VAX 7000 Model 810
V2.3—25 January 1999
Systems and Options Catalog

Product Description

VAX 7000 Enterprise Servers are part of a family of OpenVMS based systems designed for the rigorous demands of data center computing. They have a modular platform which enables users to improve performance in a number of different dimensions— symmetric multiprocessing, larger memory, more I/O bandwidth, greater disk capacity, and OpenVMS Cluster systems. VAX 7000 servers support additional I/O controllers, storage, user licenses, database software.

With up to 6 CPUs in a symmetric multiprocessing (SMP) configuration and up to 400 Mbytes/second of I/O, a single VAX 7000 system offers the powerful features needed in data center systems. VAX 7000 systems in OpenVMS Cluster configurations provide support for as much as 10 terabytes of storage.

An optional N+1 redundant power system allows for higher system availability in the event of a power regulator failure. Systems can be configured with up to three power regulators. Optional system level Uninterruptable Power Supplies (UPS) are available to support CPU and I/O expansion cabinets.

The VAX 7000 Enterprise Server provides substantial I/O capacity, one 12-slot XMI I/O channel is standard, with the option of adding up to three additional 12-slot XMI I/O channels. XMI I/O channels offer a bandwidth of 100 Mbytes/second each, making this system capable of providing very high I/O bandwidth performance—up to 400 Mbytes/second.

XMI devices supported include adapters for Ethernet, CI, FDDI, and DSSI interconnects. Support for up to sixteen Ethernet adapters, ten CI adapters, twelve DSSI adapters, and eight FDDI adapters demonstrates the large expansion potential of these systems. StorageWorks controllers enable SCSI-2 devices to provide reliable high-end storage on the CI bus.

Enterprise Expansion Packages may be ordered with a single part number to provide the hardware and licensing necessary to start an OpenVMS Cluster or add another node to an existing cluster.

Step 1—Systems

The following items are required.

Note: A second power regulator is required when configuring five and six processor systems. OpenVMS user licenses may be ordered as needed.

- OpenVMS V5.5-2[1], V6.1, V6.2, V7.1 or V7.2.
- InfoServer 1000 Local Area CD-ROM for initial booting of system console.
- CIXCD (CI) controller, KFMSA (DSSI) disk/tape adapter.
- System disk device
- Console terminal
- VAXcluster Software license for each system when multiple systems are used in an OpenVMS Cluster environment

Additional items may be added as required.

1. Requires console firmware V4.2.

OpenVMS Base Enterprise Servers include

- Model 810 CPU, system interconnect bus and 12-slot XMI I/O channel.
- 512 MB or 2 GB of memory.
- DEC LANcontroller 400 (DEMNA) 802.3/Ethernet controller.
- 48 V power regulator.
- OpenVMS base license.
- DIGITAL NAS Base Server 200 V5.0 software.
- One year hardware product warranty.
- 90 day software product warranty.

Order Number	Memory
7MAME-KA/KB/KC	512 MB (one 512 MB module)
7MAMH-KA/KB/KC	2 GB (one 2 GB module)

Note: xA = 60 Hz, 208 V; xB = 50 Hz, 380/416 V; xC = 50/60 Hz, Japan

Step 1a—CPU Symmetric MultiProcessing (SMP) Upgrade

7MATA-LE SMP Upgrade. Contains one CPU processor, OpenVMS VAX base license upgrade, and one full year product warranty. Add up to 5 additional CPU processors.

Step 1b—Enterprise Expansion Packages

Enterprise Expansion Packages are designed to be added to Base Enterprise Servers to create fully functional systems. They contain all necessary hardware (excluding console terminal) and software to make complete and operational systems.

7YCAA-BX Cluster Add on Package, includes:
CIXCD-AC XMI CI controller
BNCIA 10 m cable
VAXcluster license

Step 1c—Console Load Device

InfoServer is required for initial booting of system console unless already available onsite on local area network.

SEADx-BA/BE InfoServer Local Area CD-ROM, includes InfoServer 1000 controller and CD-ROM drive

Note: SEADx = B for ThinWire, or C for AUI connector.
-BA includes 120 V power cord.
-BE requires country-specific power cord.

Step 2—Memory

Select additional memory if required; maximum 3.5 GB per system. New systems can be expanded in any combination of arrays listed below. Systems running OpenVMS V5.5-2 are restricted to 512 MB maximum memory.

