

HP 9000 Series 700 Model 715/33, 715/50 and 715/75 Workstations



The HP 9000 Series 700 Models 715/33, 715/50, and 715/75 are the highest performing entry-level workstations in the power desktop family. These systems deliver 46, 69, and 110 SPECmarks (89), respectively. Graphics capabilities are derived from the industry's leadership price/performance Series 700 GRX and CRX graphics. They sustain 610,000, 920,000 and 1,100,000 2D/3D vectors per second, respectively.

The Models 715/33, 715/50 and 715/75 are designed for easy installation, upgradability, expansion, and serviceability. This family of computers makes

workstations as easy to configure as stereo components, featuring plug-in memory modules, processor upgrade boards, disks, and removable media devices. These systems support a wide variety of industry-standard I/O interfaces. To provide the best possible performance and cost savings for the user, the systems have built-in IEEE (8023) local area networking (LAN), an external SCSI-2 port, a bidirectional Centronics interface, two RS232 serial ports, audio connections, and HP-HIL, for multiple input device support.

The Models 715/33, 715/50, and 715/75 are the low-cost workstations of choice for a broad range of applications that require fast X Window System performance

and 2D/3D wireframe color and grayscale graphics. They are designed to meet the needs of workstation applications such as electronic computer-aided design (ECAD), mechanical computer-aided design (MCAD), computer-aided software engineering (CASE), desktop publishing, and desktop productivity, as well as many emerging applications such as customer services and financial services. Multimedia functionality is also supported in the form of a CD-quality audio I/O capability and add-on video input card options. Entry-level surface rendering is available through HP's 3D surfaces software, PowerShade, while optional CRX24, CRX-24Z, and CRX-48Z (Model 715/50 and 715/75 only) functionality is offered for solids modeling, visualization, and accelerated rendering requirements.

The Models 715/33, 715/50, and 715/75 share in HP's rich tradition of standards, advanced transparent networking, robust development tools, and intuitive graphical user interfaces. HP also offers financing alternatives to help get you the equipment you need now and to upgrade in the future. And HP products set the standard for quality, reliability, and low cost of ownership.

Features	715/33	715/50	715/75	Benefits
CPU Performance (PA-RISC 7100 Processor)				
Clock frequency	33MHz	50MHz	75MHz	• Industry's fastest entry-level workstation • Industry leadership price/performance
MIPS	41	62	86	
SPECmark89	46	69	110	
SPECint92	24	36	61	• Speeds technical computations
SPECfp92	45	72	113	
MFLOPS (DP)	8.6	13	31	
Memory and Cache				
Memory Capacity	*8-192MB	16-256MB	32-256MB	• Improves application performance
Instruction cache	64KB	64KB	256KB	
Data cache	64KB	64KB	256KB	
Mass Storage				
Internal Capacity	2GB	2GB	2GB	• A wide range of mass storage capacity options
Total Capacity	68.6GB	68.6GB	68.6GB	
Removable Media				
Internal option	600MB CD-ROM 1.44MB Floppy 2.0GB DDS tape 4-8GB DDS tape	600MB CD-ROM 1.44MB Floppy 2.0GB DDS tape 4-8GB DDS tape	600MB CD-ROM 1.44MB Floppy 2.0GB DDS tape 4-8GB DDS tape	• A wide range of removable media options
Graphics				
2D/3D Wireframe				
Grayscale				
19", 1280 x 1024, 72Hz Monitor				• Superb image detail • Leadership windowing and vector performance through X11 and PHIGS
X11 vectors/second	570,000	860,000	900,000	
X11 perf	7,633	11,187	15,975	
8-plane grayscale				• 256 shades aid user comprehension • Fast performance for text-intensive applications
Character hardware				
Color				
15", 1024 x 768, 70Hz monitor				• Superb image detail
17", 1024 x 768, 75Hz monitor				
19", 1280 x 1024, 72Hz monitor				• Leadership windowing and vector performance • Ideal for design, engineering, and scientific applications
X11 perf	7,633	11,187	15,975	
2D/3D vectors/second	610,000	925,000	1,100,000	
Triangles per second	12,000	18,000	27,000	• 256 colbrs aid user comprehension
Lighted, shaded quadrilaterals per second	8,000	12,000	15,000	
8 plane color				

