

# Digital Equipment Corp. DECstation Systems

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**Note:** The DECstation 5000 Model 120MX has effectively replaced the DECstation 3100 due to a price reduction on the 120MX.

The Digital DECstation family of ULTRIX RISC open system products consists of the DECstation 3100 and the DECstation 5000 workstation family of high-performance graphics workstations. All DECstation systems are based on a Reduced Instruction Set (RISC) processor from MIPS Computer Systems, Inc., and are supported by the associated MIPS floating point processor. The DECstation 3100 product is Digital's low-cost, high-performance desktop workstation based on RISC technology. It is the price/performance workstation industry leader, and the only workstation available today which can run the OSF/1 operating system. It is meant to be used either as a single-user, standalone workstation or as a network server. When combined with a DECsystem product, it becomes part of the lowest cost workgroup environment in the industry. It is offered in three diskless configurations and two standalone configurations. All feature standard compliance, OSF/Motif commitment and X Window System performance.

## Strengths

- Uniquely upgradeable RISC/UNIX workstations that introduce innovative technology, establishing Digital's position as a leading participant in the Advanced Computing Environment (ACE) initiative.
- DECstation systems use MIPS CPU, supported by the associated MIPS floating point processor.
- The use of Digital's industry standard UNIX operating system—ULTRIX—and industry standard products allows DECstation systems to function in mixed-vendor networks.

- Removable CPU daughter card in the DECstation 5000 series Model 100 protects customers' investments against technological obsolescence, allowing users to upgrade processing power easily and economically, as more powerful processors become available.
- The new 32M-byte memory module, available for Model 200 DECstation 5000 systems, boosts maximum memory capability to 480M bytes—unprecedented in a desktop workstation.

## Limitations

- As new products, the DECstation 5000 systems cannot yet offer maximum UNIX applications software until software manufacturers have converted their standard UNIX offerings.
- The use of DECstation turbo options limits the availability of expansion slots for other purposes, i.e., additional SCSI controllers, thick wire ethernet option card, VME bus, FDDI (Fiber Distributed Data Interface) memory controller board.
- Digital's DECstation systems may suffer from competition from its own and its competitors' minicomputers.

## Competition

- Sun SPARCstation SLC, SPARCstation IPC, and SPARCstation 2
- Hewlett-Packard 9000/425t, Hewlett-Packard 9000/720
- IBM RS/6000 Model 320
- SGI Personal Iris 4D/25G, SGI 4D/35

## Vendor

Digital Equipment Corp.  
129 Parker St.  
Maynard, Mass. 01754-2571  
(508) 493-5398

## Price

Basic systems range from \$4,995 to \$49,100. GSA Schedule: Yes.

—By Jane G. Reh  
Product Information Consultant  
JGR Associates, Inc.

## Product Analysis

Digital's high-performance graphic workstations are comprised of the DECstation 3100 and 5000 computer family. The 3100 is offered as a single-user workstation or a network server. The 5000 family offers three models—the 120, 125, and 200—in five different graphic configurations, CX, MX, PX, PXG, and PXG Turbo.

The operating system is ULTRIX, Digital's version of UNIX. ULTRIX is supported by TCP/IP network protocol software, X-Windows Version 11 software, and Network File System (NFS) software. These industry standard products allow the DECstation family systems to function in mixed-vendor networks.

### Target Applications

### DECApplications

DECstation	Applications
DECstation 3100	Desktop publishing, software development, general-purpose
DECstation 5000	Electrical and mechanical CAD, artificial intelligence, research and development, computer-aided engineering and CASE (computer-aided software engineering), scientific simulation and modeling, data analysis, statistical analysis, and decision support, graphic-intensive applications, 3D modeling, and complex animation applications

### Overview

Model	3100	5000-120	5000-125	5000-200
Date Announced	1/89	4/91	4/91	4/90
Date Installed	2/89	5/91	7/91	4/90
Operating System	ULTRIX	ULTRIX	ULTRIX	ULTRIX
Networking	Ethernet	Ethernet/ FDDI	Ethernet/ FDDI	Ethernet/ FDDI
Base price (\$)	4,995	6,495	8,495	12,495

