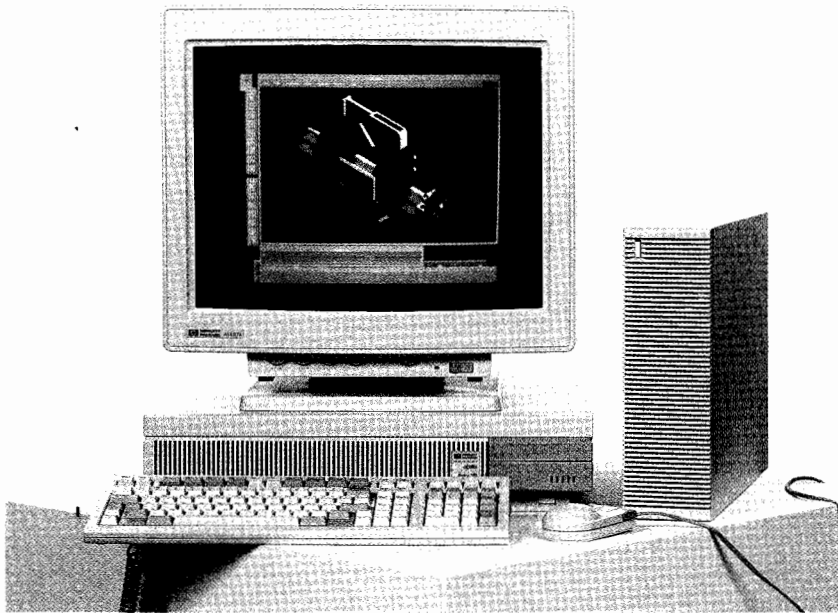

HP Apollo Series 700 Model 735 Workstation



Overview

The PA-RISC-based HP Apollo Series 700 Model 735 offers industry-leading performance in a desktop system. Performance at 147 SPECmarks, 124 MIPS, and 40 MFLOPS, along with large RAM and disk capacities, make the Model 735 ideal for compute-intensive and demanding graphics applications. An advanced input/output design matches the high performance CPU, providing high throughput to disks and networks and resulting in leading-edge application performance. An EISA slot is also provided to accommodate a variety of expansion options.

Integrated graphics options include 8-plane greyscale (GRX), 8-plane color (CRX), 24-plane color (CRX-24), 24-plane accelerated color (CRX-24Z), and 24-plane accelerated, double buffered color (CRX-48Z). While the GRX and CRX deliver the industry's best X window and 2D/3D vector performance, the CRX-24, -24Z, and 48Z are ideal for solids modeling, rendering and visualization. Graphics software support includes X11R5, PEX PHIGS, Starbase and PowerShade.

The Model 735 supports the UNIX-based HP-UX operating system which incorporates the functionality and emerging standards of OSF. In addition, it provides the best ease of use through an enhanced HP VUE user interface, based on OSF/Motif.

FEATURES

BENEFITS

CPU Performance (99 MHz PA-RISC 7100 Processor)

124 MIPS Integer	•Industry's leading performance
147 SPECmarks89	
40 MFLOPS	•Speeds technical computations
80 SPECint92	
150 SPECfp92	
Graphics instructions in the CPU	•High performance, cost effective graphics

Memory and Cache

High bandwidth (128 bits wide) CPU RAM interface	•Improves application performance
32-400MB ECC RAM	
256KB Instruction Cache	
256KB Data Cache	

Mass Storage

525MB-2GB (Internal)	•A wide range of mass storage options
125.4GB max. disk with disk arrays	
600MB CD ROM, 2.0GB 4mmDDS tape, 2-8GB DDS-DC tape,	
1.4MB floppy disk	
Rewritable optical drives,	
1/2" tape drive	