* Note: 8MB RAM is supported only in diskless configuration. 8MB configuration does NOT support local HP-VUE, Starbase, PHIGS, local mounted disks, local swap space, floppy, CD ROM, DAT, SoftPC, printer spooler, RS232 driver, Centronics driver, audio drivers, or cooperative computing products

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Features	715/33	715/50	715/75	Benefits
CRX-24 (24 plane, 3D wireframe)				
19", 1280 x 1024, 72 Hz Monitor				• Superb image detail
X11 perf	7,424	10,646	15,975	
2D/3D vectors/second	610,000	680,000	680,000	
Triangles per second	12,000	18,000	27,000	• Ideal for visualization and image processing
Lighted, shaded quadrilaterals per second	8,000	12,000	15,000	
24-plane color				
12/12 plane double buffering				• 16.7 million simultaneously displayable colors • Allows smooth movement of dynamic images • Annotation and image comparison
8 overlay planes				
CRX-24Z (24 plane, Z-buffered, 3D solids)				
19", 1280 x 1024, 72 Hz Monitor				• Superb image detail
X11perf	7424	10,646	15,975	
2D/3D vectors/second	610,000	680,000	680,000	
Triangles per second	100,000	140,000	175,000	• High-performance lighting and shading for surface rendering and data animation
Lighted, shaded quadrilaterals per second	45,000	65,000	94,000	
24-plane color				
12/12 plane double buffering				• 16.7 million simultaneously displayable colors • Allows smooth movement of dynamic images • Annotation and image comparison
8 overlay planes				
CRX-48Z (24 plane, Z-buffered, 2D/3D solids and visualization)				
19", 1280 x 1024, 72 Hz Monitor				• Superb image detail
X11perf		9,891	15,975	
2D/3D vectors/second		1,000,000	1,450,000	
Triangles per second		600,000	600,000	• High-performance lighting and shading for surface rendering and data animation • Real-time rendering of large 3D models
Lighted, shaded quadrilaterals per second		80,000	107,000	
24-plane color				
24/24 plane double buffering				• 16.7 million simultaneously displayable colors • Allows smooth movement of dynamic images • Annotation and image comparison
8 overlay planes				
Graphics Software				
X11/R5, PEX, PHIGS, Starbase, GKS, PowerShade				• Speed and realism through standards enhance the capabilities of all applications of Starbase, PHIGS and GKS