### Strengths

- The ULTRIX operating system—a single-user multi-tasking system—and support software provide compliance with a host of major industry standards. It complies with:
  - POSIX
  - X/Open
  - X/Open Portability Guide 3
  - OSF
  - AT&T UNIX System V Interface Definition
- ULTRIX is extended in the DECstation line with X-Windows Version 11 and Network File System (NFS) software.
- Extensive networking capabilities and software provide:
  - Communications link to Digital's office automation programs
  - Bidirectional communications between DECnet and Internet networks
  - Industry-standard TCP/IP network protocol
  - Connectors for both Thick Wire (DB15) and Thin Wire (BNC) Ethernet cable
  - DECnet support by DECnet-ULTRIX
- An optional Digital graphics tablet as a substitute for the Digital three-button mouse.
- A wide choice of workstation configurations:
  - 8MB to 480MB of main memory
  - 600MB CD drive, 104MB-1GB SCSI hard drives, 1GB removable hard drive, 1.4MB 3.5" floppy
- All DECstation systems contain an Ethernet controller with both a thick and a thin Ethernet connector, DECnet, and TCP/IP.
- The ULTRIX operating system supports TCP/IP network protocol software, X Window System Version 11 software, and Network File System (NFS) software—all industry-standard products.
- The use of Digital's industry standard UNIX operating system, ULTRIX, and industry standard products allow DECstation systems to function in mixed-vendor networks.
- DECstation workstations offer high-performance graphics options.
- DECstation systems use MIPS CPU and are supported by the associated floating point processor.
- The DECstation 3100 has an excellent price/performance ratio, delivering better performance at a lower price than its competitors.
- DECstation 5000-family computers are available in five different graphics configurations: MX, CX, PX, PXG, and PXG Turbo, making them suitable for a broad range of graphics applications.
- DECstation 5000 systems support five different graphics options, making them suitable for a broad range of graphic applications.

## Decision Points

Requirements	Performance	Datapro Opinion
Conforms to UNIX operating system standards	ULTRIX is an industry-compliant UNIX operating system	Supports all UNIX operating system standards
Supports a range of software applications	Offers a very sizable, constantly expanding range of RISC applications that adhere to the industry's open standards	Offers exceptional RISC software choices, easily ported between different vendor systems
Offers a networked windowing environment	Provides DECwindows, Digital's enhanced implementation of the networked X Window System (X11)	Provides an extremely fast and robust implementation of the UNIX X Window standard
Compatible with established UNIX networking standards	TCP/IP, the de facto UNIX standard for networking, is an integral part of the ULTRIX operating system.  Supports NFS, an industry-standard facility that governs file sharing among networked systems.  Supports multivendor application integration through NAS (Network Application Support), a set of industry-standard application services.	Meets all UNIX networking standards
Offers an industry-standard GUI (Graphical User Interface)	The DECstation windows environment supports both the OSF/Motif and DECwindows-based UNIX-standard GUI environments	Both GUIs (DECwindows with the 3100 and DECwindows and OSF/Motif with the 5000 family) are UNIX industry standards compliant, and portability between the two is provided
Adequate system memory included, and sufficient maximum allowable memory	The 3100 includes 8MB of memory, expandable to 24MB. The 5100 Series includes 8MB or 16MB of memory depending on the model, and are expandable to 128MB or 480MB depending on the model.	Adequate system memory is included and a generous allowable maximum can be configured for each DECstation configuration.
Adequate cache memory included	Includes separate 64K-bytes instruction and write-through data caches	Sufficient cache memory is included for RISC processing
Adequate number of maximum colors/grays	Provides from 2 to 16 M, monochrome/color	Users must choose the correct configuration for the number of colors desired
Display Size	19" monitor available for all models; 16" color monitor available for the PX, PXG, and PXG Turbo models	Users must choose the correct configuration to meet their needs
Graphics Subsystems	5000-Family offers five: MX(monochrome frame buffer), CX (color frame buffer), PX (accelerated 2D), PXG and PXG TURBO (accelerated 3D)	Users must choose the graphics configuration that meets their needs

- The new 32M-byte memory module, available for Model 200 DECstation 5000 systems, is based on new 4M-bit DRAM technology, and boosts maximum memory capability to 480M bytes — unprecedented in a desktop workstation.
- The new 16" high-resolution Sony Trinitron monitor, available for Model 200 DECstation 5000 systems, has a 1280 x 1024 resolution and a 66 Hz refresh rate; and, it is smaller and lower priced than the 19" Sony Trinitron monitor, while offering the same Sony quality and reliability.

