROMs. InfoServer systems support CD-ROM, hard drives, magneto-optical and tape drives. InfoServer 1000 systems can serve up to seven SCSI devices. See descriptions in Chapter 8, *Storage Devices*, for ordering information.

### Network Connectivity Products

See Chapter 7, *Networks, Communications, and Cables*, and the *Network Products Guide*.

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## Step 5—Console Terminal

A console device is necessary for a system to function. Console cable included with system. Order video terminals (e.g., VT420) for each system unless otherwise available. If logging is required, a combination of video terminal and LA75 is recommended. See Chapter 9, *Terminals, Scanners, Printers*, for ordering information.

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## Step 6—Terminals and Printers

Select terminals and serial printers as required. Serial printers connect to an asynchronous line. A cable (e.g., BC16E-25) must be ordered with each unless otherwise provided. See Chapter 9, *Terminals, Scanners, Printers*, for ordering information.

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## Step 7—CPU Upgrade

CPU upgrade for MicroVAX 3100 Models 40 and 80 include 64-Mbytes ECC memory and OpenVMS base license.

**31JXR-AA** CPU Upgrade: MicroVAX 3100 Model 40 or 80 to MicroVAX 3100 Model 85

CPU upgrade for MicroVAX 3100 Models 40, 85 and 95 include 64-Mbytes ECC memory and OpenVMS base license.

**49GAX-E9** CPU Upgrade: MicroVAX 3100 Model 40 to MicroVAX 3100 Model 96

**49JAX-E9** CPU Upgrade: MicroVAX 3100 Model 85 to MicroVAX 3100 Model 96

**49XR-AA** CPU Upgrade: MicroVAX 3100 Model 95 to MicroVAX 3100 Model 96

Refer to the *ADVANTAGE-UPGRADES* section for MicroVAX 3100 system upgrade ordering information.

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## Step 8—Software

Licenses required to support additional users beyond those included in base systems.

Operating System support for Model 40 requires V5.5 or higher; Model 85 and 96 require V5.5-2H4 or higher

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Software Processor Code	MicroVAX 3100 = <b>B</b>
Clusterwide License Rating	MicroVAX 3100 = <b>20</b> (C)

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### OpenVMS VAX Interactive User Licenses

OpenVMS VAX Interactive User licenses are for customers running **OpenVMS VAX V5.5 or greater**. OpenVMS VAX Interactive User licenses **are** specific to a single system and **cannot** be shared across an OpenVMS Cluster.

<b>QL-XULA9-BB</b>	OpenVMS VAX Interactive 1-user license
<b>QL-XULA9-BC</b>	OpenVMS VAX Interactive 2-user license
<b>QL-XULA9-BD</b>	OpenVMS VAX Interactive 4-user license
<b>QL-XULA9-BE</b>	OpenVMS VAX Interactive 8-user license
<b>QL-XULA9-BF</b>	OpenVMS VAX Interactive 16-user license
<b>QL-XULA9-BG</b>	OpenVMS VAX Interactive 32-user license
<b>QL-XULA9-BH</b>	OpenVMS VAX Interactive 64-user license
<b>QL-XULAA-BR</b>	OpenVMS VAX Interactive 128-user license
<b>QL-XULAB-BR</b>	OpenVMS VAX Interactive 256-user license

### OpenVMS VAX Distributed Interactive User Licenses

OpenVMS VAX Distributed Interactive User licenses are for customers running **OpenVMS VAX Version 6.0 or greater**. OpenVMS VAX Distributed Interactive User licenses are **not** specific to a single system and can be moved between systems at user discretion. OpenVMS VAX Distributed Interactive User licenses can also be shared across an entire OpenVMS Cluster running OpenVMS VAX V6.0 or greater.

**Note:** OpenVMS VAX Distributed Interactive User licenses are architecture specific and **cannot** be shared across a **mixed** OpenVMS Cluster (OpenVMS VAX and OpenVMS AXP systems).

<b>QL-09SA9-BB</b>	OpenVMS VAX Distributed Interactive 1-user license
<b>QL-09SA9-BC</b>	OpenVMS VAX Distributed Interactive 2-user license
<b>QL-09SA9-BD</b>	OpenVMS VAX Distributed Interactive 4-user license
<b>QL-09SA9-BE</b>	OpenVMS VAX Distributed Interactive 8-user license
<b>QL-09SA9-BF</b>	OpenVMS VAX Distributed Interactive 16-user license
<b>QL-09SA9-BG</b>	OpenVMS VAX Distributed Interactive 32-user license
<b>QL-09SA9-BH</b>	OpenVMS VAX Distributed Interactive 64-user license
<b>QL-09SAA-BR</b>	OpenVMS VAX Distributed Interactive 128-user license
<b>QL-09SAB-BR</b>	OpenVMS VAX Distributed Interactive 256-user license

**QL-VBRAP-AA** VAXcluster license for multiuser systems

### OpenVMS VAX Media and Documentation

Choose operating system media and documentation. Recommended for first system on site. Operating System support for Model 40 requires V5.5 or higher; Model 85 and 96 require V5.5-2H4 or higher.

<b>QA-001AA-Hx</b>	OpenVMS media with extended documentation.
<b>QA-09SAA-Hx</b>	OpenVMS media with base documentation.

**Note:** x denotes the media type: 5 = TK50, 8 = CD-ROM

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**Step 8—Software** (*continued*)**OpenVMS Consolidated Software Media and Documentation**

Choose as an alternative to the above OpenVMS kits. Requires RRD43 CD-ROM.

- |                    |   |
|--------------------|---|
| <b>QA-VWJ8A-A8</b> | OpenVMS and layered product binaries on CD-ROM without hardcopy documentation.  |
| <b>QA-VYR8A-G8</b> | OpenVMS extended online documentation and layered product online documentation on CD-ROM; requires DECwindows Bookreader. |
| <b>QA-358AA-Hx</b> | Rdb/VMS Runtime media and documentation   |
| <b>QA-GXXAA-Hx</b> | POSIX media and documentation (with IEEE documentation)   |
| <b>QA-GXXAB-Hx</b> | POSIX media and documentation (without IEEE documentation)  |

**NAS Licenses**

NAS packaged products do not include hardcopy documentation, (documentation is CD-ROM only).

- |                    |   |
|--------------------|---|
| <b>QL-MC1A*-AA</b> | NAS 200 license for OpenVMS VAX systems |
| <b>QA-MC1AA-Hx</b> | NAS 200 media and documentation kit     |

**Note:** \* denotes processor code; x denotes media type: 8 = CD-ROM, 5 = TK50, M = magtape

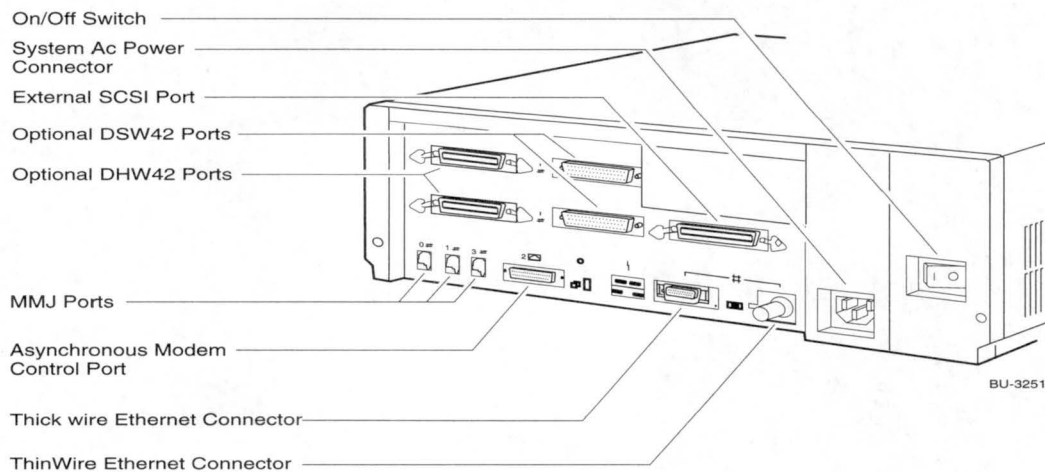
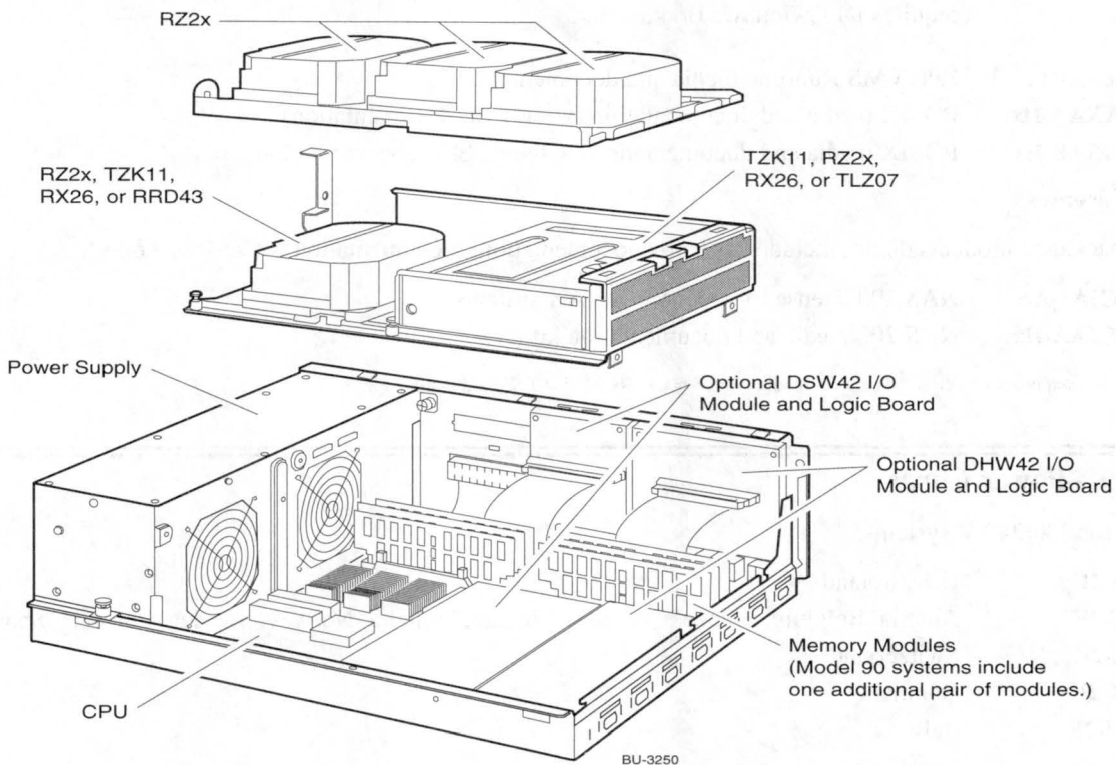
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**Step 9—Power Cords**

Select for 220/240 V systems.

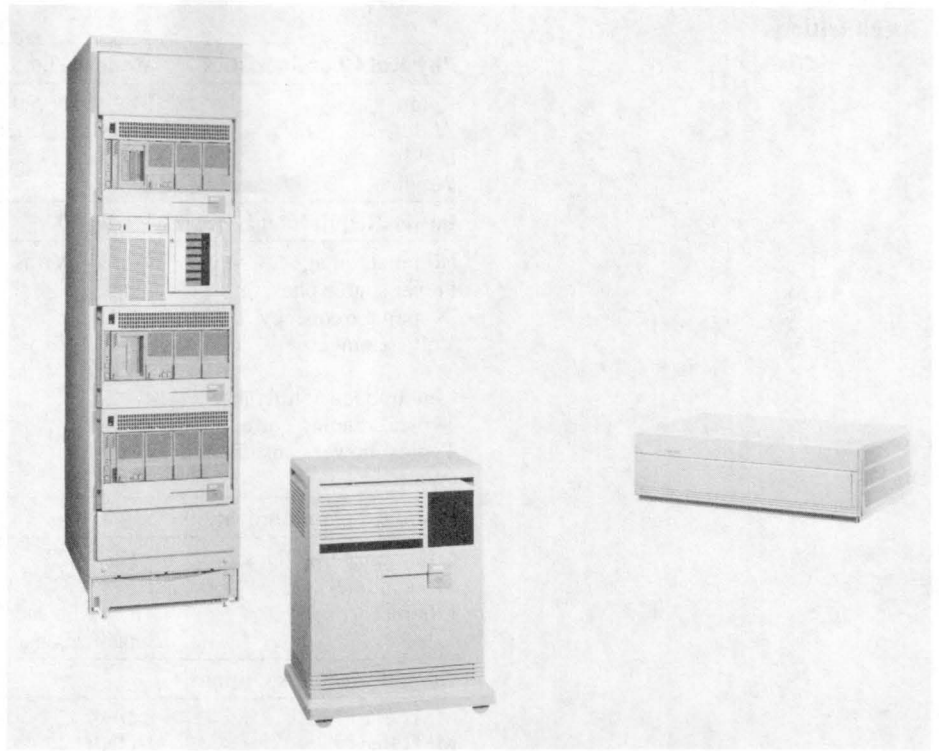
- |                 |   |
|-----------------|---|
| <b>BN19A-2E</b> | U.K./Ireland  |
| <b>BN19C-2E</b> | Austria, Belgium, France, Germany, Finland, Holland, Norway, Sweden, Portugal, Spain, and Chile |
| <b>BN19E-2E</b> | Switzerland   |
| <b>BN19K-2E</b> | Denmark   |
| <b>BN19M-2E</b> | Italy   |
| <b>BN19U-2E</b> | Israel  |
| <b>BN19S-2E</b> | India   |
| <b>BN19H-2E</b> | Australia, New Zealand  |



Specifications

<b>Physical Characteristics</b>		<b>Models 40, 85, 96</b>	
Height	14.99 cm ( 5.90 inches)		
Width	46.38 cm (18.26 inches)		
Depth	40.00 cm (15.75 inches)		
Weight	16.0 kg (36.85 lb)		
<b>Power Requirements</b>		<b>Model 40</b>	<b>Models 85/96</b>
Nominal voltage	120/240 Vrms		120/240 Vrms
Power source phasing	Single		Single
Nominal frequency	50–60 Hz		50–60 Hz
Voltage range	88–132 Vrms		88–132 Vrms
	176–264 Vrms		176–264 Vrms
Line frequency tolerance	47–63 Hz		47–63 Hz
Typical running current	1.1/0.6 A		1.5/0.75 A
Typical power consumption (Watts)	132/144		180/40
<b>Standard Communication</b>			
Minimum MMJ lines	3 DEC-423		3 DEC-423
Modem lines	1 EIA-232		1 EIA-232
Ethernet	Thick wire and ThinWire supported on all models		
<b>Communications Options<sup>1</sup></b>			
MMJ lines	8 DEC-423		8 DEC-423
MMJ lines	16 DEC-423		16 DEC-423
Modem lines	8 EIA-232		8 EIA-232
Synchronous lines	2 synchronous		2 synchronous
<b>Operating Environment</b>		Temperature (sea level) 10-40°C (50-90°F) Relative humidity 10%–80% noncondensing; 20% to 80% if tape drive is present. Maximum operating altitude 2.4 km (8,000 ft)	

<sup>1</sup> DEC-423, EIA-232 and synchronous lines can be ordered separately. The DEC-423 and EIA-232 options cannot be configured together in the same system. An 8-line DEC-423 to 16-line DEC-423 upgrade option is available for the MicroVAX 3100 Model 40.



## VAX 4000 Systems and Servers

### Product Description

VAX 4000 systems provide commercial systems performance, high availability, and a compact footprint. They support a wide range of applications and options, including Token Ring networks and Q-bus peripherals. VAX 4000 systems offer investment protection through board upgrades, memory and storage expansion, and the ability to create DSSI OpenVMS Cluster systems.

DSSI and Ethernet adapter chips—each driven by a 10-MIP on-chip RISC processor—are tightly integrated on the CPU module and have direct access to memory. Digital's DSSI disk technology offers dedicated cache and an embedded controller on each disk, enabling linear I/O performance as disks are added to the system.

The VAX 4000 Model 106A is a follow-on product to the VAX 4000 Model 105A, offering 20% more performance with a 10-ns NVAX chip. Systems achieve 215 transactions per second (TPS). With external support for connecting to the HSD05, a DSSI-to-SCSI converter, VAX 4000 customers can expand their storage options to access SCSI disks and tapes in open StorageWorks configurations.

VAX 4000 systems are also available in rackmount models. Rackmount systems offer the opportunity to start with a single system in a rackmount chassis and add systems, storage, and other options vertically in a single 19-inch-wide rackmount cabinet to a two- or three-system DSSI OpenVMS Cluster configuration. Three VAX 4000 Model 705A systems with nearly unlimited disk and tape configurations can be housed in 4.5 square feet of floor space.

A DSSI OpenVMS Cluster system provides high data and system availability by joining Q-bus VAX 4000, VAX 6000, and VAX 7000 systems via DSSI. Each system can access and share all disks attached to the DSSI buses; this provides multiple paths to the data. Should one system in a DSSI OpenVMS Cluster configuration fail, data is available to serve systems via the other paths, and all I/O operations can resume immediately. No application rewrite is required across high-availability options, and systems can be expanded without disruption to existing operations.

Multi-host DSSI OpenVMS Cluster systems are commonly used as boot nodes for local area OpenVMS Cluster systems, or as multiuser systems with terminal servers. Packaged DSSI OpenVMS Cluster systems are available. Refer to system ordering menus for ordering information.

VAX 4000 Comparison Chart

	Model 106A(BA42B)	Model 505A(BA440)	Model 705A(BA440)
Minimum supported version of OpenVMS	5.5-2H4 / 6.1	5.5-2H4 / 6.1	5.5-2H4 / 6.1
Performance (TPS)	215	200	280
Maximum memory	128 Mbytes	512 Mbytes	512 Mbytes
Maximum storage (Note 5)			
System enclosure (internal)	5 Gbytes	14 Gbytes	14 Gbytes
Expansion pedestal (external)	70 Gbytes	136 Gbytes	136 Gbytes
Total	75 Gbytes	500 Gbytes	500 Gbytes
Maximum disk I/O throughput per embedded DSSI bus	1200 I/Os per second 1 standard 1 optional	1200 I/Os per second 2 standard 2 optional	1200 I/Os per second 2 standard 2 optional
Q-bus slots available	N/A <sup>3</sup>	7	7
Maximum possible Q-bus slots (with B400X expansion pedestals)	11	17	17
Maximum Tape Configurations:			
TF85	2 <sup>3</sup>	8 <sup>4</sup>	8 <sup>4</sup>
TF86	2 <sup>3</sup>	8 <sup>4</sup>	8 <sup>4</sup>
TLZ06	2	4 <sup>2</sup>	4 <sup>2</sup>
TK70	1 <sup>3</sup>	2 <sup>1</sup>	2 <sup>1</sup>
TK50	1 <sup>3</sup>	2 <sup>1</sup>	2 <sup>1</sup>
TSV05	1 <sup>3</sup>	1 <sup>3</sup>	1 <sup>3</sup>
TSZ07	1 <sup>3</sup>	2 <sup>5</sup>	2 <sup>5</sup>

1 One TK70/TK50 in BA4xx (system enclosure), one in B400X.

2 Supported in tabletop model only.

3 In separate cabinet or enclosure.

4 Maximum two per DSSI bus.

5 One per KZQSA adapter.

The following chart lists tape and CD-ROM devices that can be used as boot<sup>1</sup> and load<sup>2</sup> devices:

Device	Model 106A (BA42B)	Model 505A (BA440)	Model 705A (BA440)
InfoServer 150 <sup>3</sup>	Load	Load	Load
RRD43	Boot/Load	Boot/Load	Boot/Load
RWZ01 <sup>4</sup>	Boot	Boot	Boot
TF85/TF86 <sup>6</sup>	Boot/Load	Boot/Load	Boot/Load
TK50E	Boot/Load	Boot/Load	Boot/Load
TK70E	Boot/Load	Boot/Load	Boot/Load
TLZ06	Boot	Boot	Boot
TSV05	Load <sup>5</sup>	Load <sup>5</sup>	Load <sup>5</sup>
TSZ07	Load <sup>5</sup>	Load <sup>5</sup>	Load <sup>5</sup>
TZ30	Boot/Load	N/A	N/A
TZK10	Boot/Load	N/A	N/A
TZ8x	Boot/Load	Boot/Load	Boot/Load

1 A "boot" device is defined as a device that is supported by both the hardware system's VMB bootstrap facility (console level "BOOT" command) and the OpenVMS operating system STABACKIT utility.

2 A "load" device is defined as a device that supports the media on which Digital distributes software.

3 Attaches directly to the network for simultaneous shared access. OpenVMS V5.5-2H4 supports Initial System Software Load (ISL) for MicroVAX 3xxx, VAX 4000, and VAX 6000 systems.

4 Model 106A: supported as boot device when connected to embedded SCSI adapter. Models 505A/705A: supported as boot device when connected to first KZQSA adapter on the Q-bus.

5 Requires a TK50-compatible tape drive unit in order to support the initial loading of OpenVMS operating system from magtape media. The TK50 media contains a bootable image to install the magtape contents of the consolidated OpenVMS kit, i.e., QA-001AG-HM or QA-09SAG-HM.

6 OpenVMS V5.5-2H4 operating system does not support standalone backup utility for TF86. OpenVMS V6.1 supports this utility.

## Step 1—VAX 4000 Model 106A Systems

Select system.

- VAX 4000 Model 106A systems require OpenVMS V5.5-2H or V6.1. To operate systems in an existing cluster environment, the cluster system disk must be updated.
- Systems ordered with one disk include factory-installed software\* (OpenVMS V6.1). Media and documentation is recommended for the first system on site. Media and documentation for OpenVMS V 5.5-2H4 is included with each system.
- Systems include 120 V power cord (220 V/240 V devices require a country-specific power cord; see Step 9)
- Select OpenVMS user licenses if required from Step 8

\*FIS is not a substitute for software media and documentation; see Step 8

### ADVANTAG SERVER Systems include

- CPU with single or dual DSSI controller, 802.3/Ethernet (ThinWire/thick wire) controller
- BA42B tabletop enclosure with:
  - Three DSSI slots for RF3x drives
  - Synchronous SCSI controller
  - Two SCSI slots for removable media devices
  - Q-bus port
  - Universal power supply that automatically adjusts to 88–132 Vac or 176–264 Vac
  - Three DEC-423 asynchronous serial lines (MMJ data leads only)
  - H8575-A 25-pin-to-MMJ DEC-423-to-EIA-232 adapter
- 7.6-meter (25-foot) console terminal cable
- One full-year product warranty (standard warranty recommended)
- Hardware documentation
- 64-Mbyte memory
- 600 Mbyte CD-ROM (RRD43-EN) drive
- 1.6 Gbyte DSSI (RF36-EN) disk drive
- OpenVMS base license
- NAS 200 software license (DECnet, TCP/IP, PATHWORKS, Polycenter Software Distribution Client; DECwindows Motif, ObjectBroker, DECMessageQ, DECPrint)
- *DSSI VMScluster Installation and Troubleshooting Guide* (EK-410AB-MG)

Order Number	Memory	DSSI Controller	RF36 = 1.6 GB*	RRD43- = 600 Mbytes
DV-416CB-E9	64 Mbytes	Dual-DSSI	1.6 Gbytes	600 Mbyte

## Step 2—Memory

ADVANTAGE SERVER systems include 64 Mbytes of memory. Select additional memory if required; 64-Mbyte systems can be expanded to 80 or 128 Mbytes.

MS44L-BC	16 Mbytes of memory (4 x 4-Mbyte DSIM modules)
MS44-DC	64 Mbytes of memory (4 x 16-Mbyte DSIM modules)

## Step 3—Storage

### Configuration Rules

Select storage devices if required. Field-installed options require Customer Services installation.

- Single systems support seven ISEs per DSSI adapter; two-system DSSI OpenVMS Cluster configurations support six DSSI ISEs and can be connected between any pair of DSSI adapters (one adapter in each system).
- Order load device if required—OpenVMS Cluster satellite members or systems being loaded over the network do not require a load device.
- Systems ordered with one DSSI disk (ISE) include factory installed software.

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**Step 3a—Storage Controllers**

Four Q-bus storage adapters are supported per CPU in a Q-bus enclosure; two DSSI (KFQSAs), two SDI (KDA50s), or one of each plus up to two SCSI (KZQSAs)

<b>KFQSA-SE/SG</b>	Q-bus-to-DSSI adapter. Uses one Q-bus slot (in B400X expansion pedestal); factory/field installed.
<b>KDA50-SE/SG</b>	Q-bus-to-SDI adapter. Uses three Q-bus slots (in B400X expansion pedestal); factory/field installed. Supports four external RA-disk drives (except RA70/RA71). Refer to Chapter 8, <i>Storage Devices</i> , for RA-disk descriptions and ordering information.
<b>KZQSA-SA/SF</b>	Q-bus-to-SCSI adapter. Uses one Q-bus slot (in B400X expansion pedestal). Supports two SCSI devices (RWZ01, TSZ07, TLZ06, TZ8x, RRD43) in tabletop enclosure.

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**Step 3b—Internal Storage**

- System enclosure supports up to three 3.5-inch DSSI ISEs (RF36) on top tray and two 5.25-inch SCSI removable media devices (TLZ07, TZ30, TZK11, RX26, RRD43) on bottom tray.
- SCSI hard disk drives are supported in two bottom trays. DSSI ISEs and SCSI hard disks must not exceed maximum of three hard disks.

**DSSI Integrated Storage Elements (ISE)**

**RF36-EN/EK** 1.6-Gbyte 3.5-inch full-height embedded DSSI disk drive; factory/field installed

**SCSI Removable Media Devices**

**RX26-EN/EL** 2.8-Mbyte diskette drive; factory/field installed  
**RRD43-EN/EK** 600-Mbyte CD-ROM drive; factory/field installed  
**TLZ07-HF/HG** 8.0-Gbyte DAT drive; factory/field installed  
**TZK11-HF/HG** 2.0-Gbyte quarter-inch cartridge (QIC) tape drive; factory/field installed

**SCSI Fixed Disk Drives**

**RZ26L-EN/EK** 1.0-Gbyte 3.5-inch x 1.0-inch embedded disk drive, factory/field installed  
**RZ28-EN/EK** 2.1-Gbyte 3.5-inch half-height embedded disk drive, factory/field installed

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**Step 3c—DSSI External Expansion**

- One Q-bus expansion pedestal (B400X) supported per CPU
- One TKxx tape drive supported in a B400X expansion pedestal
- Two TF8x tape drives supported per DSSI bus

Refer to Chapter 6, *High Availability and High Performance Products*, for DSSI OpenVMS Cluster configuration rules

**B400X and R400X Expansion Pedestals include**

- Q-bus extender modules and two 2.7-meter (9-foot) cables (B400X only)
- 2.7-meter (9-foot) DSSI cable (BC21M-09)
- 1.8-meter (6-foot) KZQSA cable (BC06P-06)
- 3.0-meter (10-foot) power control cable (BC09F-10)
- Universal power supply
- 120 V power cord

**B400X-B9** Provides ten additional Q-bus slots and supports four RF362 disk drives, or three RF362 disk drives and one TKxx or TF8x tape drive; factory/field installed

**R400X-B9** Supports five RF362 disk drives maximum, or four RF362 disk drives maximum and one TF8x tape drive; factory/field installed

Step 3c—DSSI External Expansion (*continued*)**DSSI Storage Devices for B400X or R400X Pedestals**

<b>RF36E-AA/AF</b>	1.6-Gbyte ISE in full-height assembly, expandable to two ISEs; factory/field installed
<b>RF362-AA/AF</b>	Two 1.6-Gbyte ISEs in full-height assembly; factory/field installed
<b>TF86E-JA/JF*</b>	6.0-Gbyte embedded cartridge tape drive; factory/field installed. Also available as a tabletop option. Refer to Chapter 8, <i>Storage Devices</i> , for ordering information.

\* OpenVMS V6.1 supports standalone backup. Standalone backup not supported on OpenVMS V5.5-2H4.

**DSSI External Storage Devices**

<b>SF10X</b>	DSSI Storage Array Pedestal. Refer to Chapter 8, <i>Storage Devices</i> , for ordering information.
<b>SF12-CA</b>	DSSI expansion pedestal with one RF36 (1.6-Gbyte) disk SF12 supports four 3.5-inch DSSI disks; includes 9-foot DSSI cable (BC21M-09).
<b>BA46X-AA</b>	Optional floor stand for SF12 expansion pedestal
<b>SF400</b>	DSSI DECarray storage subsystem. Refer to Chapter 8, <i>Storage Devices</i> , for ordering information.
<b>TF86-TA*</b>	6.0 Gbyte cartridge tape subsystem in tabletop enclosure. Requires CK-SF100-LP cable kit.

\* 120 V power cord included. Order country specific power cord for 220/240 V use, refer to Chapter 8, *Storage Devices*.

## Step 3d—SCSI External Storage expansion

- System supports six SCSI devices per CPU on synchronous SCSI controller, two internal, four external in SZ12 enclosure. Maximum two SZ12s per CPU.
- Select storage controller if additional external SCSI storage is required.
- Maximum SCSI bus length (internal and external) is 6 meters (236 inches). See SCSI cable chart for cable length information.

**StorageWorks HSD05 Array Controller**

<b>HSD05-AA</b>	StorageWorks HSD05 DSSI-to-SCSI Array Controller supports seven SCSI-2 devices; includes DSSI terminator and tralink adapter; requires DSSI cable (BC29R-xx) for VAX 4000 to HSD05 connection.
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**StorageWorks Deskside Expansion Unit (BA350)**

BA350 deskside expansion unit supports HSD05 DSSI-to-SCSI array controller and six SCSI-2 devices.

<b>BA350-KA</b>	StorageWorks Pedestal expansion units include: BA35-SA basic shelf, BA35X-HA universal ac power supply, pedestal mounting kit, and 120 V power cord.
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**SCSI devices supported in StorageWorks Pedestal with HSD05 array controller**

<b>RZ26L-VA</b>	1.05-Gbyte 3.5-inch half-height disk drive
<b>RZ28-VA</b>	2.1-Gbyte 3.5-inch half-height disk drive
<b>RZ28B-VA</b>	2.1-Gbyte 3.5-inch half-height disk drive
<b>EZ51R-VA</b>	107-Mbyte solid state disk drive
<b>EZ54R-VA</b>	428-Mbyte solid state disk drive
<b>TLZ6L-VA</b>	4.0-Gbyte 4-mm DAT tape drive in 5.25-inch carrier
<b>TZ86-VA</b>	6.0-Gbyte tape drive in 5.25-inch carrier
<b>TZ87-VA</b>	20-Gbyte tape drive in 5.25-inch carrier
<b>SZ12</b>	Refer to Chapter 8, <i>Storage Devices</i> , for ordering information
<b>RRD43-FA/DG*</b>	600-Mbyte tabletop CD-ROM drive; includes (3-foot)cable (BC06P-03) 120/240 V
<b>RRD43-FB/DH*</b>	600-Mbyte tabletop CD-ROM drive; includes 1.8-meter (6-foot) cable (BC06P-06); 120/240 V.
<b>TLZ07-GA*</b>	8.0-Gbyte, 5.25-inch DAT drive with universal power supply, for connection to optional KZQSA; includes 120 V power cord
<b>TZ86-TA</b>	6.0-Gbyte, 5.25-inch SCSI tape drive; requires BC06P cable; includes 120 V power cord
<b>RWZ01-AA*</b>	5.25-inch rewritable magneto-optical disk drive; includes 120 V power cord
<b>TSZ07-CA*</b>	1600/6250-bit/inch, 9-track magtape; refer to Chapter 8, <i>Storage Devices</i> , for ordering information

\*120 V power cord included. Order country specific power cord for 220/240 V use, refer to Chapter 8, *Storage Devices*.

Step 3d—SCSI External Storage expansion (*continued*)**SCSI Cables**

<b>BC06P-2F</b>	2.5-foot (0.8-m) TZxx cable
<b>BC06P-06</b>	6-foot (1.8-m) TZxx cable
<b>BC06P-09</b>	9-foot (2.7-m) TZxx cable

**SCSI Cable Chart**

SCSI cabling recommendations. Maximum cable length must not exceed 4.3 m (174.4 in.). The following devices include cables except TZ8x, which requires BC06P-xx cable.

Tabletop Enclosure	Internal Cable Length	External Cable Length
<b>SZ12</b>	0.78 m (31 in.)	0.6 m (24 in.)
<b>RRD43</b>	0.35 m (14 in.)	0.45 m (18 in.)
<b>TLZ07</b>	0.32 m (12.6 in.)	0.91 m (36 in.)
<b>TZ8x</b>	0.15 m (6 in.), 28 m (31 in.)	
<b>RWZ01</b>		Depends on length of SCSI cable selected.

**Step 4—Networks and Communications**

Select communications options as required. See Chapter 7, *Networks, Communications, and Cables*, and the *Network Products Guide* for more information.

**Host-Based Communications Controllers**

Select host-based communications controllers for standalone systems (without LAN connectivity), or for other requirements.

**Asynchronous Multiplexer Options**

Select one asynchronous multiplexer for communications expansion.

<b>DHW42-AA</b>	Provides eight DEC-423 lines for a system total of 12 asynchronous lines (11 data only and one with modem control). Includes internal logic module with cable, DEC-423 I/O assembly, external 36-pin 3-meter (10-foot) cable (BC16C-10), and H3104-00 eight-line distribution harmonica; factory or field installed.
<b>DHW42-CA</b>	Provides eight EIA-232 lines for a system total of 12 asynchronous lines (three data only and nine with modem control). Includes internal logic module with cable, EIA-232 I/O assembly, and two 1.8-meter (6-foot) external 50-pin to 4-way 25-pin (BC29J-06) cables; factory or field installed.
<b>DHW42-BA</b>	Provides 16 DEC-423 lines for a system total of 20 asynchronous lines (19 data only and one with modem control). Includes internal logic module with cable, DEC-423 I/O assembly, two external 36-pin 3-meter (10-foot) cables (BC16C-10), and two H3104-00 eight-line distribution harmonica; factory or field installed.
<b>DHW42-UP</b>	Upgrades DHW42-AA to DHW42-BA; field installed only.