Features	Benefits	
User-friendly Features		
HP VUE, OSF/Motif, X11 Window System Instant Ignition	• Ease of use through standards. • Provides immediate productivity through a preinstalled and preconfigured HP UX environment	
Standard Interfaces		
Integrated I/O subsystem	• Low-cost, high-performance IEEE 802.3 IEEE (AUI) • Allows quick and easy integration in heterogeneous networks • Simple connection of high-speed, low-cost disks and other peripherals • Multimedia capability	
SCSI-II, RS-232(2) Centronics, HP-HIL Audio I/O ports		
Cooperative Computing Products		
NCS, Passwd Etc	• Supports distributed applications, ease of administration in a networked environment • Provides users with access to all available power on the network • Allows licensing of applications based on actual usage • Automates system backup in a networked environment	
Task Broker NetLS OmniBack		
Operating System		
HP-UX 9.01: Complies with IEEE POSIX.1003.1 and 1003.2 FIPS 151-1, ANS X3.159-1989, System V Interface Definition (SVID) Issue II (Base System and all Extensions except AS, NS and shmat [KE_OS]), X/Open Portability Guide Issue III (XPG3), (Base Branding).	101 key, PC style 3 adjustable angle settings, HP-HIL, available in 11 languages Length 463.2mm Width 177.6mm Height 55.3mm (max - highest angle setting) 38.6mm (min - lowest angle setting) Weight 1.54kg	Connectors 1 mono mic, 1 stereo headphones, 1 stereo line in, 1 stereo line out (all mini phone jacks) Built-in speaker
HP-UX 9.01 also complies with IS 9945/1 and Base Component and all Optional Components except XTI only.	Regulatory Specifications—These keyboards are designed to meet all applicable of the following: EN 55022 Class A / prEN 55024-2 / IEC 801-2 prEN 55024-3 / IEC 801-3 IEC 950 / EN 60950 ZH1/618 Underwriters Laboratories (UL) UL 1950, "Information Technology Equipment" Canadian Standards Association (CSA) C22.2 No. 950, "Information Technology Equipment" Federal Communications Commission (FCC) FCC Part 15, Sub-part B - Computing Devices, Class A Radio Research Laboratory of Korea (RRL) EMI Regulations	Three independent time generators controllable over 30db Frequency Range—81.46Hz to 83.3KHz Speaker is built in
X Window System		
Version 11 Release 5 (X11R5), OSF/Motif 1.2		
Languages		
C, C++, Pascal, ANSI FORTRAN, ANSI C, PA RISC 1.1, Assembler		
User Interface		
HP VUE 3.0		
Human Interface		
Keyboards		
109 key, 3 adjustable angle settings, HP-HIL, available in 21 languages Length 443.9mm Width 177.6mm Height 53.5mm (max - highest angle setting) 38.6mm (min - lowest angle setting) Weight 1.48kg	Mouse 3 button, rollerball, HP-HIL	
Audio		
16-bit CD/DAT quality stereo Digital data rate The sampling rate can be set to many rates between 4K & 48KHz		
Interface Specifications		
Type HP-HIL, 1.0 Amp Device Limit 7 per interface Connector AMP SMD		
Networking Options		
LAN		
Standard IEEE 802.3 LAN with interface with ThickNET (AUI) connector Optional FDDI EISA controller SNA EISA X.25 EISA IEEE 802.3 EISA IEEE 802.5 EISA Apollo Token Ring EISA		
Networking Products		
NCS, NFS, Berkeley 4.3 TCP-IP, BSD 4.3 Network Services, and ARPA Services		

Technical Specifications	715/33	715/50	715/75
System Processing Unit			
Central processor	PA-RISC	PA-RISC	PA-RISC
Clock frequency	33MHz	50MHz	75MHz
Performance			
MIPS	41	62	86
SPECmark89	46	69	110
SPECint92	24	36	61
SPECfp92	45	72	113
MFLOPS (DP)	8.6	13	31
Memory management unit			
Virtual memory address	48 bit	48 bit	48 bit
Instruction TLB and data TLB	120 page entries unified, 16 variable block entries unified, fully associative		
External cache			
Instruction cache size	64KB	64KB	256KB
Organization	Direct mapped	Direct mapped	Direct mapped
Bus width	64 bits	64 bits	64 bits
Instruction cache bus peak performance	267MB/second I-fetch (4 byte)	400MB/second I-fetch (4 byte)	600MB/second I-fetch (4 byte)
Data cache size	64KB	64KB	256KB
Organization	Direct mapped	Direct mapped	Direct mapped
Data bus width	64 bits	64 bits	64 bits
Data cache peak bus performance	267MB/second load (8 byte) 267MB/second single store (8 byte)	400MB/second load (8 byte) 400MB/second single store (8 byte)	600MB/second load (8 byte) 600MB/second load single store (8 byte)
Main memory type	ECC SIMMs single bit correct double bit detect	ECC SIMMs single bit correct double bit detect	ECC SIMMs single bit correct double bit detect
Capacity	8-192MB	16-256MB	32-256MB
Main memory bus width	64 data bits w/ 8 check bits	64 bits w/ 8 check bits	64 bits w/ 8 check bits
Main memory bus peak performance	105MB/sec (64 byte duration)	160MB/sec (64 byte duration)	160MB/sec (64 byte duration)
System DRAM technology	80ns, 4 & 16 Mbit DRAM		
Memory options	8, 16, 32, 48, 128, 192	16, 32, 64, 128, 256	32, 64, 128, 256

I/O Specifications

Graphics Bus (standard)

1 slot

Width

32-bit address

Peak bus performance

133MB/sec (block move out,
32 bytes)

LAN Interface (standard)

Type

IEEE 802.3/Ethernet

Data Rate

10Mbits/sec

Connectors

15-pin AUI (ThickNET) connector

SCSI Interface (standard)