## Limitations

- DECstation systems may suffer from competition from its own and its competitors' minicomputers.
- The use of DECstation turbo options limit the availability of expansion slots. The PXG uses a dual-width TURBOchannel card, leaving one free expansion slot in a workstation only equipped with three expansion slots. The PXG Turbo's triple-width TURBOchannel card leaves no expansion slots.

## Vendor Analysis

### Product Strategy

- Producing the best price performance workstations in the industry, the 3100 and 5000 family DECstation systems.
  - The DECstation 3100 is best price/performance workstation in the industry in its class
  - Specially packaged DECstation configurations are priced less than the sum of the pieces
- Increasing the UNIX-RISC applications portfolio.
- Targeting the newly-forming low-end commercial UNIX marketplace.
- Offering trade-in discounts on competitors' workstations.

### Target Markets

Both the technical and commercial industry market segments are targeted by Digital for the DECstation systems families, addressing the needs of high-, medium-, and low-end user needs through their extensive number of model offerings—from entry-level DECstations to high-performance DECstations. In addition, both the DECstation 3100 and the DECstation 5000 family meet specific market needs:

- DECstation 3100 Systems
  - Software development and technical publishing, markets that are more sensitive to cost than high-performance computing.
  - An entry-level single-user, standalone desktop workstation for general purpose applications
  - Network server
- DECstation 5000 Systems
  - CASE software developers in the engineering/scientific marketplace
  - Earth resource engineering firms
  - Stock exchanges
  - Investment brokerage firms

### Market Position

According to a 1990 Dataquest report and a 1990 IDC report, Digital ranked third in the workstation market in 1990, holding about 17%. According to IDC, this is a loss of 6% from the previous year.

Digital's slip from 23% in 1989 to 17% in 1990 may be due to the lack of software available for DECstation systems at the time. This problem is expected to be corrected in 1991.

The DECstation 3100 competes with the Sun Microsystems Sun/4 series, and with workstations from Hewlett-Packard, Silicon Graphics, and IBM.

The DECstation 5000, Models 120 and 125, compete directly with Sun Microsystems SPARCstation IPC family of graphics workstations.

Digital has a large presence in the engineering, scientific, and software development market most likely to be interested in the DECstation computers. The introduction of the DECstation 5000 Model 200 has given Digital a highly competitive entry into the graphic workstation market.

### Major Competitors

Sun Microsystems (28%) and Hewlett-Packard (23%) hold more than half of the market. Other major competition comes from IBM and SGI.

### Sales and Distribution Strategy

#### Sales

Digital Equipment Corp. sales and distribution strategy is direct and indirect sales, provided through their offices worldwide. In addition, for the convenience of current customers who are familiar with the DEC products they wish to order, Digital offers the DECdirect Telephone Ordering and Information Service (800-DIGITAL), supported by the DECdirect catalog.

For detailed information on all of the many customer sales/services offered, call your local Digital Office and request Digital's *Customer Services Reference Guide* (part number EC-G0892-75).

#### Distribution

Digital is deploying a sales distribution strategy that incorporates indirect and direct channels. Digital's direct sales team is working with VARs, OEMs and distributors as it moves to a distribution strategy in which two thirds of sales will be made through indirect channels. During the past year, Digital's RISC/UNIX products were distributed equally between direct and indirect channels.

## Support

The local Digital Customer Services unit manager assists you in developing a service solution for your local site.

Digital has over 40,000 service professionals, with more than 20,000 in the United States; 450 service locations in 64 countries, with more than 200 locations in the United States; and 14 Customer Support Centers worldwide, providing software, technical and network support.

Digital has the capability to support all Digital products (hardware and software) and more than 8,000 non-Digital products from 850 vendors; sophisticated call-management and tracking systems that ensures a prompt response and timely follow-through on customers' service requests; and a worldwide logistics system that includes more than 1,000 inventory stocking locations.

For detailed information on the many specialized customer services offered, call your local Digital office and request their Customer Services Reference Guide (part number EC-G0892-75).