Standard Interfaces

Integrated I/O Subsystem	•Low cost, high performance
IEEE 802.3 (Thick or ThinNet),	•Allows quick and easy integration in heterogeneous networks
Integrated FDDI (optional)	•Fastest LAN
Fast-wide 20MB/sec SCSI-II	•Fastest SCSI interface for faster disk I/O
CD-quality audio input/output	•Audio annotation
1 EISA slot, SCSI-II, RS 232(2), Centronics, HP-HIL	•Simple connection of high speed, low cost disks and other peripherals

Cooperative Computing Products

NCS, Passwd Etc, OpenView	•Supports distributed applications, ease of administration in a networked environment
Network Node Manager, Omniback	
Task Broker	•Provides users with access to all available power on the network
NetLS	•Allows licensing of applications based on actual usage

Graphics

GRX (8 plane greyscale)

971,000 X11 vectors/seconds	•Leadership windowing and vector performance ideal for design, engineering, and scientific applications
19,115 X11 perf	
1.16 million 2D/3D vectors/second	
8-plane greyscale	•Exceptional price/performance
19", 1280x1024, 72Hz monitor	•Superb image detail

CRX (8 plane color)

971,000 X11 vectors/second	•Leadership windowing and vector performance ideal for design, engineering, and scientific applications
19,115 X11 perf	•Exceptional application performance
1.16 million 2D/3D vectors/second	•256 colors aid user comprehension
GPC PLBlit sys_chassis: 32.5	•Smooth interactive screen refreshes
8-plane color	
8/8 plane double buffering	
40,000 triangles per second	
25,000 lighted, shaded quadrilaterals per second	
19", 1280 x 1024, 72 Hz Monitor	•Superb image detail

CRX-24 (24 plane color)

652,000 X11 vectors/second
18,755 X11 perf
680,000 2D/3D vectors/second
GPC PLBlit sys_chassis: 33.5
GPC PLBlit head: 41.0
24-plane Color
12/12 plane double buffering
8 overlay planes
40,000 triangles per second
30,000 lighted, shaded quadrilaterals
per second
19", 1280 x 1024, 72 Hz Monitor

- Fast user interfaces
- 24-bit true color for demanding visualization and image processing applications
- Exceptional application performance
- 16.7 million simultaneously displayable colors
- Smooth interactive screen refreshes
- Superb image detail

CRX-24Z (24 plane accelerated color)

652,000 X11 vectors/second
18,786 X11 perf
680,000 2D/3D vectors/second
150,000 3D anti-aliased vectors
per second
GPC PLBlit sys_chassis: 31.2
GPC head: 69.0
24-plane color
Dedicated 24-bit Z buffer
12/12 plane double buffering
8 overlay planes
175,000 triangles per second
95,000 lighted, shaded quadrilaterals
per second
19", 1280 x 1024, 72 Hz Monitor

- No sacrifice of user interface performance to achieve interactive modelling performance
- Exceptional application performance
- 16.7 million simultaneously displayable colors
- Smooth interactive screen refreshes
- Fast user interfaces
- Leadership low-cost 3D performance
- Superb image detail

CRX-48Z (24 plane accelerated, double buffered color)

1.24 million X11 vectors/second
19,122 X11 perf
2.0 million 2D vectors/second
1.9 million 3D vectors/second
1.2 million 3D anti-aliased vectors
per second
GPC PLBlit sys_chassis: 40.3
GPS PLBlit head: 127.1
Four independent color maps
24-plane color
24/24 plane double buffering
Dedicated 24-bit Z buffer
8 overlay planes
600,000 triangles per second
150,000 lighted, shaded quadrilaterals
per second
19", 1280 x 1024, 72 Hz Monitor

- Premier 3D modelling performance
- For complex wireframe modeling
- Exceptional application performance
- 16.7 million simultaneously displayable colors
- Interactive movement of true color images
- Fast user interfaces
- Superb image detail

Graphics Software

X11R5, PEX, PHIGS, Starbase

HP PowerShade
(standard with CRX-24Z and
CRX-48Z graphics options)

- Speed and realism through standards enhance the capabilities of all applications
- Allows users to produce highly realistic renderings without large investment or training

