

HP 9000 Series 700 Model 735 and 735/125 Workstations



Overview

The HP 9000 Series 700 Model 735 offers a choice of industry-leading performance and price/performance in a desktop system. The PA-RISC 7100 microprocessor-based Model 735 now has a performance optimized companion; utilizing the new PA-RISC 7150 microprocessor running at 125MHz for ultimate desktop power. With performance up to 154 MIPS, SPECint of 136, SPECfp of 201, along with large RAM and disk capacities, the Model 735 is 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 application performance. An EISA slot is also provided to accommodate a variety of expansion options.

With the introduction of the Model 735/125, HP continues to provide unparalleled upgrade investment protection. Customers who have invested in Models 720, 730, and 735 can upgrade to the new 125MHz model easily and quickly.

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 exceptional 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 systems support the UNIX-based HP-UX operating system which incorporates much of the functionality and emerging standards provided by CDE. In addition, it provides the best ease of use through an enhanced HP VUE user interface, based on OSF/Motif.

Features	735	735/125	Benefits	
CPU Performance				
MIPS Integer, Dhrystone 1.1	125	154	• Industry's leading desktop performance • Speeds technical computations	
MFLOPS, LinpackDP, Compiled	45	57		
SPECint92	109	136		
SPECfp92	168	201		
AIM APR II	72	135		
LINPACK MFLOPS SP -1000x1000	108	123		
SPECrate_int92	1914	3047		
SPECrate_fp92	3506	4647		
SPEC SFS 1 LADDIS	NR	989		
Memory and Cache				
High bandwidth (128 bits wide) CPU RAM interface			• Improves application performance	
ECC RAM	32-400MB	32-400MB		
Instruction Cache	256KB	256KB		
Data Cache	256KB	256KB		
Mass Storage				
Internal	525MB-2GB	525MB-2GB	• A wide range of mass storage options	
Max. disk with disk arrays	125.4GB	125.4GB		
CD ROM	600MB	600MB		
4mmDDS tape	2.0GB	2.0GB		
DDS-DC tape	2-8GB	2-8GB		
Floppy disk	1.4MB	1.4MB		
Rewritable optical drives				
1/2" tape drive				
Standard Interfaces				
Integrated I/O Subsystem			• Low cost, high performance • Allows quick and easy network integration • Fastest LAN • Fastest SCSI interface for best disk I/O • Audio annotation • Simple connection of high-speed, low-cost disks and other peripherals	
IEEE 802.3 (Thick or ThinNet),				
Integrated FDDI (optional)				
Fast-wide 20MB/sec SCSI-II				
CD-quality audio input/output				
1 EISA slot, SCSI-II, RS 232(2), Centronics, HP-HIL				
Graphics				
GRX (8 plane greyscale)				
Xmark93	8.8	9.4		
GPC PLB2D93	60	68		
GPC PLBwire93	64	75		
CRX (8 plane color)				
Xmark93	8.8	9.9	• High-speed windowing and vector performance ideal for design, engineering, and scientific applications	
GPC PLB2D93	60	68		
GPC PLBwire93	64	75		
GPC PLBsurf93	40	44		
8-plane color			• 256 colors aid user comprehension • Smooth interactive screen refreshes	
8/8 plane double buffering				

