

## HP 9000 Series 700 Models 715/64, 715/80, and 715/100 Workstations



The HP Series 700 Models 715/64, 715/80 and 715/100 provide a comprehensive line of desktop workstations designed to meet the most demanding technical and commercial customer requirements. These workstations are based on the 7100LC PA-RISC architecture that supports bi-endian switching for current and future operating systems. Likewise, the 7100LC architecture has built-in MPEG video decompression capable of displaying up to 30 frames per second for current and future

multimedia applications without the addition of dedicated, expensive hardware. The Series 700 family also provides increased storage capability by supporting 2GB disk drives internally.

A high-performance graphics subsystem is included with every Model 715—it is integrated on the CPU motherboard for lowest possible cost. This hot, new graphics subsystem is binary-code compatible with HP's current family of industry-leading CRX graphics. This means that applications that run on HP graphics today will run without change on the new graphics. The graphics are designed for optimum GUI and vector performance. The new Model 715

includes a patented new HP Color Recovery technology that enables it to display true-color images—approximately 8 million simultaneous colors—using 1/3 the Video RAM (VRAM) of the 24-bit graphics system. This results in the lowest cost true-color graphics available. Optionally available are a new class of graphics accelerators, the HCRX series. Together with the integrated graphics, the new graphic subsystems deliver industry-leading performance in both 2D and 3D benchmarks in their price class, providing customers with more graphics choices to suit their budget/needs than previously available on HP workstations.

The Models 715/64, 715/80, and 715/100 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, disks, and removable media devices, including an industry-standard 3.5" floppy, especially convenient for PC software that can run in emulation mode. To provide the best possible performance and cost savings for the user, the systems have built-in IEEE 802.3 local area networking (LAN), an external SCSI-2 port, a Centronics interface, two RS-232 serial ports, audio connections, and HIL and PS/2 (mini-DIN) for multiple input device support.

| Features                                                    | 715/64         | 715/80         | 715/100        | Benefits                                                     |
|-------------------------------------------------------------|----------------|----------------|----------------|--------------------------------------------------------------|
| <b>CPU Performance (PA-RISC 7100LC bi-endian processor)</b> |                |                |                |                                                              |
| Clock frequency                                             | 64MHz          | 80MHz          | 100MHz         | • Industry leadership price/performance                      |
| Dhrystone 1.1 MIPS                                          | 77.5           | 97.12          | 121.61         |                                                              |
| SPECint92                                                   | 66.6           | 83.5           | 100.1          |                                                              |
| SPECfp92                                                    | 96.5           | 120.9          | 137.0          |                                                              |
| Linpack (100x100)                                           | 24.33          | 30.49          | 37.84          |                                                              |
| MFLOPS (DP)                                                 |                |                |                |                                                              |
| SPECrate_int92                                              | 1497.82        | 1866.06        | 2237.30        |                                                              |
| SPECrate_fp92                                               | 2281.39        | 2864.56        | 3225.85        |                                                              |
| <b>Memory and Cache</b>                                     |                |                |                |                                                              |
| Memory Capacity                                             | 32-256MB       | 32-256MB       | 32-256MB       | • Improves application performance                           |
| Combined Instruction/Data Cache                             |                | 256KB          | 256KB          |                                                              |
| <b>Mass Storage</b>                                         |                |                |                |                                                              |
| Internal Capacity                                           | 4GB            | 4GB            | 4GB            | • A wide range of mass storage capacity options              |
| Total Capacity                                              | 84GB           | 84GB           | 84GB           |                                                              |
| <b>Removable Media</b>                                      |                |                |                |                                                              |
| Internal option                                             | 600MB (2X)     | 600MB (2X)     | 600MB (2X)     | • A wide range of removable media options                    |
|                                                             | CD-ROM         | CD-ROM         | CD-ROM         |                                                              |
|                                                             | 1.44MB Floppy  | 1.44MB Floppy  | 1.44MB Floppy  |                                                              |
|                                                             | 2.0GB DDS tape | 2.0GB DDS tape | 2.0GB DDS tape |                                                              |
|                                                             | 4-8GB DDS tape | 4-8GB DDS tape | 4-8GB DDS tape |                                                              |
| <b>Integrated 2D/3D wireframe color graphics</b>            |                |                |                |                                                              |
| 17", 1280x1024, 72Hz Monitor                                |                |                |                | • Superb image detail                                        |
| 20", 1280x1024, 72Hz Monitor                                |                |                |                |                                                              |
| X/mark93                                                    | 6.55           | 7.90           | 8.63           | • Leadership windowing and vector performance                |
| PLBwire93*                                                  | 43             | 52             | 61             |                                                              |
| PLBsurf93                                                   | 16             | 20             | 28             |                                                              |
| 3D vectors/second (millions)                                | 1.4            | 1.8            | 1.6            | • Ideal for design, engineering, and scientific applications |
| Triangles per second (000s)                                 | 26             | 32             | 40             |                                                              |
| Lighted/shaded quadrilaterals per second (000s)             | 15             | 18             | 23             | • True color (ca. 8 million colors)                          |
| 8-plane color with HP Color Recovery technology             |                |                |                |                                                              |
|                                                             |                |                |                |                                                              |