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## Policies & Programs

### Warranty

At the time of purchase, you may select one of two warranties: either List Price Support or the Standard Warranty. Neither warranty includes installation of workstations; however, installation service is available from the local DEC service at a fixed price or at current call rates.

List Price Support includes a one-year FRU (field-replacement unit) return to Digital for hardware—the Hardware Foundation Warranty—and a one-year conformance to software product description warranty for Digital-developed software products—the Software Foundation Warranty; and all documentation pertinent to the system purchased.

The Standard Warranty covers a period of one year, and includes the following features with workstation(s) purchase:

- One-year on-site hardware service provided during normal business hours, best effort response time (typically next-day service).
- Telephone assistance for hardware, operating system, and Digital layered products purchases with Standard Warranty.
- Critical onsite software support.
- Customer Support Center access via DSNlink two-way electronic communication and/or Digital Software Information Network.
- Right-to-use new versions of software, for Digital-licensed software products covered by the warranty, for the warranty period.
- One-year conformance to Software Product Description for kernel software.
- All documentation pertinent to the system purchased.

### Support Services

All Digital support numbers are toll-free. If the direct toll-free number is not known, the call-screening specialist at the nearest Customer Support Center (also a toll-free call) routes service calls to the appropriate support team:

- Hardware support, remote diagnosis
- Software support for workstations, ULTRIX, micro systems, PCs and layered products

Digital onsite support is available for:

- Remedial maintenance and preventive maintenance
- Corrective action for software in the case of critical need

### Service Provider

Digital's U.S. Customer Support Centers, providing specialized, centralized support, and the local Digital office provide hardware, software, and network support.

Customer Support Centers offer toll-free telephone, advanced two-way electronic communications, and electronic dial-in over a public network (TYMNET).

### Service Locations

Digital has four U.S. Customer Support Centers. Support for workstations and ULTRIX are two of the responsibilities of the Customer Support Center in Atlanta, Georgia (800-DEC-8000).

### Service Hours

Support is offered by U.S. Customer Support Centers 24 hours a day, 7 days a week, 365 days a year.

### Training/Education

Digital Educational Services provides comprehensive and varied training programs—over 700 different courses in 16 languages—to support all of their products, both hardware and software. Educational Services offers a worldwide—145 locations—network of training, education and communication services, supplied by a professional staff of 4300 people, to over 320,000 Digital customers and employees.

Digital Educational Services consists of:

- Instructor-led Training Courses, including lecture/lab, seminars, text- and video-based instruction.
- Self-paced Training Courses, including computer-, text-, and audio- and video-based formats.
- Training via Digital satellite communications networks, the Digital Video Network and the Digital Customer Video Network.

Courses are available to Digital customers for:

- End users of Digital hardware and software.
- Technical personnel, such as system administrators, network administrators, and programmers.
- MIS management.

Customer training information, courseware cost, planning assistance, and course registration may be obtained by calling the toll-free Customer Training Office at: 800-332-5656.

### Documentation

Beyond the warranty period, media and documentation support is available for properly licensed kernel software and Digital-supported layered products may be purchased as a value-added service. This includes automatic distribution of latest software versions and documentation updates.

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## User Groups

The Digital Equipment Computer Users Society (DECUS) is composed of many chapters worldwide. The U.S. Chapter, supported in part by Digital Equipment Corp., consists of Special Interest Groups (SIGs) throughout the United States to help users get the most out of their computer investments. SIGs sponsor business meetings, tutorials, workshops, and newsletters, and serve as reviewers of programs submitted to the DECUS Library. Some of the groups are detailed below.

## DECstation User Groups

SIG Designation	SIG Name-Special Interest	Mission/Area of Interest
BO/AIM	Business & Office/ Applications, Integration & Management	Assist managers, technologists and implementors in the selection, implementation, and management of information technology.
3P	Third-Party Providers	Provide channels of communication between Digital and third-party hardware, software, and service providers to the Digital end-user community, and specifically for system developers, integrators, and consultants.
UIG	The User Interface User Interest Group	Human-to-system interface; both graphical and non-graphical interfaces.
PCS	Personal Computing Systems	Provides an interchange of information on utilization of Digital's personal computing systems and appropriate hardware and software.
EDUSIG	Education Interest Group	Promote information and idea exchange for the use of computing in education through Digital products and services.
Networks	Networks and Distributed Processing	Forum for personal computer to mainframe users involved in computer networks and distributed systems.
GA	Graphics Applications	Communication and graphics information exchange.