MS7AA-DA	512 MB memory array
MS7AA-FA	2 GB memory array

Step 3—Storage

Select storage devices as required. See *Storage Devices* for ordering information.

Step 3a—Storage Controller(s)/CI Controller

Base systems require selection of storage controller or CI controller (KFMSA included with preconfigured systems).

KFMSA-BA	DSSI disk/tape adapter. Total five per XMI; up to a maximum of 12 per system. Maximum number of KFMSAs is derived as follows: (25 minus the number of CIXCDs) divided by two. Requires one XMI slot; supports 14 DSSI devices. VAXcluster Software license (QL-VBRA*-AA) required for all OpenVMS systems that will connect to a DSSI based OpenVMS Cluster. Note: One CK-KFMSA-LN required with each KFMSA-BA.
CK-KFMSA-LN	Two pairs of 1.2 m (4 ft) cables in cabinet kit. Supports mixed hosting with VAX 4000, quad hosting of VAX 7000, and warm swap.
CIXCD-AC	XMI CI controller. Total four per XMI; maximum 10 per system. Requires one XMI slot. Each CIXCD requires one BNCIA cable set to connect system to Star Coupler. VAXcluster Software license (QL-VBRAx-AA) required for each system when multiple systems are used in an OpenVMS Cluster environment.
BNCIA-xx	Computer interconnect cable sets. Connect Star Coupler to system and SW800 or HSCxx. Choose required length 10, 20 or 45 m (10 m = 32.8 ft, 20 m = 65.6 ft, 45 m = 147.6 ft).

Step 3b—Internal Storage (System Cabinet)

The system cabinet provides space for two disk plug-in units. Disk plug-in unit has two BA356 modular expansion shelves; each shelf holds a maximum of two 5.25-inch devices or seven 3.5-inch devices.

BA660-AB	16-bit Wide SCSI plug-in unit—includes 16-bit personality module, 48 V 150 W dc power supply, dc fans, and mounting hardware. Supports 16-bit wide SCSI devices and some 8-bit narrow SCSI devices depending on compliance with minimum hardware revision levels. Includes two BA356-LB modular expansion shelves.
HSD10-BF	StorageWorks array controller. Supports up to six SCSI-2 devices. Supported by OpenVMS VAX V5.5-2 , V6.1, V6.2, V7.1, and V7.2
BC29S-06	Required to connect KFMSA-BA to internal HSD10-AA/BA660-AB
BC29U-02	Required if daisy chaining HSD10-AA within BA660-AB

SCSI Devices Supported

DS-RZ29L-VA	4.3 GB 8-bit narrow 7200 RPM SCSI disk drive
DS-RZ1CF-VA	4.3 GB 8-bit narrow 7200 RPM SCSI disk drive
DS-RZ1DF-VA	9.1 GB 8-bit narrow 7200 RPM SCSI disk drive
DS-RZ40-VA	9.1 GB 8-bit narrow 7200 RPM SCSI disk drive
DS-RZ1EF-VA	18.2 GB 8-bit narrow 7200 RPM SCSI disk drive
DS-TLZ10-VA	4/8 GB 4 mm DAT drive in 3.5-inch half-height StorageWorks carrier
TZ89N-VA	35/70 GB DLT single-ended tape drive in 5.25-inch StorageWorks carrier

Step 3c—External Storage

The following list describes available storage devices, capacities, and components included with **initial** offerings; supported options can be added as required. See *Storage Devices* for ordering information.

Storage Arrays	Capacity	Storage Array Disk Drive Components
SW5xx, SW8xx	6–227 GB	SCSI disk drives
Disk Drives	**Capacity**	
RZ26N SCSI	1.05 GB	
RZ28 SCSI	2.1 GB	
RZ29B SCSI	4.3 GB	
Tape Drives		
TZ89N	35/70 GB 5.25-inch SCSI tape drive	
TZ889	280 GB SCSI-2 cartridge tape subsystem	

Note: For additional ordering information, see Storage Devices.

Step 4—System Cabinet and I/O Expansion Cabinet

The system cabinet includes one 12-slot XMI plug-in unit and one power regulator, two additional power regulators are supported. The lower bays accommodate plug-in units as follows.