\* Xmark93, PLBwire93, and PLBsurf93 are comprehensive single-number benchmarks developed by the GPC (Graphics Performance Characterization Committee). These benchmarks are better indicators of application performance than such simple graphics primitives as vectors, triangles, and lighted, shaded quadrilaterals. Xmark93 is an indicator of 2D and X Window performance. PLBwire93 is an indicator of 3D wireframe performance. And PLBsurf93 is an indicator of 3D surfaces/solids modeling performance.

The Models 715/64, 715/80 and 715/100 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 solids graphics. They are designed to meet the needs of such workstation applications as electronic computer-aided design (ECAD), mechanical computer-aided design/engineering (MCAD/MCAE), computer-aided software engineering (CASE) as well as many emerging

technical and scientific applications. Entry-level surface rendering is available through HP's 3D surfaces software, PowerShade, while optional HCRX-8, HCRX-8Z, HCRX-24, HCRX-24Z, and CRX-48Z (Model 715/100 only) functionality is offered for solids modeling, visualization, and accelerated rendering requirements.

The Model 715/64, 715/80 and 715/100 share in HP's rich tradition of standards, advanced transparent network-

ing, 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. The new Models also provide investment protection to existing, installed base customers by providing an upgrade path.

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| Features                                                                           | 715/64 | 715/80 | 715/100 | Benefits                                                     |
|------------------------------------------------------------------------------------|--------|--------|---------|--------------------------------------------------------------|
| <b>HCRX-8 (color 8/8 plane, 2D/3D wireframe graphics)</b>                          |        |        |         |                                                              |
| 17", 1280x1024, 72Hz Monitor                                                       |        |        |         | • Superb image detail                                        |
| 20", 1280x1024, 72Hz Monitor                                                       |        |        |         |                                                              |
| XMark93                                                                            | 9.15   | 10.72  | 12.25   | • Ideal for visualization and image processing               |
| PLBwire93                                                                          | 45     | 57     | 62      |                                                              |
| PLBsurf93                                                                          | 21     | 26     | 29      | • Ideal for design, engineering, and scientific applications |
| 3D vectors/second (millions)                                                       | 1.5    | 1.9    | 2.3     |                                                              |
| Triangles per second (000s)                                                        | 26     | 32     | 40      | • Allows smooth movement of dynamic images                   |
| Lighted/shaded quadrilaterals per second (000s)                                    | 15     | 18     | 23      |                                                              |
| 8-plane double buffering                                                           |        |        |         | • True color (ca. 8 million colors)                          |
| HP Color Recovery technology                                                       |        |        |         |                                                              |
|  |        |        |         |                                                              |
| <b>HCRX-24 (color, 24-plane, 2D/3D wireframe graphics)</b>                         |        |        |         |                                                              |
| 17", 1280x1024, 72Hz Monitor                                                       |        |        |         | • Superb image detail                                        |
| 20", 1280x1024, 72Hz Monitor                                                       |        |        |         |                                                              |
| XMark93                                                                            | 9.15   | 10.72  | 12.25   | • Ideal for visualization and image processing               |
| PLBwire93                                                                          | 45     | 57     | 62      |                                                              |
| PLBsurf93                                                                          | 21     | 26     | 29      | • Ideal for design, engineering, and scientific applications |
| 3D vectors/second (millions)                                                       | 1.5    | 1.9    | 2.3     |                                                              |
| Triangles per second (000s)                                                        | 26     | 32     | 40      | • Allows smooth movement of dynamic images                   |
| Lighted/shaded quadrilaterals per second (000s)                                    | 15     | 18     | 23      |                                                              |
| 12/12-plane double buffering                                                       |        |        |         | • 16.7 million simultaneously displayable colors             |
| 8 overlay planes                                                                   |        |        |         |                                                              |
| 24-plane color                                                                     |        |        |         |                                                              |
| <b>HCRX-8Z (color, 8/8-plane, Z-buffered, 3D solids graphics)</b>                  |        |        |         |                                                              |
| 17", 1280x1024, 72Hz Monitor                                                       |        |        |         | • Superb image detail                                        |
| 20", 1280x1024, 72Hz Monitor                                                       |        |        |         |                                                              |
| XMark93                                                                            | 9.15   | 10.72  | 12.25   | • Ideal for visualization and image processing               |
| PLBwire93                                                                          | 46     | 58     | 68      |                                                              |
| PLBsurf93                                                                          | 49     | 59     | 68      | • Ideal for design, engineering, and scientific applications |
| 3D vectors/second (millions)                                                       | 1.5    | 1.9    | 2.3     |                                                              |
| Triangles per second (000s)                                                        | 270    | 340    | 410     | • Allows smooth movement of dynamic images                   |
| Lighted/shaded quadrilaterals per second (000s)                                    | 56     | 71     | 86      |                                                              |
| 8/8-plane double buffering                                                         |        |        |         | • Annotation and image comparison                            |
| 8 overlay planes                                                                   |        |        |         |                                                              |