**Synchronous Communications Option**

- Select ONE synchronous option
- EIA-232 synchronous cable (BC19D-02 is included—select alternate cables for EIA-423/V.10 and EIA-422/V.11 connection)

<b>DSW42-AA</b>	EIA-232 synchronous controller—provides two lines. Includes synchronous logic module, I/O assembly, and external 0.6-meter (2-foot) EIA-232 adapter cable.
<b>BC19B-02</b>	EIA-422/V.11 0.6-meter (2-foot) adapter cable
<b>BC19E-02</b>	EIA-423/V.10 0.6-meter (2-foot) adapter cable

**802.3/Ethernet Communications Controller**

802.3/Ethernet interface (ThinWire/thick wire selectable) included with system. Connection of system to Ethernet requires a ThinWire BNC connection (e.g.; BC16M cable) or a thick wire 15-pin AUI transceiver cable (e.g.; BNE3x).

**Note:** VAX 4000 Model 106A Systems require a B400X Q-bus expander before adding any of the following options:

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## Step 4—Networks and Communications (*continued*)

### 802.5/Token Ring Communications Controller

- DEQRA-CA**      DEC TRNcontroller 100 Q-bus 802.5/Token Ring Controller. Includes Digital Token Ring network device driver for VMS. Uses one Q-bus slot.
- BN26G-xx**      Shielded twisted pair office cable, DB9-to-802.5/Token Ring. xx = -03, -10, -30 (length in feet).

### FDDI Communications Controller

- DEFQA-SA/SF**      DEC FDDIcontroller/Q-bus SAS (single attachment station) FDDI Controller. Uses one Q-bus slot. Model 106A systems running OpenVMS V5.5-2H4 require DEC LAN Device driver kit for OpenVMS VAX V.1.0. DEC LAN device driver included in OpenVMS V6.1. Factory/field installed.
- DEFQA-DA/DF**      DEC FDDIcontroller/Q-bus DAS (dual attachment station) FDDI Controller. Uses one Q-bus slot. Model 106A systems running OpenVMS V5.5-2H4 require DEC LAN device driver kit for OpenVMS VAX V.1.0. DEC LAN device driver included in OpenVMS V6.1. Factory/field installed.

Both options use the ANSI standard MIC (media interface connector) and support multimode fiber (MMF) up to distances of 2 kilometers between stations. Options require one Q-bus slot (maximum two per system) and a DEC LAN device driver kit.

- QA-0PAAA-H5**      DEC LAN device driver kit for DEFQA on TK50
- QA-0PAAA-HM**      DEC LAN device driver kit for DEFQA on 9-track 1600-bit/inch magtape

### Local and Wide Area Communications Servers

Each communications server requires an 802.3/Ethernet connection. Depending on the server selected, either a ThinWire BNC connection (e.g., BC16M) or a thick wire 15-pin AUI transceiver cable (e.g., BNE3x) is required. Software media, documentation, and cables are also required. See descriptions in Chapter 7, *Networks, Communications, and Cables*, for ordering information.

### DECserver 90M, 90L+, 90TL, 900TM, 700, and MUXserver 90, 320, 380 Communications and Printer Servers

Select a terminal or printer server to provide users with multiple session access to systems on a LAN, to minimize cabling complexity and costs, and to conserve host resources.

### InfoServer 1000 Network Storage Server

To provide initial system load (ISL) capabilities to VAX systems, order the InfoServer Local Area compact disk. Other configurations are offered for tape/backup and serving more CD-ROMs. InfoServer systems support CD-ROM, hard drives, magneto-optical and tape drives. InfoServer 1000 systems can serve up to seven SCSI devices. See descriptions in Chapter 8, *Storage Devices*, for ordering information.

### DEC WANrouter 90, 250, DECbrouter 90; DECnis 500, 600 Multiprotocol Routers

Select a router to cost-effectively link a LAN to a remote system or another LAN and to offload routing overhead from the application host system.

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## Step 5—Console Terminal

A console device is necessary for a system to function. Console cable included with system. Order video terminals (e.g., VT420) for each system unless otherwise available. See Chapter 9, *Terminals, Scanners, Printers*, for ordering information. **Note:** One console terminal required per configuration. A VT330/VT340/VT420 with split screen capability can be used as a shared console terminal.

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## Step 6—Terminals and Printers

Select terminals and printers as required. Serial printers connect to an asynchronous line. A cable (e.g., BC16E-25) must be ordered unless otherwise available. Maximum two parallel printers per LPV11 controller; maximum two controllers per system which require one Q-bus slot each. See Chapter 9, *Terminals, Scanners, Printers*, for ordering information.

## Step 7—CPU Upgrades

In cabinet CPU upgrade for VAX 4000 Models 100 and 100A systems.

Order Number	From	To	Includes
53XR-BA	VAX 4000 Models 100, 100A,105A	VAX 4000 Model 106A	OpenVMS VAX base license

**Note:** See the *ADVANTAGE-UPGRADES* section, for VAX 4000 system upgrade ordering information.

### Step 7a—Dual-DSSI Adapter Module (Field Installed)

Select dual-DSSI storage adapter module upgrade for **installed** VAX 4000 Model 100, 100A,105A or 106A systems. Both options require one additional 9-foot DSSI cable (BC21M-09).

Order Number	From	To	Includes
KFDDA-AF*	Model 100A and 105A systems with one high-speed DSSI adapter module	Model 100A/105A/106A systems	High-speed dual-DSSI adapter module, cable assembly, and user documentation
KFDDA-CF†	Model 100 systems with one high-speed DSSI adapter module	Model 100A system	High-speed dual-DSSI adapter module, DSSI in/out cable, I/O cover panel, OpenVMS and CPU firmware upgrade media kits, and user documentation

\* For VAX 4000 Model 100A systems with serial numbers KA332ABJ46 and higher, or AY33328925 and higher and all Model 105A systems

† For VAX 4000 Model 100 systems with serial numbers KA332ABJ45 and lower, or AY33328924 and lower

## Step 8—Software

Software Processor Code      VAX 4000 Model 106A = **B**

Layered Product Level        Workgroup Level—**Tier B**

### OpenVMS VAX Interactive User Licenses

OpenVMS VAX Interactive User licenses are for customers running **OpenVMS VAX V5.5 or greater**. OpenVMS VAX Interactive User licenses **are** specific to a single system and **cannot** be shared across a OpenVMS Cluster.

QL-XULA9-BB	OpenVMS VAX Interactive 1-user license
QL-XULA9-BC	OpenVMS VAX Interactive 2-user license
QL-XULA9-BD	OpenVMS VAX Interactive 4-user license
QL-XULA9-BE	OpenVMS VAX Interactive 8-user license
QL-XULA9-BF	OpenVMS VAX Interactive 16-user license
QL-XULA9-BG	OpenVMS VAX Interactive 32-user license
QL-XULAB-6A	OpenVMS VAX Interactive unlimited user license

### OpenVMS VAX Distributed Interactive User Licenses

OpenVMS VAX Distributed Interactive User licenses are for customers running **OpenVMS VAX Version 6.0 or greater**. OpenVMS VAX Distributed Interactive User licenses are **not** specific to a single system and can be moved between systems at user discretion. OpenVMS VAX Distributed Interactive User licenses can also be shared across an entire OpenVMS Cluster running OpenVMS VAX V6.0 or greater.

**Note:** OpenVMS VAX Distributed Interactive User licenses are architecture specific and **cannot** be shared across a **mixed** OpenVMS Cluster (OpenVMS VAX and OpenVMS AXP systems).

QL-09SA9-BB	OpenVMS VAX Distributed Interactive 1-user license
QL-09SA9-BC	OpenVMS VAX Distributed Interactive 2-user license
QL-09SA9-BD	OpenVMS VAX Distributed Interactive 4-user license
QL-09SA9-BE	OpenVMS VAX Distributed Interactive 8-user license

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**Step 8—Software** (*continued*)**OpenVMS VAX Distributed Interactive User Licenses**

<b>QL-09SA9-BF</b>	OpenVMS VAX Distributed Interactive 16-user license
<b>QL-09SA9-BG</b>	OpenVMS VAX Distributed Interactive 32-user license
<b>QL-09SA9-BH</b>	OpenVMS VAX Distributed Interactive 64-user license
<b>QL-09SAA-BR</b>	OpenVMS VAX Distributed Interactive 128-user license
<b>QL-09SAB-BR</b>	OpenVMS VAX Distributed Interactive 256-user license

**QL-VBRAB-AA** VAXcluster license for multiuser systems

**OpenVMS Consolidated Software Media (CD-ROM) and documentation—requires CD-ROM reader**

Systems include OpenVMS V6.1 base license; order media and documentation separately for OpenVMS V6.1. Systems also include OpenVMS V5.5-2H4 media and documentation

<b>QA-VWJ8A-A8</b>	OpenVMS layered product binaries on CD-ROM without hardcopy documentation
<b>QA-VYR8A-G8</b>	OpenVMS extended online documentation and layered product online documentation on CD-ROM; requires DECwindows Bookreader
<b>QA-VWJ8B-H8</b>	OpenVMS layered product binaries on CD-ROM with hardcopy base documentation
<b>QA-VWJ8A-H8</b>	OpenVMS layered product binaries on CD-ROM with extended hardcopy documentation
<b>QA-A93AA-Hx</b>	PATHWORKS for OpenVMS media and documentation
<b>QA-358AA-Hx</b>	Rdb Runtime media and documentation
<b>QA-GXXAA-Hx</b>	POSIX media with IEEE documentation
<b>QA-GXXAB-Hx</b>	POSIX media without IEEE documentation

x denotes media type: 5 = TK50; M = Magtape

**NAS Licenses**

ADVANTAGE-SERVERS include NAS 200 license, order media and documentation separately

See description of NAS packages in Chapter 11.

**Note:** NAS packaged products do not include hardcopy documentation (the documentation is CD-ROM only). To order NAS component hardcopy documentation, see Chapter 11 for listing of order numbers.

<b>QL-MC1AB-AA</b>	NAS 200 (Network Application Support 200)
<b>QA-MC1AA-Hx</b>	NAS 200 media and documentation kit

x denotes media type: 8 = CD-ROM, 5 = TK50, M = magtape

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**Step 9—Power Cords**

Select for 220/240 V use.

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**Step 9a—Power Cords for VAX 4000 Model 106A System Enclosure**

<b>BN19A-2E</b>	U.K., Ireland
<b>BN19C-2E</b>	Austria, Belgium, France, Germany, Finland, Holland, Norway, Sweden, Portugal, Spain
<b>BN19E-2E</b>	Switzerland
<b>BN19K-2E</b>	Denmark
<b>BN19M-2E</b>	Italy
<b>BN19U-2E</b>	Israel
<b>BN19H-2E</b>	Australia, New Zealand
<b>BN19S-2E</b>	India

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**Step 9b—Power Cords for B400X and R400X Expansion Pedestals**

BN20B-2E	U.S., Canada, Japan
BN22C-2E	Australia, New Zealand
BN22D-2E	Austria, Belgium, France, Germany, Finland, Holland, Norway, Sweden, Portugal, Spain
BN22E-2E	U.K., Ireland
BN22F-2E	Switzerland
BN22H-2E	Denmark
BN22J-2E	Italy
BN22K-2E	India
BN22L-2E	Israel

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**Step 10—Diagnostics and Documentation**

Select optional diagnostics and documentation.

QZ-K14AA-U5	On TK50 media
QZ-K32AA-U8	On CD-ROM media

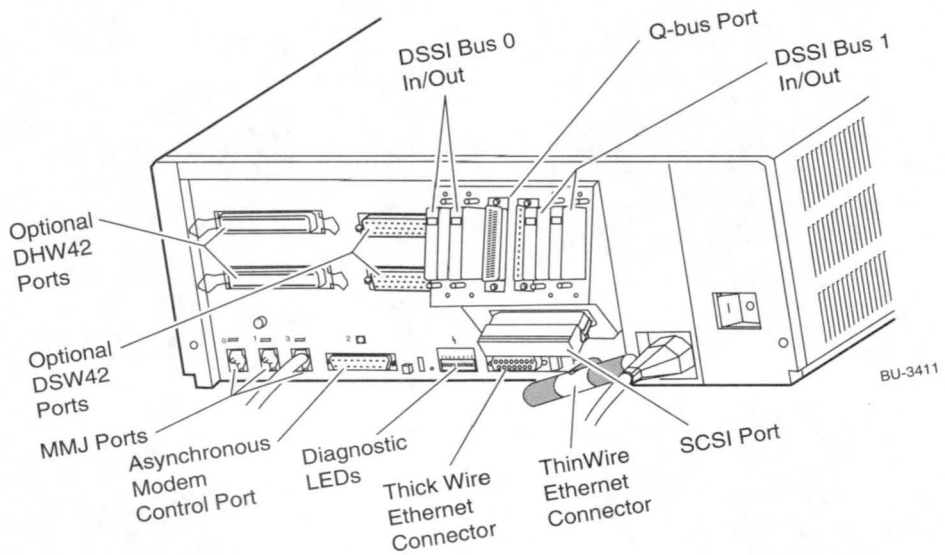
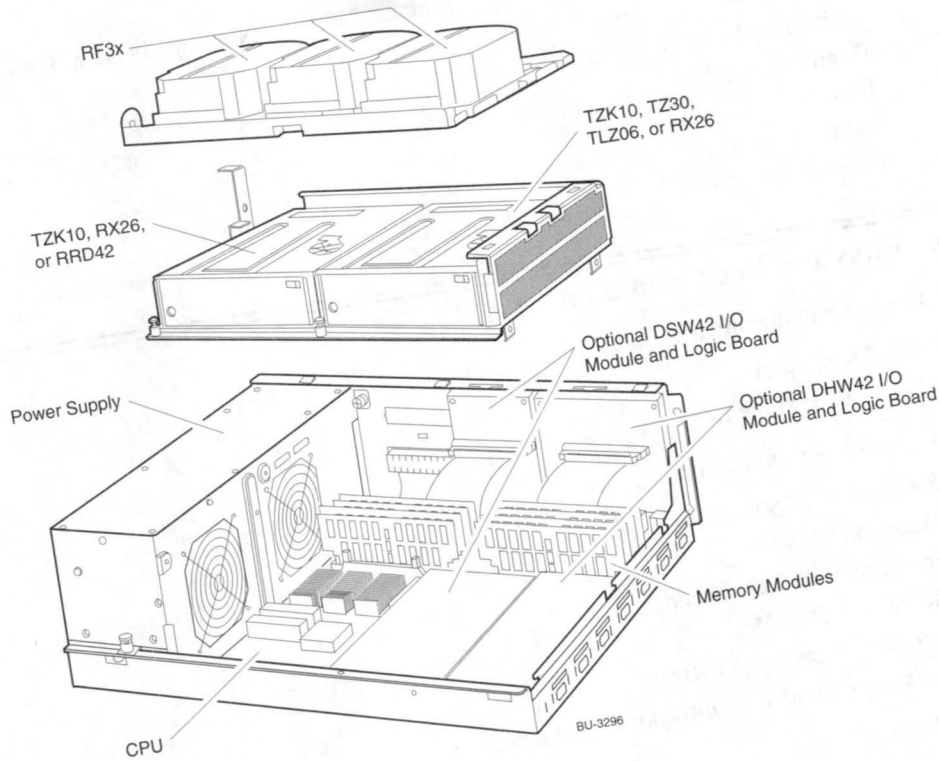
**Extended Diagnostics and Documentation**

QX-K19AC-AA	Single-use TK50 license
QZ-K19AA-H5	Media on TK50
QX-K32AA-AA	Single-use CD-ROM license
QZ-K32AA-H8	Media on CD-ROM
QY-K32AA-A8	Annual updates on CD-ROM
QZ-K19AA-GZ	Hardcopy extended maintenance documentation

**Hardware Documentation**

QZ-K04AB-GZ	English language (included with system)
QZ-00H8A-GZ	Multilingual (English, French, German, Italian)

# VAX 4000 Model 106A System Diagram



## Specifications

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**Physical Characteristics**

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Height	14.99 cm ( 5.90 in.)
Width	46.38 cm (18.26 in.)
Depth	40.00 cm (15.75 in.)
Weight	18.40 kg (40.00 lb)*

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**Power Requirements**

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Nominal voltage	120/240 Vrms
Power source phasing	Single
Nominal frequency	50–60 Hz
Voltage range	88–132 Vrms 176–264 Vrms
Line frequency tolerance	47–63 Hz
Typical running current	2.0/1.0 A
Typical power consumption	240 W

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**Standard Communication**

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Minimum MMJ lines	Three DEC-423
Modem lines	One EIA-232
Ethernet	Thick wire and ThinWire supported on all models

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**Communications Options**

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MMJ lines	Eight DEC-423
MMJ lines	16 DEC-423
Modem lines	Eight EIA-232
Synchronous lines	Two synchronous

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**Operating Environment**

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Temperature (sea level)	10°–40° C (50°–90° F)
Relative humidity	10%–90% noncondensing
Maximum operating altitude	2.4 km (8,000 ft)

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\* Approximate weight with three disks.

# ADVANTAGE-UPGRADE Program

ADVANTAGE-UPGRADE Program

VAX, DECsystem, and Alpha to Alpha ADVANTAGE-UPGRADES

VAX to VAX ADVANTAGE-UPGRADES

## Overview

Digital Equipment Corporation has taken the best attributes of its many upgrade programs and combined them into a single overall ADVANTAGE-UPGRADE Program. Whether upgrading from a VAX-to-VAX, VAX-to-Alpha, MIPS-to-Alpha, or Alpha-to-Alpha system, upgrades are now covered by a single upgrade program from Digital. By offering all upgrade selections under a uniform set of hardware and software business practices, Digital has simplified the process of selecting the proper and most cost-effective upgrade.

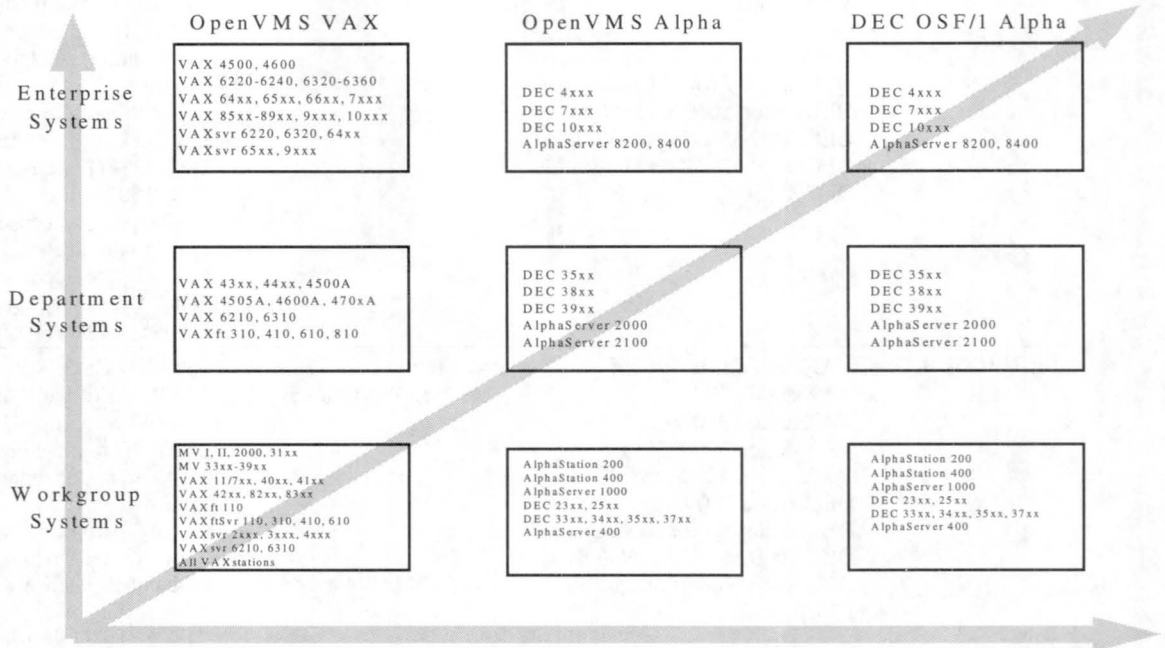
Digital's ADVANTAGE-UPGRADE Program helps to reduce cost of ownership especially when used in conjunction with Digital's aggressive leasing programs. Digital also offers migration assistance in moving business applications to the Alpha platform.

## Highlights

- Upgrades are easier to select, configure, and order.
- Generous trade-in value for the existing installed system; includes credit for operating system licenses.
- Single, uniform set of hardware and software business practices which apply to all types of system upgrades.
- Customer is allowed to keep existing installed system (or board) for 60 days to allow a smooth transition to the new system.
- Unless otherwise noted, for system upgrades, customer must return CPU, CPU enclosure, minimum memory configuration and base operating system license. For in-cabinet upgrades, customer must return CPU board and base operating system license.

Software Business Practices

Digital protects customers' software investments. Standard Software License Trade-in policy applies to the ADVANTAGE-UPGRADE Program.



VAX and Alpha System Classes

**Note:** No change to tiers for MIPS/RISC software licenses.

Standard Software License Trade-in Policy

Customers receive credit equal to 75% of price (after discount) of software license traded-in towards purchase of a new software license for the same product. Credit is not to exceed 75% of price (after discount) of new software license.

- Layered Product Capacity Licenses move freely within the same Operating System/Hardware System Class or to a lower System Class within the same Operating System/Hardware Platform.
- Layered Product Capacity License upgrades are required when moving to any new Operating System/Hardware System Class. Standard Software License Trade-in Policy applies.
- Concurrent Use and Personal Use software licenses move freely within the same Operating System regardless of Hardware platform. For upgrades to new Operating System, Standard Software License Trade-in policy applies.
- The ADVANTAGE-UPGRADE system package price includes credit for the base Operating System license.
- For MIPS license upgrades, Standard Software License Trade-in Policy applies.

For more information, contact a local Software Business Practices Specialist, Digital Sales Representative, or Digital Authorized Distributor/Reseller.

### AlphaStation 200 4/166 Workstation Upgrades

Order Number	From	To	Includes
<b>PB4BU-AA/AB</b>	VAXstation I, II, II/GPX	AlphaStation 200 4/166 Desktop Workstation	166 MHz CPU
	VAXstation 2000		32 Mbytes of parity memory
	VAXstation 3100/xx		1.44-Mbyte floppy disk
	VAXstation 3200, 35xx		ZLXp 2D 8-plane graphics
	VAXstation 4000/xxx		16-bit audio, headphone, and microphone
	DECstation 2100, 3100		Mouse
	DECstation 5000/xx/1xx/2xx		US keyboard/power cord (-xA only)
	DEC 3000 Models 300/300L		English User Documentation (-xA only)
	DEC 3000 Models 300X/300LX		<b>DEC OSF/1</b> license
	DECpc 150		NAS 150 license DEC Open3D license Multimedia license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license
<b>PB4BU-BA/BB</b>	VAXstation I, II, II/GPX	AlphaStation 200 4/166 Desktop Workstation	166 MHz CPU
	VAXstation 2000		32 Mbytes of parity memory
	VAXstation 3100/xx		1.44-Mbyte floppy disk
	VAXstation 3200, 35xx		ZLXp 2D 8-plane graphics
	VAXstation 4000/xxx		16-bit audio, headphone, and microphone
	DECstation 2100, 3100		Mouse
	DECstation 5000/xx/1xx/2xx		US keyboard/power cord (-xA only)
	DEC 3000 Models 300/300L		English User Documentation (-xA only)
	DEC 3000 Models 300X/300LX		<b>OpenVMS</b> license
	DECpc 150		NAS 150 license DEC Open3D license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, base memory, and operating system license
<b>PB4BU-CA/CB</b>	VAXstation I, II, II/GPX	AlphaStation 200 4/166 Desktop Workstation	166 MHz CPU
	VAXstation 2000		32 Mbytes of parity memory
	VAXstation 3100/xx		1.44-Mbyte floppy disk
	VAXstation 3200, 35xx		600-Mbyte CD-ROM
	VAXstation 4000/xxx		ZLXp 2D 8-plane graphics
	DECstation 2100, 3100		16-bit audio, headphone, and microphone
	DECstation 5000/xx/1xx/2xx		Mouse
	DEC 3000 Models 300/300L		US keyboard/power cord (-xA only)
	DEC 3000 Models 300X/300LX		English User Documentation (-xA only)
	DECpc 150		<b>Windows NT</b> license <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license

### AlphaStation 200 4/233 Workstation Upgrades

Order Number	From	To	Includes
<b>PB4CU-AA/AB</b>	VAXstation I, II, II/GPX	AlphaStation 200 4/233 Desktop Workstation	233 MHz CPU
	VAXstation 2000		32 Mbytes of parity memory
	VAXstation 3100/xx		1.44-Mbyte floppy disk
	VAXstation 3200, 35xx		ZLXp 2D 8-plane graphics
	VAXstation 4000/xxx		16-bit audio, headphone, and microphone
	DECstation 2100, 3100		Mouse
	DECstation 5000/xx/1xx/2xx		US keyboard/power cord (-xA only)
	DEC 3000 Models 300/300L		English User Documentation (-xA only)
	DEC 3000 Models 300X/300LX		<b>DEC OSF/1</b> license
	DECpc 150		NAS 150 license DEC Open3D license Multimedia license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license

AlphaStation 200 4/233 Workstation Upgrades (*continued*)

Order Number	From	To	Includes
<b>PB4CU-BA/BB</b>	VAXstation I, II, II/GPX VAXstation 2000 VAXstation 3100/xx VAXstation 3200, 35xx VAXstation 4000/xxx DECstation 2100, 3100 DECstation 5000/xx/1xx/2xx DEC 3000 Models 300/300L DEC 3000 Models 300X/300LX DECpc 150	AlphaStation 200 4/233 Desktop Workstation	233 MHz CPU 32 Mbytes of parity memory 1.44-Mbyte floppy disk ZLXp 2D 8-plane graphics 16-bit audio, headphone, and microphone Mouse US keyboard/power cord (-xA only) English User Documentation (-xA only) <b>OpenVMS</b> license NAS 150 license DEC Open3D license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license
<b>PB4CU-CA/CB</b>	VAXstation I, II, II/GPX VAXstation 2000 VAXstation 3100/xx VAXstation 3200, 35xx VAXstation 4000/xxx DECstation 2100, 3100 DECstation 5000/xx/1xx/2xx DEC 3000 Models 300/300L DEC 3000 Models 300X/300LX DECpc 150	AlphaStation 200 4/233 Desktop Workstation	233 MHz CPU 32 Mbytes of parity memory 1.44-Mbyte floppy disk 600-Mbyte CD-ROM ZLXp 2D 8-plane graphics PCI Ethernet 16-bit audio, headphone, and microphone Mouse US keyboard/powercord (-xA only) English User Documentation (-xA only) <b>Windows NT</b> license <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license

## AlphaStation 400 4/233 Workstation Upgrades

Order Number	From	To	Includes
<b>PB5BU-AA/AB</b>	VAXstation I, II, II/GPX VAXstation 2000 VAXstation 3100/xx VAXstation 3200, 35xx VAXstation 4000 VLC VAXstation 4000 Models 60, 90, 90A,96 DECstation 2100, 3100 DECstation 5000/xx/1xx/2xx DEC 3000 Models 300/300L DEC 3000 Models 300X/300LX DEC 3000 Models 400/600/700/500/500X DECpc 150	AlphaStation 400 4/233 Mini Tower Workstation	233 MHz CPU, 512 KB cache 32 Mbytes of memory 600-Mbyte CD-ROM 1.44-Mbyte floppy disk ZLXp 2D 8 plane graphics 16-bit audio, headphone, and microphone Mouse US keyboard/power cord (-xA only) English User Documentation (-xA only) <b>DEC OSF/1</b> license NAS 150 license DEC Open3D license Multimedia Services license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license
<b>PB5BU-BA/BB</b>	VAXstation I, II, II/GPX VAXstation 2000 VAXstation 3100/xx VAXstation 3200, 35xx VAXstation 4000 VLC VAXstation 4000 Models 60, 90, 90A,96 DECstation 2100, 3100 DECstation 5000/xx/1xx/2xx DEC 3000 Models 300/300L DEC 3000 Models 300X/300LX DEC 3000 Models 400/600/700/500/500X DECpc 150	AlphaStation 400 4/233 Mini Tower Workstation	233 MHz CPU, 512 KB cache 32 Mbytes of memory 600-Mbyte CD-ROM 1.44-Mbyte floppy disk ZLXp 2D 8 plane graphics PCI Ethernet 16-bit audio, headphone, and microphone Mouse US keyboard/power cord (-xA only) English User Documentation (-xA only) <b>OpenVMS</b> license NAS 150 license Open3D license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license

**AlphaStation 400 4/233 Workstation Upgrades (continued)**

Order Number	From	To	Includes
<b>PB5BU-CA/CB</b>	VAXstation I, II, II/GPX VAXstation 2000 VAXstation 3100/xx VAXstation 3200, 35xx VAXstation 4000 VLC VAXstation 4000 Models 60, 90, 90A, 96 DECstation 2100, 3100 DECstation 5000/xx/1xx/2xx DEC 3000 Models 300/300L DEC 3000 Models 300X/300LX DEC 3000 Models 400/600/500/500X DECpc 150	AlphaStation 400 4/233 Mini Tower Workstation	233 MHz CPU, 512 KB cache 32 Mbytes of memory 600-Mbyte CD-ROM 1.44-Mbyte floppy disk ZLXp 2D 8 plane graphics PCI Ethernet 16-bit audio, headphone, and microphone Mouse US keyboard/power cord (-xA only) English User Documentation (-xA only) <b>Windows NT</b> license <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license

**AlphaServer 400 4/166 MiniTower Upgrades**

Order Number	From	To	Includes
<b>PB5IU-DA/DB</b>	MicroVAX I, II, 2000 MicroVAX 3100/xx MicroVAX 3300, 3400 VAX 82xx, 83xx DECsystem 5000 Models 25, 50, 133, 150, 200, 240, 260 DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 300, 500 DEC 3000 Model 400S, 500S, 600S, 800S	AlphaServer 400 4/166 MiniTower System	166MHz processor, 512 KB cache 32 Mbytes of memory 600-Mbyte CD-ROM 1.44 MB floppy 1.0 Gbyte, 3.5-inch SCSI disk drive PCI Ethernet Mouse North American power cord (-xA only) English User Documentation (-xA only) <b>DEC OSF/I</b> license NAS 200 license DECmigrate License <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license
<b>PB5IU-EA/EB</b>	MicroVAX I, II, 2000 MicroVAX 3100/xx MicroVAX 3300, 3400 VAX 82xx, 83xx DECsystem 5000 Models 25, 50, 133, 150, 200, 240, 260 DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 300, 500 DEC 3000 Model 400S, 500S, 600S, 800S	AlphaServer 400 4/166 MiniTower System	166MHz processor, 512 KB cache 32 Mbytes of memory 600-Mbyte CD-ROM 1.44 MB floppy 1.0 Gbyte, 3.5-inch SCSI disk drive PCI Ethernet Mouse North American power cord (-xA only) English User Documentation (-xA only) <b>OpenVMS base</b> license NAS 200 license DECmigrate License <b>Note:</b> Mandatory return of CPU, system box, base memory, base operating system license
<b>PB5IU-FA/FB</b>	MicroVAX I, II, 2000 MicroVAX 3100/xx MicroVAX 3300, 3400 VAX 82xx, 83xx DECsystem 5000 Models 25, 50, 133, 150, 200, 240, 260 DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 300, 500 DEC 3000 Model 400S, 500S, 600S, 800S	AlphaServer 400 4/166 MiniTower System	166MHz processor, 512 KB cache 32 Mbytes of memory 600-Mbyte CD-ROM 1.44 MB floppy 1.0 Gbyte, 3.5-inch SCSI disk drive PCI Ethernet Mouse North American power cord (-xA only) English User Documentation (-xA only) <b>Windows NT Server</b> license NAS 200 license DECmigrate License <b>Note:</b> Mandatory return of CPU, system box, base memory, and base operating system license

**Note:** Monitors must be ordered separately. Users who have VRT17 or VRC21 monitors must order the BC13L monitor video cable and BN19P-1K monitor power cord (or other appropriate version as determined by area).