User-friendly Features

HP VUE, OSF/Motif,
Instant Ignition

- Ease of use through standards
- Provides immediate productivity through a preinstalled and preconfigured environment



Technical Specifications

System Processing Unit

Central Processor

PA-RISC 7100

Clock Frequency: 99MHz

Performance:

SPECmarks89	147
MIPS	124
MFLOPS	40
SPECint92	80
SPECfp92	150

Memory Management Unit

Virtual Memory Address -48 bit

Instruction TLB and Data TLB:

120 page entries, 16 variable block entries, fully associative

External Cache

Instruction Cache Size

256Kbytes

Organization

Direct mapped

Data Bus Width

64 bits

Instruction Cache Bus Performance

800MB/sec I-fetch (8 byte)

Data Cache Size

256Kbytes

Organization

Direct mapped

Data Bus Width

64 bits

Data Cache Peak Bus Performance

800MB/sec load (8 byte)

800MB/sec single store (8 byte)

Main Memory

Type

ECC (single bit correct, double bit detect)

RAM

32Mbytes standard

Main Memory Bus Width

128 data bits, 16 check bits

Main Memory Bus Peak Performance

32MB/sec (64 byte duration)

System DRAM Technology

80nsec, 4&16 Mbit DRAM

Maximum Memory

400Mbytes

Memory Options

32, 48, 80, 144, 208 & 400MB

Software

Operating System

HP-UX 9.0 complies with IEEE 1003.1-1988 (FIPS 151-1), ANS X3.159-1989, IEEE 1003.1-1990, 1003.2, System V Interface Definition (SVID) Issue II (Base System and KE extensions), X/Open Portability Guide Issue III (XPG3) (Base branding), OSF Application Environment Specification (OSPI), and X/Open Worldwide Portability Interface (WPI).

HP-UX 9.0 also complies with IS 9945/1 and Base Component and all Optional Components except XTI only.

Window Systems

X Window System Version 11

Release 5 (X11R5), OSF/Motif 1.2

Languages

C, ANSI C, C++, Fortran, Pascal,

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

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)

40.4mm (min - lowest angle setting)

Weight 1.54kg

Mouse

3 button, rollerball, HP-HIL

Audio

Three independent tone generators controllable over 30db

Frequency Range

81.46Hz to 83.3KHz

(Available via speaker connected to external jack 250mW @ 8 ohms)

Interface Specifications

Type

HP-HIL, 1.0 Amps, built-in audio beeper

Device Limit

7 per interface

Connector

AMP SMD

Networking Options

LAN

One of the following three LAN connections can be chosen:

Standard

IEEE 802.3 AUI (thick)

IEEE 802.3 BNC (thin)

Optional Integrated FDDI

ANSI X3T9.5 Single Attach MIC

Adapter

Networking Products

NCS, NFS, Berkeley 4.3 TCP-IP,

BSD 4.3 Network Services, ARPA

Services, HP Diskless (IEEE 802.3 only)

Station Management V 6.2 (FDDI only)

I/O Specifications

Graphics Bus (standard)

1 slot for graphics

Width

32-bit address

Peak Bus Perf.

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

LAN Interface (standard)

Type

IEEE 802.3/Ethernet

Data Rate

10 Mbits/sec

Connector

15-pin AUI or BNC "T"

SCSI Interface (standard)

Type
SCSI-II: single-ended, 8 bit

Data Rate
5 Mbytes/sec synchronous
1.5 Mbytes/sec asynchronous
with standard length cables

Device limit
7 devices

Connector
ALT-1 of SCSI-II 50-pin high
density

Fast-Wide SCSI Interface (standard)

Type
SCSI-II: fast-wide, 16 bit

Data Rate
20 Mbytes/sec synchronous
asynchronous support

Device limit
15 devices (7 if disk arrays)

Connector
SCSI-3, P-connector (68-pin high
density)

Serial Interface (two standard)