| Features                                                             | 715/64 | 715/80 | 715/100 | Benefits                                                                                                      |
|----------------------------------------------------------------------|--------|--------|---------|---------------------------------------------------------------------------------------------------------------|
| <b>HCRX-24Z (color, 12/12 plane, Z-buffered, 3D solids graphics)</b> |        |        |         |                                                                                                               |
| 17", 1280x1024, 72Hz Monitor                                         |        |        |         | • Superb image detail                                                                                         |
| 20", 1280x1024, 72Hz Monitor                                         |        |        |         |                                                                                                               |
| XMark93                                                              | 9.15   | 10.72  | 12.25   | • Ideal for visualization and image processing                                                                |
| PLBwire93                                                            | 46     | 58     | 68      |                                                                                                               |
| PLBsurf93                                                            | 49     | 59     | 68      |                                                                                                               |
| 3D vectors/second (millions)                                         | 1.5    | 1.9    | 2.3     | • Ideal for design, engineering, and scientific applications                                                  |
| Triangles per second (000s)                                          | 270    | 340    | 410     |                                                                                                               |
| Lighted/shaded quadrilaterals per second (000s)                      | 56     | 71     | 86      | • Allows smooth movement of dynamic images                                                                    |
| 12/12-plane double buffering                                         |        |        |         |                                                                                                               |
| 8 overlay planes                                                     |        |        |         |                                                                                                               |
| 24-plane color                                                       |        |        |         | • 16.7 million simultaneously displayable colors                                                              |
| <b>CRX-48Z (color, 12/12-plane, Z-buffered, 3D solids graphics)</b>  |        |        |         |                                                                                                               |
| 17", 1280x1024, 72Hz Monitor                                         |        |        |         | • Superb image detail                                                                                         |
| 20", 1280x1024, 72Hz Monitor                                         |        |        |         |                                                                                                               |
| XMark93                                                              | N/A    | N/A    | 8.89    | • Ideal for visualization and image processing                                                                |
| PLBwire93                                                            | N/A    | N/A    | 68      |                                                                                                               |
| PLBsurf93                                                            | N/A    | N/A    | 89      |                                                                                                               |
| 3D vectors/second (millions)                                         | N/A    | N/A    | 2.2     | • Ideal for design, engineering, and scientific applications                                                  |
| Triangles per second (000s)                                          | N/A    | N/A    | 600     |                                                                                                               |
| Lighted/shaded quadrilaterals per second (000s)                      | N/A    | N/A    | 140     | • Allows smooth movement of dynamic images                                                                    |
| 24/24-plane double buffering                                         |        |        |         |                                                                                                               |
| 8 overlay planes                                                     |        |        |         |                                                                                                               |
| 24-plane color                                                       |        |        |         | • 16.7 million simultaneously displayable colors                                                              |
| <b>Graphics Software</b>                                             |        |        |         |                                                                                                               |
| 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                                                                                     |
|----------------------------------------|----------------------------------------------------------------------------------------------|
| <b>User-friendly Features</b>          |                                                                                              |
| HP VUE, OSF/Motif, X11 Window System   | • Ease of use through standards.                                                             |
| Instant Ignition                       | • Provides immediate productivity through a preinstalled and preconfigured HP UX environment |
| Soft Power-down                        | • Quick and correct system shut-down when system turned off                                  |
| <b>Standard Interfaces</b>             |                                                                                              |
| Integrated I/O subsystem               | • Low-cost, high-performance IEEE 802.3 IEEE (AUT)                                           |
|                                        | • Allows quick and easy integration in heterogeneous networks                                |
| SCSI-II, RS-232 (2) Centronics, HP-HIL | • Simple connection of high-speed, low-cost disks and other peripherals                      |
| Audio I/O ports                        | • Multimedia capability                                                                      |
| <b>Cooperative Computing Products</b>  |                                                                                              |
| NCS, Passwd Etc                        | • Supports distributed applications, ease of administration in a networked environment       |
| Task Broker                            | • Provides users with access to all available power on the network                           |
| NetLS                                  | • Allows licensing of applications based on actual usage                                     |
| OmniBack                               | • Automates system backup in a networked environment                                         |