## DEC 3000 Model 300X Workstation Upgrades

Order Number	From	To	Includes
<b>PE32U-BA/BB</b>	VAXstation 100, 520 VAXstation I, II VAXstation II/GPX VAXstation 2000, 3xxx VAXstation 4000 VLC VAXstation 4000 Models 60, 90, 90A,96 DECstation 2100, 3100 DECstation 5000 Models 20, 25, 33, 50 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Models 200, 240, 260	DEC 3000 Model 300X Workstation	32 Mbytes of memory Hardware bracket kit 1.05-Gbyte, 3.5-inch SCSI disk drive Two TURBOchannel slots Integral high-resolution graphics 10BaseT twisted pair Ethernet Ethernet adapter 21-inch monitor, US keyboard, mouse <b>DEC OSF/1</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license MME Runtime license DECspin Audio license DECmigrate license <b>Note:</b> Mandatory return of CPU board, system box, and base memory
<b>PE32U-NA/NB</b>	VAXstation 100, 520 VAXstation I, II VAXstation II/GPX VAXstation 2000, 3xxx VAXstation 4000 VLC VAXstation 4000 Models 60, 90, 90A,96 DECstation 2100, 3100 DECstation 5000 Models 20, 25, 33, 50 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Models 200, 240, 260	DEC 3000 Model 300X Workstation	32 Mbytes of memory Hardware bracket kit 1.05-Gbyte, 3.5-inch SCSI disk drive Two TURBOchannel slots Integral high-resolution graphics 10BaseT twisted pair Ethernet Ethernet adapter 21-inch monitor, US keyboard, mouse <b>OpenVMS</b> base license, one-user license NAS 250 license DEC Open3D license DEC PHIGS Runtime license DECmigrate license <b>Note:</b> Mandatory return of CPU board, system box, and base memory
<b>PE32U-DA</b>	VAXstation 100, 520 VAXstation I, II VAXstation II/GPX VAXstation 2000, 3xxx VAXstation 4000 VLC VAXstation 4000 Models 60, 90, 90A,96 DECstation 2100, 3100 DECstation 5000 Models 20, 25, 33, 50 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Models 200, 240, 260	DEC 3000 Model 300X Workstation	32 Mbytes of memory Hardware bracket kit Two TURBOchannel slots Integral high-resolution graphics 10BaseT twisted pair Ethernet Ethernet adapter US keyboard and mouse <b>DEC OSF/1</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license MME Runtime license DECspin Audio license DECmigrate license <b>Note:</b> Mandatory return of CPU board, system box, and base memory
<b>PE32U-RA</b>	VAXstation 100, 520 VAXstation I, II VAXstation II/GPX VAXstation 2000, 3xxx VAXstation 4000 VLC VAXstation 4000 Models 60, 90, 90A,96 DECstation 2100, 3100 DECstation 5000 Models 20, 25, 33, 50 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Models 200, 240, 260	DEC 3000 Model 300X Workstation	32 Mbytes of memory Hardware bracket kit Two TURBOchannel slots Integral high-resolution graphics 10BaseT twisted pair Ethernet Ethernet adapter US keyboard and mouse <b>OpenVMS</b> base license, one-user license NAS 250 license DEC Open3D license DEC PHIGS Runtime license DECmigrate license <b>Note:</b> Mandatory return of CPU board, system box, and base memory
<b>PE32U-AA</b>	DEC 3000 Models 300L*, 300	DEC 3000 Model 300X Workstation	175 MHz CPU daughter card <b>Note:</b> Mandatory return of old CPU card

\* No TURBOchannel slots or high resolution graphics for 300L upgrades. **Note:**xA = 120/240 V, xB = 240 V Southern Hemisphere

## DEC 3000 Model 600 Workstation Upgrades

Order Number	From	To	Includes
<b>PE42U-AB*</b>	VAXstation 4000 Model 60 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Model 200	DEC 3000 Model 600 Workstation	32 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>DEC OSF/I</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license MME Runtime license DECspin Audio license <b>Note:</b> Mandatory return of CPU, system box, and base memory
<b>PE42U-BB*</b>	VAXstation 4000 Model 60 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Model 200	DEC 3000 Model 600 Workstation	32 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>OpenVMS</b> base license, one-user license NAS 250 license DEC Open3D license DEC PHIGS Runtime license <b>Note:</b> Mandatory return of CPU, system box, and base memory
<b>PE42U-AC*</b>	VAXstation 4000 Models 90, 90A, 96 DECstation 5000 Models 240, 260	DEC 3000 Model 600 Workstation	32 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>DEC OSF/I</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license MME Runtime license DECspin Audio license <b>Note:</b> Mandatory return of CPU, system box, and base memory
<b>PE42U-BC*</b>	VAXstation 4000 Models 90, 90A, 96 DECstation 5000 Models 240, 260	DEC 3000 Model 600 Workstation	32 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>OpenVMS</b> base license, one-user license NAS 250 license DEC Open3D license DEC PHIGS Runtime license <b>Note:</b> Mandatory return of CPU, system box, and base memory
<b>PE42U-AA<sup>†</sup></b>	DEC 3000 Model 400	DEC 3000 Model 600 Workstation	<b>DEC OSF/I</b> two-user base license DEC Open3D license NAS 250 license DEC PHIGS Runtime license MME Runtime license DECspin Audio license <b>Note:</b> Requires field service installation; Mandatory return of CPU module
<b>PE42U-BA<sup>†</sup></b>	DEC 3000 Model 400	DEC 3000 Model 600 Workstation	<b>OpenVMS</b> base license, one-user license DEC Open3D license NAS 250 license DEC PHIGS Runtime license <b>Note:</b> Requires field service installation; Mandatory return of CPU module

\* Requires graphics controller. See DEC 3000 Models 600/700 Workstation ordering information for details.

## VAX, DECsystem, and Alpha Platform to Alpha ADVANTAGE UPGRADES

For system documentation order the following:

EK-SNDPL-OG.B01	DEC 3000 Model 600/600S/700 Owner's Guide
EK-SNDPL-OP.B01	DEC 3000 Model 600/600S/700 Options Guide
EK-FLSPC-SV.A01	DEC 300 Model 600/600S/800/800S Service Information

### DEC 3000 Model 700 Workstation Upgrades

Order Number	From	To	Includes
<b>PE44U-CA*</b>	VAXstation 4000 Models 60, 90, 90A,96 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Models 200, 240, 260 DEC 3000 Model 400	DEC 3000 Model 700 Workstation	64 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers 1.05 -Gbyte, 3.5-inch SCSI disk drive ZLX-E1 graphics accelerator 600-Mbyte CD-ROM Thick wire/twisted pair Ethernet 21-inch color monitor (Northern Hemisphere) US keyboard and mouse <b>DEC OSF/1</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license MME Runtime license DECspin Audio license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory
<b>PE44U-CB*</b>	VAXstation 4000 Models 60, 90, 90A,96 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Models 200, 240, 260 DEC 3000 Model 400	DEC 3000 Model 700 Workstation	64 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers 1.05 -Gbyte, 3.5-inch SCSI disk drive ZLX-E1 graphics accelerator 600-Mbyte CD-ROM Thick wire/twisted pair Ethernet 21-inch color monitor (Northern Hemisphere) US keyboard and mouse <b>OpenVMS</b> base license, one-user license NAS 250 license DEC Open3D license DEC PHIGS Runtime license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory
<b>PE44U-DA*</b>	VAXstation 4000 Models 60, 90, 90A,96 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Models 200, 240, 260 DEC 3000 Model 400	DEC 3000 Model 700 Workstation	64 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>DEC OSF/1</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license MME Runtime license DECspin Audio license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory
<b>PE44U-DB*</b>	VAXstation 4000 Models 60, 90, 90A,96 DECstation 5000 Models 120, 125, 133, 150 DECstation 5000 Models 200, 240, 260 DEC 3000 Model 400	DEC 3000 Model 700 Workstation	64 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>OpenVMS</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory

**DEC 3000 Model 700 Workstation Upgrades (continued)**

Order Number	From	To	Includes
PE44U-AA <sup>†</sup>	DEC 3000 Model 600	DEC 3000 Model 700 Workstation	<b>DEC OSF/1</b> two-user base license DEC Open3D license NAS 250 license DEC PHIGS Runtime license MME Runtime license DECspin Audio license <b>Note:</b> Requires field service installation; Mandatory return of CPU module
PE44U-BA <sup>†</sup>	DEC 3000 Model 600	DEC 3000 Model 700 Workstation	<b>OpenVMS</b> base license, one-user license DEC Open3D license NAS 250 license DEC PHIGS Runtime license <b>Note:</b> Requires field service installation; Mandatory return of CPU module

\* Requires graphics controller. See DEC 3000 Models 600/700 Workstations ordering information for details.

<sup>†</sup> For system documentation order the following:

EK-SNDPL-OG.B01      DEC 3000 Model 600/600S/700 Owner's Guide  
EK-SNDPL-OP.B01      DEC 3000 Model 600/600S/700 Options Guide  
EK-FLSPC-AD      DEC 3000 Model 700/900 Service/Upgrade Information Addendum

**DEC 3000 Model 900 Workstation Upgrades**

Order Number	From	To	Includes
PE54U-CA	VAXstation 4000 Models 90, 90A, 96 DECstation 5000 Models 240, 260 DEC 3000 Models 500, 500X	DEC 3000 Model 900 Workstation	64 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers 2.1-Gbyte, 3.5-inch SCSI disk drive ZLX-E1 graphics accelerator 600-Mbyte CD-ROM Thick wire/twisted pair Ethernet 21-inch color monitor (Northern Hemisphere) US keyboard and mouse <b>DEC OSF/1</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license MME Runtime license DECspin Audio license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory
PE54U-CB	VAXstation 4000 Models 90, 90A, 96 DECstation 5000 Models 240, 260 DEC 3000 Models 500, 500X	DEC 3000 Model 900 Workstation	64 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers 2.1-Gbyte, 3.5-inch SCSI disk drive ZLX-E1 graphics accelerator 600-Mbyte CD-ROM Thick wire/twisted pair Ethernet 21-inch color monitor (Northern Hemisphere) US keyboard and mouse <b>OpenVMS</b> base license, one-user license NAS 250 license DEC Open3D license DEC PHIGS Runtime license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory

**DEC 3000 Model 900 Workstation Upgrades (continued)**

Order Number	From	To	Includes
<b>PE54U-DA*</b>	VAXstation 4000 Models 90, 90A,96 DECstation 5000 Models 240, 260 DEC 3000 Models 500, 500X	DEC 3000 Model 900 Workstation	64 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>DEC OSF/1</b> two-user base license NAS 250 license DEC Open3D license DEC PHIGS Runtime license MME Runtime license DECspin Audio license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory
<b>PE54U-DB*</b>	VAXstation 4000 Models 90, 90A,96 DECstation 5000 Models 240, 260 DEC 3000 Models 500, 500X	DEC 3000 Model 900 Workstation	64 Mbytes of memory Hardware bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>OpenVMS</b> base license, one-user license NAS 250 license DEC Open3D license DEC PHIGS Runtime license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box and base memory
<b>PE54U-AA†</b>	DEC 3000 Model 800	DEC 3000 Model 900 Workstation	<b>DEC OSF/1</b> two-user base license DEC Open3D license NAS 250 license DEC PHIGS Runtime license MME Runtime license DECspin Audio license <b>Note:</b> Requires field service installation; Mandatory return of CPU module
<b>PE54U-BA†</b>	DEC 3000 Model 800	DEC 3000 Model 900 Workstation	<b>OpenVMS</b> base license, one-user license DEC Open3D license NAS 250 license DEC PHIGS Runtime license <b>Note:</b> Requires field service installation; Mandatory return of CPU module

\* Requires graphics controller. See DEC 3000 Model 900 Workstations ordering information for details.

† For system documentation order the following:

EK-FLMUL-OG.B01	DEC 3000 Model 800/800S/900 Owner's Guide
EK-FLMUL-OP.B01	DEC 3000 Model 800/800S/900 Options Guide
EK-FLSPC-AD	DEC 3000 Model 700/900 Service/Upgrade Information Addendum

**DEC 3000 Model 600S Server Upgrades**

Order Number	From	To	Includes
<b>PE43U-AB</b>	VAX 4000 Model 100, 100A MicroVAX 3100/xx DECsystem 5000 Models 133, 150 DECsystem 5000 Models 200, 240, 260 DECsystem 3100, 5100 DECsystem 5400, 5500, 5800	DEC 3000 Model 600S Server	32 Mbytes of memory Hardware upgrade bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>DEC OSF/1</b> two-user base license DEC OSF/1 server extension license <b>Note:</b> Mandatory return of CPU board, system box, and base memory
<b>PE43U-BB</b>	VAX 4000 Model 100, 100A MicroVAX 3100/xx DECsystem 5000 Models 133, 150 DECsystem 5000 Models 200, 240, 260 DECsystem 3100, 5100 DECsystem 5400, 5500, 5800	DEC 3000 Model 600S Server	32 Mbytes of memory Hardware upgrade bracket kit Two Fast SCSI-2 controllers Thick wire/twisted pair Ethernet <b>OpenVMS</b> base license DECnet/OSI end-system license <b>Note:</b> Mandatory return of CPU board, system box, and base memory

**DEC 3000 Model 600S Server Upgrades (continued)**

Order Number	From	To	Includes
PE43U-AA <sup>†</sup>	DEC 3000 Model 400S	DEC 3000 Model 600S Server	<b>DEC OSF/1</b> two-user base license DEC OSF/1 server extension license <b>Note:</b> Requires field service installation; Mandatory return of CPU module
PE43U-BA <sup>†</sup>	DEC 3000 Model 400S	DEC 3000 Model 600S Server	<b>OpenVMS</b> base license DECnet/OSI end-system license <b>Note:</b> Requires field service installation; Mandatory return of CPU module

<sup>†</sup> For system documentation order the following:

EK-SNDPL-OG.B01	DEC 3000 Model 600/600S/700 Owner's Guide
EK-SNDPL-OP.B01	DEC 3000 Model 600/600S/700 Options Guide
EK-FLSPC-SV.A01	DEC 300 Model 600/600S/800/800S Service Information

**DEC 4000 Model 700 Distributed/Departmental Server Upgrades**

Order Number	From	To	Includes
430XR-CA	DEC 4000 Model 610	DEC 4000 Model 620 Server	CPU module <b>DEC OSF/1</b> two-user base license DEC OSF/1 SMP extension license
430XR-BA	DEC 4000 Model 610	DEC 4000 Model 620 Server	CPU module <b>OpenVMS</b> base license OpenVMS SMP extension license
431XR-DA	DEC 4000 Model 610	DEC 4000 Model 710 Server	CPU module <b>DEC OSF/1</b> two-user base license <b>Note:</b> Mandatory return of 6xx CPU module
431XR-AA	DEC 4000 Model 610	DEC 4000 Model 710 Server	CPU module <b>OpenVMS</b> base license <b>Note:</b> Mandatory return of 6xx CPU module
431XR-EA	DEC 4000 Model 620	DEC 4000 Model 720 Server	Two CPU modules <b>DEC OSF/1</b> two-user base license DEC OSF/1 SMP extension license <b>Note:</b> Mandatory return of 6xx CPU modules
431XR-BA	DEC 4000 Model 620	DEC 4000 Model 720 Server	Two CPU modules <b>OpenVMS</b> base license OpenVMS SMP extension license <b>Note:</b> Mandatory return of 6xx CPU modules
431XR-FA	DEC 4000 Model 710	DEC 4000 Model 720 Server	CPU module <b>DEC OSF/1</b> two-user base license DEC OSF/1 SMP extension license
431XR-CA	DEC 4000 Model 710	DEC 4000 Model 720 Server	CPU module <b>OpenVMS</b> base license OpenVMS SMP extension license

## AlphaServer 1000 4/233 System Upgrades

Order Number	From	To	Includes
<b>PB71U-FA/FB*</b>	MicroVAX I, II, 2000 MicroVAX 3100/xx MicroVAX 3300, 3400 VAX 82xx, 83xx DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Models 300, 500 DEC 3000 Model 600S, 800S	AlphaServer 1000 4/233	233 MHz, 2-Mbyte cache CPU 64 Mbytes of memory 2.1-Gbyte SCSI disk drive 1.44-Mbyte floppy disk drive 600-Mbyte CD-ROM DE435-AA Ethernet card Mouse North American power cord (xA only) Documentation <b>DEC OSF/1 base license</b> NAS 200 license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory.
<b>PB71U-MA/MB*</b>	MicroVAX I, II, 2000 MicroVAX 3100/xx MicroVAX 3300, 3400 VAX 82xx, 83xx DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Models 300, 500 DEC 3000 Model 600S, 800S	AlphaServer 1000 4/233	233 MHz, 2-Mbyte cache CPU 64 Mbytes of memory 2.1-Gbyte SCSI disk drive 1.44-Mbyte floppy disk drive 600-Mbyte CD-ROM DE435-AA Ethernet card Mouse North American power cord (xA only) Documentation <b>OpenVMS base license</b> NAS 200 license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base memory. OpenVMS 6.1-1H2 required for integrated graphics support
<b>PB71U-AA/AB*</b>	MicroVAX I, II, 2000 MicroVAX 3100/xx MicroVAX 3300, 3400 VAX 82xx, 83xx DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 300, 500 DEC 3000 Model 600S, 800S	AlphaServer 1000 4/233	233 MHz, 2-Mbyte cache CPU 64 Mbytes of memory 2.1-Gbyte SCSI disk drive 1.44-Mbyte floppy disk drive 600-Mbyte CD-ROM DE435-AA Ethernet card US keyboard, mouse, and power cord (xA only) Documentation <b>Windows NT Server license</b> and media <b>Note:</b> Mandatory return of CPU, system box, and base memory

\* Refer to AlphaServer 1000 4/200 menu to order user documentation. SWXBA-BA, fixed media device carrier kit, required to migrate disks.

## AlphaServer 2000 4/233 System Upgrades

Order Number	From	To	Includes
<b>DA-241DU-H9</b>	VAX 11/7xx VAX 41xx/A MicroVAX II MicroVAX 3100/xx MicroVAX 3200-3900 DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 500 DEC 3000 Model 400S, 600S	AlphaServer 2000 4/233	233 MHz CPU 64 Mbytes of memory 2.1-Gbyte SCSI disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>DEC OSF/1 base license</b> NAS Base Server 200 for DEC OSF/1 license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

## AlphaServer 2000 4/233 System Upgrades (continued)

Order Number	From	To	Includes
<b>DY-241DU-H9</b>	VAX 11/7xx VAX 41xx/A MicroVAX II MicroVAX 3100/xx MicroVAX 3200-3900 DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 500 DEC 3000 Model 400S, 600S	AlphaServer 2000 4/233	233 MHz CPU 64 Mbytes of memory 2.1-Gbyte SCSI disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>OpenVMS</b> base license NAS Base Server 200 for OpenVMS license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license
<b>DN-241DU-H9</b>	VAX 11/7xx VAX 41xx/A MicroVAX II MicroVAX 3100/xx MicroVAX 3200-3900 DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 500 DEC 3000 Model 400S, 600S	AlphaServer 2000 4/233	233 MHz CPU 64 Mbytes of memory 2.1-Gbyte SCSI disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1280 x 1024 video graphics adapter Keyboard, mouse Documentation kit <b>Windows NT</b> license, media, and documentation <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

## AlphaServer 2000 4/275 System Upgrades

Order Number	From	To	Includes
<b>DA-242DU-H9</b>	VAX 11/7xx VAX 41xx/A MicroVAX II MicroVAX 3100/xx MicroVAX 3200-3900 DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 500 DEC 3000 Model 400S, 600S	AlphaServer 2000 4/275	275 MHz CPU 64 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>DEC OSF/1</b> base license NAS Base Server 200 for DEC OSF/1 license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license
<b>DY-242DU-H9</b>	VAX 11/7xx VAX 41xx/A MicroVAX II MicroVAX 3100/xx MicroVAX 3200-3900 DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 500 DEC 3000 Model 400S, 600S	AlphaServer 2000 4/275	275 MHz CPU 64 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>OpenVMS</b> base license NAS Base Server 200 for OpenVMS license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

**AlphaServer 2000 4/275 System Upgrades (continued)**

Order Number	From	To	Includes
<b>DN-242DU-H9</b>	VAX 11/7xx VAX 41xx/A MicroVAX II MicroVAX 3100/xx MicroVAX 3200-3900 DECsystem 5000/xx DECsystem 5000/xxx DECsystem 3100, 5100 DECsystem 5400, 5500 DEC 2000 Model 500 DEC 3000 Model 400S, 600S	AlphaServer 2000 4/275	275 MHz CPU 64 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>Windows NT</b> license, media, and documentation <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

**AlphaServer 2000 CPU Upgrades**

Order Number	From	To	Includes
<b>460AR-UA<sup>1</sup></b>	AlphaServer 2000 4/200	AlphaServer 2000 4/275	275 MHz CPU, 4 Mbyte Cache memory <b>DEC OSF/I</b> system operating license for 4/275 <b>Note:</b> Mandatory return of 200 MHz CPU and <b>DEC OSF/I</b> base operating system license
<b>460AR-UB</b>	AlphaServer 2000 4/200	AlphaServer 2000 SMP 4/275	275 MHz CPU, 4 Mbyte Cache memory <b>DEC OSF/I</b> SMP license for 4/275 <b>Note:</b> Mandatory return of 200 MHz CPU and <b>DEC OSF/I</b> SMP license
<b>460YR-UA<sup>1</sup></b>	AlphaServer 2000 4/200	AlphaServer 2000 4/275	275 MHz CPU, 4 Mbyte Cache memory <b>OpenVMS</b> system operating license for 4/275 <b>Note:</b> Mandatory return of 200 MHz CPU, and <b>OpenVMS</b> base operating system license
<b>460YR-UB</b>	AlphaServer 2000 4/200	AlphaServer 2000 SMP 4/275	275 MHz CPU, 4 Mbyte Cache memory <b>OpenVMS</b> SMP license for 4/275 <b>Note:</b> Mandatory return of 200 MHz CPU and <b>OpenVMS</b> SMP license
<b>460NR-UA<sup>1</sup></b>	AlphaServer 2000 4/200	AlphaServer 2000 4/275 AlphaServer 2000 SMP 4/275	275 MHz CPU, 4 Mbyte Cache memory <b>Windows NT</b> license included with 4/200 MHz system supports 275 MHz CPU upgrade and SMP upgrades <b>Note:</b> Mandatory return of 200 MHz CPU

<sup>1</sup> To upgrade AlphaServer 2000 4/200 systems with Serial Number(s) xx515xxxxxx or lower to a 4/275 CPU, order a BA720-UA AlphaServer 2000 Enclosure EMC Upgrade Kit (no charge) along with CPU upgrade.

## AlphaServer 2100 4/233 System Upgrades

Order Number	From	To	Includes
<b>DA-251PU-J9</b>	MicroVAX 3200-3900 VAX 4000 Models xxx, xxxA VAX 6000 Models 2xx-4xx VAX 82xx, 83xx DECsystem 5400, 5500, 5800 DEC 3000 Models 400S, 600S	AlphaServer 2100 4/233	233 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>DEC OSF/1</b> base license NAS Base Server 200 for DEC OSF/1 license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license
<b>DY-251PU-J9</b>	MicroVAX 3200-3900 VAX 4000 Models xxx, xxxA VAX 6000 Models 2xx-4xx VAX 82xx, 83xx DECsystem 5400, 5500, 5800 DEC 3000 Models 400S, 600S	AlphaServer 2100 4/233	233 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>OpenVMS</b> base license NAS Base Server 200 for OpenVMS license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license
<b>DN-251PU-J9</b>	MicroVAX 3200-3900 VAX 4000 Models xxx, xxxA VAX 6000 Models 2xx-4xx VAX 82xx, 83xx DECsystem 5400, 5500, 5800 DEC 3000 Models 400S, 600S	AlphaServer 2100 4/233	233 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>Windows NT</b> license, media, and documentation <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

## AlphaServer 2100 4/275 System Upgrades

Order Number	From	To	Includes
<b>DA-252PU-J9</b>	VAX 9000 VAX 88xx, 86xx, 85xx VAX 65xx, 66xx VAX 42xx-47xx DECsystem 5900 DEC 3000 Models 500S, 600S DEC 3000 Model 800S DEC 4000 Models 610, 710	AlphaServer 2100 4/275	275 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>DEC OSF/1</b> base license NAS Base Server 200 for DEC OSF/1 license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

## AlphaServer 2100 4/275 System Upgrades (continued)

Order Number	From	To	Includes
<b>DY-252PU-J9</b>	VAX 9000 VAX 88xx, 86xx, 85xx VAX 65xx, 66xx VAX 42xx-47xx DECsystem 5900 DEC 3000 Models 500S, 600S DEC 3000 Model 800S DEC 4000 Models 610, 710	AlphaServer 2100 4/275	275 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>OpenVMS</b> base license NAS Base Server 200 for OpenVMS license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license
<b>DN-252PU-J9</b>	VAX 9000 VAX 88xx, 86xx, 85xx VAX 65xx, 66xx VAX 42xx-47xx DECsystem 5900 DEC 3000 Models 500S, 600S DEC 3000 Model 800S DEC 4000 Models 610, 710	AlphaServer 2100 4/275	275 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1280 x 1024 video graphics adapter Keyboard, mouse Documentation kit <b>Windows NT</b> license, media, and documentation <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

## AlphaServer 2100 5/250 System Upgrades

Order Number	From	To	Includes
<b>DA-253PU-J9</b>	VAX 9000 VAX 88xx, 86xx, 85xx VAX 65xx, 66xx VAX 42xx-47xx DECsystem 5900 DEC 3000 Models 500S, 600S DEC 3000 Model 800S DEC 4000 Models 610, 710	AlphaServer 2100 5/250	EV5-based 250 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>DEC OSF/1</b> base license NAS Base Server 200 for DEC OSF/1 license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license
<b>DY-253PU-J9</b>	VAX 9000 VAX 88xx, 86xx, 85xx VAX 65xx, 66xx VAX 42xx-47xx DECsystem 5900 DEC 3000 Models 500S, 600S DEC 3000 Model 800S DEC 4000 Models 610, 710	AlphaServer 2100 5/250	EV5-based 250 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1024 x 768 video graphics adapter Keyboard, mouse Documentation kit <b>OpenVMS</b> base license NAS Base Server 200 for OpenVMS license DECmigrate license <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

**AlphaServer 2100 5/250 System Upgrades (continued)**

Order Number	From	To	Includes
DN-253PU-J9	VAX 9000 VAX 88xx, 86xx, 85xx VAX 65xx, 66xx VAX 42xx-47xx DECsystem 5900 DEC 3000 Models 500S, 600S DEC 3000 Model 800S DEC 4000 Models 610, 710	AlphaServer 2100 5/250	EV5-based 250 MHz CPU 128 Mbytes of memory 2.1-Gbyte disk drive 2.88-Mbyte floppy disk drive 600-Mbyte CD-ROM 1280 x 1024 video graphics adapter Keyboard, mouse Documentation kit <b>Windows NT</b> license, media, and documentation <b>Note:</b> Mandatory return of CPU, system box, and base operating system license

**AlphaServer 2100 CPU Upgrades**

Order Number	From	To	Includes
460AR-UA	AlphaServer 2100 4/200 MHz	AlphaServer 2100 4/275 MHz	275 MHz CPU, 4 Mbyte Cache memory <b>DEC OSF/1</b> system operating license for 4/275 <b>Note:</b> Mandatory return of 200 MHz CPU and <b>DEC OSF/1</b> base operating system license
460AR-UB	AlphaServer 2100 4/200 MHz	AlphaServer 2100 SMP 4/275 MHz	275 MHz CPU, 4 Mbyte Cache memory <b>DEC OSF/1</b> SMP license for 4/275 <b>Note:</b> Mandatory return of 200 MHz CPU and <b>DEC OSF/1</b> SMP license
460YR-UA	AlphaServer 2100 4/200 MHz	AlphaServer 2100 4/275 MHz	275 MHz CPU, 4 Mbyte Cache memory <b>OpenVMS</b> system operating license for 4/275 <b>Note:</b> Mandatory return of 200 MHz CPU, and <b>OpenVMS</b> base operating system license
460YR-UB	AlphaServer 2100 4/200 MHz	AlphaServer 2100 SMP 4/275 MHz	275 MHz CPU, 4 Mbyte Cache memory <b>OpenVMS</b> SMP license for 4/275 <b>Note:</b> Mandatory return of 200 MHz CPU and <b>OpenVMS</b> SMP license
460NR-UA	AlphaServer 2100 4/200 MHz	AlphaServer 2100 4/275 MHz AlphaServer 2100 SMP 4/275 MHz	275 MHz CPU, 4 Mbyte Cache memory <b>Windows NT</b> license included with 4/200 Mhz system supports 275 MHz CPU upgrade and SMP upgrades <b>Note:</b> Mandatory return of 200 MHz CPU

### AlphaServer 8200 System Upgrades

Order Number	From	To	Includes
<b>DA-281AS-A9</b>	VAX 88xx, 86xx, 85xx, 4xxx VAX 66xx, 65xx, 64xx DEC 4xxx	AlphaServer 8200	Single-CPU AlphaServer 8200 128 Mbytes of memory <b>OSF/1 Alpha</b> base license NAS 200 base server license DECmigrate License <b>Note:</b> Mandatory return of existing system
<b>DY-281AS-A9</b>	VAX 88xx, 86xx, 85xx, 4xxx VAX 66xx, 65xx, 64xx DEC 4xxx	AlphaServer 8200	Single-CPU AlphaServer 8200 128 Mbytes of memory <b>OpenVMS Alpha</b> base license NAS 200 base server license DECmigrate License <b>Note:</b> Mandatory return of existing system

### AlphaServer 8400 System Upgrades

Order Number	From	To	Includes
<b>DA-291BS-AA/AB/AC</b>	VAX 64xx, 65xx	AlphaServer 8400	Dual-CPU AlphaServer 8400 256 Mbytes of memory <b>OSF/1 Alpha</b> base license NAS 200 base server license DECmigrate License <b>Note:</b> Mandatory return of existing system
<b>DY-291BS-AA/AB/AC</b>	VAX 64xx, 65xx	AlphaServer 8400	Dual-CPU AlphaServer 8400 256 Mbytes of memory <b>OpenVMS Alpha</b> base license NAS 200 base server license DECmigrate License <b>Note:</b> Mandatory return of existing system
<b>DA-291BS-BA/BB/BC</b>	VAX 66xx, 9xxx	AlphaServer 8400	Dual-CPU AlphaServer 8400 256 Mbytes of memory <b>OSF/1 Alpha</b> base license NAS 200 base server license DECmigrate License <b>Note:</b> Mandatory return of existing system
<b>DY-291BS-BA/BB/BC</b>	VAX 66xx, 9xxx	AlphaServer 8400	Dual-CPU AlphaServer 8400 256 Mbytes of memory <b>OpenVMS Alpha</b> base license NAS 200 base server license DECmigrate License <b>Note:</b> Mandatory return of existing system

**VAX/DEC 7000/10000 In-cabinet Upgrades to Digital AlphaServer 8400 5/300**

Upgrades for current VAX/DEC 7000/10000 customers are available to upgrade your current system platform to a AlphaServer 8400 systems.

Upgrades consist of replacing your current VAX/DEC 7000/10000 System Backplane, CPU module(s), memory module(s), and I/O port module. All of your XMI plug-in unit(s) and disk/tapes are fully supported. In addition you have the option of adding the new PCI plug-in unit.

Upgrade kit part numbers are available with either OpenVMS or DEC OSF/1 licenses and include all the hardware items needed to upgrade a base level VAX/DEC 7000/10000 system to AlphaServer 8400.

The AlphaServer 8400 requires a new System Backplane assembly, new CPU module(s), new memory module(s), and new I/O port module(s). Special allowances and trade-ins are available to handle your current memory modules.

Before undertaking this Step by Step procedure, get an up to date configuration listing of the system that you plan to upgrade.

**Step 1— AlphaServer 8400 Upgrades**

- Requires DEC OSF/1 V3.2B or later, and OpenVMS V6.2 or later.
- Console terminal required unless available on site.
- Upgrade part numbers assume you are starting with a single CPU module VAX/DEC 7000/10000 configuration (VAX/DEC 7610/7710).
- AlphaServer 8400 system upgrade consists of a 9 slot centerplane, with a Dual-CPU module, KFTHA-AA System I/O module, and either no memory or 2 Gbyte memory upgrade.
- Minimum system configuration must have; One AlphaServer 8400 Dual-CPU module, one KFTHA-AA System I/O module, and one memory module.
- Six slots are available for additional modules (CPU modules, memory modules, or System I/O modules).
- CD-ROM is required - VAX 7000 upgrades require the addition of RRDCD-CA option.
- CD-ROM requires a single-ended SCSI-2 connection from either KFTIA-AA., or KZMSA-AB in a XMI plug-in unit, or KZPAA-AA in a PCI plug-in unit.

**DEC OSF/1 Upgrade Systems include**

- TurboLaser 9-slot backplane assembly
- One Processor module with *two* DECchip 21164/300 MHz CPUs, each DECchip 21164 has 4 Mbyte Backup cache
- System I/O module (KFTHA-AA) with *four* I/O channel connections
- No memory or a 2 Gbytes empty motherboard for upgrading your current 2 Gbyte memory module
- DEC OSF/1 base license
- One year hardware product warranty
- 90 day software product warranty

**OpenVMS Upgrade Systems include**

- TurboLaser 9-slot backplane assembly
- One Processor module with *two* DECchip 21164/300 MHz CPUs, each DECchip 21164 has 4 Mbyte Backup cache
- System I/O module (KFTHA-AA) with *four* I/O channel connections
- No memory or a 2 Gbytes empty motherboard for upgrading your current 2 Gbyte memory module
- OpenVMS base license
- One year hardware product warranty
- 90 day software product warranty

Order Number - Dual CPU Systems	Operating System	Memory Notes
DA-291BU-YX	DEC OSF/1	No memory included, order below
DA-291BU-FX	DEC OSF/1	Empty 2 Gbyte memory motherboard
DY-291BU-YX	OpenVMS	No memory included, order below
DY-291BU-FX	OpenVMS	Empty 2 Gbyte memory motherboard

**Notes:** All upgrades require the return of upgraded hardware to Digital Equipment Corporation

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## Step 2—CPU Symmetric Multi-Processing (SMP)

- Order up to five additional CPU modules, for a maximum of six modules.
- If more than three processor modules are in a system, a minimum of two separate memory modules should be considered for optimal system performance.
- Use Step 2a to “trade-in” your current VAX/DEC 7000/10000 CPUs, if you have more than One CPU in your current VAX/DEC 7000/10000 system.
- Use Step 2b to add additional AlphaServer 8400 CPU modules to your configuration.

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### Step 2a—CPU Symmetric Multi-Processing (SMP) Trade-ins

- Part numbers provide for trade-in value of your current VAX/DEC 7000 CPUs to AlphaServer 8400 CPUs.
- All trade-in part numbers require return of hardware to Digital Equipment Corporation.
- One year hardware product warranty.