System Cabinet

Expansion Bay Location	Plug-In Unit	Quantity	Expansion Bays Occupied
Lower	Disk plug-in unit	Two maximum	One each
Lower	XMI plug-in unit	Two maximum (included)	Two each
Lower	Battery plug-in unit	One maximum	Two
Lower	VAXBI plug-in unit	One maximum	Two

The I/O expansion cabinet includes one power regulator and provides space for two additional power regulators and six expansion bays—two upper and four lower—for plug-in units. The two upper bays accommodate a maximum of two disk plug-in units. The four lower bays accommodate plug-in units as follows.

I/O Expansion Cabinet

Expansion Bay Location	Plug-In Unit	Quantity	Expansion Bays Occupied
Upper	Disk plug-in unit	Two maximum	One each
Lower	Disk plug-in unit	Four maximum	One each
Lower	XMI plug-in unit	Two maximum	Two each
Lower	Battery plug-in unit	One maximum	Two
Lower	VAXBI plug-in unit	One maximum	Two

H9F00-BA/BB/BC	I/O expansion cabinet, maximum two per system.
H7237-AA	Battery plug-in unit with batteries for battery backup/UPS capability—maximum one per cabinet. Includes four batteries to support one 48 V power regulator and cabling for second and third H7238-AA battery options. Note: Not available in same cabinet with DWMBB VAXBI option.
H7237-CA/CB	Battery plug-in unit, includes one H7263-AA/AB (BBU capable power regulator) and batteries for battery backup/UPS capability. Must be ordered at time of system purchase if BBU functionality is required.

Step 4—System Cabinet and I/O Expansion Cabinet *(continued)*

I/O Expansion Cabinet

H7263-AA/AB	48 V power regulator, 60/50 Hz; maximum three per cabinet (one included). Second regulator may be required to supply adequate power depending on configuration. See power configuration table that follows. Third regulator assures redundancy and higher availability in the event of power regulator failure. Note: The power configuration table provides manual method of determining the need for second power regulator. Second power regulator is required when configuring five or six processor systems. Equivalent power unit (EPU) is equivalent value of power used at 48 Vdc by each option.
H7263-AC/AD	Same regulator as above, without battery backup capability
H7238-AA	4 pack battery option; one required per optional 48 V power regulator (H7263-AA/AB) to support battery backup/UPS capability
H7238-BA/BB	Additional batter UPS, includes H7263-AA/AB (BBU capable power regulator and H7238-AA 4 pack battery option.

Note: Maximum four XMI plug-in units per system; total two per cabinet (one included in system cabinet)

DWLMA-AA	XMI plug-in unit with 12-slot XMI I/O channel for system cabinet

Step 5—Networks and Communications

DEMNA 802.3/Ethernet controller included with each system. Select additional devices if required. **Note:** Connection of system to Ethernet requires an Ethernet transceiver cable. See the *Network Products Guide* for details.

LAN Communications Controllers

DEMNA-M	802.3/Ethernet controller; one included; total four per XMI, maximum 16 per system. Requires one XMI slot.
CK-DEMNA-KN	DEMNA cabinet kit, required with DEMNA-M.
DEMFA-AA	DEC FDDIcontroller 400, XMI to FDDI adapter; requires one XMI slot. Total four per XMI slsmaximum seven per system. Includes cabinet kit.

Local and Wide Area Communications Servers

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

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 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 the *Network Products Guide* for details.

Step 6—OpenVMS Cluster Options

For OpenVMS Cluster configurations, select appropriate OpenVMS Cluster options. CI controller, BNCIA cables, and VAXcluster Software license required.

HSJ50-AF/AH/AJ	StorageWorks array controller, supports up to 36 SCSI-2 devices. Includes 32/64/128 MB Read Cache and controller based disk striping.
HSD10-BF	StorageWorks array controller; supports up to seven SCSI-2 devices.
HSD30-CD/CF	StorageWorks array controller; supports up to 18 SCSI-2 devices.
SW5xx/SW8xx	StorageWorks arrays. See *Storage Devices* for details.
BNCIA-xx	Computer interconnect cable sets—connects Star Coupler to system and SW800 or HSCxx Choose required length of 10, 20 or 45 m (10 m = 32.8 ft, 20 m = 65.6 ft, 45 m = 147.6 ft).
SC008-AC	8-port Star Coupler; maximum five Star Couplers per system.
SC008-AD	Star Coupler; Upgrades SC008-AC to 16 ports; maximum one per SC008-AC.
QL-VBRA5-AA	VAXcluster license; required with each system that will connect to an OpenVMS Cluster.