## User Ratings

### Site Profiles

#### DECstation User 1

**Industry:** Wine production

**Size:** Revenues of \$1 billion; 6,000 employees

**Operations:** Networked workgroup; 9 DECstation 3100's and a DECstation 3100 file server; 12M bytes of memory, 200M-byte disk capacity each.

**Application Environment:** 90% Auto-CAD

**Networking Environment:** Ethernet

**Hardware:** Good

**Networking:** Excellent

**Software:** Excellent

**Graphics:** Excellent

**Technical Support:** Good

**Maintenance Support:** Outstanding

#### DECstation User 2

**Industry:** Education

**Operations:** Networked workgroup; 20 DECstation 5100's, Model 125 PX, with 32M bytes of memory and 400M-byte disk capacity, and two DECstation 5000s, Model 200 CPU/file servers with 120M bytes of memory and 7.2G-byte disk capacity.

**Application Environment:** CAD/CAM; integrated circuits research, emulations.

**Networking Environment:** Ethernet

**Hardware:** Good

**Networking:** Excellent

**Software:** Excellent

**Technical Support:** Good

### Comments

- Outstanding product maintenance is provided by our local Digital office, eliminating downtime worries.
- Was apprehensive about moving to a UNIX environment, and was pleasantly surprised at the ease of migration to ULTRIX.
- Excellent operating system and networking software.

Users cited a number of wishes, including:

- Integer performance increase (MIPS).
- Dedicated customer support representative for savvy technical customers who do not need to go through call screening, thus decreasing time lost getting to the right technical person to solve the problem or answer the question.

*Note: Digital responded to this customer's wish, and is assigning a dedicated customer support representative.*

# Specifications

## Features/Functions

Model	3100	5000-120	5000-125	5000-200
<b>Workstation Characteristics</b>				
Min./Max. Memory (M bytes)	8/24	8/128	8/128	8/480
Expansion Increments (M bytes)	4	4	4	4
Min./Max. Int. Mass Storage (M bytes)	0/418	0/418	0/418	None
Max. Ext. Mass Storage (G bytes)	6.2	18.2	18.2	21
Number Of Processors	1	1	1	1
<b>Central Processing Unit and Memory</b>				
Processor Model	R2000	R3000A	R3000A	R3000
Processor Type	RISC	RISC	RISC	RISC
Memory Type	Parity	Parity	Parity	ECC
Fl. Pt. Processor	MIPS R2010	MIPS R3010	MIPS R3010	MIPS R3010
Cache Memory (K bytes)	64	64	64	64
<b>General Performance</b>				
MIPS	16.2	21.7	26.8	27.3
SPECMarks	11.8	13.9	16.4	19.9
MFLOPS	1.7	2.6	3.0	3.7
Main Processor Speed (MHz)	16.7	20	25	25
Fl. Pt. Processor Speed (MHz)	16.7	20	25	25
<b>Input/Output Subsystem</b>				
Bus Architecture	None	Turbo Channel	Turbo Channel	Turbo Channel
Expansion Slots	None	3	3	3
Parallel Ports	None	None	None	None
Number of Serial Ports	2	2	2	2
Other I/O Ports	Keyboard/Mouse Port SCSI, Ethernet	Keyboard/Mouse Port SCSI, Ethernet	Keyboard/Mouse Port SCSI, Ethernet	Keyboard/Mouse Port SCSI, Ethernet

## Video Subsystem

Model	3100	MX	CX
<b>Graphics Co-Processor</b>			
Processors	1	1	1
Expansion Slots Occupied	None	1	1
Screen Size (in.)	19	19	16
Resolution	1024-x-864	1280-x-1024	1020-x-864
Refresh Rate (Hz)	60	60	60
Subsystem Type	Monochrome	Monochrome	Color, 2D/3D wireframe
<b>Graphics Capability</b>			
Max. No. Colors/Grays	2	2	256
<b>Graphics Performance</b>			
2D Vectors/sec.	80K	81.4K-130K <sup>1</sup>	93.9K-130K <sup>4</sup>
3D Vectors/sec.	30K	35K <sup>2</sup>	35K <sup>2</sup>
Polygons/sec.	5K	10K <sup>3</sup>	10K <sup>3</sup>

### Comments

MX is the entry-level monochrome graphics option for applications that need crisp images and text, along with high CPU and performance, such as CASE and technical publishing. Multiscreen display capability supports 2 or 3 monitors, depending on the specific model, simultaneously.