Type

SCSI-II: single-ended, 8 bit

Data rate

5MB/sec synchronous

1.5MB/sec asynchronous with
standard length cables

Device limit

7 devices

Connector

ALT-1 of SCSI-2 50-pin high density

Serial Interface (two standard)

Type

EIA RS232C, CCITT V.24/V.28

Data Rate

to 460.8Kbps

Connector

9 pin male DTE (PC Standard)

Parallel Interface (standard)

Type

Centronics, BUSY handshake

Data rate

300+ KB/sec with DMA

200KB/sec sustained

Connector

25-pin female (PC standard)

EISA Bus

Number of slots: one (optional on
Model 715/33)

Width

32-bit address, 32-bit data

Peak bus performance

22MB/sec burst mode (Model 715/33)

33MB/sec burst mode

(Model 715/50, 715/75)

Optional Internal Mass Storage**Max. Mass Storage Devices**

Two 3.5" hard disks and one 3.5" or one 5.25" removable media devices

Max Internal Mass Storage

2GB

Internal 525MB Disk

Number supported

up to 2

Operating system

HP-UX 9.01

Size

3.5"

Formatted capacity

525MB

Average seek time

10.5 ms

Average latency

6.7 ms

Spindle speed

4,500 rpms

Internal 1GB Disk

Number supported

up to 2

Operating system

HP-UX 9.01

Size

3.5"

Formatted capacity

1.05GB

Average seek time

10.5 ms

Average latency

5.6 ms

Spindle speed

4,500 rpms

Digital Audio Tape Drive

Max. number supported

1 per unit

Operating system

HP-UX 9.01

Size

5.25 inch full height

Media type

60 and 90 meter DDS cassette

Capacity

2.0GB (without data compression)
up to 8.0GB (with data compression)

Transfer Rate

183 KB/sec

Format

Helical-scan DAT

Max. burst data transfer rate

1.5MB/sec

Max. sustained data rate transfer

183KB/sec (without data compression) up to 732KB/sec (with data compression)

Average random access time

20 seconds

1.44MB 3.5" Floppy

Max. number supported

1 per unit

Operating system

HP-UX 9.01

Media

HP 2MB or HP 1MB floppy disk

Formatted capacity

1.44MB or 720MB

Format

MFM or FM

Transfer rate

500KB/sec or 250KB/sec

Track to track access time

3 ms

Avg. latency

100 ms

Avg. access w/latency

194 ms

600MB 5.25" CD-ROM

Max. number supported

1 per unit

Operating system

HP-UX 9.01

Media diameter

4.7 inches

Avg. data transfer rate

154Kbits/sec

Avg. random access time

350 ms

SPU Power-Output specifications

Power

143 W max output

+5 V at 22A

+12 V at 3.0 A

-12 V at 0.1 A

-5 V at 0.1 A

+12 V HIL at 1.0A

5V SCSI at 1.0A

Physical and Environmental**System Unit Power**

Source Consumption

3.60A max @ 120V

2.0A max @ 240V

Auto Ranging

90-132 VAC

98-264 Volts

Line Frequency

47-63Hz

Power Consumption

210 max Watts

716 BTU/hour

180 Kcal/hour

Physical Dimensions

Desktop:

Height

110mm

Width

470mm

Depth

399mm

Deskside:

Height

470mm

Width

110mm

Depth

399mm

Net weight

24 lbs (fully loaded)

Shipping weight

29 lbs. (fully loaded)

Environmental Specifications

Temperature: operating

5 to 40°C; 20°C/hr.

rate of change max.

Temp. non-operating

-40 to +70°C

Humidity: non-condensing

Operating

15% to 80% R.H. max

Operating max wet bulb temp

37°C

Non-operating

15% to 90% R.H. max

Non-operating max wet bulb temp

68°C

Altitude: operating

3050 meters (10,000 ft) to 40°C

Altitude: non-operating

4572 meters (15,000 ft) to 60°C

Monitors

15" color monitor (for model 715/33 only)

Screen refresh rate
70Hz (single sync)

Video signals
RS-343 A

Resolution
1024x768

Electrical specifications

Line voltage
88-135VAC
193-269VAC

Line frequency
47-63Hz

Maximum current
1.5A/1.0A

Power consumption
75 Watts max.