75U14-AX	<b>From - VAX/DEC 7000 CPU Module to DEC OSF/1 SMP—Uni-CPU</b> , Requires the trade-in of <i>one</i> VAX/DEC 7000/10000 CPU module. Includes processor module with <i>one</i> DECchip 21164/300 MHz CPU, DEC OSF/1 SMP extension license.
75U13-AX	<b>From - VAX/DEC 7000 CPU Module to OpenVMS SMP—Uni-CPU</b> , Requires the trade-in of <i>one</i> VAX/DEC 7000/10000 CPU module. Includes processor module with <i>one</i> DECchip 21164/300 MHz CPU, OpenVMS SMP extension license.
75U24-AX	<b>From - VAX/DEC 7000 CPU Module to DEC OSF/1 SMP—Dual-CPU</b> , Requires the trade-in of <i>one</i> VAX/DEC 7000/10000 CPU module. Includes processor module with <i>two</i> DECchip 21164/300 MHz CPUs, DEC OSF/1 SMP extension license.
75U23-AX	<b>From - VAX/DEC 7000 CPU Module to OpenVMS SMP—Dual-CPU</b> , Requires the trade-in of <i>one</i> VAX/DEC 7000/10000 CPU module. Includes processor module with <i>two</i> DECchip 21164/300 MHz CPUs, OpenVMS SMP extension license.
75U34-AX	<b>From - two VAX/DEC 7000 CPU Modules to DEC OSF/1 SMP—Dual-CPU</b> , Requires the trade-in of <i>two</i> VAX/DEC 7000/10000 CPU modules. Includes processor module with <i>two</i> DECchip 21164/300 MHz CPUs, DEC OSF/1 SMP extension license.
75U33-AX	<b>From - two VAX/DEC 7000 CPU Modules to OpenVMS SMP—Dual-CPU</b> , Requires the trade-in of <i>two</i> VAX/DEC 7000/10000 CPU modules. Includes processor module with <i>two</i> DECchip 21164/300 MHz CPUs, OpenVMS SMP extension license.

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### Step 2b—CPU Symmetric Multi-Processing (SMP) Expansion

- Order up to five additional CPU modules, for a maximum of six modules.
- Part numbers are for adding additional AlphaServer 8400 CPUs to your system configuration.

751P2-AX	<b>DEC OSF/1 SMP upgrade—Uni-CPU</b> , includes processor module with <i>one</i> DECchip 21164/300 MHz CPU, DEC OSF/1 SMP extension license.
751P1-AX	<b>OpenVMS SMP upgrade—Uni-CPU</b> , includes processor module with <i>one</i> DECchip 21164/300 MHz CPU, OpenVMS SMP extension license.
752P2-AX	<b>DEC OSF/1 SMP upgrade—Dual-CPU</b> , includes processor module with <i>two</i> DECchip 21164/300 MHz CPUs, DEC OSF/1 SMP extension license.
752P1-AX	<b>OpenVMS SMP upgrade—Dual-CPU</b> , includes processor module with <i>two</i> DECchip 21164/300 MHz CPUs, OpenVMS SMP extension license.
752P3-AX	<b>DEC OSF/1 SMP upgrade—Uni-CPU to Dual-CPU</b> , includes processor module with <i>two</i> DECchip 21164/300 MHz CPUs, DEC OSF/1 SMP extension license. Requires return of AlphaServer 8400 Uni-CPU module to Digital Equipment Corporation.
752P4-AX	<b>OpenVMS SMP upgrade—Uni-CPU to Dual-CPU</b> , includes processor module with <i>two</i> DECchip 21164/300 MHz CPUs, OpenVMS SMP extension license. Requires return of AlphaServer 8400 Uni-CPU module to Digital Equipment Corporation.

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**Step 3—Memory**

- Select additional memory if required; maximum 14 Gbytes per system.
- Order up to six additional memory modules, for a maximum of seven memory modules.
- Use Step 3a to “trade-in” your current VAX/DEC 7000/10000 memory modules.
- Use Step 3b to add additional AlphaServer 8400 memory modules to your configuration.
- Each memory module has built in two-way interleaving. Additional interleaving is accomplished by adding more memory modules.
- Maximum of seven memory modules is reduced by **one** for each additional CPU module added from Step 2.

**Note:** A short term memory size restriction is currently in effect; Memory modules **must** be in quantity of one, two, or four memory modules of the same size. This means that maximum memory configuration is temporarily four 2-Gbyte memory modules, resulting in system maximum memory of 8 Gbytes.

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**Step 3a—Memory Trade-in**

- Part numbers provide for trade-in value of current VAX/DEC 7000 memory modules to AlphaServer 8400 memory modules.
- All trade-in part numbers require return of hardware to Digital Equipment Corporation.
- If you have 2 Gbyte memory modules on your VAX/DEC 7000/10000 system order MS7CC-UC to move SIMMs from VAX/DEC 7000/10000 memory motherboard to AlphaServer 8400 memory motherboard.

<b>MS7CC-UD</b>	DEC/VAX 7000 256 Mbyte memory trade-in for a AlphaServer 8200/8400 256 Mbyte module
<b>MS7CC-UE</b>	DEC/VAX 7000 256 Mbyte memory trade-in for a AlphaServer 8200/8400 512 Mbyte module
<b>MS7CC-UF</b>	DEC/VAX 7000 512 Mbyte memory trade-in for a AlphaServer 8200/8400 512 Mbyte module
<b>MS7CC-UG</b>	DEC/VAX 7000 512 Mbyte memory trade-in for a AlphaServer 8200/8400 1 Gbyte module

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**Step 3b—Memory Expansion**

- These part numbers provide for adding additional AlphaServer 8400 memory to your system configuration.

<b>MS7CC-BA</b>	128-Mbyte memory module
<b>MS7CC-CA</b>	256-Mbyte memory module
<b>MS7CC-DA</b>	512-Mbyte memory module
<b>MS7CC-EA</b>	1024-Mbyte memory module
<b>MS7CC-FA</b>	2048-Mbyte memory module

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**Step 3c—Memory Upgrades**

- Field installation only (**not** configurable in manufacturing).

<b>MS7CC-UA</b>	128-Mbyte memory upgrade (8-Mbyte SIMMs), upgrades 128-Mbyte (-BA) module to a 256-Mbyte (-CA) module
<b>MS7CC-UB</b>	512-Mbyte memory upgrade (32-Mbyte SIMMs), upgrades 512-Mbyte (-DA) module to a 1-Gbyte (-EA) module
<b>MS7CC-UC</b>	2-Gbyte empty memory motherboard, <b>only</b> for upgrading from a MS7AA-FA module

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## Step 4—CD-ROM

- If VAX/DEC 7000/10000 system does not include CD-ROM (located in the upper front right hand corner of the system cabinet) a CD-ROM device is required.
- CD-ROM device in StorageWorks shelf driven from the KZPSA-BB and a DWZZA-VA is **not** allowed.
- CD-ROM requires a single-ended SCSI-2 connection from either the KFTIA-AA., or the KZMSA-AB in a XMI plug-in unit, or the KZPAA-AA in a PCI plug-in unit.
- All connections to the CD-ROM device will stop at the device, further daisy chaining is **not** allowed.

**RRDCD-CA**      **AlphaServer 8400 In-cabinet CD-ROM disk**—maximum of one per system. Must be ordered if no CD-ROM device exists in upgraded system. Includes CD-ROM device, mounting hardware, BN21H-0H cable (.75 meter length cable) - will require ordering longer cable to reach either the XMI PIU or the PCI PIU.

**KZPAA-AA**      **PCI SCSI Controller**—Single-ended narrow SCSI controller. **ONLY** for connecting the RRDCD-CA to the PCI plug-in unit.

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## Step 5—Three Phase Expansion Components

If VAX/DEC 7000/10000 system being upgraded has one H7263 power regulator, recheck the EPUs to verify if second power regulator is needed.

**H7263-AA/AB**      **Three Phase 48 VDC power regulator**—maximum three per cabinet. A second regulator may be required to supply adequate power depending on configuration. See power configuration table in the AlphaServer 8400 section. A third regulator assures N+1 power redundancy and higher availability in the event of a power regulator failure.

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## Step 6—Additional procedures needed

- Verify that T2028 module in DWLMA (XMI plug-in unit) is at minimum revision of “F05”. If not replace with latest revision.
- Recheck new configurations “EPU” value to determine if second power regulator is now required.
- For additional items see the AlphaServer 8400 System and Options article.

## DEC 7000 Model 700 Enterprise Server Upgrades

Order Number	From	To	Includes
7KAXA-DA/DB/DC	VAX 6000 Models 4xx, 5xx	DEC 7000 Model 710 Base Server	128 Mbytes of memory KZMSA disk controller RRD43 600-Mbyte CD-ROM DEMNA XMI Ethernet adapter <b>DEC OSF/1</b> two-user base license <b>Note:</b> Mandatory return of VAX system
7KAXA-FA/FB/FC	VAX 6000 Models 4xx, 5xx	DEC 7000 Model 710 Base Server	128 Mbytes of memory KZMSA disk controller RRD43 600-Mbyte CD-ROM DEMNA XMI Ethernet adapter <b>OpenVMS</b> base license <b>Note:</b> Mandatory return of VAX system
7KAXB-DA/DB/DC	VAX 6000 Models 6xx	DEC 7000 Model 710 Base Server	128 Mbytes of memory KZMSA disk controller RRD43 600-Mbyte CD-ROM DEMNA XMI Ethernet adapter <b>DEC OSF/1</b> two-user base license <b>Note:</b> Mandatory return of VAX system
7KAXB-FA/FB/FC	VAX 6000 Models 6xx	DEC 7000 Model 710 Base Server	128 Mbytes of memory KZMSA disk controller RRD43 600-Mbyte CD-ROM (RRD43) DEMNA XMI Ethernet adapter <b>OpenVMS</b> base license <b>Note:</b> Mandatory return of VAX system
7KAXD-DA/DB/DC	VAX 9000	DEC 7000 Model 710 Server	CPU module 512 Mbytes of memory KZMSA disk controller RRD43 600-Mbyte CD-ROM DEMNA XMI Ethernet adapter XMI CI controller <b>DEC OSF/1</b> two-user base license <b>Note:</b> Mandatory return of VAX 9000
7KASA-DA/DB/DC	VAX 9000	DEC 7000 Model 710 Server	CPU module 1 Gbyte of memory KZMSA disk controller DEMFA FDDI controller STORME plug-in unit storage subsystem Two 2.1-Gbyte SCSI disk drives RRD43 600-Mbyte CD-ROM <b>DEC OSF/1</b> two-user base license <b>Note:</b> Mandatory return of VAX 9000
7KBXA-FA/FB/FC	VAX 9000	DEC 7000 Model 720 Server	Two CPU modules 512 Mbytes of memory KZMSA disk controller RRD43 600-Mbyte CD-ROM DEMNA XMI Ethernet adapter XMI CI controller <b>OpenVMS</b> base license OpenVMS SMP extension license <b>Note:</b> Mandatory return of VAX 9000
7KBSA-FA/FB/FC	VAX 9000	DEC 7000 Model 720 Server	Two CPU modules 1 Gbyte of memory KZMSA disk controller DEMFA FDDI controller STORME plug-in unit storage subsystem Two 2.1-Gbyte SCSI disk drives RRD43 600-Mbyte CD-ROM <b>OpenVMS</b> base license OpenVMS SMP extension license <b>Note:</b> Mandatory return of VAX 9000

**Note:** xA = 208-V, xB = 416-V, xC = 202-V

**DEC 7000 and 10000 Symmetric Multiprocessing (SMP) Upgrades**

Order Number	From	To	Includes
<b>7KAVA-DC</b>	VAX 7000 Model 610, 710 VAX 10000 Model 610 DEC 7000 Model 610	DEC 7000 Model 710 Server	<b>DEC OSF/1</b> two-user base license <b>Note:</b> Mandatory return of VAX CPU module
<b>7KAVA-FC</b>	VAX 7000 Model 610, 710 VAX 10000 Model 610 DEC 7000 Model 610	DEC 7000 Model 710 Server	<b>OpenVMS</b> base license <b>Note:</b> Mandatory return of VAX CPU module
<b>7KAVA-NC<sup>1</sup></b>	VAX 7000 Model 6xx/7xx VAX 10000 Model 6xx DEC 7000 Model 6xx SMP Systems	DEC 7000 Model 7xx SMP System	CPU <b>DEC OSF/1</b> two-user base license <b>Note:</b> Mandatory return of VAX CPU modules
<b>7KAVA-MC<sup>2</sup></b>	VAX 7000 Model 6xx/7xx VAX 10000 Model 6xx DEC 7000 Model 6xx SMP Systems	DEC 7000 Model 7xx SMP System	CPU <b>OpenVMS</b> base license <b>Note:</b> Mandatory return of VAX CPU modules
<b>9HATA-ND</b>	DEC 10000 Model 6xx	DEC 10000 Model 6xx	One CPU module <b>DEC OSF/1</b> two-user license DEC OSF/1 SMP extension license
<b>9HATA-MD</b>	DEC 10000 Model 6xx	DEC 10000 Model 6xx	One CPU module <b>OpenVMS</b> SMP extension license

<sup>1</sup> Use in conjunction with order number 7KAVA-DC to upgrade VAX 7000 Model 6xx SMP systems to DEC 7000 Model 7xx SMP systems. For example, to upgrade from a VAX 7000 Model 640 to a DEC 7000 Model 740 system, order: (1) 7KAVA-DC and (3) 7KAVA-NC.

<sup>2</sup> Use in conjunction with order number 7KAVA-FC to upgrade VAX 7000 Model 6xx SMP systems to DEC 7000 Model 7xx SMP systems. For example, to upgrade from a VAX 7000 Model 640 to a DEC 7000 Model 740 system, order: (1) 7KAVA-FC and (3) 7KAVA-MC.

## VAXstation 4000 Upgrades

Upgrade kits must be installed by Digital Services.

Order Number	From	To	Includes
PV71U-B9	VAXstation 3100 with VRT16, VRT19, VR320 (72 Hz)	VAXstation 4000 Model 96 LCSPX 2D graphics (72 Hz)	VAXstation Model 96 CPU System enclosure and power supply 16 Mbytes of memory 8-plane color/grayscale graphics board 2.7-m (9-ft) color/monochrome video cable Brackets for three internal SCSI devices (one removable, two fixed disks) ThinWire/thick wire Ethernet DEC-423 serial line EIA-232D serial line with modem control Synchronous SCSI controller <b>OpenVMS VAX</b> base license NAS 150 license <b>Note:</b> Mandatory return of VAXstation 3100 CPU board and system enclosure
PV71U-BF <sup>†</sup>	VAXstation 4000 Model 60 2D LCG graphics (66/72 Hz)	VAXstation 4000 Model 96 LCSPX 2D graphics (66/72 Hz)	VAXstation 4000 Model 96 CPU System enclosure and power supply 8-plane color/grayscale graphics board 2.7-m (9-ft) color/monochrome video cable Brackets for three internal SCSI devices (one removable, two fixed disks) ThinWire/thick wire Ethernet DEC-423 serial line EIA-232D serial line with modem control Synchronous SCSI controller OpenVMS VAX base license NAS 150 license <b>Note:</b> Mandatory return of Model 60 CPU board and LCG graphics card
PV71U-BH	VAXstation 4000 Model 90/90A 2D LCSPX graphics - 66/72Hz	VAXstation 4000 Model 96 LCSPX 2D (66/72 Hz)	VAXstation 4000 Model 96 CPU NAS 150 license <b>Note:</b> Mandatory return of Model 90/90A CPU board

<sup>†</sup> VAXstation Model 96 systems require minimum of 16 Mbytes of main memory; 8-Mbyte memory embedded on Model 60 system board cannot be transferred. See Model 96 memory configurations. 4-Mbyte and 16-Mbyte SIMMs from Model 60 may be transferred to Model 96 in sets of four ONLY (e.g., two MS44L-BA = 4 x 4-Mbyte SIMMs). Model 96 memory modules must be installed in sets of four matching value SIMMs.

## MicroVAX 3100 Desktop Server Upgrades

**Note:** Non-return charge assessed if old system/CPU board is not returned to Digital.

Order Number	From	To	Includes
DV-31SUA-E9	MicroVAX II, 2000 MicroVAX 3100e, 3100 VAX 82xx/83xx	MicroVAX 3100 Model 96 ADVANTAGE-SERVER	64 Mbytes of memory SCSI controller Ethernet adapter Four asynchronous lines 1.05-Gbyte SCSI disk 600-Mbyte CD-ROM US power cord Hardware documentation kit <b>OpenVMS VAX</b> base license NAS 200 license
49GAX-E9	MicroVAX 3100 Model 40 MicroVAX 3100 Model 80	MicroVAX 3100 Model 96 Server	MicroVAX 3100 Model 96 Server CPU, 64 Mbytes of memory <b>OpenVMS VAX</b> base license
49JAX-E9	MicroVAX 3100 Model 85	MicroVAX 3100 Model 96 Server	MicroVAX 3100 Model 96 Server CPU, 64 Mbytes of memory <b>OpenVMS VAX</b> base license
49XR-AA	MicroVAX 3100 Model 95	MicroVAX 3100 Model 96 Server	MicroVAX 3100 Model 96 Server CPU, 64 Mbytes of memory <b>OpenVMS VAX</b> base license

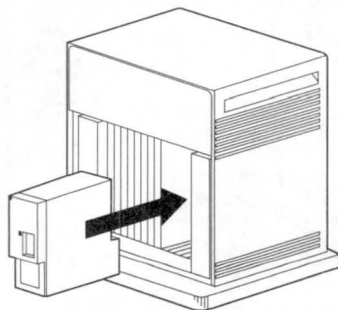
## VAX 4000 Model 50 In-Cabinet Upgrades

This upgrade kit is for MicroVAX 3000 series and VAX 4000 Model 200 systems residing in BA213, BA212, BA215, BA211, BA430, or BA431 enclosures, running OpenVMS VAX Version 5.5-2 or 6.1 (6.0 is excluded). The kit mounts into the first four slots of a system backplane, replacing the CPU and memory.

Installed base system upgrades require the mandatory return of the CPU and memory modules.

Order Number	From	To	Includes
2T-V405A-Ax	MicroVAX 3000 Series VAX 4000 Model 200	VAX 4000 Model 50	16 Mbytes of memory Four DEC 423 asynchronous communication ports Two DSSI ports SCSI port ThinWire Ethernet port Q-bus connection to BA200 and BA430 series enclosure backplanes <b>OpenVMS</b> base license <b>Note:</b> Mandatory return of CPU and memory modules
2T-V405A-Bx	MicroVAX 3000 Series VAX 4000 Model 200	VAX 4000 Model 50	32 Mbytes of memory Four DEC 423 asynchronous communication ports Two DSSI ports SCSI port ThinWire Ethernet port Q-bus connection to BA200 and BA430 series enclosure backplanes <b>OpenVMS</b> base license <b>Note:</b> Mandatory return of CPU and memory modules
2T-V405A-Cx	MicroVAX 3000 Series VAX 4000 Model 200	VAX 4000 Model 50	64 Mbytes of memory Four DEC 423 asynchronous communication ports Two DSSI ports SCSI port ThinWire Ethernet port Q-bus connection to BA200 and BA430 series enclosure backplanes <b>OpenVMS</b> base license <b>Note:</b> Mandatory return of CPU and memory modules
2T-V405A-Dx	MicroVAX 3000 Series VAX 4000 Model 200	VAX 4000 Model 50	128 Mbytes of memory Four DEC 423 asynchronous communication ports Two DSSI ports SCSI port ThinWire Ethernet port Q-bus connection to BA200 and BA430 series enclosure backplanes <b>OpenVMS</b> base license <b>Note:</b> Mandatory return of CPU and memory modules

**Note:** x = user license; 1 = server; 2 = 5-user; 3 = 10-user; 4 = 20-user; 5 = 40-user; 6 = unlimited user



BU-3452

## VAX 4000 Model 106A System Upgrades

**Note:** Non-return charge assessed if old system/CPU board is not returned to Digital.

### CPU Upgrade

Order Number	From	To	Includes
53XR-BA	VAX 4000 Models 100, 100A, 105A, 106A	VAX 4000 Model 106A ADVANTAGE-SERVER	<b>OpenVMS VAX</b> base license <b>Note:</b> Mandatory return of old CPU

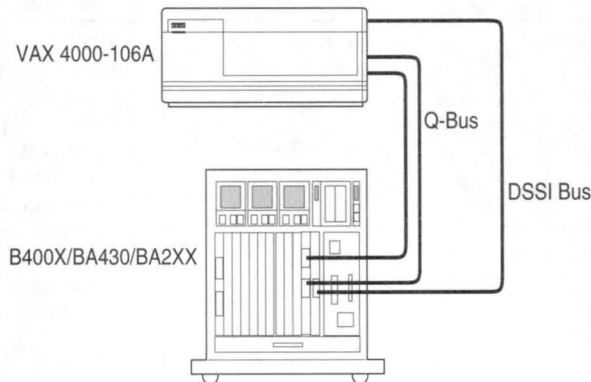
### System Trade-in Upgrade

Order Number	From	To	Includes
DV-416V1-EB	MicroVAX I, II, 2000, 3100 MicroVAX 3300, 3400, 3500 MicroVAX 3600, 3700, 3800, 3900 VAX 4000 Model 200 VAX 11/780	VAX 4000 Model 106A ADVANTAGE-SERVER	64 Mbytes of memory Dual DSSI controller RF36 1.6-Gbyte DSSI disk 600-Mbyte CDROM <b>OpenVMS VAX</b> base license NAS 200 license <b>Note:</b> Mandatory return of old system

### Expansion Upgrade

Order Number	From	To	Includes
DV-416U1-EB	MicroVAX 3300, 3400, 3500 MicroVAX 3600, 3700, 3800, 3900 VAX 4000 Model 200	VAX 4000 Model 106A ADVANTAGE-SERVER	64 Mbytes of memory Dual DSSI controller RF36 1.6-Gbyte DSSI disk Q-bus expansion slot 600-Mbyte CDROM <b>OpenVMS VAX</b> base license NAS 200 license <b>Note:</b> Mandatory return of old system

**Note:** Q-bus extender upgrades must be installed by Digital Services. The existing BA2xx or BA4xx becomes a Q-bus storage expander box (see diagram below) to continue support of installed communications, storage devices, or third-party options.



**Note:** KFDDA-BA or KFDDA-AA disk controller required.

BU-3453

**VAX 4000 Models 505A/705A Board Upgrades**

**Note:** The following upgrade kits are for VAX/VAXserver 4000 Model 300 systems with serial numbers WFO4899999 or lower, AYO4700100 and lower.

Order Number	From	To	Includes
691XU-CS*	VAX 4000 Model 300	VAX 4000 Model 505A	CPU BA440 backplane <b>OpenVMS VAX</b> base license
694XR-CS*	VAX 4000 Model 300	VAX 4000 Model 705A	CPU BA440 backplane <b>OpenVMS VAX</b> base license

\* Memory must be upgraded to new style memory. Refer to part numbers MS690-UC (64-Mbyte memory upgrade) or MS690-UD (128-Mbyte memory upgrade).

**Note:** A non-return charge will be assessed if old CPU board is not returned to Digital.

**VAX 4000 Models 505A/705A Board Upgrades**

**Note:** The following upgrade kits are for VAX/VAXserver 4000 Model 300 systems with serial numbers WFO4900000 or higher, AYO4700101 and higher, starting with KAO or NIO.

Order Number	From	To	Includes
691XU-DS*	VAX 4000 Model 300	VAX 4000 Model 505A	CPU <b>OpenVMS VAX</b> base license
694XR-DS*	VAX 4000 Model 300	VAX 4000 Model 705A	CPU <b>OpenVMS VAX</b> base license

\* Memory must be upgraded to new style memory. Refer to part numbers MS690-UC (64-Mbyte memory upgrade) or MS690-UD (128-Mbyte memory upgrade).

**Note:** A non-return charge will be assessed if old CPU board is not returned to Digital.

**VAX 4000 Models 505A/705A Board Upgrades**

Order Number	From	To	Includes
691XU-DB	VAX 4000 Models 400, 500 VAX 4000 Model 500A	VAX 4000 Model 505A	CPU <b>OpenVMS VAX</b> base license
694XR-DB	VAX 4000 Models 400, 500 VAX 4000 Model 500A	VAX 4000 Model 705A	CPU <b>OpenVMS VAX</b> base license
694XR-JB	VAX 4000 Model 505A VAX 4000 Models 600, 600A VAX 4000 Model 700A	VAX 4000 Model 705A	CPU <b>OpenVMS VAX</b> base license

**Note:** A non-return charge will be assessed if old CPU board is not returned to Digital.

**VAX 4000 Models 505A/705A System Upgrades**

Order Number	From	To	Includes
DV-45AV2-C9	MicroVAX 3300, 3400, 3500, 3600 MicroVAX 3800, 3900 VAX 4000 Model 200 VAX 11/7xx VAX 82xx, 83xx	VAX 4000 Model 505A Advantage Server	64 Mbytes of memory RF36 1.6Gbyte DSSI disk 600-Mbyte CDROM <b>OpenVMS VAX</b> base license NAS 200 license
DV-47AV2-C9	MicroVAX 3300, 3400, 3500, 3600 MicroVAX 3800, 3900 VAX 4000 Model 200 VAX 11/7xx VAX 82xx, 83xx, 85xx, 86xx	VAX 4000 Model 705A Advantage Server	128 Mbytes of memory RF36 1.6gbyte DSSI disk 600-Mbyte CDROM <b>OpenVMS VAX</b> base license NAS 200 license

## VAX 7000 System Upgrades

Order Number	From	To	Includes
7JAXD-AA/AB/AC	VAX 6000 Models 4xx, 5xx	VAX 7000 Model 710 System	256 Mbytes of memory VAX 7000 console kit DEMNA XMI Ethernet adapter <b>OpenVMS VAX</b> base license NAS 200+ base server license <b>Note:</b> Mandatory return of VAX 6000 system
7JAXE-AA/AB/AC	VAX 6000 Model 6xx VAX 9xxx	VAX 7000 Model 710 System	256 Mbytes of memory VAX 7000 console kit DEMNA XMI Ethernet adapter <b>OpenVMS VAX</b> base license NAS 200+ base server license <b>Note:</b> Mandatory return of VAX 6000 or VAX 9xxx system

## VAX 7000 Symmetric MultiProcessing (SMP) Upgrades

Order Number	From	To	Includes
7FATA-LA	VAX 7000/1000 Model 610 Model 620 Model 630	VAX 7000 Model 620 Model 630 Model 640	Single CPU <b>OpenVMS VAX</b> base license
7FETB-AA <sup>1</sup>	VAX 7000 Model 640	VAX 7000 Model 650	CPU <b>OpenVMS VAX</b> base license
7FFTBA-AA <sup>1</sup>	VAX 7000 Model 650	VAX 7000 Model 660	CPU <b>OpenVMS VAX</b> base license
7JATB-LE	VAX 7000 Model 7xx	VAX 7000 Model 7xx+1	CPU <b>OpenVMS VAX</b> base license
7JAVB-AA <sup>2</sup>	VAX 7000 Model 610 VAX 10000 Model 610	VAX 7000 Model 710	CPU module VAX 7000 console kit <b>OpenVMS VAX</b> base license <b>Note:</b> Mandatory return of Model 6xx CPU modules
7JAVB-LA <sup>2</sup>	VAX 7000 Model 6xx SMP System	VAX 7000 Model 7xx SMP System	CPU module <b>OpenVMS VAX</b> base license <b>Note:</b> Mandatory return of Model 6xx CPU modules

1 Note that OpenVMS VAX V6.0 or higher is required to support VAX 7000 Models 650 and 660, and a minimum of 512 Mbytes of memory

2 Use in conjunction with order number 7JAVB-AA to upgrade VAX 7000/10000 Model 6xx SMP systems to VAX 7000 Model 7xx SMP systems. For example, to upgrade from a VAX 7000 Model 640 to a VAX 7000 Model 740 system, order: (1) 7JAVB-AA and (3) 7JAVB-LA.

## Prioris HX 590 and HX 590DP PC Servers

### Product Description

Digital's Prioris HX systems are superior departmental file and application servers, providing high levels of reliability and fault tolerance.

Key system features include: Intel Pentium single and dual symmetric multi-processor configuration, integrated Hot-Swap drive support; PCI bridge technology providing six available PCI slots at 132Mb/s throughput; 512KB write-back cache.

Prioris HX systems offer a modular, architecture providing CPU upgradability and a scalable balanced system design.

Reliability and fault-tolerant features include: Error Correction Code (ECC) memory; advanced disk subsystem with controller duplexing; SCSI channel redundancy; redundant power supply and cooling systems; internal or external RAID.

Expandability features include: 12 expansion slots (all bus master), 6 PCI and 6 EISA; total of 11 device bays, 7 with Integral Hot-Swap support; memory scalability up to 512 MB parity and 256MB ECC.

Digital's Remote Server Manager option provides remote control of distributed servers.

Prioris HX systems are certified and compatible with all current revisions of major operating systems, and come with three year on site warranty.

## Sep 1—Systems

Select system.

Country Kits, monitors and operating system software **must** be ordered separately.

### Prioris HX 590 and Prioris HX 590DP Systems include

- Prioris HX 590 Single Pentium 90 Mhz with 512 Kbyte writeback cache
- Prioris HX 590DP Dual Pentium 90 Mhz with 512 Kbyte shared writeback cache
- Pedestal enclosure includes:
  - Twelve I/O bus mastered slots: Six PCI and Six EISA
  - Graphics with Cirrus Logic 5428 VGA (supports 1024 x 768 x 16 colors and 800 x 256 colors)
  - 20 industry-standard SIMM slots
  - 10 storage slots:
    - One 3.5-inch diskette drive slot
    - One 5.25-inch CD-ROM drive slot
    - One additional 5.25-inch removable media slot
    - Seven 3.5-inch front accessible StorageWorks Hot Swap hard disk drive slots
  - 450-Watt power supply
- Two 9-pin Serial up to 115k baud ports
- 1 parallel ECP/EPP port
- 1 mini-DIN PS/2 mouse port
- 1 mini-DIN PS/2 keyboard
- Memory
  - 1.44-Mbyte diskette drive (RX23L) installed
  - 600-Mbyte (RRD43) dual speed CD-ROM installed
  - 2.1-Gbyte hard disk drive (RZ28-VA) installed in storage assembly slot
  - 3 year on-site Warranty, next-day response
- Operating system software:
  - Novell netWare, Novell UNIXWare, SCO UNIX, SCO ODT, Windows for Workgroups, Windows NT Workstation, Windows NT Server, PATHWORKS and Banyan VINES

### Prioris HX 590 Single Processor

Order Number	CPU	Memory	Hard Disk Drive	Host Controller
FR-880WW-AX*	Single Pentium 590	Option	Option	Option
FR-880WW-AA	Single Pentium 590	16 Mbytes Parity <sup>1</sup>	Option	1-channel PCI Fast Wide SCSI
FR-880WW-AC	Single Pentium 590	32 Mbytes ECC <sup>2</sup>	Option	1-channel PCI Fast Wide SCSI
FR-880WW-AB	Single Pentium 590	16 Mbytes Parity <sup>1</sup>	2 x 1.05 Gbyte	1-channel EISA Narrow RAID SCSI
FR-880WW-AD	Single Pentium 590	32 Mbytes ECC <sup>2</sup>	2 x 1.05 Gbyte	1-channel EISA Narrow RAID SCSI

### Prioris HX 590DP Dual Processor

Order Number	CPU	Memory	Hard Disk Drive	Host Controller
FR-881WW-AX*	Dual Pentium 590	Option	Option	Option
FR-881WW-AA	Dual Pentium 590	32 Mbyte Parity <sup>1</sup>	Option	1-channel PCI Fast Wide SCSI
FR-881WW-AB	Dual Pentium 590	32 Mbyte ECC <sup>2</sup>	4 x 1.05 Gbytes	1-channel EISA Narrow RAID SCSI

\* European and Asia Pacific Area (APA) orders only

1 Systems supports Parity memory only

2 Systems support ECC memory only

### Prioris HX 590 Single Processor Rackmount Systems

CT-880WW-AX*	Single Pentium 590	Kernel in 24-inch rackmount cabinet
CT-880WW-AA	Single Pentium 590	Base in 24-inch rackmount cabinet
CT-880WW-AB	Single Pentium 590	RAID in 24-inch rackmount cabinet

### Prioris HX 590DP Dual-Processor Rackmount Systems

CT-881WW-AX*	Dual Pentium 590	Kernel in 24-inch rackmount cabinet
CT-881WW-AA	Dual Pentium 590	Base in 24-inch rackmount cabinet
CT-881WW-AB	Dual Pentium 590	RAID SCSI controller in 24-inch rackmount cabinet

\* European and Asia Pacific Area (APA) orders only

## Step 2—Country Kits

Country kit is required.

Kits include: keyboard, mouse, two power cords (one for primary power supply and one for redundant supply if installed), system utilities and drivers, and user documentation.