Type
EIA RS232C, CCITT V.24/V.28

Data Rate
To 230.4 Kbps with CTS/RTS
bidirectional hardware flow
control

Connector
9 pin male DTE (PC Standard)

Parallel Interface (standard)

Type
Centronics, BUSY handshake

Data rate
300+ Kbytes/sec with DMA
200Kbytes/sec sustained

Connector
25 pin female (PC standard)

EISA Bus

Number of slots
1 standard

Width
32-bit address, 32-bit data

Peak Bus Perf.
33 Mbytes/sec seq. mem write

Audio

Type
16 bit CD/DAT quality Stereo

Digital Data Rate
16 bit resolution, 44.1 or 48 KHz
sampling input/output

Connectors
1 mono mic, 1 stereo head
phones, 1 mono speaker, 1
stereo line in, 1 stereo line out
(all mini phone jacks)

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

Two half height 3.5 inch
mechanisms

Max Internal Mass Storage

2.0GB

Internal 525MB Disk (Single-ended SCSI-II)

Number Supported
up to 2

Operating System
HP-UX 9.0

Size
3.5 inch half height

Formatted Capacity
525MB

Average Seek Time
10 msec

Average Latency
6.7 msec

Spindle Speed
4500 rpms

Internal 1.0GB Disk (single-ended SCSI-II)

Number Supported
up to 2

Operating System
HP-UX 9.0

Size
3.5 inch half height

Formatted Capacity
1052MB

Average Seek Time
10.5 msec

Average Latency
5.56 msec

Spindle Speed
5400 rpms

Internal 1.0GB Disk (Fast-wide SCSI-II)

Number Supported
up to 2

Operating System
HP-UX 9.0

Size
3.5 inch half height

Formatted Capacity
1052MB

Average Seek Time
10.5 msec

Average Latency
5.56 msec

Spindle Speed
5400 rpms

Floppy Drive 3.5-inch

Max. Number supported
1 per unit

Operating System
HP-UX 9.0

Size
3.5 inch

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 with Latency
194ms

Physical and Environmental**SPU Power - Input specifications**

Source Consumption
 8 Amps @ 120VAC
 5 Amps @ 220VAC
 Auto Ranging
 100-120 VAC
 200-240 VAC
 Line Frequency
 50-60Hz
 Power Consumption
 240 max Watts

Regulatory Specifications

Designed to meet all applicable sections of the following:
 Electromagnetic Compatibility (EMC) Directive
 EN 55022 Class A / CISPR 22 Class A
 prEN 55101-2 / IEC 801-2
 prEN 55024-3 / IEC 801-3
 Product Safety
 TUV/GS license
 IEC 950 / EN 60950
 ZH1/618
 Underwriters Laboratories (UL) listed
 UL 1950, "Information Technology Equipment"
 Canadian Standards Association (CSA) certified
 C22.2 No. 950, "Information Technology Equipment"
 Federal Communications Commission (FCC)
 FCC Part 15, Sub-part B - Computing Devices, Class A
 VCCI CISPR 22 Class 1
 Radio Research Laboratory of Korea (RRL)
 Electromagnetic Interference (EMI) Control Regulations

Physical Dimensions

Desktop:
 Height 114mm (4.5 in.)
 Width 508mm (20.0 in.)
 Depth 470mm (18.5 in.)
 Deskside:
 Height 524mm (20.6 in.)
 Width SPU 114mm (4.5 in.)
 Width Pedestal 254mm (10.0 in.)
 Depth 470mm (18.5 in.)
 Net Weight 22.7 kg (50 lbs.)