CX supports color and grayscale, and is well suited for applications—such as entry-level design automation—that do not require accelerated graphics. Like the MX, offers multiscreen display capability which supports 2 or 3 monitors, depending on the specific model, simultaneously.

## Features/Functions (Continued)

### Video Subsystem (Continued)

Model	PX	PXG	PXG Turbo
<b>Graphics Co-Processor</b>		i860, Pixel stamp accelerator	i860, Pixel stamp accelerator
<b>Processors</b>	1	1	
<b>Expansion Slots Occupied</b>	1	2	3
<b>Screen Size (in.)</b>	16/19	16/19	19
<b>Resolution</b>	1280-x-1024	1280-x-1024	1280-x-1024
<b>Refresh Rate (Hz)</b>	66	66	66
<b>Subsystem Type</b>	Color	Color	Color
<b>Graphics Capability</b>	Accelerated 2D/3D wireframe	Accelerated 3D solids	High-end accelerated 3D Solids/Visualization
<b>Max. No. Colors/Grays</b>	256	16.7M	16.7M
<b>Graphics Performance</b>			
<b>2D Vectors/sec.</b>	277K-782K <sup>5</sup>	260K-265K <sup>6</sup>	439K-450K <sup>11</sup>
<b>3D Vectors/sec.</b>	70K <sup>6</sup>	274K-300K <sup>9</sup>	285K-400K <sup>12</sup>
<b>Polygons/sec.</b>	20K <sup>7</sup>	51K-65K <sup>10</sup>	100K <sup>13</sup>
<b>Comments</b>	<p>PX supports fast 2D vectors, polygons, and rastergraphics; full-page double buffering; and PixelStamp two-chip rendering processor for accelerated 2D vector and pixel rendering operations.</p> <p>PXG offers high-performance 3D modeling and imaging graphics; full-page double buffering; optional 24-bit Z buffer; and PixelStamp rendering processor chipset.</p> <p>PXG Turbo offers high-performance 3-D modeling and visualization, and animation applications; full-page double buffering; 24-bit Z buffer; PixelStamp rendering processor chipset with two scan-converter chips running in parallel for faster rendering and display of graphics images; and an extra 24 planes that can be used for additional image memory.</p>		

<sup>1</sup>5000-120MX=81.4K; 5000-125MX=85.6K; 5000-200MX=138K.

<sup>2</sup>5000-120MX=N/A; 5000-125MX=N/A; 5000-200MX=35K.

<sup>3</sup>5000-120MX=N/A; 5000-125MX=N/A; 5000-200MX=10K.

<sup>4</sup>5000-120CX=93.9K; 5000-125CX=103K; 5000-200CX=123K.

<sup>5</sup>5000-120PX=277K; 5000-125PX=278K; 5000-200PX=282K.

<sup>6</sup>5000-120PX=N/A; 5000-125PX=N/A; 5000-200PX=70K.

<sup>7</sup>5000-120PX=N/A; 5000-125PX=N/A; 5000-200PX=20K.

<sup>8</sup>5000-120PXG=260K; 5000-125PXG=260K; 5000-200PXG=265K.

<sup>9</sup>5000-120PXG=274K; 5000-125PXG=292K; 5000-200PXG=300K.

<sup>10</sup>5000-120PXG=51K; 5000-125PXG=51K; 5000-200PXG=65K.

<sup>11</sup>5000-120PXG Turbo=439K; 5000-125PXG Turbo=439K; 5000-200PXG Turbo=450K.

<sup>12</sup>5000-120PXG Turbo=285K; 5000-125PXG Turbo=300K; 5000-200PXG Turbo=400K.

<sup>13</sup>All models=100K.