Step 7—Console Terminal

A console terminal with EIA-232 25-pin D-subminiature connector and printer required unless otherwise available.

VT510-xx	VT510 terminal
LA75S-xx	LA75 Plus printer
LAXXS-AD	VT510/LA75 table for both VT510 and LA75

Step 8—Terminals and Printers

Order printers and terminals if required.

Step 9—Software

Note: An OpenVMS Group Table Patch is available that enables OpenVMS Concurrent Use License PAKs and Distributed Interactive User License PAKs; it can be duplicated and used with each valid license. Customers are allowed to install and use the patch under their existing license agreement. The kit is available on the Internet at the following address: http://www.service.digital.com/html/patch_service.html. It can also be obtained by ordering the following:

QA-MT3AC-H8	OpenVMS VAX and Alpha Group Table Patch on CD-ROM

OpenVMS VAX Concurrent Use Licenses

OpenVMS VAX Concurrent Use licenses are for customers running OpenVMS VAX V6.2 or greater, see above note.

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

QL-MT3AA-3B	OpenVMS Concurrent Use 1-user license
QL-MT3AA-3C	OpenVMS Concurrent Use 2-user license
QL-MT3AA-3D	OpenVMS Concurrent Use 4-user license
QL-MT3AA-3E	OpenVMS Concurrent Use 8-user license
QL-MT3AA-3F	OpenVMS Concurrent Use 16-user license
QL-MT3AA-3G	OpenVMS Concurrent Use 32-user license
QL-MT3AA-3H	OpenVMS Concurrent Use 64-user license
QL-MT3AA-3J	OpenVMS Concurrent Use 128-user license
QL-MT3AA-3K	OpenVMS Concurrent Use 256-user license

Step 9—Software *(continued)*

OpenVMS VAX Distributed Interactive User Licenses

OpenVMS VAX Distributed Interactive User Licenses are for customers running OpenVMS VAX V6.0 to V 6.1, see above note.

OpenVMS VAX Distributed Interactive User licenses provide the right to interactively use the operating system by the specified number of Interactive Users on a designated OpenVMS VAX system. OpenVMS VAX Distributed Interactive User licenses can be moved from one OpenVMS VAX system to another OpenVMS VAX system at the user's discretion and can be shared in an OpenVMS VAX Cluster but **NOT** in a mixed OpenVMS VAX and OpenVMS Alpha Cluster.

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
QL-09SA9-BF	OpenVMS VAX Distributed Interactive 16 User License
QL-09SA9-BG	OpenVMS VAX Distributed Interactive 32 User License
QL-09SA9-BH	OpenVMS VAX Distributed Interactive 64 User License
QL-09SAA-BR	OpenVMS VAX Distributed Interactive 128 User License
QL-09SAB-BR	OpenVMS VAX Distributed Interactive 256 User License
QL-XULA5-AA	OpenVMS VAX Traditional unlimited user license

VAXcluster Software License

QL-VBRA5-AA	VAXcluster Software license. Required with each system that will connect to an OpenVMS Cluster.

Media and Documentation

QA-001AA-Hx	OpenVMS media and extended documentation, including OpenVMS Cluster and DECnet documentation
QA-09SAA-Hx	OpenVMS media and base documentation
QA-GXXAB-Hx	POSIX media and documentation (without IEEE documentation)

Note: x denotes media type: 5 = TK50; 8 = CD-ROM

DIGITAL NAS Software Packages

Select the appropriate DIGITAL NAS software package. The DIGITAL NAS packaged products do not include hardcopy documentation for the components (the documentation is CD-ROM only).