Order Number	Country/ Language	Order Number	Country/ Language
FR-PC88K-TA	United States/English	FR-PC88K-BR	Arabia/English
FR-PC88K-AA	North America/English	FR-PC88K-BQ	Hungary/English
FR-PC88K-AB	Belgium/Belgian	FR-PC88K-BP	Poland/English
FR-PC88K-AC	French Canada/French Canadian	FR-PC88K-BT	Russia/English
FR-PC88K-AD	Holland/Danish	FR-PC88K-BU	Turkey/English
FR-PC88K-AE	UK/English	FR-PC88K-BY	Japan/Kangi
FR-PC88K-AF	Finland (Suomi)/English	FR-PC88K-CA	Far East/English
FR-PC88K-AG	Germany/German	FR-PC88K-CD	Malaysia/English
FR-PC88K-AH	Dutch/English	FR-PC88K-CE	Philippines/English
FR-PC88K-AI	Italy/Italian	FR-PC88K-CF	Singapore/English
FR-PC88K-AJ	Japan/English	FR-PC88K-CG	Vietnam/English
FR-PC88K-AK	Swiss-French/Swiss	FR-PC88K-CI	China/English
FR-PC88K-AL	Swiss-German/Swiss	FR-PC88K-CN	Indonesia/English
FR-PC88K-AM	Swedish/Finnish	FR-PC88K-CP	Thailand/English
FR-PC88K-AN	Norway/English	FR-PC88K-CQ	Iceland/English
FR-PC88K-AP	France/French	FR-PC88K-CS	Latin America/English
FR-PC88K-AQ	Isobilingual Canada/ French	FR-PC88K-CT	Latin America/Spanish
FR-PC88K-AS	Spain/Spanish	FR-PC88K-CU	Hong Kong/English
FR-PC88K-AT	Israel/English	FR-PC88K-CV	Peoples Republic of China /English
FR-PC88K-AV	Portugal/English	FR-PC88K-CZ	Czechoslovakia/English
FR-PC88K-AZ	Australia/English	FR-PC88K-EC	Europe/English
FR-PC88K-BC	South Africa/English		
FR-PC88K-BH	Greece/English		
FR-PC88K-BI	Taiwan/English		
FR-PC88K-BJ	India/Indian		
FR-PC88K-BK	South Korea/English		

Note: Country Kits must be ordered separately. They include: documentation, power cord, mouse, and keyboard

## Step 3—Monitors

- Monitor **must** be ordered separately.
- 16-bit graphics with 512KB of video RAM supports VGA monitor
- SVGA monitors require high resolution, high speed graphics adapters, see Step 5

FR-PC7XV-KA	14-inch, monochrome, VGA
FR-PCXCV-GE	14-inch, color, VGA, SVGA
FR-PCXBV-PF	14-inch, color, multi-frequency
FR-PCXBV-PC	15-inch, color, multi-frequency
FR-PCXBV-KA	17-inch, color, multi-frequency
FR-PCXAV-EC	15-inch, color, multi-frequency
FR-PCXAV-HA	21-inch, color, multi-frequency

### Keyboard and Mouse

FR-PCXAL-NA	101-key premium-line U.S. keyboard
FR-PC7XS-AA	2-button mouse

### Step 4—Memory

- Systems for Europe and APA only (-AX variants) require a minimum 16 Mbytes (Parity or ECC) memory
- Memory options must be 70ns or faster
- Systems support 16 Mbytes to 512 Mbytes of Parity memory **or** 32 Mbytes to 256 Mbytes of ECC (Error Correction Code) memory
- Parity and ECC memory options **cannot** be mixed in same system

#### Standard Parity SIMMs

FR-PC77M-AA	8 Mbyte (2 x 4 Mbyte) 70ns
FR-PC77M-AB	16 Mbyte (2 x 8 Mbyte) 70ns
FR-PC77M-AC	32 Mbyte (2 x 8 Mbyte) 70ns
FR-PC77M-AD	64 Mbyte (2 x 8 Mbyte) 70ns

#### ECC SIMMs

FR-PCSBM-AC	32 Mbyte (2x16 Mbyte)
FR-PCSBM-AD	64 Mbyte (2x32 Mbyte)

### Step 5—Optional Graphics Adapter

- System includes 16-bit graphics with 512 Kbytes video RAM
- Select PCI graphics option for high resolution, high speed monitors
- Graphics options require one PCI slot

FR-PCXAG-AM	PCI, 80M graphics card, Diamond Viper
FR-PCXAG-AP	PCI, 80M graphics card, Diamond Stealth 64
FR-PCT7M-DA	DRAM 512KB upgrade for Diamond Stealth 64

### Step 6—Storage

- Systems with 1 channel PCI Fast Wide SCSI controller support 16 SCSI devices
- Systems with 1 channel EISA Narrow RAID SCSI controller support 8 SCSI devices
- Systems support CD-ROM (included), two 5.25-inch devices, and seven hot swap hard disk drives
- Cabling for EISA controller, CD-ROM, and two half-height devices ships with each system (one wide ribbon cable with 5 connectors).

#### Storage Controllers

Order Number	Description	Operating Software
FR-PCTAZ-DC <sup>1</sup>	PCI-based 1 channel, fast wide SCSI controller	SCO UNIX, OS/2, PATHWORKS, NetWare, Windows
FR-PCTAZ-DA*	PCI-based 1 channel, narrow SCSI controller	SCO UNIX, OS/2, PATHWORKS, NetWare, Windows
FR-PCTAR-AA	EISA-based 1 channel, narrow RAID controller	SCO UNIX, Windows NT, Novell
FR-PCTAR-CA	EISA-based 3 channel, narrow RAID controller	SCO UNIX, Windows NT, Novell

\* PCI-based controllers require Version 1.02 of 7800 Management Set (diskette) and BIOS Version 1.11 for either controller to work in both primary and secondary PCI slots

#### Internal SCSI Adapters, Cables and Terminator

FR-PCXAR-WB*	68 to 50 pin wide- to-narrow adapter	Narrow devices on a wide cable
FR-PCXAR-WF	68 pin wide, 2 connector, unshielded cable	Controller to storage backplane (hot swap)
FR-PCXAR-WG	68 pin wide, 2 connector (1 shielded & 1 unshielded) cable	Controller or backplane to system bulkhead (rear)
FR-PCXAR-WJ	68 pin, single-ended active terminator	Storage backplane terminator <b>only</b>

\* This Adapter is not the same as the three 68-to-50 pin adapters included with system for connecting CD-ROM and devices in 5.25-inch bays.

Step 4a—Internal Storage

- Systems include one diskette drive, and one dual speed CD-ROM drive
- Single processor Narrow RAID systems include two 1.05 Gbyte hard disk drives in Storage Building Blocks (SBBs)
- Dual processor Narrow RAID systems include four 1.05 Gbyte hard disk drives in Storage Building Blocks (SBBs)
- PCI Fast Wide controller supports narrow or wide SCSI drives (up to 7 narrow or 15 wide drives)

**RAID Configuration rules**

- RAID controller supports narrow SCSI drives only
- For hot swap support in RAID systems, select drives in SBBs only
- Select same capacity drives in a RAID group
- Maximum of 8 RAID groups to a system

RAID	Description	Drives per RAID group
<b>0</b>	Striping - no redundancy	2-8
<b>1</b>	Mirroring	2
<b>0 + 1</b>	Striping and Mirroring	3-8
<b>5</b>	Striping with parity	3-8
<b>JBOD*</b>	Single disk - no redundancy (factory default)	1

\* JBOD = Just a bunch of disks

**Storage Building Blocks (SBBs)**

- SBBs for installation in seven hot-swap bays

- FR-PCXVR-AL      1.05 Gbyte hard disk drive in SBB (RZ26L-VA) **narrow**
- FR-PCXVR-AK      2.0 Gbyte hard disk drive in SBB (RZ28-VA) **narrow**
- FR-PCXVR-AR      1.05 Gbyte hard disk drive in SBB (RZ26L-VW) **wide**
- FR-PCXVR-AS      2.0 Gbyte hard disk drive in SBB (RZ28-VW) **wide**

**SCSI Hard Disk Drives**

- Drives include mounting hardware for installation in two 5.25-inch storage bays

- FR-PCXAR-AL      1.0 Gbyte 1-inch hard disk drive (RZ26L) **narrow**
- FR-PCXAR-AT      1.0 Gbyte 1-inch hard disk drive (RZ26L) **narrow**
- FR-PCXAR-AR      1.0 Gbyte 1-inch hard disk drive (RZ26W-E) **wide**
- FR-PCXAR-AK      2.0 Gbyte 1.6-inch hard disk drive (RZ28E) **narrow**
- FR-PCXAR-AQ      2.0 Gbyte 1-inch hard disk drive (RZ28W) **wide**

**SCSI Tape Drives**

- Drives include mounting hardware for installation in two 5.25-inch storage bays
- Each device uses **both** 5.25-inch bays

- FR-PCXLT-AA\*      20 Gbyte 5.25-inch full height DLT 2000 drive
- FR-PCXAT-AH      2/4 Gbyte 5.25-inch half height DAT drive
- FR-PCXAT-AF      4/8 Gbyte 5.25-inch half height SDT 5000, DDS2 drive
- FR-PCXAT-AD      2.5 Gbyte 5.25-inch half height QIC tape drive

\* Full height drive takes up both 5.25-inch bays

**Optional Floppy Diskette Drive**

- Selection of optional floppy diskette drive requires removal of diskette standard in all systems

- FR-PCTXR-AA\*      2.88 Mbyte 3.5-inch floppy diskette drive (RX26)
- FR-PC7XR-BA      1.2 Mbyte 5.25-inch floppy diskette drive (RX33L)

Step 4b—External Storage

- Order expansion enclosures, cables, and drives
- Select drives in Storage Building Blocks (SBBs) **only** for expansion enclosure
- Connecting external enclosure to system:
  - Connect directly to available external connector on controller, **or**
  - Connect to bulkhead connector on back of the system. An external cable is required to connect controller to bulkhead connector (FR-PCXAR-WF).

**StorageWorks Expansion Units**

- BA350 StorageWorks expansion unit includes 120 V power cord and SCSI cable to connect controller in system box.

**FR-PCXAP-AA** BA350 StorageWorks expansion unit

**External SCSI Shielded Cables**

- Wide or narrow connectors can connect directly to available external connector on controller or to bulkhead connector on back of system box. Bulkhead connector requires cable to connect controller to bulkhead (FR-PCXAR-WF).
- External SCSI cable (back of system to external connection or device) cannot exceed 2 meters (approximately 6 feet).

<b>BN21K-02</b>	Wide high-density to Wide high-density	Connects Wide controller to wide external devices
<b>FR-PCXAR-WK</b>	Wide high-density to Narrow high-density	Wide controller to a BA350
<b>FR-PCXAR-WB</b>	Wide high-density to Narrow low-density	Wide controller to a BA350
<b>BN21H-02</b>	Narrow high-density to Narrow high-density	Narrow controller to narrow devices
<b>FR-PCXAR-WH</b>	Narrow high-density to Narrow low-density	Narrow controller to narrow devices

**Backup Software**

<b>FR-PCXDT-BA</b>	Arcada Backup Exec, DOS/Windows
<b>FR-PCXDT-BB</b>	Arcada Backup Exec, OS/2
<b>FR-PCXDT-BC</b>	Arcada Backup Exec, Windows-NT
<b>FR-PCXDT-BD</b>	Arcada Backup Exec, Netware-Enterprise
<b>FR-PCXDT-BE</b>	Arcada Backup Exec, Windows-NTAS

**Step 7—Communications Adapters**

- Adapters are qualified and certified indicated. Refer to option data sheet for further details and operating system support.

**Network Adapters**

<b>FR-PCXBN-AD</b>	PCI Ethernet, 1-channel, 2-connector, RACAL	Novell, SCO UNIX, Microsoft Windows , Microsoft Windows NT
<b>FR-PCXAN-AC</b>	Ethernet III, EISA, 1 channel, 2 connector, 3COM	Novell, SCO UNIX, Microsoft Windows , Microsoft Windows NT
<b>FR-PCXAN-AD</b>	Ethernet III, EISA, 1 channel, 2 connector, 3COM	Novell, SCO UNIX, Microsoft Windows , Microsoft Windows NT
<b>FR-PCXTN-AA</b>	Token Ring,EISA, Protean	Novell, SCO UNIX, Microsoft Windows, Microsoft Windows NT
<b>FR-DEFEA-AA</b>	FDDI, EISA	Microsoft Windows NT
<b>FR-DEFEA-DA</b>	FDDI, EISA	SCO UNIX, OSF
<b>FR-DEFEA-UA</b>	FDDI, EISA	Novell, PATHWORKS

**Multipoint Adapters (for SCO UNIX only)**

<b>FR-PCXAN-BB</b>	PORTS/XEM, host controller, Digiboard
<b>FR-PCXAN-BC</b>	RJ45-DB25, cable converter, Digiboard
<b>FR-PCXAN-BD</b>	EPC/X, controller, concentrator (w/ LEDs),Digiboard
<b>FR-PCXAN-BE</b>	EPC/X, controller, concentrator (w/ LEDs),Digiboard
<b>FR-PCXAN-BF</b>	RJ45-DECMJ11, Digiboard

## Step 7—Communications Adapters *(continued)*

### Modems

<b>FR-PCXDF-AA</b>	14.4bps data and fax, internal
<b>FR-PCXDF-BA</b>	14.4bps data and fax, external
<b>FR-PCXHF-AA</b>	28.8bps data, 14.4 fax, internal

## Step 9—Server Management

- Requires:
  - EISA bus master slot
  - Windows NT
  - One modem cable
  - Hardware kit for server
  - Software kit for management station
  - Reset cable connects from Remote Server Manager modules to system motherboard
  - UPS is recommended
- On-board features:
  - Industry-standard 32-bit EISA bus Master Card (occupies one EISA slot on Server)
  - 80C186EB 16 Mhz, 16-bit microprocessor
  - 512 Kbyte Static RAM
  - 6 Kbyte Flash ROM (firmware is customer-upgradable)
  - Realtime clock
  - Temperature moitor Sensor (5° to 78.4° C)

<b>FR-PCDSM-AA</b>	Remote Server Manager hardware kit and Remote Server Management Station software kit (English)
<b>FR-PCDSM-AA</b>	Remote Server Manager hardware kit and Remote Server Management Station software kit (English)
<b>FR-PCDSM-AC</b>	Remote Server Manager hardware kit and Remote Server Management Station software kit (French/Spanish)
<b>FR-PCDSC-AA</b>	Remote Server Manager hardware kit (English)
<b>FR-PCDSC-AC</b>	Remote Server Manager hardware kit (French/Spanish)
<b>QB-38EAA-AA</b>	Remote Manager Software Kit
<b>FR-PCXCK-AE*</b>	PRIORIS HX reset cable
<b>FR-PCDAX-AD</b>	UPS, 900 watts
<b>FRPCXDF-BA</b>	14.4 External Modem

\* Reset cable must be ordered with hardware kit to be factory installed.

## Step 10—Accessories

<b>QB-MESAA-SA</b>	DOS 6.22/WFW 3.11 license, no media
<b>QB-MESSAA-SB</b>	3.5-inch media for DOS 6.22/WFW 3.11
<b>FR-PCXHF-AA</b>	28.8 Kbytes data/14.4 Kbytes /s FAX modem

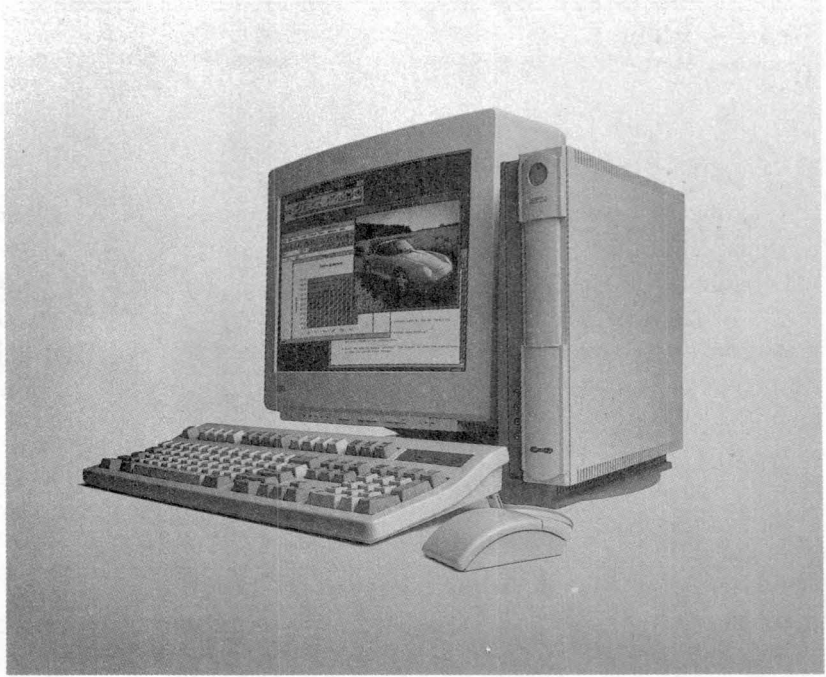
## Step 11—Miscellaneous Options

<b>FR-PCSPS-AA*</b>	450 Watt Redundant Power Supply
<b>FR-PCDAX-AD</b>	System UPS, 900 watts

\* Country kits include two power cords, one for primary power supply and one for redundant power supply.

Specifications

Physical Characteristics	
Length	34.04 cm (13.25 in.)
Width	12.5 cm (5 in)
Tick	1.87 cm (.75 in)
Environmental	
Operating temperature	10 - 50 C
Nonoperating temperature	0 - 70 C
External Power Supply	
Voltage Range	+4.85 to +5.25 volts measured at the board
Current	1.0 amps maximum: 0.1 amps minimum
Power consumption	10 watts maximum
Management Station Software	
Windows NT V3.1 or higher	
Certifications	
Safety	UL Listed, CSA, CE-mark
Emmissions	FCC-B, BCCI, CISPR-22, N-mark (Nemko), S-mark Senko), D-mark (Denko)



### Multia Multi-Client Desktop System

#### Product Description

Multia is a comprehensive hardware and software desktop system that combines features of a PC (locally runs 16- and 32-bit Windows applications), workstation (graphics performance), and terminal (centralized systems management) within a single desktop device. Multia is designed for ease of desktop management and simultaneous access to PC, mainframe, and X (UNIX and OpenVMS) based applications, regardless of location on network.

The combination of Digital's Alpha technology, Microsoft Windows NT Workstation V3.5 software, an optimized X11.R6 Server, and multiple local terminal emulators results in application access without performance tradeoff. Standard NT protocols as well as PATHWORKS, DECnet, and enhanced TCP/IP protocols are embedded in system. Multia Base Software includes a Windows NT Workstation V3.5 operating system.

Multia PCI-based hardware includes a 166 MHz Digital Alpha processor with a custom graphics accelerator (TGA) and supports VT340 graphics, VT420 text, and Tektronix 4010/4014 emulations. Memory is industry-standard 70 nanosecond ECC SIMMs. An optional 340 Mbyte 2.5-inch hard disk drive can be substituted for the 3.5-inch drive which provides the ability to add a PCI option. Floppy drive is customer-installable if not included in the system. Systems include ThinWire, thick wire, and twisted pair Ethernet, and two serial lines and a bi-directional parallel port.

Multimedia built-in hardware includes on-board support for CD-quality input and output jacks for headphones and speakers, and an internal speaker. A microphone can be attached.

## Step 1—Systems

Select system.

### Multia Multi-Client Desktop Systems include:

- 166 Mhz Digital Alpha CPU processor
- High-performance PCI-based graphics accelerator
- 340 Mbyte SCSI hard drive
- 24 Mbyte SIMM memory
- Two PCMCIA slots (Type 1 or 2 cards supported)
- Two serial lines with full modem support
- Bi-directional port
- Autosensing PCI-based Ethernet connections for thick wire, ThinWire, and twisted pair (10 BaseT)
- Kensington lock-ready
- CD audio-quality input/output with built-in speaker
- PCI option slot supports short-card format
- SCSI-2 connector option
- Mouse
- Multia software, preloaded complete with license
- Hardware warranty: 30-day money-back guarantee plus free repair or replacement of field-replaceable units on-site for one-year, return-to-Digital SERVICenter for two years
- Software warranty: 90-day conformance to documentation

### Multia Packaged System with 17-inch color monitor

Order Number	Memory	Diskette Drive	340 Mbyte Hard Drive	Keyboard
VX47A-N3	24 Mbytes	Option	3.5-inch disk	LK411 U.S. Canada
VX47A-N4	24 Mbytes	Option	3.5-inch disk	PC U.S. Canada
VX47B-HZ	24 Mbytes	Option	3.5-inch disk	None Australia
VX47A-F3	24 Mbytes	Included	3.5-inch disk	LK411 U.S. Canada
VX47A-F4	24 Mbytes	Included	3.5-inch disk	PC U.S. Canada
VX47B-GZ	24 Mbytes	Included	3.5-inch disk	None Australia
VX47A-N1	24 Mbytes	Option	2.5-inch disk	LK411 U.S. Canada
VX47A-N2	24 Mbytes	Option	2.5-inch disk	PC U.S. Canada
VX47B-NZ	24 Mbytes	Option	2.5-inch disk	None Australia
VX47A-F1	24 Mbytes	Included	2.5-inch disk	LK411 U.S. Canada

### Base Systems

VX4A-N3	24 Mbytes	Option	3.5-inch disk	Option
VX40B-H*	24 Mbytes	Option	3.5-inch disk	Option
VX40A-F3	24 Mbytes	Included	3.5-inch disk	Option
VX40B-G*	24 Mbytes	Included	3.5-inch disk	Option
VX40A-N2	24 Mbytes	Option	2.5-inch disk	Option
VX40A-N*	24 Mbytes	Option	2.5-inch disk	Option
VX40A-F2	24 Mbytes	Included	2.5-inch disk	Option
VX40A-F*	24 Mbytes	Included	2.5-inch disk	Option

\*D = Denmark, E = UK, K = Switzerland, T = Israel, X = Europe, Z = Southern

## Step 2—Monitors—Required for Base Systems

- System supports 14-inch to 21-inch multi-sync monitors providing 640 x 480 resolution with refresh rate of 60-72 Hz.

### Monitors

VR424-HA	14-inch, Shadow Mask, Northern Hemisphere
VR424-H4	14-inch, Shadow Mask, Southern Hemisphere
VR425-HA	15inch, Shadow Mask, Northern Hemisphere
VR425--H4	15inch, Shadow Mask, Southern Hemisphere
VR417-HA	17-inch, Trinitron, Northern Hemisphere
VR417-H4	17-inch, Trinitron, Southern Hemisphere
VR417-H*	17-inch, Trinitron
VRC20-HA	20-inch, Shadow Mask, Northern Hemisphere

**Step 2—Monitors—Required for Base Systems (continued)**

VRC20-H4	20-inch, Shadow Mask, Southern Hemisphere
VRC20-H*	20-inch, Shadow Mask
VR421-HA	Diamondtron, Northern Hemisphere
VR421-H4	Diamondtron, Southern Hemisphere
VR421-H*	Diamondtron

\*D = Denmark, E = UK, K = Switzerland, T = Israel, X = Europe, Z = Southern

**Step 3—Keyboard and Mouse—Required for Base Systems**

LK411-AA	108-key standard keyboard
LK-412-AA	108-key WPS keyboard
PCXAL-GA	101-key PC style keyboard

**Step 4—Memory**

- Systems include 24 Mbyte standard memory. System maximum 256 Mbytes

**Multia Memory Option Upgrades**

VX40M-AA	8 Mbyte (2 x 4 Mbyte SIMMs)
VX40M-AB	16 Mbyte (2 x 8 Mbyte SIMMs)
VX40M-AC	32 Mbyte (2 x 16 Mbyte SIMMs)
VX40M-AD	64 Mbyte (2 x 32 Mbyte SIMMs)

**Step 5—Multia Hardware Options**

VX40N-AA	Floppy disk option (for Multia with no floppy)
VX40R-A2	2.5-inch hard disk option (to change 3.5-inch disk)
FR-PCP3H-AG	Kensington Lock

**Step 6—Multia Base Software**

- Factory-installed
- Microsoft Windows NT Workstation 3.5 Operating System
- Protocols:
  - IPX/SPX
  - TCP/IP
  - LAN Manager
  - NetBEUI/NetBIOS
  - DECnet
  - LAT
  - PATHWORKS client-ready
- User-selectable set up in English, French, German, and Spanish Configuration Manager
- Remote workgroup and individual Multia management
- Central customization of:
  - Network settings
  - Local and remote application access
  - Hardware options (enable/disable)
- Supports LAN and WAN environments
- Password protection
- Backup and restore configuration data
- Status displays network counters, PING, and current application status
- Optional software available for Multia are MPEG (Multimedia Photographic Expert Group) and JPEG (Joint Photographic Expert Group) Software Viewers

**Multia Software Option Licenses**

QM-3DT9A-AA	Multia X Server Option Kit
QB-0ECAA-SA	eXcursion for Windows NT kit
QM-0ECAA-AA	eXcursion for Windows License only

### Step 7—Multia X Server Option

- Performance-optimized X11 ?server
- Local OSF/Motif Window Manager
- X Image Extension
- NFS Client
- Enhanced TCP/IP provides dynamic routing capability
- Font support
- Font Server: SNF, BDF, PCF font failover
- XDM host chooser
- Integrated with Multia Configuration Manager
- Multia Serial X Protocol Option
  - Supports X connections over serial lines

### Specifications

<b>Physical Characteristics</b>		
Height	7.1 cm (2.8 in.)	
Width*	31.7 cm (12.5 in.)	
Depth*	31.7 cm (12.5 in.)	
Weight	6.1 kg (13.5 lb) maximum	
<b>Electrical—Power Supplies/Power Cord</b>		
Nominal ac voltage	100-120 Vac	220-240 Vac
Frequency range	47-63 Hz	47-63 Hz
Power cord	Type	88-264 Vac Auto Range, detachable power cord, single-phase, three-wire design
<b>Regulatory</b>		
Agency approvals	EMI: FCC Class B: EN55022, EN55082 Class B CISPR 22 Class B: VCCI Class 2, CSA 108.8 Ergonomics: ZHI/618; EN 29242-3 Telecom approvals: Germany, Japan, Sweden, Australia Nordic country approvals: NEMKO, DEMKO, SEMKO, FIMKO Australia/New Zealand: AS/NZD 3260 Safety: CSA 22.2 #950; IEC 950; UL1950; EN60950 plus amendments; VDE805 plus amendments	

## ATMworks 750 Adapter

ATMworks 750 provides TURBOchannel-to-ATM connectivity, enabling a DEC 3000 AXP client or server to take advantage of high-bandwidth ATM networks — relieving information bottlenecks, speeding data flow, and supporting the powerful capabilities of today's high-performance workstation applications. ATMworks 750's optimized design fully uses the high bandwidth of ATM and includes FLOWmaster flow control to ensure network stability.

### Features

- Fastest ATM adapter in the industry
- ATM host adapter for TURBOchannel systems
- Runs at 155-Mb/s (OC3) ATM network speed
- Supports SONET/SDH framing

High-performance, low-latency work group for data, voice, and video with GIGAswitch/ATM and ATMworks 750 adapters

Digital's ATMworks 750 network adapter offers unprecedented performance. Together with Digital's GIGAswitch/ATM system, it provides zero cell loss due to congestion and maximizes network utilization with our FLOWmaster flow control algorithm. Because of the guaranteed bandwidth and low latency capabilities of ATM networks, the ATMworks 750 adapter is the perfect solution for enterprises that use the DEC 3000 AXP for client/server computing or multimedia network applications.

ATMworks 750 is supported by DEC OSF/1 V3.2 or later, which provides classical IP support per RFC 1577, Q.2931 signaling, Permanent Virtual Circuits (PVCs), and Switched Virtual Circuits (SVCs). It is also compliant with ATM Forum UNI specification.

ATMworks 750 is a single-slot, dual-height option card using 62.5/125 multimode fiber optic cable and runs at 155 Mb/s with SONET/SDH framing. It supports ATM Adaptation Layer 5 (AAL5), designed for class C connection-oriented traffic.

ATMworks 750 supports 2,048 Virtual Circuits (VCs), and provides Available Bit Rate (ABR) class of service. Packets are segmented and assembled on the ATMworks 750 adapter, thereby minimizing host utilization and increasing performance.

The maximum throughput of ATMworks 750 is a factor of the protocol stacks, packet sizes, I/O bus loading, SONET/SDH framing overhead, and relative CPU power. At the driver/data link level, this equates to data rates in excess of 130 Mb/s for the ATMworks 750.

### Prerequisite Hardware

DEC 3000 AXP (the DEC 3000/300 must be at revision F or later)

One TURBOchannel slot

Interface cable (62.5/125 multimode fiber optic cable with SC connector)

ATM switch that complies with the specifications supported by ATMworks 750

### Prerequisite Software

DEC OSF/1 AXP V3.2 and later (includes driver support)

## ATMworks 750 Adapter

### Ordering Information

Maximum of one ATMworks 750 supported per system

ATMworks 750 can be connected to an ATM network via an ATM switch such as the GIGAswitch/ATM system

**DGLTA-FA** ATMworks 750 TURBOchannel Adapter with installation manual (DEC OSF/1 driver supplied with operating system)

### Specifications

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#### Physical Characteristics

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Module dimensions	14.7 cm x 11.7 cm (5.8 inches x 4.6 inches)
Weight	295 g (0.65 lb)
Shipping Weight	567 g (1.25 lb)
Service space required	91.4 cm (3 ft) in front
Shipping Box Dimensions	Length - 25.2 cm (9.9 in) Width - 20.3 cm (8 in) Depth - 8.5 cm (3.3 in)

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#### Environment

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Temperature	Operating	10°C to 40°C (50°F to 104°F)
	Non-operating	-40°C to 85°C (-40°F to 185°F)
	Ambient	25°C (77°F)
Humidity	Operating	0% to 92%
	Non-operating	0% to 95%
Vibration	Operating	5 Hz to 30 Hz, 0.1270 mm
		30 Hz to 500 Hz, 10 m/s <sup>2</sup>
	Non-operating	Sine 5 Hz to 9 Hz, 3.5 mm 9 Hz to 500 Hz, 10 m/s <sup>2</sup>
Altitude	Operating	100 m/s <sup>2</sup> , 6 ms 1/2 sine
	Non-operating	400 m/s <sup>2</sup> , 6 ms 1/2 sine

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#### Power Requirements

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Current	2.75 Amps @ 5V
Power	13.75 Watts

#### General

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Regulations	Safety compliance per UL1950, IEC950 RFI/EMI, FCC Class A, CE Class A
Standards	Compliance with ATM Forum UNI specification
Connectors	Multimode fiber, SC connector
Indicators	One (1) to indicate module status
	One (1) to indicate network connection
Bus Interface	32-bit TURBOchannel

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## GIGAswitch/ATM Networking Switch

The GIGAswitch/ATM system is a high-performance switch that is especially suited for use in LAN backbones and high-performance workgroups. It supports up to 52 155-Mb/s SONET/SDH multimode fiber ports, using a 10.4-Gb/s switch fabric.

### Features

- Designed to support LAN backbones and high-performance workgroups
- High-performance — 10.4-Gb/s switch fabric with SWITCHmaster feature enables highly efficient switch utilization
- Robust networks — FLOWmaster flow control *eliminates* cell loss
- Simplifies network management through auto-configuration, reconfiguration, and dynamic routing of virtual circuits
- Guaranteed quality of service — supports CBR and VBR traffic with *customer defined* latency limits
- High-capacity — supports up to 52 155-Mb/s SONET/SDH multimode fiber ports
- Superior reliability — redundancy in power supplies, fans, linecards, and system control

Providing unprecedented performance, the GIGAswitch/ATM system uses Digital's FLOWmaster algorithm to eliminate cell loss due to congestion and maximize network utilization.

GIGAswitch/ATM system's 10.4-Gb/s switch fabric is large enough to support high-volume traffic — up to 52 155-Mb/s SONET/SDH multimode fiber ports, with support planned for 155-Mb/s single-mode fiber and unshielded twisted-pair (Category 5), T3/E3 and 622-Mb/s SONET/SDH transmission.

GIGAswitch/ATM system uses Digital's innovative SWITCHmaster feature to achieve greater than 95 percent utilization of the switch fabric. The system also ensures high availability with redundant power supplies and external power connections, power system control, redundant fans, and inherent redundancy of the master linecard — because any linecard can act as the master.

### Optimized Traffic Flow for Network Stability

GIGAswitch/ATM system provides a 10.4-Gb/s aggregate bandwidth in a 13 × 13 non-blocking crossbar switch. Each port on the switch fabric supports 800 Mb/s. Digital's SWITCHmaster function eliminates head-of-line blocking (port contention), resulting in over 95 percent utilization of the switch fabric.

It provides Constant Bit Rate (CBR), Variable Bit Rate (VBR), and Available Bit Rate (ABR) switching. CBR and VBR traffic is scheduled by reservation, thereby providing guaranteed bandwidth, with the GIGAswitch/ATM system tracking allocation on a link-by-link basis. ABR traffic uses unallocated cell slots or slots that were reserved, but not used, by guaranteed traffic. When the FLOWmaster flow control mechanism is supported on a link in the ATM network, *no* ABR cell on that link is lost due to congestion, ensuring network stability. CBR circuits, including point-to-multipoint (multicast) ones, are also assured of operation with *zero cell loss*. Multicast and broadcast traffic are supported.

The GIGAswitch/ATM system's latency (the delay before a cell is transmitted) is much lower than alternative solutions — including switched Ethernet or switched FDDI — which must contend for a shared resource or acquire tokens. Latency in the GIGAswitch/ATM switch fabric is less than 10 microseconds.

## GIGAswitch/ATM Networking Switch

### FLOWmaster Flow Control

An ATM network must ensure that cell transmissions are not dropped due to congestion caused by the bursty nature of LAN and WAN traffic. Loss of any one cell requires that the entire packet be resent. With classical IP, a typical packet is 9,180 bytes, if one cell is dropped in the ATM network, all of that packet must be resent.

Digital's innovative FLOWmaster congestion control manages the traffic flow before it becomes a problem. With FLOWmaster flow control, your transmissions instantly accelerate to full link speed when there is no contending traffic. No other scheme provides continuous, maximum network throughput while never losing cells as new users start their work.

Using a credit-based scheme, the FLOWmaster function tracks the number of cells being transmitted. A cell is sent only when sending device recognizes that the receiver's buffer is available to hold it. The FLOWmaster mechanism tracks all "debits and credits," ensuring transparent flow control.

### SWITCHmaster Advanced Queuing Management

In high traffic networks, "head-of-line" blocking can occur when the first cells in multiple input queues are all addressed to the same output port.