## Peripherals

### Hard Disk Storage Devices

Model	RZ23L	RZ24	RZ55
<b>Type (Int./Ext.)</b>	Internal	Internal	External
<b>Size (in.)</b>	3.5	3.5	5.25
<b>Formatted Capacity (M bytes)</b>	121	209	332
<b>Interface/Controller Type</b>	SCSI	SCSI	SCSI
<b>Average Access Time (ms)</b>	19	16	16
<b>Data Transfer (M bytes/sec)</b>	1.5	1.5	1.25
<b>Supported on Workstation Models</b>	All except 5000-200 series	All except 5000-200 series	All
<b>Type (Int./Ext.)</b>	Internal	External	External
<b>Size (in.)</b>	3.5	5.25	5.25
<b>Formatted Capacity (bytes)</b>	426M	665M	1GB
<b>Interface/Controller Type</b>	SCSI	SCSI	SCSI
<b>Average Access Time (ms)</b>	14	16	14.5
<b>Data Transfer (M bytes/sec.)</b>	3.125	1.6	2.2
<b>Supported on Workstation Models</b>	all except 5000-200 series	all	all

## Peripherals (Continued)

### Tape Devices

Model	TZ30	TKZ08	TLZ04	TSZ07	TZK10
Type	Streaming Cartridge	Helical scan	Digital audio	Magnetic	1/4" cartridge streaming tape
Size (in.)	4mm	8mm	4mm		
Format					
Recording Density			GCR 6250 BPI PE1600 BPI		
Recording Mode		Helical scan	Helical scan	GCR, PE	
Characteristics					
Interface/Controller	SCSI	SCSI	SCSI	SCSI	SCSI
Formatted Storage Capacity	95M	2.2GB	1.2GB	140M	
Tape Speed		150ips		2.54MB/sec.	
Data Transfer Rate (KB/sec.)	62.5	246	183	625	200
Supported on Workstation Models	3100, 5000 model 200	All	All	3100, 5000 model 200	All 5000 models

### Printers

Model	LP37	LP29	LG01/LG02
Type	Band	Band	Line dot-matrix
Speed	1200 lpm	2000 lpm	600 lpm
Graphics Resolution	Fully formed character	Fully formed character	200 x 2000
Interface/Controller	Parallel	Parallel	Parallel EIA232

### Printers (Continued)

Model	Turbo Print Server 20	Print Server
Type	Laser	Laser
Speed	20 ppm	40 ppm
Graphics Resolution	300 x 300 dpi	300 x 300 dpi
Interface/Controller	DECnet, TCP/IP, Ethernet	DECnet, TCP/IP, Ethernet

### Networking Features

Network Interfaces	Ethernet (FDDI, DECstation 5000, model 200 only)
LAN Protocols Supported	NFS
WAN Protocols Supported	TCP/IP
Network Applications	DecNet

### Software

Operating System	ULTRIX V4.2
UNIX Implementation	Berkeley 4.3 BSD, AT&T UNIX V.4 Extension
Complied Standards	ISO/OSI, OSF, POSIX, IEEE 802.3 Ethernet, LU6.2, X.400, X.25, TCP/IP, XPE3
Window Systems	X Window Systems, DEC Windows
Graphical User Interfaces Supported	MOTIF, DEC Windows
Compilers	C

## Security Features

Operating System/Physical Security	Removable disks
NCSC Security: Date/Level	C2 functionality
File Encryption Capabilities	Yes
Tempest Version Available	Yes

## Configuration

### Components

Processor, memory, hard disk, tape, graphics subsystem, compact disk drive

### Configuration Rules

Options and upgrades are field-installable and can be added to a system unit after it has been installed at a customer site.

All DECstation 5000 Model 200 and 100 series workstations have three available TURBOchannel slots.