QL-MC2A5-AA	DIGITAL NAS Server 300 license
QA-MC2AA-Hx	DIGITAL NAS Server 300 media and documentation kit
QL-MC5A5-AA	DIGITAL NAS Production Server 400 license
QA-MC5AA-Hx	DIGITAL NAS Production Server 400 media and documentation kit

Note: x denotes media type: 8 = CD-ROM, 5 = TK50, M = magtape

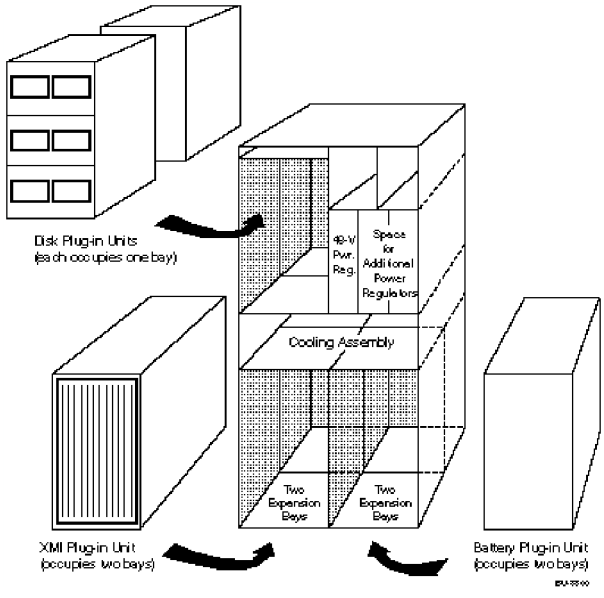
Step 10—Environmental Power Products

Power Configuration Table						
Options	**EPU Values System Cabinet Options**	**Quantity**	**Total EPU (Quantity times EPU)**	**EPU Values Expansion Cabinet Options**	**Quantity**	**Total EPU (Quantity times EPU)**
Base System includes power regulator, I/O port module, CPU module, memory module, XMI I/O channel, DEMNA	30	1	30	–		
I/O expansion cabinet (H9F00-BA/BB/BC) includes power regulator	–			0	1	0
Additional CPU modules	7			–		
MS7AA-BA 128 MB of memory	10			–		
MS7AA-CA 256 MB of memory	10			–		
MS7AA-DA 512 MB of memory	10			–		
MS7AA-FA 2 GB of memory	10			–		
CIXCD-AC XMI CI controller	4			4		
DEMFA-AA XMI FDDI adapter	5			5		
DEMNA-M XMI Ethernet controller	3			3		
DWLMA-AA XMI plug-in unit	4			–		
DWLMA-BA XMI plug-in unit	–			4		
KFMSA-BA XMI DSSI adapter	3			3		
DMB32-M VAXBI multifunction controller	3			3		
DWMBB-LA VAXBI plug-in unit	4			4		
RZ26, RZ28, RZ29 SCSI disk drives	1			1		
TLZ09 SCSI DAT tape drive	1			1		
TZ87-VA SCSI tape drive	3			3		
Total the Last Column[1]						

1. If EPU is greater then 80, order second power regulator (H7263-AA/AB). EPU must not exceed a system total of 180. Five and six processor systems include two power regulators, providing a total of 180 EPUs.

Note: Depending on the configuration, the system offers integral UPS capability that supports all in cabinet components for up to 11 minutes. If UPS support is required for external devices, e.g., console terminals, terminal servers, printers, modems, etc., a universal UPS can be ordered separately.

VAX 7000 System Diagram



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.)

Environmental	Operating	Nonoperating
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 maximum
Heat dissipation[1]	Fully Configured System (System Cabinet) 17,700 Btu/hr, 5,200 W	Fully Configured System (System Cabinet with Two I/O Expansion Cabinets) 47,000 Btu/hr, 13,800 W
	Minimally Configured System[2] (System Cabinet) 3,400 Btu/hr, 1,000 W	

Power requirements[3]	U.S./Canada	Europe/APA	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 4	DEC 12-12315-01
Receptacle	NEMA L21-30R	IEC309	NEMA L21-30R
PCS/PDS/PDU/UPS cable	BC24W	BN29X	BC24W

1. Power system provides unity power factor which allows full use of input line current (watts=VA). Approximate Btu's for a given system configuration can be calculated by multiplying the “EPU” value per cabinet by 85.4.
2. Minimally configured system contains one regulator, one CPU module, one memory module, one IOP module, and one Ethernet controller.
3. Power cord is required for system cabinet and each I/O expansion cabinet.
4. Receptacle type is Hubbell 516R6 or equivalent.