Environmental characteristics

Operating temperature
5-40°C

Non-operating temperature
-40-70°C

Humidity operating
15-80%RH

Max. altitude operating
3048m (10,000ft)

Max. altitude non-operating
10,668m (35,000ft)

Regulatory compliance

CISPR level: A

FCC class: A

VCCI class: 1

Safety

UL, CSA, EN60950, GS Mark

Monitors physical characteristics

Height
366mm (4.4 in.)

Width
354mm (13.9 in.)

Depth
400mm (15.8 in.)

Net weight
14kg (31 lbs)

17" color monitor (for model 715/33 only)

Screen refresh rate
75Hz (single sync)

Video signals
RS-343 A

Resolution
1024x768

Electrical specifications

Line voltage
88-135VAC
193-269VAC

Line frequency
47-63Hz

Maximum current
1.5A/1.0A

Power consumption
100 Watts max.

Environmental characteristics

Operating temperature
10-40°C

Non-operating temp.
-40-60°C

Humidity operating
10-80%RH

Max. altitude operating
3048m (10,000ft)

Max. altitude non-operating
10,668m (35,000ft)

Regulatory compliance

CISPR level: A

FCC class: A

VCCI class: 1

Safety

UL, CSA, EN60950, GS Mark

Monitors physical characteristics

Height
438mm (17.2 in.)

Width
408mm (16.1 in.)

Depth
442mm (17.4 in.)

Net weight
21kg (46.2 lbs)

19" Grayscale

Screen refresh rate
72Hz (Single sync)

Video signals
RS-343 A

Resolution
1280x1024

Electrical specifications

Line voltage
88-135VAC
193-269VAC

Line frequency
47-63Hz

Maximum current
1.6 A/0.8 A

Power consumption
100 Watts max.

Environmental characteristics

Operating temperature
0-55°C

Non-operating temp.
-40-71°C

Humidity operating 40°C
10-95% RH

Max. altitude operating
4572m (15,000ft)

Max. altitude non-operating
15,250m (50,000ft)

Regulatory compliance

CISPR level: B

FCC class: A

VCCI class: 1

Safety

UL, CSA, EN60950, GS Mark

Monitors physical characteristics (Product only)

Height
444mm (17.5 in.)

Width
470mm (18.5 in.)

Depth
426mm (16 in.)

Net weight
20.5kg (45.1 lbs)

19" Color

Screen refresh rate
72Hz (Single sync)

Video signals
RS-343 A

Resolution
1280x1024

Power Budget	+5V (Amps)	+12V (Amps)	-12V (Amps)	-5V (Amps)	Totals (Watts)
Base system	9.1	0.2	0.1		49.1
HIL maximum load		1.0			12
Hard disk	1.0	.71			13.5
DDS tape drive	1.0	.25			5.5
CD ROM	0.5	.22			5.5
Floppy disk	0.8				4
EISA interface	1.2				6
EISA/HP-IB	3.06				15.3
EISA/SCSI-differential	3.06	.005	.005		15.
EISA/802.3 LAN	3.4	.36			17
					21.3
EISA/802.5 LAN	2.24				11.2
EISA/FDDI	2.0				10
EISA/X.25	3.4	.09	.10		19.2
SCSI terminators	1.0				4.8
Fans		.30			3.6

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In Canada, call 1-800-387-3867).**

The information contained in this
document is subject to change without
notice.

Electrical specifications

Line voltage

88-135VAC

193-269VAC

Line frequency

47-63Hz

Maximum current

3.7A/2.0A

Power consumption

250 watts max.

Environmental characteristics

Operating temperature

10 to 40°C

Non-operating temp.

-40 to 60°C

Humidity operating 40°C

10-80%RH

Max. altitude operating

3048m (10,000 ft)

Max. altitude non-operating

10,668m (35,000 ft)

Regulatory compliance

CSPR level: A

FCC class: A

VCCI class: 1

Safety

UL, CSA, IEC950, GS Mark

Monitors physical characteristics

(Product only)

Height

410mm (16.1 in.)

Width

485mm (19.1 in.)

Depth

510mm (20.1 in.)

Net weight

32.5kg (71.5 lbs)