A range of five graphics options are available:

MX—High-resolution monochrome graphics (1 slot)

CX—Color and grayscale 8-plane graphics (1 slot)

PX—Fast 2D vector performance (2 slots)

PXG—3D modeling and imaging graphics (2 slots)

PXG Turbo—High-performance 3D modeling and visualization (3 slots)

DECstation 5000 Models 120 and 125 have three internal storage cavities. The following combinations are possible:

Slot 1—Removable media, one of the following:

RX23 (1.4M-byte, 3.5" internal diskette drive)

RRD42 (internal compact disk drive)

TZK10 (525M-byte .25" cartridge tape drive)

Slot 2—3.5" drive: RZ23L, RZ24, RZ25

Slot 3—3.5" drive: RZ23L, RZ24, RZ25

A single RZ23L, RZ24 or RZ25 disk drive is recommended as data/swap device only

An RZ23L/RZ24 or RZ25 combination, or two RZ24/RZ25 disks are recommended configurations for a standalone system

A maximum of seven SCSI devices are supported on the base-board SCSI channel; an optional TURBOchannel card occupying one TURBOchannel slot must be used to attach more

Additional storage may be added by using external expansion boxes

All storage on the DECstation Model 200 is through external expansion boxes.

A maximum of six external SCSI devices are supported by the base SCSI controller; an optional TURBOchannel card occupying one TURBOchannel slot must be used to attach more

Systems support a maximum of six storage devices, two internal and four external.

Systems' multiscreen displays can be ordered as part of a new system (preconfigured or a la carte) or as an upgrade to existing DECstation 5000 systems.

Systems cannot combine MX and CX adapters on the same system when configuring a multiscreen display.

When purchasing, order one or two additional field-installed graphics adapters, consistent with the existing MX or CX graphics adapters; order either one or two additional monitors that are compatible with the above field installed graphics adapters.

Video cables are included with the graphics adapters.

The appropriate power cable is included with all monitors EXCEPT the V319 monitor.

To upgrade, an ULTRIX V4.2 software upgrade must be purchased if the existing system is not under warranty or under a software service contract that includes automatic updates.

A 32M-byte memory module and a 16" high-resolution Sony Trinitron monitor are also available for the Model 200 DECstation 5000 systems.

### DECstation 3100

### DECstation 5000

### Sample Configuration

DECstation 5000 model 120PX-8MB memory, 330MB storage, 19" color, accelerated 2D/3D wireframe monitor, keyboard

## Physical Environment

Model	3100	5000-120	5000-125	5000-200
<b>Physical Specifications</b>				
Physical Orientation	Desktop	Desktop	Desktop	Desktop
Height x Width x Depth (in)	4.07 x 18.26 x 15.52	4 x 20.1 x 17.1	4 x 20.1 x 17.1	3.6 x 20.1 x 17.1
Weight (lbs.)	20.14	28	28	30
<b>Electrical Specifications</b>				
Power Supply (watts)				
Input Power (VAC)	120/240	120/240	120/240	120/240
Max. Power Consumption (watts)	122	302	302	359
<b>Operating Environment</b>				
Temperature (F°)	50-122	50-104	50-104	50-122
Humidity (%)	10-90	10-90	10-90	10-90

# Pricing

Model	Description	Price (\$)
<b>DECstation 5000 Systems</b>		
120 MX	8MB of memory 19" monochrome monitor keyboard	4,995
120 CX	8MB of memory 330MB storage <sup>1</sup> , 16" color 2D/3D wireframe monitor, CD drive, keyboard	9,495
120 PX	8MB of memory 330MB storage <sup>1</sup> , drive 19" color, accelerated 2D/3D wireframe monitor, keyboard	13,995
125 MX	8MB of memory 19" monochrome monitor keyboard	6,995
125 PX	16MB of memory 418MB storage <sup>2</sup> , 19" color, accelerated 2D/3D wireframe monitor, CD drive, keyboard	15,995
125 PXG	16MB of memory 418MB storage <sup>2</sup> , 19" color, accelerated 2D/3D wireframe monitor. CD drive, keyboard	17,995
200 MX	8MB of memory 19" monochrome monitor keyboard	8,895
200 CX	8MB of memory 16" color 2D/3D wireframe monitor, keyboard	10,495
200 PX	8MB of memory 19" color, accelerated 2D/3D wireframe monitor, keyboard	12,995
200 PXG	16MB of memory 19" color, accelerated 3D solids monitor, keyboard	13,995
200 PXG Turbo	24MB of memory 19" color high-end accelerated 3D solids visualization monitor, keyboard	38,500

<sup>1</sup>330MB storage includes R823L drive with 121Mb and R824 drive with 209MB.

<sup>2</sup>418MB storage includes two R824 drives, each containing 209MB. ■