Digital's GIGAswitch/ATM system uses SWITCHmaster advanced queuing management to ensure non-blocked switching. The SWITCHmaster function employs Digital's patented Parallel Iterative Matching technique to ensure that cells addressed to idle ports are transmitted as quickly as possible.

With Parallel Iterative Matching, cells stored in input queues — not just the first cell — are matched with the appropriate output port, enabling the GIGAswitch/ATM system to effectively use the switch fabric even when there is contention.

Digital's SWITCHmaster function achieves over 95 percent utilization of the switch fabric, compared with a typical utilization of less than 60 percent by systems that do not address head-of-line blocking.

### High Availability, Simplified Network Management

Because the processor on each linecard stores and maintains routing information, there is no dependence on an attached workstation. Any linecard can be "elected" as master by the other linecards. This design provides inherent redundancy of the master, supporting high availability. The distributed processing architecture of the GIGAswitch/ATM system also enables the distribution of various network services, such as address registration and multicast/broadcast — with only a firmware upgrade.

**Auto-configuration** GIGAswitch/ATM system provides automatic address registration and network resiliency. The GIGAswitch/ATM system automatically learns the network topology, and if a physical link fails, will reconfigure the network around the failure.

**Dynamic routing** When a switched virtual circuit (SVC) is being set up, GIGAswitch/ATM system will use a shortest-path-first algorithm to route the VC, and will seek an alternate path if necessary.

**Load balancing** In choosing a physical route between a source and a destination, the GIGAswitch/ATM system will choose the least loaded link for the new SVC.

The GIGAswitch/ATM system can be managed by any SNMP-compliant network management application, including POLYCENTER NetView and HP OpenView. The switch may also be managed through an Out-of-Band (OBM) interface via a TELNET session.

## GIGAswitch/ATM Networking Switch

### Prerequisite Hardware

ATM devices that comply with ATM UNI V3.0 specification can connect to GIGAswitch/ATM system. Switch can be mounted in a standard 19-inch communications rack. Both AC and DC power are available, with redundancy an option.

### Prerequisite Software

Any SNMP-compliant network management station.

### Ordering Information

The GIGAswitch/ATM platform has 14 slots. One is reserved for clock/management module. The other 13 slots may be used for linecards. Each linecard supports four 155-Mb/s multimode fiber SONET/SDH ports.

DAGGA-CA—GIGAswitch/ATM chassis includes crossbar switch module and clock/management card. Power supply is not included. Select one power supply, two if redundancy is desired. Each DEFGB-DB requires a power cord, see chart below. Each DEFGB-AB requires a power cord (DEFGX-A\*/B\*/C\*. U.S. power cord is included with U.S. variants

Linecards (DAGGL-AA). Each linecard has four 155 Mb/s SONET/SDH multimode fiber ports integral to the card.

<b>DAGGA-CA</b>	GIGAswitch/ATM chassis with no power or linecards
<b>DAGGL-AA</b>	GIGAswitch/ATM four-port linecard, SONET/SDH, multimode fiber
<b>DEFGB-DA*</b>	GIGAswitch 20-amp power supply includes (U.S.)
<b>DEFGB-DB*</b>	GIGAswitch 20-amp power supply (non-U.S.)
<b>DEFGB-BA</b>	GIGAswitch 48V power supply
<b>DEFGB-AA†</b>	GIGAswitch 15-amp power supply includes (U.S.)
<b>DEFGB-AB†</b>	GIGAswitch 15-amp power supply (non-U.S.)

\* GIGAswitch 20-amp power supply is standard; for optional redundancy, order two DEFGB-D\*. With more than ten linecards, no redundancy is available, however two DEFGB-BA are required. The 15-amp power supply can never be used with more than ten linecards.

### Power Cords for DEFGB-DB 20-amp Power Supply:

<b>BN20B-2E</b>	Japan, Canada
<b>BN27L-2E</b>	Australia, New Zealand, Central Europe ( Austria, Belgium, France, Germany, Finland, Norway, Sweden, Portugal, Spain)
<b>BN27Q-2E</b>	UK, Ireland
<b>BN27G-2E</b>	Switzerland
<b>BN27K-2E</b>	Denmark
<b>BN27J-2E</b>	Italy
<b>BN27P-2E</b>	India, South Africa
<b>BN27N-2E</b>	Israel

### Physical Characteristics

<b>Height</b>	75.6 cm (29.75 in) without inlet and exhaust plenums 89.5 cm (35.25 in) with plenums
<b>Width</b>	48.9 cm (19.25 in) overall 44.45 cm (17.50 in) chassis only (without mounting flanges)
<b>Depth</b>	50.8 cm (20.0 in)
<b>Service space required</b>	91.4 cm (3 ft) in front
<b>Weight</b>	70.3 kg (155 lb) with one AC power supply 93.0 kg (205 lb) fully configured with redundant power supply

## Digital NetRider Remote Access System

Digital NetRider remote access system is a complete client/server packaged solution that combines an eight-port remote access server with the client connection software for TCP/IP, IPX, and AppleTalk systems. Digital NetRider solution draws upon DECserver technology to create a reliable, high-performance, multiprotocol access server. It also incorporates industry-leading remote access software for client connections, including Stampede for TCP/IP and IPX clients, and InterPPP for TCP/IP and AppleTalk connections.

In addition to providing multiple client connection facilities out of one box, Digital NetRider remote access system also offers other beneficial features. Bundled with a copy of Enhanced Mosaic, users can take advantage of this browser application for the Internet. TCP/IP stack is also included for remote user.

The Digital NetRider remote access system is available in standalone or hub-based configurations.

**DSRVH-J\*** Digital NetRider Remote Access System (Standalone)

**DSRVH-ND** Digital NetRider Remote Access System (Hub-based)

\* Denotes multiple variations for country specific power cords

### Digital NetRider Software Upgrades

Existing DECserver systems that can run DNAS software (i.e., DECserver 90M, DECserver 700, and DECserver 900TM) can be upgraded to Digital NetRider functionality through the purchase of a Digital NetRider software upgrade kit.

QB-3RTAA-AA 8-port Digital NetRider Software Upgrade Kit\*

QB-3RTAA-AB 16-port Digital NetRider Software Upgrade Kit\*

QB-3RTAA-AC 32-port Digital NetRider Software Upgrade Kit\*

\* For existing DECserver systems supporting DNAS software.

**Fast EtherWORKS PCI 10/100 (DE500-XA)****Product Description**

Digital's first Fast Ethernet product is a 10/100Base-TX Fast Ethernet adapter for the PCI bus. Fast EtherWORKS PCI 10/100 includes support for multiple system platforms, including Alpha, Intel, PowerPC, and MIPS.

The adapter is based on the DECchip 21140. Plans call for a full suite of performance-tuned drivers, including support for NetWare, NDIS 2.01, NDIS 3.0, and a variety of other platforms. An auto-sense feature, for operation at either 10 Mb/s or 100 Mb/s, will allow adapter to be used in current 10BaseT configurations, while providing extended bandwidth capabilities as applications warrant. Full-duplex capability, which extends bandwidth up to 200 Mb/s, is also featured. The board form factor is PCI short length. Fast EtherWORKS PCI 10/100 adapter includes a lifetime warranty.

**Features:**

- Powerful Parallel Cut-Through Architecture optimizes system level throughput while minimizing PCI bus loading and host CPU overhead.
- Uses a single RJ45 connector to interface to either a 10Base-T network using Category 3, 4, or 5 UTP cabling, or to 100BASE-TX network using Category 5 UTP cabling. Once connected, the adapter automatically senses the correct operating speed.
- Software configurable to operate in full-duplex mode, increasing its aggregate bandwidth up to 20 Mb/s and 200 Mb/s.
- Operates in either a repeater-based shared access or switch-based point-to-point LAN configuration.
- Lifetime Return-to-Factory Warranty.

**Hardware Requirements**

Host CPU must be compliant with PCI Local Bus V2.0, and BIOS Specification V2.0. Requires a single PCI Bus Master Slot. Adapter is customer installable.

**Software Requirements**

The following software drivers are included with each adapter for use in Intel platforms:

- NetWare DOS ODI client, NetWare 3.x ODI server, NetWare 4.x ODI server, DOS client, Windows 3.1, PATHWORKS, Windows for Workgroups 3.11, OS/2, and SCO UNIX.
- Windows NT support for all platforms will be distributed with operating system and supported directly by Microsoft.

**Ordering Information**

OPEN DECconnect CAT 5 UTP cables, using an RJ45 connector, are available in straight-through and crossover configurations.

Multiple adapters, up to number of PCI slots on system are supported. Each operating system may impose limits on supported PCI and PCI-LAN options on host CPU.

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<b>DE500-XA</b>	PCI to 100BASE-TX NIC, w/RJ45 connector
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**Technical Data**


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Based on the DECchip 21140

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Single, short-form PCI Option Card

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Utilizes 5-volt bus signaling

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FCC and CEmark Class B certified

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Implements the 100BASE-TX IEEE Standard (Two pair CAT 5 UTP cable)

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## Asynchronous Multiplexer for EISA/ISA Systems—CXI01

### Product Description

Two asynchronous multiplexer products are available from Digital for systems with EISA or ISA buses (see system menus for system support details). The basic CXI01-AA and the CXI01-AD products both support sixteen asynchronous ports, however the CXI01-AD is more expandable and is capable of higher data throughput.

CXI01-AA includes a host adapter module that connects by a cable (included) to a small external "PORTS 16/em" module that carries connectors for asynchronous ports. Up to three optional PORTS modules (total of four) may be connected to provide 64 asynchronous connections (see illustration). The basic CXI01-AA is capable of supporting line speeds up to 115 Kbps on first sixteen lines, or 57.5 Kbps with an additional PORTS module on 32 lines, or 38.4 Kbps on a fully configured 64 line multiplexer.

CXI01-AD also includes a host adapter module and first external EPC/CON-16 module with connections for sixteen asynchronous lines. Three additional EPC/CON-16 modules are supported, and each EPC/CON-16 can support three PORTS/16em modules for a total of 224 asynchronous ports (see illustration).

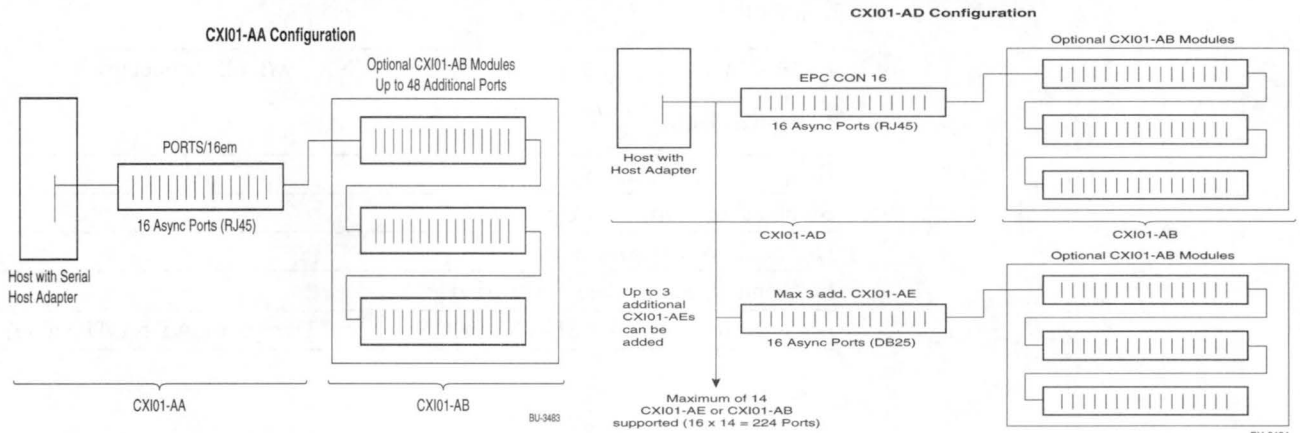
CXI01-AB is used to add sixteen additional asynchronous ports to either the CXI01-AE concentrator or CXI01-AA product, cable is included. Asynchronous connections to the CXI01-AE concentrator are RJ45, RJ45 to DECMJ11 adapters (CXI01-AF) are available.

CXI01-AE concentrator connects to the CXI01-AD host adapter module and supports direct connection of sixteen asynchronous lines, each CXI01-AE can host connection to three CXI01-AB modules with 16 asynchronous connections each. A cable for connection to the host or other CXI01-AE concentrators is included, optional fiber optic connections are available directly from Digiboard for remote connection up to 2 km from the host. Asynchronous connections to the CXI01-AE concentrator are RJ45, RJ45 to DECMJ11 adapters (CXI01-AF) are available.

CXI01-AF adapter kit includes material to convert eight RJ45 connections to DECMJ11 connections.

<b>CXI01-AA</b>	Digiboard PC/16em
<b>CXI01-AD</b>	Digiboard EPC/16
<b>CXI01-AB</b>	Digiboard PORTS/16em
<b>CXI01-AE</b>	Digiboard C/CON-16
<b>CXI01-AF*</b>	RJ45 TO DECMJ11 Adapter Kit
<b>CXI01-AC</b>	RJ45 TO DB25 Adapter Kit

\* CXI01-AF adapter converts an RJ45 connections to DB25 connections



## StorageWorks RAID Array 230 Subsystem

### Product Description

StorageWorks RAID Array 230 subsystem is a hardware-based RAID subsystem for Alpha and Intel system platforms that use the industry-standard PCI bus. It provides RAID levels 0 (striping), 1 (mirroring), 0+1 (striped mirrored sets), and 5 (striping with distributed parity). By providing RAID functionality, it binds a collection of disk drives into logical drives to provide data redundancy and/or increased performance.

Performance improvements are obtained by striping user data across a number of disk drives, thus overlapping disk operations (RAID 0, 0+1).

Redundancy is obtained by keeping additional copies of user data on a redundant disk drive (RAID 1), or by generating and storing data parity so that user information can be reconstructed in the event of a disk failure (RAID 5). In either case, the application continues to run without data loss in the event of a single disk drive failure.

For more information on RAID, see the *Buyer's Guide to RAID Storage* (EC-G2412-45).

The StorageWorks RAID Array 230 subsystem is comprised of a PCI backplane RAID controller, Operating system specific RAID drivers and utilities (software), documentation, and disk drives with appropriate cables and enclosures.

The controller provides RAID functionality. It is a backplane controller, and plugs directly into PCI bus inside system enclosure. Therefore, RAID functionality can be provided for disk drives inside, as well as outside, system enclosure.

In a standalone RAID subsystem, disks are housed in separate StorageWorks pedestal enclosures. The combination of a PCI adapter and a RAID controller (as a single component) provides a lower-cost solution than traditional standalone RAID controllers. The KZPSC controller is available in two models, a single SCSI channel variant that supports up to 7 disk drives, and a three channel model that supports up to 21 drives. RAID drivers and utilities provide the following functionality:

- RAID subsystem configuration (display drive array map, bind disks into RAID sets, configure array parameters, etc.)
- RAID subsystem monitoring and fault reporting. Status changes are reported to OPCOM (VMS), System Console (OSF), Event Viewer (Windows NT); written to a log file (OSF and VMS); and notification can be sent via MAIL (VMS).
- RAID subsystem maintenance (parity check and repair, firmware updates)

The hardware components of StorageWorks RAID Array 230 subsystem are standard StorageWorks components. This includes disk drives as well as enclosures. Many of the redundancy attributes of StorageWorks RAID Array 230 subsystem, such as disk drive, power supply, and fan hot swapping, are standard StorageWorks attributes.

### System Support

The StorageWorks RAID Array 230 subsystem is supported on Alpha systems and Intel Servers that use industry-standard PCI bus

### Operating System Support

StorageWorks RAID Array 230 subsystem is supported on DEC OSF/1 V3.0B, OpenVMS 6.2, and Windows NT V3.5  
SCO Unix V3.2.4, Novell NetWare V3.1x, 4.10, and Intel Windows NT V3.5.

## StorageWorks RAID Array 230 Subsystem

### Ordering Information

StorageWorks RAID Array 230 Subsystem can be configured with disk drives inside system enclosure, or in standalone configurations, where the disk devices are contained in StorageWorks pedestal enclosures

StorageWorks RAID Array 230 Subsystem consists of the following key components:

- PCI backplane RAID controller, which plugs-in directly into PCI system backplane,
- Software and documentation kit, which includes device drivers and RAID utilities for chosen system platform. (Software/Documentation kits are bundled with controllers)
- StorageWorks disk drives
- Enclosures, as required, to house disks
- Cables to connect controller to disk drives.
- Additional StorageWorks components (redundant power supplies, fans, etc.)

<b>KZPSC-AA</b>	<b>Single Channel PCI backplane RAID controller for Alpha Platforms.</b> Provides one FWSE SCSI channel through a 68-pin HD connector on module, for internal connection, or via an 0.8 mm 68 pin connector on the module's standard PCI bulkhead for external connection. Includes StorageWorks RAID Array 230 Subsystem Family Software and Documentation Kit for DEC OSF/1, Open VMS, and Windows NT. 4 Mbyte Cache. Requires SCSI cable.
<b>KZPSC-BA</b>	<b>Three Channel PCI backplane RAID controller for Alpha Platforms.</b> Provides three FWSE SCSI channels through 68-pin HD connectors on module, for internal connection. For external connection, two of the channels are available through 0.8 mm 68 pin connectors on module's standard PCI bulkhead; third channel can be connected to an 0.8 mm 68-pin connector on a standard PCI bulkhead connector via an adapter cable (BN31K-0E). Includes StorageWorks RAID Array 230 Subsystem Family Software and Documentation Kit for DEC OSF/1, Open VMS, and Windows NT. 4-Mbyte cache. Requires SCSI cables.
<b>BN31K-0E</b>	SCSI cable and bulkhead assembly for internal connection from KZPSC-BA module to system cabinet bulkhead (17-04108-01). Use to connect KZPSC-BA 3rd SCSI channel to system bulkhead. - 16 bit capable - 0.5m
<b>BN31L-1E</b>	External 1.5 m, 8-bit SCSI-2 cable. (17-04107-01). Connects 0.8 mm 68-pin HD connector from PCI bulkhead connector to 50-pin HD SCSI connector on StorageWorks 8-bit device enclosure. Use one for each KZPSC external SCSI channel.
<b>BN31M-1E</b>	External 1.5 m, 16-bit SCSI-2 cable (17-04107-02). Connects 0.8 mm 68-pin HD connector from PCI bulkhead connector to 68-pin HD SCSI connector on StorageWorks 16-bit enclosure (BA354). Use one for each KZPSC external SCSI channel.
<b>BN31S-1E</b>	External 1.5 m, 16-bit SCSI-2 cable (17-04107-03). Connects 0.8 mm connector from the PCI bulkhead to 68-pin HD SCSI connector on a BA356, StorageWorks 16-bit enclosure, I/O personality module (BA35X-MH). Use one for each KZPSC external SCSI channel.
<b>KZPSC-UB</b>	Battery backup for KZPSC cache memory. Provides up to 20 hours of memory retention for 4Mbyte of cache memory.
<b>MS100-AA</b>	16Mbyte Cache memory for KZPSC and KZESC. 16Mbyte, 4Mx36,70ns,72 pin, Industry standard SIMM (54-23170-AA). Replaces 4Mbyte SIMM on KZPSC and KZESC backplane RAID controller
<b>MS100-AB</b>	32Mbyte Cache memory for KZPSC and KZESC. 32Mbyte, 8Mx36,70ns,72 pin, Industry standard SIMM (54-21277-AA). Replaces 4Mbyte SIMM on KZPSC and KZESC backplane RAID controller

### Technical Information

System bus interface	Industry-standard PCI
Controller form factor	Industry-standard PCI card
Supported RAID levels	0, 1, 0+1, 5, JBOD ("just a bunch of disks")
Supported drive channels	1 or 3 SCSI channels
Number of drive groups	Up to 8 per controller
SCSI channels	SCSI-2, 8 and 16 bit, Single-Ended, Fast (10/20 Mbytes/second)
Number of disks supported per controller	Up to 7 per SCSI channel: KZPSC-AA = 7 disk drives maximum KZPSC-BA = 21 disk drives maximum (See drive support table)

## StorageWorks RAID Array 230 Subsystem

### Drives supported

RAID Level	Physical Drives per logical drive	Useable Storage	Data Redundancy	Max. Number drives KZPSC-AA	Max. Number drives KZPSC-BA
0	2-8	All	No	7	21
1	2	50%	Yes	6	16
0+1	3-8	50%	Yes	7	21
5	3-8	66%-87%	Yes	7	21
JBOD	1	All	No	7	8

Non-RAID device support Yes, disk drives (JBOD)

Non-Disk device support Yes, Tape drives and CD drives (Windows NT V 3.5, Novell NetWare, SCO Unix)

Drives supported  
 0.5 Gbytes RZ25L-VA, (Rev C06 or higher)  
 1.05 Gbytes RZ26L-VA, (Rev D05 or higher)  
 1.05 Gbytes, 16-bit, RZ26L-VW  
 2.1 Gbytes RZ28-VA, (Rev F05 or higher)  
 2.1 Gbytes, 16-bit, RZ28-VW  
 4.2 Gbytes, RZ29-VA  
 4.2 Gbytes, 16 bit, RZ29-VW

Drive Reconstruct Automatic.

Disk hot swap Yes

Disk hot spare Yes

Redundant power supplies Yes

Redundant controllers No

Redundant fans Yes

Mixed drive types Yes

Mixed RAID levels within Drive Group Yes

Configurable reconstruct time Yes

Stripe size Variable, 8K-64KB

Write through cache Yes, User Selectable (default)

Write back cache Yes, User Selectable (optional)

Battery Backup for Cache Yes

Boot capability Bootable from RAID set (System dependant)

Number of controllers/system 4

Cache support 4-32 Mbyte; 4 Mbytes standard

## KZPSA—PCI to SCSI Fast Wide Differential (FWD) Storage Adapter

### Product Description

KZPSA is a high performance, intelligent, PCI to SCSI-2 fast, wide, differential storage adapter which provides a solution for the most demanding AlphaServer with heavy PCI I/O requirements. KZPSA maximizes I/O and data processing performance on AlphaServer 2100 4/275, AlphaServer 2000 4/200 and AlphaServer 1000 4/200 systems.

Support of HSZ40-Ax Storage Works controller with the KZPSA provides a winning storage solution for those customers who wish to have high availability, high performance and allows the customer to take advantage of the fast access to SCSI-2 devices while maintaining a high availability storage subsystem. This availability is delivered through support of such features as RAID 0,3,5 and warm disk swap.

Maximum Off-loading of Host CPU requirements offered by any adapter. Supports HSZ40-Ax (High performance, high availability RAID array PCI StorageWorks controller)

Differential interconnect for up to 25 meter connections allowing greater configuration flexibility

Up to 20 Mbyte per second throughput. Greater than 2000 I/O's per second

Single slot 4.6" x 5.6" PCI Module

Target Mode Support. Tagged Queue Support

On board EEROM can be customized using the configuration utility

68-pin high density external connector

DECsafe Available Server V1.2 support of the KZPSA is an ideal part of a highly available and highly reliable total system CPU resources.

KZPSA, 16-bit wide SCSI bus supports both 8-bit and 16-bit devices with

- Up to 6 devices in a two node DECsafe environment
- Up to 5 devices in a three node DECsafe environment
- Up to 4 devices in a four node DECsafe environment

Differential bus can be configured in lengths up to 25 meters

Supports most Storageworks industry standard devices including:

- RZ25L, TZ86, TZK10, RZ26, TZ87, TZK11, RZ26L, TZ875, TKZ09, RZ28, TLZ06, RRD42, RZ28B, TLZ6L, EZ51, RZ73, TLZ07, HSZ40-AX, RZ74, RZ26L-VW, RZ29L-VW.

### Operating System Support

DECsafe V1.2 with KZPSA requires DEC OSF/1 Operating System V3.2.

KZPSA with requires DEC OSF/1 Operating System V3.2 or NTAS V3.5.

Maximum number of KZPSA adapters supported on each AlphaServer 2100 AlphaServer, AlphaSever 2000 or AlphaServer 1000 system is equivalent to number of PCI slots available.

Connect via DWZZA to StorageWorks or other single-ended SCSI enclosures. DWZZA is a single converter which permits connection of a single-ended storage device to a differential SCSI-2 bus.

Minimum supported revisions of DWZZA for DECSAFE are:

- DWZZA-AA E01
- DWZZA-VA F01

The minimum supported revision of the HSZ40-Ax is V2.0.

The KZPSA supports up to 6 HSZ40-Ax's per adapter

**KZPSA—PCI to SCSI Fast Wide Differential (FWD) Storage Adapter****Ordering Information**

**KZPSA-BB** PCI to SCSI-2 Adapter

**Additional Hardware Installation Items**

Hardware installation items must be ordered separately, if required.

**BN31G-xx** SCSI Cable- 68 pin BN21K-xx (90 degree connector) -xx denotes length of cable  
**H879-AA** SCSI Cable - 68 pin 16 bit differential terminator  
**H885-AA** Tri-Link Connector  
**BN21W-OB** SCSI "Y" Cable  
**DWZZA-VA** SCSI Bus Converter 16-bit differential to 8-bit single-ended

**StorageWorks DWZZB 16-Bit SCSI Bus Extender and Signal Converter****Product Description**

DWZZB is a differential to single-ended SCSI bus extender and signal converter. It is an 8 or 16 bits Fast Wide Differential SCSI on one side and an 8 or 16 bits single-ended SCSI on the other side. DWZZB is SCSI-3 (ANSI X3T9.2-10R3) compliant, can handle data rates up to 20 (16-bit) Mbytes per second, and operates transparently to SCSI bus. The product fully supports all the latest SCSI-3 bus phases as well as all earlier standard SCSI compatible implementations, back to SASI.

DWZZB handles the more powerful 16-bit SCSI buses as well as 8-bit buses and handles data rates up to 20 Mbytes per second on Fast SCSI. It is fully compatible with 2- to 5-Mbyte per second data rates of earlier SCSI interconnects.

Extends SCSI buses from 3 or 6 meters to 25 meters. And accepts conventional single-ended signals on one end and differential signals on the other end

Applications of DWZZB include:

- Connecting a user supplied 16-bit differential device to a 16-bit single-ended adapter.
- Extending a 16-bit SCSI single-ended bus so that very loud devices may be located in a lights-out closet or away from noise-sensitive work spaces.
- Creating "clumps" with UNIX systems so that non-dynamic disk sharing can occur should one of two worksystems fail.
- Centrally locating devices for several members of a workgroup for administrative or security control.
- DWZZB family consists of DWZZB-AA standalone product, DWZZB-MA module for OEM use, and DWZZB-VW for StorageWorks pedestals and shelves.

DWZZB can be used to connect the widening range of available differential SCSI storage devices and subsystems to single-ended hosts. It can also be used to free a system of SCSI bus length limit, and to locate SCSI devices over 170 feet apart using synchronous transfers. No changes are required to existing devices or software; the DWZZB does not occupy a SCSI bus node.

The standard warranty includes one year of onsite service and an additional two years of return-to-factory service.. The DWZZB is bi-directional in operation and can be cascaded. No more than two can be attached to a bus in a series. Termination on the single-ended side is user selectable. The 16-bit wide differential side features user removable resistors.

## StorageWorks DWZZB 16-Bit SCSI Bus Extender and Signal Converter

### Ordering Information

- **DWZZB-AA Standalone Product**—with a built-in universal power supply is self-contained. It meets general purpose SCSI bus length and signal conversion needs, and can be used with any device that is SCSI-2 compatible.
- **DWZZB-MA Module for OEM Use**—DWZZB-MA is the first OEM SCSI signal converter that operates at 20 Mbyte per second and is fully ANSI compliant. Designed and manufactured by Digital, the DWZZB-MA consists of the basic module for embedded applications and requires that the OEM or System Integrator supply power and packaging.
- **DWZZB-VW for StorageWorks Pedestals and Shelves**—DWZZB-VW occupies a single Storage Building Block (SBB) slot in the new BA356 StorageWorks Deskside Wide Expansion Pedestal, and also works in BA350 shelves. It converts single-ended disks and tapes in shelf to differential SCSI signal standards to connect BA356 to a differential host adapter as much as 25 meters (88 feet) away.

### 16-bit SCSI Bus Extender and Signal Converter

<b>DWZZB-AA</b>	For general use
<b>DWZZB-MA</b>	For OEM use (module)
<b>DWZZB-VW</b>	For use in StorageWorks shelves

### Accessories and Supplies

<b>DWZZB-AA</b>	68-pin "P" connectors for both SCSI buses Box size: 8.3 inches long x 4.5 inches wide x 3.0 high Universal AC power, 20 watts
<b>DWZZB-MA</b>	68 pin "P" connectors -- hi-density female, shielded, jack screw retention AMPS 749076-7—Mates with AMPS 750752-1 or equivalent Power connector—Mates with AMPS 1-480424-0. Female pins are AMPS 61320-1 (3 required) or equivalents: Pin 1—no connection; Pin 2—Frame ground; Pin 3—Power ground (+5 VDC return); Pin 4 - +5 VDC; Indicators: none; Dimensions: 3.88 inches x 6.00 inches; Power Required: 5 VDC at 4 AMPS maximum
<b>DWZZB-VW</b>	Connector -- same as DWZZB-MA Occupies single 3.5-inch carrier position

## StorageWorks BA356-KC Wide 16 Bit Deskside Expansion Pedestal

### Product Description

The BA356-KC StorageWorks deskside expansion pedestal supports both 8 bit and 16 bit devices when connected to a qualified 16 bit host adapter. The BA356-KC also supports the DWZZB-VW differential converter for use with the KZPSA or for where system layouts of more than 3 meters of SCSI bus length are required.

- Supports new 16 bit RZ26L-VW (1 Gbyte) and RZ28-VW (2 Gbyte) disks
- Supports new DWZZB-VW, 16 bit single-ended to differential SCSI bus converter and new KZPSA high performance wide SCSI to PCI adapter.
- Allows mixing of 8 bit and 16 bit SCSI devices
- Supports new high performance 7200 RPM disks
- The BA356-KC supports hot-swap dual power supplies.
- Dual blowers provide full cooling even when one fails.
- Shelf-OK indicators on power supply tell condition of supplies and blowers.
- It supports Digital Fault Bus standards, providing signals to host adapters for remote system management.

The BA356-KC pedestal supports up to seven 16 bit 7200 RPM disks. There are no slot restrictions. The BA356-KC has 15 percent more power than the BA350-KB.

Older StorageWorks devices may be migrated and re-used in the BA356-KC. Many installed base devices can be used in the BA356-KC with no modifications.

Installation and use is easier than the BA350. SCSI cable connections are more accessible. Access to hot-swapping drives has been simplified.

The BA356-KC visually integrates with other expansion pedestals.

BA356-KC and options come with a one-year onsite and two additional years return-to-factory warranty.

Resources: StorageWorks Solutions, BA356 16-bit Deskside Expansion Pedestal, Users Guide EK-BA356KB-UG. StorageWorks Solutions, BA356 16-bit Shelf, Users Guide EK-BA356-UG. StorageWorks Configuration Guide, for SCSI cabling details EK-BA350-UG. Pre-sales support 1-800-STORWOR (1-800-786-7967).

## StorageWorks BA356-KC Wide 16 Bit Deskside Expansion Pedestal

### Supported Systems

AlphaServer 2100, AlphaServer 2000, and AlphaServer 1000 systems Pentium Prioris HX Servers

### StorageWorks BA356-KC

- BA35X-HB and BA35X-HC may be used with BA356 instead of BA35X-HF
- Bus 1 connection requires right angle connector. Use BN21L-E/01/02 (right angle to right angle)
- Bus 2 connection requires straight connector. Use BN21K-01 (straight to straight)
- Other cables may be required if host connection is not standard SCSI P connector. Consult host documentation.

<b>BA356-KC</b>	BA356-KC Deskside Expansion Pedestal high availability, includes BA356 shelf
<b>BA35X-HF</b>	Power supply, BA35X-Vx pedestal kit, and BA27S-03 power cord
<b>BA35X-YA</b>	Factory Integration (for all devices ordered with a BA356-KC)
<b>BA35X-HF</b>	150 Watt Universal AC Input Power Supply, maximum of two per enclosure, occupies a single 3.5-inch carrier (for SW300 and BA356)

### 16 Bit Devices Supported (see chart for 8-Bit devices supported)

<b>RZ26L-VW</b>	1.0 Gbyte 16 bit disk, 5400 RPM (all Revision levels supported)
<b>RZ28-VW</b>	2.1 Gbyte 16 bit disk, 5400 RPM (all Revision levels supported)

### Spare/Maintenance Items

<b>BA35X-MD</b>	Dual Speed Blower (for SW300 and BA356, for use as a spare)
<b>BA35X-ME</b>	Active Terminator, 16 bits (for use as spare for a BA356, SCSI-2)
<b>BA35X-MH</b>	I/O Personality Module for BA356, use for connections to 16 bit host adapters (for use as a spare)
<b>BA35X-MF</b>	Jumper Module for 16 bit SCSI-2 bus in BA356 (for use as a spare)

### Country Power Kits<sup>1</sup>

<b>BN19H-2E</b>	Australia, New Zealand
<b>BN19W-2E</b>	Central Europe
<b>BN19A-2E</b>	U.K., Ireland
<b>BN19E-2E</b>	Switzerland
<b>BN19K-2E</b>	Denmark
<b>BN19M-2E</b>	Italy
<b>BN19S-2E</b>	India
<b>BN18L-2E</b>	Israel

<sup>1</sup> BA356-KC has an IEC C14 standard power plug.