Environmental Range With Internal Mass Storage

Temperature: operating 5°C to 40°C; (20°C/hr. rate of change max)
 Temperature, storage: -30°C to 70°C (4.6Km or 15,000 ft)
 Humidity, operating 40°C: 15 to 80 % R.H. at 40°C
 Humidity, non-operating 65°C: 90% R.H. at 65°C (for 12 hours)
 Noise Output: Less than 5.0 Bels sound power to 40°C
 Altitude, operating: 10,000 feet (3.1Km) to 40°C
 Altitude, storage: 15,000 feet (4.6Km) to 70°C
 Vibration:
 Operation Random, 0.21G rms for 5-500hz
 Survival Random, 2.1G rms
 Survival Sine, 0.50G peak for 5-500hz
 Shock:
 Operating, 30in/sec-60G peak < 3.0msec
 half sinewave or 5G < 11.0msec half sinewave
 Survival (non-operating), 266in/sec-30G
 peak < 25msec trapezoidal waveform
 Packaged (non-operating), 30 inch freefall,
 10 impacts (6 faces, 4 bottom corners)

Monitors**Pre-Q2 93****Post-Q2 93****All Dates**

	Pre-Q2 93	Post-Q2 93	All Dates
	19" Mono (GRX)	19" Mono (GRX)	19"Color (CRX,CRX-24 CRX-24Z, CRX-48Z)
Screen Refresh Rate	72Hz	72Hz	72Hz
Video Signals	RS-343 A	RS-343 A	RS-343 A
Resolution	1280x1024	1280x1024	1280x1024
Electrical Specifications			
Line Voltage	88-135VAC 193-269VAC	88-135VAC 193-269VAC	88-135VAC 193-269VAC
Line Frequency	47-63Hz	47-63Hz	47-63Hz
Maximum Current	1.6A	1.6A - 0.8A	3.7A - 2.0A
Power Consumption	100 Watts max.	100 Watts Max.	250 Watts Max.
Environmental Characteristics			
Operating Temperature	0 to 40 C	0 to 40 C	10 to 40 C
Non-operating Temp.	-40 to 71 C	-40 to 71 C	-40 to 60 C
Humidity Operating 40 C	15 to 95%RH	10 to 95%RH	10 to 80%RH
Max. Altitude Operating	4570m(15,000ft.)	4572m(15,000ft.)	3048m(10,000ft.)
Max. Altitude Non-operat	15,240m(50,000ft.)	15,250m(50,000ft.)	10,668m(35,000ft.)
Regulatory Compliance			
CISPR 22	A	B	B
FCC class	A	A	A
VCCI class	1	1	1
Safety	UL, CSA, EN 60950 GS mark	UL, CSA, EN 60950 GS mark	UL,CSA,EN60950 GS mark
Monitors Physical Characteristics			
Height	471mm (18.6 in.)	444mm (17.5 in.)	472mm (18.6 in.)
Width	500mm (20 in.)	470mm (18.5 in.)	480mm (18.9 in.)
Depth	505mm (20.2 in.)	426mm (16.8 in.)	505mm (19.9 in.)
Net Weight	30 kg (66.5 lbs)	20.5 kg (45.1 lbs)	32.5kg (71.5 lbs.)

HP - The Leader in RISC-based Systems

Hewlett-Packard is the leader in installed RISC-based systems. As a result, you can count on HP for the experience needed to offer the best RISC-based workstations available. In addition, our Series 700 workstations are compatible with our Series 800 family which provides industry-leading transaction performance for commercial, multi-user environments. Whether you're comparing performance, applications availability, graphics performance, compatibility, price/performance, or investment protection, you'll find that HP is the leader.

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Greece:

Tel:+30/1/682 88 11

Hungary:

Tel:+38/61/5584 72

Iceland:

Tel:+354/1/67 10 00

Ireland:

Tel:+253/12/88 33 99

Italy:

Tel:+39/ 2/92 19 91

Netherlands:

Tel:+31/ 20/54 769 11

Norway:

Tel:+47/2/87 97 00

Poland:

Tel:+48/22/36 83 00

Portugal:

Tel:+35/1/130 173 30

Russia:

Tel:+007/95/923 50 01

Slovenia:

Tel:+38/61/55 84 72

Spain:

Tel:+34/1/626 16 00

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