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Features	735	735/125	Benefits
CRX-24 (24 plane color)			
Xmark93	7.8	8.6	• 16.7 million simultaneously displayable colors • Smooth interactive screen refreshes • Fast user interfaces
GPC PLB2D93	62	68	
GPC PLBwire93	64	75	
GPC PLBsurf93	40	45	
24-plane color			
12/12 plane double buffering			• No sacrifice of user interface performance to achieve interactive modelling performance
8 overlay planes			
CRX-24Z (24 plane accelerated color)			
Xmark93	7.8	8.6	
GPC PLB2D93	60	66	
GPC PLBwire93	64	75	• Fast 3D performance • 24-bit true color for demanding visualization and image processing applications • Realistic and fast 3D modelling • Smooth interactive screen refreshes • Fast user interfaces
GPC PLBsurf93	68	77	
24-plane color			
Dedicated 24-bit Z buffer			
12/12 plane double buffering			
8 overlay planes			• Premier 3D modelling performance
CRX-48Z (24 plane accelerated, double buffered color)			
Xmark93	9.4	10.8	
GPC PLB2D93	63	71	
GPC PLBwire93	71	79	
GPC PLBsurf93	95	112	
Four independent color maps			• Interactive movement of true color images • Fast user interfaces
24-plane color			
24/24 plane double buffering			
Dedicated 24-bit Z buffer			
8 overlay planes			
Graphics Software			
X11R5, PEX, PHIGS, Starbase			• Speed and realism through standards enhance the capabilities of all applications • Allows users to produce highly realistic renderings without large investment or training
HP PowerShade (standard with CRX-24Z and CRX-48Z graphics options)			
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	735	735/125
System Processing Unit		
Central Processor	PA-RISC 7100	PA-RISC 7150
Clock Frequency	99MHz	125MHz
Performance		
MIPS Integer	125	154
MFLOPS	45	57
SPECint92	109	136
SPECfp92	168	201
Memory Management Unit		
Virtual Memory Address	48 bit	48 bit
Instruction TLB and Data TLB	120 page entries, 16 variable block entries, fully associative	120 page entries, 16 variable block entries, fully associative
External Cache		
Instruction Cache Size	256Kbytes	256Kbytes
Organization	Direct mapped	Direct mapped
Data Bus Width	64 bits	64 bits
Instruction Cache Bus Performance	800MB/sec I-fetch (8 byte)	1GB/sec
Data Cache Size	256Kbytes	256Kbytes
Organization	Direct mapped	Direct mapped
Data Bus Width	64 bits	64 bits
Data Cache Peak Bus Performance	800MB/sec load (8 byte) 800MB/sec single store (8 byte)	1GB/sec 1GB/sec
Main Memory Type	ECC (single bit correct, double bit detect)	ECC (single bit correct, double bit detect)
RAM	32Mbytes standard	32Mbytes standard
Main Memory Bus Width	128 data bits, 16 check bits	128 data bits, 16 check bits
Main Memory Bus Peak Performance	264Mbytes/sec (64 byte duration)	250 Mbytes/sec
System DRAM Technology	80nsec, 4&16 Mbit DRAM	80nsec, 4&16 Mbit DRAM
Maximum Memory	400Mbytes	400Mbytes
Memory Options	32, 48, 80, 144, 208 & 400MB	32, 48, 80, 144, 208 & 400MB

Software

Operating System

HP-UX 9.03 complies with IEEE 1003.1-1988 (FIPS 151-1), ANSI 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 9.03 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 (17.48 in)
Width 177.6mm (6.99 in)
Height 53.5mm (2.11 in) (max. highest angle setting)
38.6mm (1.52 in) (min. lowest angle setting)
Weight 1.48kg (3.26 lbs)

101 key, PC style, 3 adjustable angle settings, HP-HIL, available in 11 languages
Length 463.2mm (18.23 in)
Width 177.6mm (6.99 in)
Height 55.3mm (2.17 in) (max. highest angle setting)
40.4mm (1.56 in) (min. lowest angle setting)
Weight 1.54kg (3.39 lbs)

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:
IEEE 802.3 AUI (thick)
IEEE 802.3 BNC (thin)
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.
132Mbytes/sec (block move out,
32 bytes) (735)
125Mbytes/sec. (735/125)

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 115.2 Kbps with CTS/RTS
bi-directional 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.
31.25 Mbytes/sec seq. mem. write
(735/125)
33 Mbytes/sec mem. write (735)

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 and above
Size
3.5-inch low profile
Formatted Capacity
525MB
Average Seek Time
10 msec



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

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 and above
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 and above
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 and above
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 nominal value
200-240 VAC nominal value
Line Frequency
50-60Hz nominal value
Power Consumption
240 max Watts 735
350 max Watts 735/125

Physical Dimensions

Desktop:
Height 114mm (4.5 in)
Width 508mm (20.0 in)
Depth 470mm (18.5 in)

Desktop:
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)

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

You can count on HP for the experience needed to offer the best RISC-based workstations available. The Series 700 workstations are compatible with the Series 800 family which provides industry-leading transaction performance for commercial, multiuser 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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