### Technical Information

<b>Optimum</b>	+18 to +24 degrees C; maximum rate of change 3 degrees C; maximum step change 3 degrees C
<b>Maximum</b>	+10 to +40 degrees C; 10 to 90 percent non-condensing
<b>Size</b>	254 mm wide x 610 mm high x 368 mm deep (BA356-KC)
<b>Input voltage</b>	94-264 V ac, autoranging power supply
<b>Compliance</b>	Enclosure, devices, and subsystem fully comply with FCC Class B, and meet UL, TUV, CSA, and CE Mark.
<b>Spin-up</b>	Device spin-up must be staggered by a minimum of four seconds

## StorageWorks BA356-KC Wide 16 Bit Deskside Expansion Pedestal

### 8 Bit Devices Supported—StorageWorks BA356-16-Bit Deskside Expansion Pedestal

- Most installed 8 bit StorageWorks devices may be installed and intermixed with wide 16 bit StorageWorks devices. All models of all StorageWorks devices, now shipping, are 16 bit compliant. Table below lists minimum revision level for all 8 bit devices supported by BA356.
- Compliance date is when factory began shipping 16 bit compliant revision. Blanks indicate the date is not absolute and all devices should be carefully checked. "All" means the device has been 16 bit compliant since its first shipments.
- Note: Hardware platform and operating system support may be different than the table.
- 16 bit StorageWorks devices will not work in and may not be used in 8 bit enclosures.
- Out-of-REV 8 bit devices that are inadvertently plugged into a bit bus will instantly freeze bus activity. Removing the device will allow the bus and attached devices to operate properly again.

Device	Description	Minimum Revision	16 Bit Compliance Date
EZ51R-VA	100 Mbyte Ele Disk	E03	
EZ54R-VA	300 Mbyte Ele Disk	E03	
EZ58R-VA	800 Mbyte Ele Disk	C03	
RRD42-VB	CD-ROM	B03	
RRD42-VU	CD-ROM	B04	
RRD43-VA	CD-ROM 2x	B05	
RRD43-VC	CD-ROM 2x	B05	
RRD43-VU	CD-ROM 2x hi per	B05	
RRD44-VA	CD-ROM 2x hi per	B03	
RRD44-VU	CD-ROM 2x hi per	B03	
RWZ52-VA	Optical	B03	
RX26 -VA	2.88 Mbyte Floppy	B03	
RZ25 -VA	426 Mbyte Disk	D01	11/93
RZ25L-VA	535 Mbyte Disk	All	
RZ26 -VA	1.0 Gbyte Disk	H02	11/93
RZ26L-VA	1.0 Gbyte Disk	B01	11/93
RZ28 -VA	2.1 Gbyte Disk	C01	11/93
RZ28B-VA	2.1 Gbyte Disk	A01	All
RZ73 -VA	2 Gbyte Disk	B04	
RZ74 -VA	4 Gbyte Disk	C04	
SWXTE-AA	8 mm Tape	B03	
SWXTE-AB	8 mm Tape	B03	
TZ86 -VA	6 Gbyte DLT	C01	4/94
TZ87 -VA	20 Gbyte DLT	—	All
TLZ06-VA	2 Gbyte DAT	B04	
TLZ07-VA	5 Gbyte DAT	B04	All
TKZ09-VA	8 mm Tape fh	B03	
TKZ15-VA	8 mm Tape hh	B03	
TZK10-VA	QIC Tape	C04	
TZK10-VU	QIC Tape	C04	
TZK11-VA	QIC Tape	B03	
TZK11-VU	QIC Tape	B03	

## StorageWorks 1 Gbyte, 2 Gbyte, and 4 Gbyte Fast Wide SCSI Disk Drives

### Product Description

RZ26L-VW 1 Gbyte, RZ28-VW 2 Gbyte, and RZ29 4 Gbyte fast wide disk drives are fully compatible with SCSI-2 single-ended interface standards. Drives are supported in BA356 storage enclosure. BA356-KC StorageWorks deskside expansion pedestal support 16 bit devices when connected to a qualified 16 bit host adapter. BA356-KC also supports DWZZB-VW differential converter for use with host adapters, such as KZPSA or when system layouts of more than 3 meters of SCSI bus length are required.

Features include:

- High performance wide SCSI 1 Gbyte, 2 Gbyte, and 4 Gbyte disks increase performance for high bandwidth applications
- High bandwidth SCSI support of 20 Mbyte per second
- Housed in StorageWorks carriers for new BA356-KC pedestal

Wide drives are ideally suited for network file servers, mid-range multi-user systems, workstations and high-end PCs. Applications that utilize high sequential data transfer rates, such as seismic recording and analysis, CAD/CAM, and image processing are just a few of the many bandwidth applications that will benefit from these products. For many high bandwidth applications the wide SCSI family subsystem provides a complete, hardware-based, uniquely affordable solution. Whatever the disk storage requirements may be these new wide disk drives have the highest performance and maximum data integrity of storage subsystem solutions in the industry.

The 7200 RPM RZ29B-Wx disk drive features an average seek time of 8.0 ms and an average latency of 4.2 ms, providing average data access time of 12.2 ms. Each drive contains 1,024 KB of segmented cache buffer that maximizes cache hit rates and increases overall subsystem performance. RZ26L-VW and RZ28-VW drives offer unsurpassed data integrity, featuring a 264 bit ECC that corrects up to 11 non-contiguous bytes per block. Drives provide multiple copies of the header for each sector, along with embedded servo for fine tuning head position during addressing. In addition, the drive electronics add end-to-end checksum error detection code (EDC) to ensure integrity of the data returning to the system bus.

<b>RZ26L-VW</b>	1.05 Gbyte data storage, 16-bit disk drive StorageWorks Building Block
<b>RZ28-VW</b>	2.1 Gbyte data storage, 16-bit disk drive StorageWorks Building Block
<b>RZ29B-VW</b>	4.3 Gbyte data storage, 16-bit disk drive StorageWorks Building Block

### Technical Information

<b>Data transfer rate</b>	20 Mbyte per second
<b>Average access time</b>	
<b>RZ26L-VW, RZ28-VW</b>	15.1 ms (seek: 9.5 ms rotational latency 5.6 ms)
<b>RZ29B-VW</b>	12.2 ms (seek: 8.0 ms rotational latency 4.2 ms)
<b>Interface</b>	Fast wide SCSI-2 single-ended interface
	Seek ordering
	Automatic sector re-allocation
	Tagged command queuing
	Over 1 Mbyte of cache
	Self-diagnostics
<b>RZ26L-VW, RZ28-VW</b>	500,000 MTBF
<b>RZ29B-VW</b>	800,000 MTBF
	UL, CSA, and VDE Standard

## StorageWorks TLZ07/7L 4mm (DAT) Loader Subsystems

### Product Description

DDS-2 compliant, 4-mm TLZ7L DAT Loader provides up to 96 Gbyte of unattended backup and archiving capability, with a transfer rate of up to 810 KB per second. It is ideal for unattended backup of workstations and servers. The DAT Loader provides up to 32 Gbyte of unattended capacity with its standard 4-cartridge magazine, and up to 96 Gbyte of unattended backup with its optional 12-cartridge magazine. TLZ7L is also read/write compatible with media used in TLZ06 and TLZ6L loaders, and TLZ04 and TLZ07 drives.

**High Unattended Backup Capacity**—DDS-2 format of TLZ7L provides native unattended capacity of 4 Gbyte, and compressed capacity of 8 Gbyte.

**Multiple Loader Options**—Standard four-cartridge and optional 12-cartridge magazines are designed to meet user needs.

**First Generation Read/Write Compatibility**—TLZ7L can read and write DDS-2 and DDS-1 media, ensuring investment protection and data interchange with DDS-1 drives.

**Multiple Packaging Options**—TLZ7L is available in system-installed, tabletop, and StorageWorks versions.

**Media Quality Checking**—TLZ7L implements DDS-2 media recognition system, eliminating performance and service issues related to use of audio-grade media cartridges.

### Systems Support

TLZ7L is supported under OpenVMS VAX V6.1 on:

- MicroVAX II (KZQSA adapter required)
- MicroVAX 3100 Models 30, 40, 80, and 90
- MicroVAX 3300, 3400, 3500, 3600, 3800, and 3900 (KZQSA adapter required)
- VAX 4000 Models 100 to 700A

### Operating System Support

TLZ7L is supported under DEC OSF/1 V2.0 and OpenVMS V6.1 on:

- DEC 3000 Models 300L, 300X, 300LX, 400, 500, 500X, 600, and 800
- DEC 4000 Alpha Models 6x0 and 7x0

TLZ7L is supported under

- POLYCENTER Storage Library System V2.5
- POLYCENTER Hierarchical Storage Management V1.1
- POLYCENTER NetWorker Save and Restore V3.0
- POLYCENTER Archive Backup V1.0
- POLYCENTER Sequential Media File System V1.0

TLZ7L is supported on the following controllers

- HSJxx V2.5, HSD30 V2.5, HSCxx V8.4, and HSD05 Vx36

TLZ7L loader, as a sequential only device, is supported under DEC OSF/1 V2.0B, OpenVMS V6.1, and Windows NT V3.5, on Digital's AlphaServer 2100 RM (rackmount) server systems. TLZ7L-LG can be internally mounted, and TLZ7L-DA can be supported as a tabletop add-on with a separately ordered BC09D-03 cable. Random access capability requires use of backup applications such as those listed.

## StorageWorks TLZ07/7L 4mm (DAT) Loader Subsystems

### Ordering Information

<b>TLZ7L-DA</b>	32-Gbyte, 4mm Tabletop Loader for MicroVAX II, MicroVAX 3100 Models 30,40,80,90 and DEC 3000 systems; includes four cartridge magazine, five data cartridges, cleaning cartridge and 3-ft SCSI (BC19J-03) cable. Supports AlphaServer 2100 systems when BC09D-03 ordered.
<b>TLZ7L-GA</b>	32-Gbyte, 4mm Table Top Loader for MicroVAX II, VAX 4000 Models 100, 100A, 105A and 200-700A, VAXstation 4000 VLC, and DEC 4000 Model 6x0 and 7x0 systems; includes four cartridge magazine, five data cartridges, cleaning cartridge and 6-ft SCSI (BC06P-06) cable. Supports AlphaServer 2100 systems when BC09D-06 ordered.
<b>TLZ7L-LG</b>	32-Gbyte, 4mm Loader, 5.25-inch, Internal Full Height for AlphaServer 2100, DECpc 150, and DEC 2000 Model 300/500; includes four cartridge magazine, five data cartridges, and cleaning cartridge
<b>TLZ7L-VA</b>	32 -Gbyte, 4mm Loader w/snap-in StorageWorks carrier for StorageWorks BA350 modular storage shelf for DEC 4000 Model 6x0 and 7x0, AlphaServer 2100

### Accessories and Supplies

<b>TLZ04-HA</b>	Cleaning cartridge for TLZ04 and TLZ07
<b>TLZ04-CB</b>	Five-pack of 60-m data cartridges for TLZ04, TLZ06, TLZ07
<b>TLZ06-CB</b>	Five-pack of 90-m data cartridges
<b>TLZ07-CA</b>	Single 120-m data cartridge for TLZ07
<b>TLZ07-CB</b>	Five-pack of 120-m data cartridges for TLZ07
<b>TLZ7L-04</b>	Four-cartridge magazine with plastic storage box
<b>TLZ7L-12</b>	Twelve-cartridge magazine with plastic storage box

### Power Cords—240 V devices require country-specific power cord.

<b>BN19A-2E</b>	U.K./Ireland
<b>BN19C-2E</b>	Austria, Belgium, Finland, France, Germany, Holland, Norway, Portugal, Spain, Sweden
<b>BN19E-2E</b>	Switzerland
<b>BN19H-2E</b>	Australia/New Zealand
<b>BN19K-2E</b>	Denmark
<b>BN19M-2E</b>	Italy
<b>BN19S-2E</b>	India
<b>BN18U-2E</b>	Israel

### TLZ7L Support Matrix

System	TLZ7L Variants Supported			Packaging Choices	
	DEC OSF/1 V2.0	OpenVMS V6.1	POLYCENTER	Internal	Tabletop
MicroVAX II <sup>1</sup>	N/A	-GA/-DA	-GA/-DA		X
MicroVAX 3100 Models 30,40,80,90	N/A	-DA	-DA		X
MicroVAX 3300, 3400, 3500, 3600 3800,3900 <sup>1</sup>	N/A	-DA	-DA		X
VAX 4000 Models 100, 100A, 105A 200-700A <sup>1</sup>	N/A	-GA -GA	-GA -GA		X
VAXStation 4000 VLC, Models 60,90	N/A	-GA	-GA		X
DEC 2000 Models 300, 500	-LG/-GA	-LG/-GA	-LG/-GA	X	X
DEC 3000 Models 300L, 300X, 400 500, 500x, 600, 700, 800, 900	-DA	-DA			X
DEC 4000 Alpha Models 6xx, 7xx	-VA/-GA	-VA/-GA	-VA/-GA		X
AlphaServer 2100 <sup>2</sup>	-LG/-DA	-LG/-DA	-LG/-DA	X	X
DECpc 150	-LG	-LG	-LG	X	

<sup>1</sup> Requires KZQSA Adapter.

<sup>2</sup> Requires BC09D-03 cable

## StorageWorks TLZ07/7L 4mm (DAT) Loader Subsystems

### Physical Characteristics

	5.25-Inch Embedded	Tabletop
Height	8.6 cm (3.4 in.)	14.3 cm (5.62 in.)
Width	14.9 cm (5.87 in.)	23.5 cm (9.25 in.)
Depth	22.2 cm (8.75 in.)	33.0 cm (13.0 in.)
Weight	2.7 kg (6.0 lb.)	6.8 kg (15.0 lb.)

### Technical Information

Feature	TLZ7L DAT Loader
Capacity (formatted)	32-96 Gbyte
Buffer size	1 Mbyte
Transfer rate	810 KB/s
Recording format	DDS-2
Write/read	DDS-1

**Note:** When DDS-1 media is used, the TLZ7L tape loader defaults to DDS-1 format and operation.

## StorageWorks TL810 Automated DLT (Digital Linear Tape) Library

### Product Description

TL810 is a mid-range automated tape library based on DLT technology. The TL810 library, the second member of Digital's library family, has a smaller capacity, higher ratio of drive-to-cartridge units and a smaller footprint than high-capacity TL820 library. With a capacity of 52 cartridges and 4 Digital Linear Tape (DLT) TZ87 drives, TL810 library offers a range of capacity from 0.5 to 1.0 Terabyte. This fully automated storage library includes robotic hardware and firmware necessary to store and move up to 52 DLT cartridges, 4 of which are contained in a built-in four-cartridge Load Port (Import/Export).

TL810 provides a faster access automated tape library that is ideal for datacenter applications for Digital systems, platforms, clusters, and networks. The unsurpassed speed, capacity, and reliability of DLT technology (ANSI standard), integrated with highly reliable proven robotics design, provide a high capacity, high performance, quality product for departmental storage needs.

Combined with Digital's POLYCENTER Storage Management software application solutions, DECLS or third party applications, TL810 tape library makes backup, archive, and POLYCENTER Hierarchical Storage Management operations easy, quick, reliable, and cost effective.

Extends benefits of automated storage management to department and client/server applications presently enjoyed by larger enterprisewide datacenters

Integrates automated backup and archiving to department operations

Protects against data loss by providing accurate, secure, auditable archiving and backup of information

Provides near-online storage in huge capacities but with a small footprint for datacenter, network, and server applications.

Boosts productivity and lowers costs for datacenter management and operations through automated access to data

Provides cost effective and reliable storage for POLYCENTER Hierarchical Storage Manager applications

Provides built-in Automatic Drive Cleaning feature that allows high availability of drives without operator intervention

## StorageWorks TL810 Automated DLT (Digital Linear Tape) Library

### Systems Support

TL810 is supported under:

- Open VMS Alpha V6.2 and Open VMS VAX V5.5-2 or later
- DEC OSF/1 V3.0 or later (DEC OSF/1 requires SCSI CAM Layered Software V3.0) see POLYCENTER NetWorker Save and Restore SPD for details.

### Operating System Support

TL810 is supported by:

- POLYCENTER suite of NetWorker Save and Restore V3.1 or later
- POLYCENTER Hierarchical Storage Management for OpenVMS V1.1 or later
- Storage Library System V2.5B or later
- POLYCENTER Archive Backup V1.0 or later
- POLYCENTER Sequential Media File System V1.0 or later

TL810 will be supported by

- HSOF V2.5 firmware for HSJ30/40 and HSD30 controllers and V8.4 for HSC65/95 controllers.

### Ordering Information

TL810 ships with four TZ87 drives installed in system, one cleaning cartridge, and one DLT data cartridge. Application software and external cabling for adapters and controllers must be ordered separately.

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<b>TL810-BA</b>	TL810 Automated Tape Library
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#### Technical Information

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Storage media	4 DLT tape drives
Library cartridge capacity	52 tape cartridges
Single cartridge capacity	10 Gbyte (native)/ 20 Gbyte (compressed)
Single drive transfer rate	1.25 Mbyte (native)/ 2.5 Mbyte (compressed)
Compatibility	VAX and Alpha platforms, OpenVMS and Digital UNIX operating systems
Interface	SCSI-2 (Differential)
Height	43.3 inches (1.10 meters)
Width	23 inches (0.58 meters)
Depth	31.9 inches (0.81 meters)
Weight	378 lbs. (171.51 Kg.) with 52 cartridges and DLT tape drives
Power	115V/230V, 50Hz/60Hz (nominal)

## RWZ52 1.2 Gbyte Multifunction Optical Drive

### Product Description

RWZ52 is a 5.25-inch full-height multifunction optical disk drive supporting write-once and rewritable operations. The drive provides removable, random access storage through low cost-per megabyte write-once or rewritable optical cartridges. Digital Optical Storage Desktop Software provides necessary drivers for host operating system, and should be purchased at same time RWZ52 drive. RWZ01 is the first generation optical drive; the RWZ52 drive is a compatible, lower-cost replacement.

Second generation 1.2 Gbyte multifunction (rewritable and write-once) optical drive.

Removability, ease of use, and low cost per Mbyteyte make it an ideal candidate for archiving, secure applications, or high-capacity online storage.

Tabletop and StorageWorks packaging options allows removable storage to be placed where it is needed.

High-capacity, removable storage devices for secure applications in government and industry, or long-term storage of infrequently retrieved data. When used in write-once mode, the RWZ52 is an effective archival tool.

Write-once optical media is often the preferred media for long-term archiving, due to its long life and ability to prevent accidental and/or deliberate overwriting of data.

RWZ52 uses random access, removable media for fast application access to data.

An unlimited number of media cartridges can be used in an RWZ52 drive, the average cost per megabyte decreases rapidly as usage increases. Since the RWZ52 drive is multifunction, customers can standardize on one drive for both archival and "working storage" applications, lowering total system costs.

RWZ52 drives removable media is easy to handle and store in a secure environment.

### Operating System Support

Integration software options required before installing RWZ52

- OpenVMS VAX V5.5-2 through 6.1 require Optical Storage Desktop Software for device integration
- MicroVAX 3100 and VAX 4000 processors are supported. VAX 4000 processor requires KZQSA adapter

## RWZ52 1.2 Gbyte Multifunction Optical Drive

### Ordering Information

<b>RWZ52-FA*</b>	Tabletop 5.25" multifunction optical drive
<b>RWZ52-VA*</b>	5.25" Multifunction optical drive for StorageWorks
<b>RWX5K-01*</b>	Rewritable Media for RWZ52
<b>RWX5K-02*</b>	Write-Once Media for RWZ52
<b>QL-OU9A9-AA**</b>	Optical Storage Desktop Software for OpenVMS VAX

### Technical Information

Drive Specifications	High-capacity mode	Low-capacity mode
Capacity	1.2 Gbyte (600 Mbyte/side)	594 Mbyte (297 Mbyte/side)
Standards Rewritable standards (CSS format)	ECMA 184 ISO/IEC DIS 13549(draft)	ISO/IEC 10089A ANSI X3.212-1992
Write-once standards (CCW format)	ECMA 184 ISO/IEC DIS 13549(draft)	ISO/IEC 11560 ANSI X3.220-1992
Performance Average Access Time Read Transfer Rates, sustained	36.0 ms  1.6 Mbyte/s	31.8 ms  1.0 Mbyte/s
Writes Transfer Rate, sustained (with verification)	0.53 Mbyte/s	0.33 Mbyte/s

## VT Lan40 Windowing Network Terminals

### Overview

VT Lan 40 is a windowing network terminal that combines the best elements of an X terminal, a personal computer running a terminal emulator, and text and graphics terminals into a single product.

Like an X terminal, the VT Lan40 is designed to connect directly to an Ethernet network, providing extensive connectivity with rapid data transfer. VT Lan40 does not use the X protocol, so it requires fewer host and network resources and needs no additional host or server software.

VT Lan40 is preconfigured at the factory for easy network installation. Support is built in for TCP/IP (Telnet), DECnet (CTERM), and LAT network environments. Configuration of network and other selections can be password protected. VT Lan40 supports up to eight color sessions over a single serial line using the widely supported TD/SMP protocol. Terminal emulation and the windows manager are stored in read-only memory (ROM) eliminating the possibility of inadvertent deconfiguration.

The user environment is true windows making the VT Lan40 easy to use. VT Lan40 uses Microsoft Windows V3.1 and sessions are launched from an intuitive control panel. Windows can be resized and positioned. Text automatically resizes with the window. Because sessions are in separate, independent windows, each session has its own color selections and VT Lan40 can be connected to one or more hosts using Ethernet connections or the serial ports or both..

### Features

- Factory configured for low network support costs
- Protocols: TCP/IP, DECnet, and LAT network environments
- Ethernet: ThinWire, thick wire, 10-BaseT (twisted-pair)
- Windows environment: Microsoft Windows 3.1
- Supports up to eight independent color sessions through network and/or serial lines
- Text emulations: VT420, VT340, VT330, VT241, VT220, VT100, ANSI BBS, and VT52
- Graphics protocols: ReGIS, Tektronix 4010/4014 and Sixels
- Keyboard language support: Danish, Dutch, English, Flemish, Finnish, French, German, Italian, Norwegian, Portuguese, Spanish, Swedish
- Windows language support: English, French, Spanish, and German
- Monitor support: 14" to 21"; VGA through SVGA. Up to 1024 x 768 with 16 colors
- Designed for low energy use
- Meets international standards for low impact on the environment
- Three-year warranty on controller box, keyboard, and mouse
- VT340 follow-on

### Ordering Information

VT Lan40 has three components:

- Terminal controller box, including power cord and mouse (Step 1)
- Monitor (Step 2)
- Keyboard (Step 3)

To get a complete system, each component **must** be ordered as a separate line item.

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**Step 1—VT Lan40 Terminal Controller Box**


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Order Number	Region / Country	Power Cord Type	Language
VTGAA-AA	North America	110V, 10A	English
VTGAA-AC	Canada, US, Mexico	BN19P-2E	French
VTGAA-AS	Central America: Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama South America: Bolivia, Columbia, Ecuador, Guyana, Peru, Surinam, Venezuela		Spanish
VTGAX-AA	Cont. Europe and CIS	220V, 10A	English
VTGAX-AP	Austria, Belgium	BN19C-2E	French
VTGAX-AS	Bulgaria, Croatia		Spanish
VTGAX-AG	Czech, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovenia, Spain, Sweden, Turkey South America Argentina, Brazil, Chile, Columbia, Ecuador, Paraguay, Peru, Uruguay Switzerland		German
VTGAK-AP		220V, 10A	French
VTGAK-AG		BN19E-2E	German
VTGAK-AE			English
VTGAE-AE	Great Britain, Ireland, Gibraltar, Hong Kong, Saudi Arabia, Singapore	220V, 10A BN19A-2E	English
VTGAT-AA	Israel	220V, 10A BN18L-2E	English
VTGAD-AA	Denmark	220V, 10A	English
VTGAD-AG		BN19K-2E	German
VTGAJ-AA	Bangladesh, Egypt, Guyana, India, Namibia, Nigeria, Pakistan, South Africa	220V, 10A	English
VTGAZ-AA	Australia, New Zealand	220V, 10A	English

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**Step 2—Color Monitor**


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Order Number	Hemisphere / Country	Monitor	Power Cord Included
VR424-HA	Northern Hemisphere	14-inch color	Jumper
VR424-H4	Southern Hemisphere	14-inch color	Jumper
VR425-HA	Northern Hemisphere	15-inch color	Jumper
VR425-H4	Southern Hemisphere	15-inch color	Jumper
VR417-HA	Northern Hemisphere	17-inch color	BN19P-2E
VR417-HX	Continental Europe	17-inch color	BN19C-2E
VR417-HK	Switzerland	17-inch color	BN19E-2E
VR417-HE	U.K., Ireland	17-inch color	BN19A-2E
VR417-HT	Israel	17-inch color	BN18L-2E
VR417-HD	Denmark	17-inch color	BN19K-2E
VR417-H4	Southern Hemisphere	17-inch color	Not included
VRC20-HA	Northern Hemisphere	20-inch color	BN19P-2E
VRC20-HX	Continental Europe	20-inch color	BN19C-2E
VRC20-HK	Switzerland	20-inch color	BN19E-2E
VRC20-HE	U.K., Ireland	20-inch color	BN19A-2E
VRC20-HT	Israel	20-inch color	BN18L-2E
VRC20-HD	Denmark	20-inch color	BN19K-2E
VRC20-H4	Southern Hemisphere	20-inch color	Not included
VR421-HA	Northern Hemisphere	21-inch color	BN10P-2E
VR421-HX	Continental Europe	21-inch color	BN19C-2E
VR421-HK	Switzerland	21-inch color	BN19E-2E
VR421-HE	U.K., Ireland	21-inch color	BN19A-2E
VR421-HT	Israel	21-inch color	BN18L-2E
VR421-HD	Denmark	21-inch color	BN19K-2E
VR421-H4	Southern Hemisphere	21-inch color	Not included

**Step 3—Keyboard**

VT 108 ANSI	VT 108 WPS	Enhanced PC	Language / Country
LK411-AD	LK412-AD	PCXAL-GD	Danish
LK411-AH	LK412-AH	PCXAL-GH	Dutch
LK411-AA	LK412-AA		English, USA, UK, Ireland
		PCXAL-GE	English, UK, Ireland
LK411-AQ	LK412-AQ	PCXAL-GQ	English, Canada
		PCXAL-GA	English NA
LK411-AF	LK412-AF		Finnish
		PCXAL-JA	Finnish, Swedish
LK411-AB	LK412-AB	PCXAL-GB	Flemish
LK411-AC	LK412-AC	PCXAL-GC	French, Canada
LK411-AP	LK412-AP	PCXAL-GP	French, France
LK411-AK	LK412-AK	PCXAL-GK	French, Switzerland
LK411-AG	LK412-AG	PCXAL-GG	German Austria, Germany
LK411-AL	LK412-AL	PCXAL-GL	German, Switzerland
LK411-AI	LK412-AI	PCXAL-GI	Italian
LK411-AN	LK412-AN	PCXAL-GN	Norwegian
LK411-AV	LK412-AV	PCXAL-GV	Portuguese
		PCXAL-GR	Spanish, Latin America
LK411-AS	LK412-AS	PCXAL-GS	Spanish, Spain
LK411-AM	LK412-AM		Swedish

**Windowing Environment**

Window Manager Microsoft Windows V3.1	Multiple resizable windows Independent session configuration
Windows features	2-button PS/2 mouse, copy and paste, clock, calendar, calculator, control center session manager
Customizable user preferences:	Colors, screen saver, wall paper, session assignments
Window languages:	English, French, German, Spanish
Session Support	Up to eight independent, active text, or graphic sessions Sessions remain active when reduced to icons Session startup through single mouse click

**Applications Compatibility**

ANSI text	VT420, VT340, VT330, VT320, VT220, VT100, VT52, VT131 block mode, ANSI BBS
Graphics	DEC VT340, VT330, ReGIS, Sixel, Tektronix 4010/4014
Character sets	ISO-Latin 1, DEC Multinational, Technical, Graphics, Line drawing, PC code pages 437, 850
Display formats	24-144 lines, 80 or 132 columns Attributes: blink, underline, reverse, double high, double wide Intensity: Normal, bold Cursor: Block or underline, blink, steady or off
Fonts	Auto scaling fonts Fonts resize in reduced windows
Terminal configuration	Select from menu Saved in non-volatile memory Password protection Fully programmable keyboard

**Communications**

Serial modes	Full/half duplex, block, RS423 (MMJ) RS232 with full modem control
Flow control	DTR/DSR, CTS/RTS, XON/XOFF, none Independent send/receive, 300-115.2K baud Support for TD/SMP (SSU)
Network protocol support	LAT, DECnet (CTERM), and TCP/IP (Telnet)
Printer	Centronics parallel and serial printer support: Color and black on white, HPGL, IBM ProPrinter, Citizen, Canon, Epson, and DEC ANSI printer protocols

**Hardware**

CPU	32-bit embedded processor, Intel Instruction set
Memory	4 MB RAM standard
Graphics support	640 x 480 with 256 colors 800 x 600 with 256 colors 1024 x 768 with 16 colors
Connectors	1 EIA RS232 DB-25 (male or female) 1 EIA RS423 6-pin MMJ 1 DB-25 Centronics (female) parallel printer port Ethernet LAN connections: EIA 802.3, ThinWire, thick wire, 10BaseT (twisted pair)
Power (all models)	100-240V with detachable power cord 88-264V single phase, 3-wire design 47-63 Hz frequency 30 watts operating VESA/DPMS power cord
Cost of Ownership	3-year warranty on controller box, keyboard, mouse 1-year warranty on Digital monitors ISO 9002 registered manufacturing ROM card for upgrade

**Regulatory Compliance**

Product safety	AS/NZS 3260, CSZ 22.2 #950, 22.1 DHHS rules 21CFR, subchapter J NFPA 70-1978, IEC 950, EN60950 UL 1950 1st edition, VDE 0805 DEMKO, NEMKO, SEMKO, FIMKO
EMI/RFI	FCC Class B, CSA 108.8 Class B, CISPR-22 Class B VDE Class B, CE Class B, (EN55022, EN50082-1, EN60555-2) ITE (VCCI) Class 2, MPR-2 1990:8
PTT	CCITT V.24, V28 Australia, Germany, Japan, Sweden
Ergonomics	TUV ZH/618, TCO 1992 EN29241-3 (ISO 9241-3), ECMA 74 ISO 9295/6, Statskontoret 26:2
Environmental	Energy Star and NUTEK energy reduction Environmentally compatible materials and processes used in design and production Designed for recycling

**Keyboards**

Ergonomic	Ergonomic, detachable keyboard with two-position tilt PC mini-DIN keyboard connector for PS/2-compatible input devices
Keyboard styles	Digital VT (108 key) ANSI Digital WPS (108 key) Enhanced PC (101/102 key)
Language support	Danish, Dutch, English, Finnish, Flemish, French, German, Italian, Norwegian, Portuguese, Spanish, Swedish

## Specifications

<b>Physical Characteristics</b>		
<b>Controller box</b>	Centimeters	Inches
Height	7	2.8
Width	32	12.8
Depth	33	13.2
Shipping weight	4.5 kg	10 lb
<b>VT style</b>		
Height	5	1.8
Width	48	18.8
Depth	18	7.0
Shipping weight	1.2 kg	2.5 lb
<b>PC style</b>		
Height	5	1.9
Width	48	18.8
Depth	20	8.0
Shipping weight	.9 kg	2.0 lb

## Office/Data Center On-Line Systems: Prestige Models 3000/6000

### Product Description

The Powerware Prestige 3000 (3kVA ) and 6000 (4.5 and 6kVA) UPS is the first on-line UPS that offers a hot-swappable modular design. The Prestige 6000 is easily upgradable from 4.5 to 6kVA.

The standard North American unit consists of three plug and play modules which can be easily diagnosed and swapped out or upgraded by the user.

- The electronics module containing automatic bypass and communications port
- The battery module which can be monitored through the software for the Prestige 3000 and Prestige 6000
- The PowerPass maintenance by-pass module which allows the electronics to be safely disconnected without interrupting the critical load.

The standard international version does not currently include the PowerPass module. PowerPass is available as an option for Prestige Model 3000.

The Prestige North American unit is available in 208 or 240 volts input and 120, 120/208, 120/240 VAC output models. The International unit is switch selectable for 208/220/230/240 volts in and out.

Double-conversion on-line technology provides regenerated, clean power at all times for consistent performance.

The user-friendly front panel features visual and audible alarms for battery, overload and change of state, LED bar graph display of percent load, battery time remaining and operational status. The unit also provides an automatic battery self test feature. Optional Network power management and UPS monitoring/shutdown software and Network adapters allows safe shutdown, remote status display and control of UPS parameters in an NMS or SNMP environment.

An exclusive “second generation” on-line design extends battery life and the “cell saver” utility interface gives the Powerware Prestige the ability to accept lower input voltages when the UPS load is at less than 100% capacity. The battery is used only during the most severe brownouts and blackouts, running cooler and increasing battery life.

The modular battery packs of the Prestige models can be changed, added or removed without turning off the UPS, providing regulated on-line power while the battery is being serviced or upgraded.

The PowerPass Distribution Module houses an isolation transformer to provide galvanic isolation while on auto or maintenance bypass. It also contains the output receptacles and protects the critical load by allowing it to be manually transferred to the utility power source (bypass) without interruption. Extra output receptacles are provided by extendable plug-in distribution modules. Each receptacle has individual circuit breaker protection for maximum flexibility. These modules are UL 1778 approved for safe handling by the user.

The Prestige is manufactured by Exide Electronics in accordance with ISO9001 standards for quality throughout the design, documentation, and manufacturing processes.

**Prestige Model 3000/6000 Ordering Information**

**Note:** Except where otherwise noted, all packages include electronics, battery, and PowerPass module with isolation XFMR and output receptacle panel and input cord.

- All UPS models include 3-year vendor hot-swap warranty when sold in the continental U.S. Models sold outside the continental U.S. include a 1-year warranty with return to the vendor's certified service center.
- Digital on-site exchange service contracts are also available.

**Step 1—Packaged Systems**

Select UPS (models include packaged battery, input cord, and PowerPass module with the output receptacle panel shown)

**Prestige 3000 Series**

Order Number	Description	Input Plug	Output Rating	Output Receptacle
4N-AEAAH-AL	3kVA Prestige 208 V Model 208 V in: 120/208 V out	L6-30P	3kVA / 2KW 60 Hz	One L6-30R Two 5-15R2
4N-AEAAH-AM	3kVA Prestige 208 V Model 208 V in: 120 V out only	L6-30P	3kVA / 2KW 60 Hz	One L5-30R Two 5-15R2
4N-AEAAH-AN	3kVA Prestige 240 V Model 240 V in: 120/240 V out	L6-30P	3kVA / 2KW 60 Hz	One L14-30R Two 5-15R2
4N-AEAAH-AP	3kVA Prestige 240 V Model 240 V in: 120 V out only	L6-30P	3kVA / 2KW 60 Hz	One L5-30R Two 5-15R2
4N-AEAAH-AR	3kVA Prestige 200-240 V Model 220/230/240 in and out (International version - no PowerPass)	Stripped VDE pigtail	3kVA / 2.1KW 50/60 Hz	Optional power strips via IEC 20A See Step 2
4N-AEAAH-AS	Same as 4N-AEAAH-AR with optional PowerPass	IEC 320-620 10A	3kVA/2.1 KW 50 Hz	Three IEC 320 (10A)

**Prestige 6000 Series**

Order Number	Description	Input Plug	Output Rating	Output Receptacle
4N-AEAAJ-AM	4.5kVA Prestige 208 V Model 208 V in: 120 V out only	L6-30P	4.5kVA / 3KW 60 Hz	Two L6-30R Four 5-15R2
4N-AEAAJ-AK	4.5kVA Prestige 200-240 V Model (International version - no PowerPass)*	Hardwired	4.5kVA / 3KW 50/60 Hz	Hardwired in and out†
4N-AEAAJ-CL	6kVA Prestige 208 V Model 208 V in: 120/208 V out	L6-30P	6kVA / 4KW 60 Hz	Two L6-30R Four 5-15R2
4N-AEAAJ-CM	6kVA Prestige 208 V Model 208 V in: 120 out only	L6-30P	6kVA / 4KW 60 Hz	Two L5-30R Four 5-15R2
4N-AEAAJ-CK	6kVA Prestige 200-240 V Model (International version - no PowerPass)*	Hardwired	6kVA / 4KW 50/60 Hz	Hardwired in and out†

\* See Steps 1a and 1b for hardwired 60 Hz applications with PowerPass.

† Call for availability of plug-in module for international applications.

**Step 1a—Custom Building Block (For Series 6000 Only)**

Select UPS with packaged battery and add optional PowerPass module as required.

**Note:** For hardwired I/O applications, use the hardwired I/O PowerPass module listed below to preserve hot-swap maintenance bypass capability.

**Prestige 6000 Series**

Order Number	Description	Input Plug	Output Rating	Output Receptacle
4N-AEAAJ-AJ	4.5kVA Prestige 200-240 V Model (no PowerPass module)	L6-30P	4.5kVA / 3KW 50/60 Hz*	One L6-30R
4N-AEAAJ-CJ	6kVA Prestige 200-240 V Model (no PowerPass module)	L6-30P	6kVA / 4KW 50/60 Hz*	One L6-30R

\* PowerPass is for 60 Hz applications only.

Step 1b—Optional PowerPass Module (Plugs into L6-30R on UPS Electronics Cabinet) 60 Hz applications only

### Prestige 6000 Series

Order Number	Description	Output Receptacle
4N-AEAAJ-DA	PowerPass 208 V Model: 208 V in; 120/208 V out	Two L5-30R, Four 5-15R2
4N-AEAAJ-DB	PowerPass 208 V Model: 208 V in; 120/208 V out	Two L6-20R, Four 5-15R2
4N-AEAAJ-DC	PowerPass 208 V Model: 208 V in; 120/208 V out	Two L6-30R, Four 5-15R2
4N-AEAAJ-DD	PowerPass 208 V Model: 208 V in; 120/208 V out	Two L14-30R, Four 5-15R2
4N-AEAAJ-DE	PowerPass 240 V Model: 240 V in; 120/208 V out	Two L5-30R, Four 5-15R2
4N-AEAAJ-DF	PowerPass 240 V Model: 240 V in; 120/208 V out	Two L6-20R, Four 5-15R2
4N-AEAAJ-DG	PowerPass 240 V Model: 240 V in; 120/208 V out	Two L6-30R, Four 5-15R2
4N-AEAAJ-DH	PowerPass 240 V Model: 240 V in; 120/208 V out	Two L14-30R, Four 5-15R2
4N-AEAAJ-DJ	PowerPass 208 V Model: 208 V in; 120/208 V out	Hardwired I/O
4N-AEAAJ-DK	PowerPass 240 V Model: 240 V in; 120/208 V out	Hardwired I/O

### Step 2—Additional Power Distribution Units (Optional)

Plug-In Output Extensions (plugs into receptacle on PowerPass module)

Used with UPS Model**	Extension Model	Output Receptacles	Extension plug type
4N-AEAAH-AL	4N-AEACH-AK	Two L6-20R and two L6-30R	L6-30P (all)
4N-AEAAJ-CL	4N-AEACH-AL	Hardwired output module (3kVA models only) (See Steps 1a and 1b for 6kVA hardwired application.)	
4N-AEAAH-CM	4N-AEACH-AA	Four 5-15R2	L5-30P (all)
4N-AEAAH-CP	4N-AEACH-AB	Four 5-20R2	
4N-AEAAJ-AM	4N-AEACH-AC	Two L5-30R and Two 5-20R2	
4N-AEAAJ-CM	4N-AEACH-AD	Two L5-20R, Two 5-20R2	
	4N-AEACH-AF	One 5-15R2, Three L5-30R	
	4N-AEACH-AE	Hardwired output module (3kVA models only) (See Steps 1a and 1b for 6kVA hardwired application)	
4N-AEAAH-AN	4N-AEACH-AG	One L14-30R and three 5-15R2	L14-30P (all)
	4N-AEACH-AH	One L14-30R, Two L6-30R, and One 5-15R2	
	4N-AEACH-AJ	Hardwired output module (3kVA models only) (See Steps 1a and 1b for 6kVA hardwired application.)	
	4N-AEACH-AM	Four 5-15R2	
4N-AEAAH-AR	4N-AEACH-DA*	Schuko outlets six @ 16 Amp	IEC320 20A (all)
	4N-AEACH-DB*	French outlets six @ 16 Amp	
	4N-AEACH-DC*	British outlets six @ 13 Amp	

\* For 3kVA models only: call for the plug connections available for 4.5 or 6kVA models.

\*\*Extensions may also be used with any building block PowerPass module 4N-AEAAJ-D\* having the corresponding mating plug.

### Step 3—Additional Battery Packs for Extra Runtime (Optional)

4N-AEAAH-AB	Battery Cabinet for 3kVA Models (up to 3 total maximum)
4N-AEAAJ-CC	Battery Cabinet for 4.5 and 6kVA Models (up to 6 total maximum)

Battery Support Times (with Additional Cabinets)					
Battery Times	STD*	STD+1	STD+2	STD+3	STD+4
3kVA @ full load	7 minutes	18 minutes	30 minutes	N/A	N/A
3kVA @ half load	14 minutes	35 minutes	55 minutes		
4.5 kVA @ full load	12 minutes	20 minutes	28 minutes	36 minutes	44 minutes
4.5 kVA @ half load	30 minutes	50 minutes	68 minutes	90 minutes	116 minutes
6kVA @ full load	7 minutes	12 minutes	18 minutes	24 minutes	30 minutes
6kVA @ half load	22 minutes	33 minutes	44 minutes	56 minutes	74 minutes

\* One battery for 3kVA; two batteries for 4.5 and 6kVA models.

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## Step 4—Select UPS Monitoring/Shutdown Software and Network Connectivity Adapter Options (Optional)

Partial list is shown; software for most other operating systems is also available.

Order Number	Description	Function
4N-AEAES-AA/BA	OnliNet Windows NT Alpha Basic/Network	Full monitoring <sup>1</sup>
4N-AEAES-AB/BB	OnliNet Windows NT x86 Basic/Network	Full monitoring <sup>1,2</sup>
4N-AEAES-AH	OnliNet Windows DOS	Full monitoring <sup>1</sup>
4N-AEAES-AK/BK	OnliNet OSF/1 Basic/Network	Full monitoring <sup>2</sup>
4N-AEAES-EE	OnliSafe OpenVMS VAX (TK50)	Shutdown/event log
4N-JBBBB-GG	PowerMon Alpha OpenVMS AXP	Shutdown/event log
4N-AEAEO-CA	Ethernet <sup>3</sup> adapter (1 UPS to Network) ThinWire	
4N-AEAEO-CB	Ethernet adapter (1 UPS to Network) twisted pair	
4N-AEAEO-CC	Ethernet SNMP adapter includes MIB, ThinWire	
4N-AEAEO-CD	Ethernet SNMP adapter includes MIB, twisted pair	
4N-AEAEO-CE	Ethernet Network adapter (2 UPS to Network)	
4N-AEAEO-CF	Ethernet Network SNMP adapter (2 UPS to Network)	
4N-AEAEO-CG	Token Ring SNMP adapter	
4N-AEAEO-CH	Token Ring Network adapter	

1. Full monitoring includes load and battery levels, safe CPU shutdown, and event log.

2. OnliNet Network allows multiple CPU shutdown, and monitoring and control via central NW management station. Requires NW connector adapter.

3. Ethernet Network adapters include connectors for ThinWire and twisted pair.

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## Step 5—Select Optional Warranty Upgrades\*

Order Number	Description
4N-AEWAR-G2/G3	Prestige 3000/6000 5-year on-site exchange warranty upgrade option upgrades 3-year hot-swap return product warranty for continental US only and is available at time of UPS sale.
4N-AEWAR-G4	Same as above for Prestige 6000 only, except for 5-year on-site and start-up package.

\* Service provided by UPS vendor.

## Office/Data Center On-Line Systems—Prestige Series 3000 Specifications

UPS SPECIFICATIONS		North American Models – 60Hz	International Models – 50Hz
		3000VA Models	
ELECTRICAL			
Input Voltage		208V (4N-AEAAH-AM) or 240 VAC	200V, 208V, 220V, 230V, 240 VAC
Allowable Input Range without using batteries		160-276 VAC @ full load 140-276 VAC @ half load	
Input Frequency		45Hz to 65Hz	
Input Power Factor		0.90 typical @ full load and nominal line	
Surge Protection		Per EN 50082-1, meets IEC 801-4, IEEE 587, ANSI C62.41 CAT A&B	
Input Connection (6' detachable line cord)		With L6-30P	Stripped Pigtail
Output Receptacles	Standard Package	1 L5-30R, 4 5-15R (4N-AEAAH-AM)	1 IEC 320, 20A (4N-AEAAH-AR)
	Options Available*	1 L6-30R, 4 5-15R or 1 L14-30R, 4 5-15R	Ext. strip w/5 British, 5 Schuko, or 5 French receptacles. (3)IEC 320 with PowerPass
Output Voltage (Sinewave)	Standard Package	120 VAC (4N-AEAAH-AM)	200V, 208V, 220V, 230V, 240 VAC $\pm$ 3% All Units
	Options Available	120V, 120/208V, 120/240V $\pm$ 3% (60Hz)	N/A
<b>Output VA/Watts</b>		3000VA/2000W @ 60Hz	3000VA/2100W @ 50Hz
Output Current @ full load		25A/120V, 14.4A/208V, 12.5A/240V	14.4A/208V, 13.6A/220V, 13.0A/230V, 12.5A/240V
Output Voltage THD/Crest Factor		<5%, 100% non-linear load/3:1 CF	
Normal/Common Mode Noise Rejection @ 100 KHZ		>80 dB/60 dB	
Output Frequency		Same as input, 50 or 60Hz $\pm$ 0.1% free running $\pm$ 5% synchronized (adjustable to $\pm$ 1.5%)	
Battery-sealed lead acid Support time full/half load Recharge time to 90% capacity		7/14 6 HRS	
MECHANICAL			
Weight of Components (lbs/kg)	Electronics	16.5 lbs/7.5 kg	
	Battery	52 lbs/23.6 kg	
	PowerPass	47 lbs/21.4 kg (Includes Isolation XFMR) Standard 60 Hz / Optional 50 Hz	
	Ext. Batt.	52 lbs/23.6 kg	
Dimensions of Components HxWxD (inches/mm)	Electronics	5.6"H x 9.9"W x 15.8"L (143mm H x 252mm W x 400mm L) Stackable	
	Battery	5.6"H x 9.9"W x 15.8"L (143mm H x 252mm W x 400mm L) Stackable	
	PowerPass	Same as Electronics module (60Hz only)	
	Ext. Batt.	Same as STD Battery Module	
ENVIRONMENTAL			
Audible Noise @ 1 meter		50dBA	
Operating/Storage Ambient Temperature & Altitude		+10C to +40C/-20C to +60C; 0-4000 FT (1200 meters) without derating	
BTU/Hr (On Line) @ Full Load		1492 (with PowerPass)	978 (without PowerPass)
Relative Humidity		5-95% Non-condensing	
EMI Suppression		FCC Part 15, Subpart J, Class A also meet CISPR22B	
Safety		UL 1778, CSA	EN 50091-1

\* Hardwired output and extension receptacle strips are available for 60Hz applications.

## Office/Data Center On-Line Systems—Prestige Series 6000 Specifications

UPS SPECIFICATIONS		North American Models – 60Hz	International Models – 50Hz
		4500VA and 6000VA Models	
<b>ELECTRICAL</b>			
Input Voltage		208V (4N-AEAAJ-CM/CL) or 240 VAC	200V, 208V, 220V, 230V, 240 VAC
Allowable Input Range without using batteries		160-276 VAC @ full load 140-276 VAC @ half load	
Input Frequency		45Hz to 65Hz	
Input Power Factor		0.90 typical @ full load and nominal line	
Surge Protection		Per EN 50082-1, meets IEC 801-4, IEEE 587, ANSI C62.41 CAT A&B	
Input Connection (6' detachable line cord)		With L6-30P (Hardwire option available)	Hardwired
Output Receptacles	Standard Package	(2) L5-30R, (8) 5-15R (4N-AEAAJ-CM & AM) (2) L6-30R, (8) 5-15R (4N-AEAAJ-CL)	Hardwired (4N-AEAAJ-CK & AK)
	Options Available*	2 L6-20R, 8 5-15R or 2 L14-30R, 8 5-15R	Call for availability
Output Voltage (Sinewave)	Standard Package	120 VAC (4N-AEAAJ-CM & AM) 120/208 VAC (4N-AEAAJ-CL)	200V, 208V, 220V, 230V, 240 VAC $\pm$ 3% (50Hz) All Units
	Options Available	120V, 120/208V, 120/240V $\pm$ 3%	N/A
<b>Output VA/Watts</b>		4500VA/3000W and 6000VA/4000W Models	
Output Current @ full load		4500VA Model: 37.5/21.6/18.7A 6000VA Model: 50/28.8/25A @ 120V/208V/240V	
Output Voltage THD/Crest Factor		<5%, 100% non-linear load/3:1 CF	
Normal/Common Mode Noise Rejection @ 100 KHZ		>80 dB/>60 dB	
Output Frequency		Same as input, 50 or 60Hz $\pm$ 0.1% free running $\pm$ 5% synchronized (adjustable to $\pm$ 1.5%)	
Battery-sealed lead acid Support time full/half load Recharge time to 90% capacity		8/20 (Model 6000VA); 12/30 (Model 4500VA) 6 HRS	
<b>MECHANICAL</b>			
Weight of Components (lbs/kg)	Electronics	39 lbs/18 kg	
	Battery	52 lbs/23.6 kg each (2 req'd)	
	PowerPass	75 lbs/34.1 kg 60Hz) (Includes Isolation XFMR)	N/A (50Hz)
	Ext. Batt.	52 lbs/23.6 kg	
Dimensions of Components HxWxD (inches/mm)	Electronics	11.2"H x 9.9"W x 15.8"L (285mm H x 252mm W x 400mm L) Stackable	
	Battery	5.6"H x 9.9"W x 15.8"L (285mm H x 252mm W x 400mm L) each (2 req'd) Stackable	
	PowerPass	Same as Electronics module (60Hz only)	
	Ext. Batt.	Same as STD Battery Module	
<b>ENVIRONMENTAL</b>			
Audible Noise @ 1 meter		50dBA	
Operating/Storage Ambient Temperature & Altitude		+10C to +40C/-20C to +60C; 0-4000 FT (1200 meters) without derating	
BTU/Hr (On Line) @ Full Load 6000VA Model: 4500VA Model:		2400 (with PowePass) 2000 (with PowerPass)	1600 (without PowerPass) 1200 (without PowerPass)
Relative Humidity		5-95% Non-condensing	
EMI Suppression		FCC Part 15, Subpart J, Class A also meet CISPR22B	
Safety		UL 1778, CSA	EN 50091-1

\*Hardwired output and extension receptacle strips are available for 60Hz applications. See Configuration Chart for other options.

**Minimum UPS Systems (see January 1995, *Digital Systems and Options Catalog* for options)**

- Select recommended UPS system for corresponding CPU system from chart below. Minimum UPS system will support fully configured system and video device. External devices may require larger rating.
- For custom configurations, see Configuration Guidelines, January 1995, *Digital Systems and Options Catalog*.

Digital System <sup>1</sup>	Special Receptacle	Video Receptacle	Minimum UPS Order Number	UPS Type (rating in VA)	Estimated VA load with monitor
DEC 7000/VAX 7000* VAX 6000	L21-30R L21-20R	No No	4N-AEAAAN-BA <sup>2</sup> 4N-AEAAAN-BA <sup>6</sup>	PUPS plus 15kVA PUPS plus 15kVA	5200* 2800
AlphaServer 8400/8200* 3 Phase	L21-30R	No	4N-AEAAAN-BA <sup>2</sup>	PUPS plus 14kVA	4800*
AlphaServer 8200/8400* 1 Phase	L21-30R	No	4N-AEAAJ-CL	PRESTIGE 6000	2860*
AlphaServer 2100* Pedestal		No	4N-AEAAH-AM	Prestige 3000	1540*
AlphaServer 2100 Rackmount/Cabinet*	L5-30R	No	4N-AEAAJ-CL	Prestige 6000	3700*
AlphaServer 2000*		No	4N-AEAAAG-AF	PUPS Personal 2000	1270*
AlphaServer 1000*		No	4N-AEABD-AF	PUPS Prestige 1250	820*
AlphaServer 1000 Rackmount/Bounded Sys*		No	4N-AEAAF-AF	Prestige 1500	900*
AlphaStation 400/AlphaServer 400		Yes	4N-AEABD-AF	PUPS Prestige 800	725
AlphaStation 200/250		No	4N-AEABC-AF	PUPS Prestige 650	470
DEC 4000 Model 600/700*	5-20R	No	4N-AEAAH-AM <sup>5</sup>	Prestige 3000	1940
DEC 3000 Model 500/800/900		Workstation only	4N-AEABF-AB	PUPS Prestige 1500	1135
DEC 3000 Model 400/600/700		Workstation only	4N-AEABF-AA	PUPS Prestige 1250	1060
DEC 3000 Model 300		Yes	4N-AEABD-AF	PUPS Prestige 800	640
DEC 2000 Model 500		Yes	4N-AEABF-AB	PUPS Prestige 1500	1400
DEC 2000 Model 300		Yes	4N-AEABC-AF	PUPS Prestige 650	575
VAX 4000 Model 500A/600A/700A		Yes	4N-AEABF-AB	PUPS Prestige 1500	1340
VAX 4000 Model 100A/105A/106A		Yes	4N-AEABC-AF	PUPS Prestige 650	450
VAX4000 Model Rackmount	L5-30R	No	4N-AEAAH-AM	Prestige 3000	2750 max
VAX 4000 Model 500/700 Rackmount 1 sys	L5-30R	No	4N-AEAAH-AM	Prestige 3000	1800
VAX 4000 Model 500/700 Rackmount 2 sys	L5-30R	No	4N-AEAAJ-AM	Prestige 4500	4370 max
MicroVAX 3100		Yes	4N-AEABC-AF	PUPS Prestige 650	450
VAXstation 4000 Model 60/90/90A		Yes	4N-AEABD-AF	PUPS Prestige 800	630
VAXft 810*	L5-30R L5-20R	No	4N-AEAAH-PA <sup>2</sup>	PUPS Plus 3.6	3000 each
VAXft 110		No	4N-AEABC-AF	PUPS Prestige 650 <sup>2</sup>	928 total
DECsystem 5900	L5-30R	Yes	4N-AEAAH-AM	Prestige 3000	1910
DECsystem/DECstation 5000		DECstation only	4N-AEABC-AF	PUPS Prestige 650	400
VAXstation VLC		Yes	4N-APACA-AB	Smart-UPS 450	300
VXT 2000/2000+		Yes	4N-APAAF-AA	Back-UPS 400	300
applicationDEC 433MP		No	4N-AEABF-AA	PUPS Prestige 1250	990
applicationDEC 433XP		Yes	4N-AEABD-AF	PUPS Prestige 800	700
DECpc AXP 150		Yes	4N-AEABC-AF	PUPS Prestige 650	575
DECpc 4xx/5xx MT/ST)		Yes	4N-APACB-AB	Smart-UPS 700	990
DECpc 4xx/5xx-XL		Yes	4N-APACB-AB	Smart-UPS 700	575
DECpc LPx, Venturis FP, Celebris FP		Yes	4N-APAAF-AA	Back-UPS 400	330
DECpc LPv, Venturis LP 4xx / 560, Celebris LP		Yes	4N-APAAF-AA	Back-UPS 400	250

1 All systems except where noted require standard NEMA configuration 5-15R (15 Amp) outlet. AlphaServer 1000 server and up may require multiple receptacles for optional redundant power supplies. Rackmount kit for Rackmount AlphaServer 1000 is 4N-AEAEO-RA.  
 2 Requires additional order numbers 4N-AEACM-BK (2) L21-30R, (3) 5-20R2 for distribution module. See also PUPS plus section Step 3, *Digital Systems and Options Catalog*, January 1995, edition.  
 3 VAXft 810 uses a special preconfigured 3.6 kVA PUPS plus package. Two required per system.  
 4 The VAXft 110 requires two UPS to maintain fault tolerant system.  
 5 Requires optional output extension module 4N-AEACH-AD.  
 6 Requires optional output distribution receptacle module: 4N-AEACM-BD, (2) 5-15R, (1) L5-30R, (1) L21-30R, (1) L21-20R  
 7 All systems have 10 min. battery at full rating (battery extensions available).

\*Systems noted have power factor corrected power supplies (i.e., VA = Watts for CPU)

## Index

—4—

4N-AEAAH, 299

4N-AEAAJ, 299, 300

—A—

ADVANTAGE-UPGRADE Program, 227

AlphaServer 1000 4/233 System Upgrades, 240

AlphaServer 2000 4/233 System Upgrades, 240

AlphaServer 2000 4/275 System Upgrades, 241

AlphaServer 2000 CPU Upgrades, 242

AlphaServer 2100 4/233 System Upgrades, 243

AlphaServer 2100 4/275 System Upgrades, 243

AlphaServer 2100 5/250 System Upgrades, 244, 245

AlphaServer 2100 CPU Upgrades, 245

AlphaServer 8200 System Upgrades, 246

AlphaServer 8400 System Upgrades, 246

AlphaStation 200 4/166 Workstation Upgrades, 231

AlphaStation 200 4/233 Workstation Upgrades, 231

AlphaStation 400 4/166 MiniTower Upgrades, 233

AlphaStation 400 4/233 Workstation Upgrades, 232

DEC 3000 Model 300X Workstation Upgrades, 234

DEC 3000 Model 600 Workstation Upgrades, 235

DEC 3000 Model 600S Server Upgrades, 238

DEC 3000 Model 700 Workstation Upgrades, 236

DEC 3000 Model 900 Workstation Upgrades, 237

DEC 4000 Model 700 Distributed/Departmental Server Upgrades, 239

DEC 7000 and 10000 Symmetric Multiprocessing (SMP) Upgrades, 252

DEC 7000 Model 700 Enterprise Server Upgrades, 251

AlphaServer 1000 4/233 Systems, 35

Diagrams, 46

PB50A, 37

PB70B, 36

PB70B, 36

Specifications, 47

AlphaServer 1000 4/233 Rackmount and Cabinet Systems, 49

Diagram, 57

PB71R, 52

PB7RD, 51

PB7RE, 52

Specifications, 58

AlphaServer 2000 4/233 and 4/275 Systems, 58

DEC OSF/1, 71

DA-241D1-H9, 71

DA-242D1-H9, 71

DN-241D1-H9, 60

DN-242D1-H9, 60

DY-241D1-H9, 81

DY-241D1-J9, 81

EISA Bus IRQ Address Table, 92

OpenVMS, 81

Specifications, 96

Storage Diagrams, 93

Windows NT, 59

AlphaServer 2100 4/233, 4/275 and 5/250 Systems, 96

EISA Bus IRQ Address Table, 126

OpenVMS AXP, 116

Windows NT, 97

DEC OSF/1 AXP, 107

DA-251P1, 107

DA-252P1, 107

DA-253P1, 107

DN-251P1, 98

DN-252P1, 98

DY-251P1, 116

DY-252P1, 116

DY-253P1, 116

Diagrams, 127

Specifications, 132

AlphaServer 2100 4/233, 4/275 and 5/250

Cabinet Systems, 144

DA-261C1, 146

DA-262C1, 146

DA-263C1, 146

DN-261C1, 145

DN-262C1, 145

EISA Bus IRQ Address Table, 154

Specifications, 157

AlphaServer 2100 4/233, 4/275 and 5/250

Rackmount Systems, 133

EISA Bus IRQ Address Table, 142

DA-251W1, 135

DA-252W1, 135

DA-253W1, 135

DN-251W1, 134

DN-252W1, 134

DY-251W1, 135

DY-252W1, 135

DY-253W1, 135

Specifications, 143

AlphaServer 8200 Systems, 158

DA-281AB, 159

DA-281AY, 171

DA-281BB, 160

DA-281BC, 160

DA-281BD, 160

DA-281BF, 160

DA-281BY, 171

Optional Controller Configuration Table, 172

Specifications, 174

System Building Blocks, 170

AlphaServer 8400 Systems, 173

System Building Blocks, 187

DA-291AC, 174

DA-291AD, 174

DA-291AF, 174

DA-291AY, 187

DA-291BC, 175

DA-291BD, 175

DA-291BF, 175

DY-291AC, 175

DY-291AD, 175

DY-291AF, 175

DY-291AY, 187

DY-291BC, 175

DY-291BD, 175

DY-291BF, 175

Optional Controller Configuration Table, 190

Power Configuration Table, 189

System Diagram, 192, 193

Specifications, 194

AlphaStation 200 4/100 Desktop Workstations, 1  
Diagrams, 9

PB410, 2

PB411, 2

PB412, 2

Specifications, 10

AlphaStation 250 4/266 Desktop Workstations, 11

Diagrams, 20

Specifications, 21

PB422, 12

PB460, 12

PB41, 12

PB46A, 13

AlphaServer 400 4/166 Mini Tower Systems, 23

Diagrams, 32

Specifications, 33

PB50A, 25

PB510, 24

PB511, 24

PB512, 24

Asynchronous Multiplexer for EISA/ISA Systems—CXI01, 277

ATMworks Adapters 750, 268

—B—

BA356, 283

BA356-KC

BA35M, 283

BA35X, 283

—C—

CT-880WW, 229

CT-881WW, 229

—D—

DA-241D1-H9, 71

DA-242D1-H9, 71

DA-251P1, 107

DA-252P1, 107

DA-253P1, 107

DA-251W1, 135

DA-252W1, 135

DA-253W1, 135

DA-261C1, 146

DA-262C1, 146

DA-263C1, 146

DA-291AC, 174

DA-291AD, 174

DA-291AF, 174

DA-291AY, 187

DA-291BC, 175

DA-291BD, 175

DA-291BF, 175

DAGGA, 274

DAGGL, 274

DE500, 276

DEC 3000 Model 300X Workstation Upgrades, 234

DEC 3000 Model 600 Workstation Upgrades, 235

DEC 3000 Model 600S Server Upgrades, 238

DEC 3000 Model 700 Workstation Upgrades, 236

DEC 3000 Model 900 Workstation Upgrades, 237

DEC 4000 Model 700 Distributed/Departmental Server Upgrades, 239

DEC 7000 and 10000 Symmetric Multiprocessing (SMP) Upgrades, 252

DEC 7000 Model 700 Enterprise Server Upgrades, 251

DEFGB, 274

DGLTA, 271

## Index

### Digital AlphaServer 8200 Systems, 158

- DA-281AB, 159
- DA-281AY, 171
- DA-281BB, 160
- DA-281BC, 160
- DA-281BD, 160
- DA-281BF, 160
- DA-281BY, 171
- Optional Controller Configuration Table, 172
- Specifications, 174
- System Building Blocks, 170

### Digital AlphaServer 8400 Systems, 173

- System Building Blocks, 187
- DA-291AC, 174
- DA-291AD, 174
- DA-291AF, 174
- DA-291AY, 187
- DA-291BC, 175
- DA-291BD, 175
- DA-291BF, 175
- DY-291AC, 175
- DY-291AD, 175
- DY-291AF, 175
- DY-291AY, 187
- DY-291BC, 175
- DY-291BD, 175
- DY-291BF, 175
- Optional Controller Configuration Table, 190
- Power Configuration Table, 189
- System Diagram, 192, 193
- Specifications, 194

### Digital NetRider Remote Access System, 275

- DN-241D1-H9, 60
- DN-242D1-H9, 60
- DN-251P1, 98
- DN-251W1, 134
- DN-252P1, 98
- DN-252W1, 134
- DN-261C1, 145
- DN-262C1, 145
- DSRVH, 275
- DV-31GAB, 206
- DV-31GCB, 206
- DV-31JCB, 206
- DV-31SCA, 206
- DV-416CB, 217
- DWZZB, 281
- DY-241D1-H9, 81
- DY-241D1-J9, 81
- DY-251P1, 116
- DY-251W1, 135
- DY-252P1, 116
- DY-252W1, 135
- DY-253P1, 116
- DY-253W1, 135
- DY-281AB, 159
- DY-281AY, 171
- DY-281BB, 160
- DY-281BC, 160
- DY-281BD, 160
- DY-281BF, 160
- DY-281BY, 171
- DY-291AC, 175
- DY-291AD, 175
- DY-291AF, 175
- DY-291AY, 187
- DY-291BC, 175
- DY-291BD, 175
- DY-291BF, 175

### —E—

- Fast EtherWORKS PCI 10/100 (DE500-XA), 276

### —F—

- FR-880WW, 229
- FR-881WW, 229

### —G—

- GIGAswitch/ATM Networking Switch, 272

### —K—

- KZPSA—PCI to SCSI Fast Wide Differential (FWD) Storage Adapter, 279

### —M—

- MicroVAX 3100 Systems and Servers, 205
  - Comparison Chart, 206
  - Diagrams, 213
  - DV-31GAB, 206
  - DV-31GCB, 206
  - DV-31JCB, 206
  - DV-31SCA, 206
  - Specifications, 214
  - Upgrades, 253
- Multia Multi-Client Desktop System, 264
  - Specifications, 267
  - VX47A, 265
  - VX47B, 265
  - VX4A, 265

### —O—

- Prestige Models 3000/6000, 297

### —P—

- Prioris HX 590 and HX 59DP PC Servers, 228
  - FR-880WW, 229
  - FR-881WW, 229
  - CT-880WW, 229
  - CT-881WW, 229
- PB422, 12
- PB460, 12
- PB46A, 13
- PB71R, 52
- PB7RD, 51
- PB7RE, 52
- Prestige Model 3000 Specifications, 302
- Prestige Model 6000 Specifications, 304

### —Q—

- QB-3RTAA, 275

### —R—

- RWX5K, 291
- RWZ52, 291
- RWZ52 1.2 Gbyte Multifunction Optical Drive, 290
- RZ26L-VW, 285
- RZ28-VW, 285
- RZ29B-VW, 285

### —S—

- StorageWorks deskside expansion pedestal, 282
  - BA356, 283
  - BA356-KC
  - BA35M, 283
  - BA35X, 283
- StorageWorks BA356-KC Wide 16 Bit Deskside Expansion Pedestal, 282
- StorageWorks DWZZB 16-Bit SCSI Bus Extender and Signal Converter, 280, 281
- StorageWorks Fast Wide RZ26L and RZ28 SCSI Disk Drives, 285
- StorageWorks RAID Array 230 Subsystem, 276
- StorageWorks TL810 Automated Tape Library, 288
- StorageWorks TLZ07/7L 4mm Audio Tape (DAT) Loader Subsystems, 286

### —T—

- TL810, 289
- TLZ7L, 287

### —V—

- VAX 4000 Model 106A Systems, 215
  - Comparison Chart, 216
  - Diagrams, 225
  - DV-416CB, 217
  - Specifications, 226
  - Upgrades, 255
- VAXstation 4000 Model 96 Systems, 196
  - Diagrams, 202
  - PV71A, 197
  - Specifications, 203
  - Upgrades, 253
- VAX 4000 Models 505A/705A Board Upgrades, 256
- VAX 4000 Models 505A/705A System Upgrades, 256
- VAX 7000 Symmetric MultiProcessing (SMP) Upgrades, 257
- VAX 7000 System Upgrades, 257
- VT Lan40 Windowing Network Terminals, 292
  - Specifications, 298
  - VR417, 295
  - VR421, 295
  - VR424, 295
  - VR425, 295
  - VRC20, 295
  - VTGAA, 295
  - VTGAD, 295
  - VTGAE, 295
  - VTGAJ, 295
  - VTGAK, 295
  - VTGAT, 295
  - VTGAX, 295
  - VTGAZ, 295
- VX47A, 265











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