| Technical Specifications                 | 715/64                                                                             | 715/80                                                                             | 715/100                                                                            |
|------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| System Processing Unit                   | 7100LC                                                                             | 7100LC                                                                             | 7100LC                                                                             |
| Central processor                        | PA-RISC                                                                            | PA-RISC                                                                            | PA-RISC                                                                            |
| Clock frequency                          | 64MHz                                                                              | 80MHz                                                                              | 100MHz                                                                             |
| Performance                              |                                                                                    |                                                                                    |                                                                                    |
| SPECint92                                | 66                                                                                 | 84                                                                                 | 101                                                                                |
| SPECfp92                                 | 96                                                                                 | 121                                                                                | 137                                                                                |
| Memory management unit                   |                                                                                    |                                                                                    |                                                                                    |
| Virtual memory address                   | 48 bit                                                                             | 48 bit                                                                             | 48 bit                                                                             |
| Instruction/Data TLB                     | 64 page entries unified,<br>8 variable block entries<br>unified, fully associative | 64 page entries unified,<br>8 variable block entries<br>unified, fully associative | 64 page entries unified,<br>8 variable block entries<br>unified, fully associative |
| External combined instruction/data cache |                                                                                    |                                                                                    |                                                                                    |
| Peak bus performance                     |                                                                                    |                                                                                    |                                                                                    |
| Load/I-fetch (8 byte)                    | 512MB/second                                                                       | 640MB/second                                                                       | 800MB/second                                                                       |
| Single Store (8 byte)                    | 512MB/second                                                                       | 640MB/second                                                                       | 800MB/second                                                                       |
| Cache size                               | 256KB                                                                              | 256KB                                                                              | 256KB                                                                              |
| Organization                             | Direct mapped                                                                      | Direct mapped                                                                      | Direct mapped                                                                      |
| Bus width                                | 64 bit                                                                             | 64 bit                                                                             | 64 bit                                                                             |
| Main memory type                         | ECC SIMMs                                                                          | ECC SIMMs                                                                          | ECC SIMMs                                                                          |
|                                          | single bit correct,<br>double bit detect                                           | single bit correct,<br>double bit detect                                           | single bit correct,<br>double bit detect                                           |
| Capacity                                 | 32-256MB                                                                           | 32-256MB                                                                           | 32-256MB                                                                           |
| Main memory bus peak<br>performance      | 170MB/sec<br>(64 byte duration)                                                    | 170MB/sec<br>(64 byte duration)                                                    | 267MB/sec<br>(64 byte duration)                                                    |
| System DRAM technology                   | 70ns, 4 & 16 Mbit DRAM                                                             | 70ns, 4 & 16 Mbit DRAM                                                             | 70ns, 4 & 16 Mbit DRAM                                                             |
| Memory options                           | 32, 64, 128, 256,<br>also available in 16MB<br>increments for add-on               | 32, 64, 128, 256,<br>also available in 16MB<br>increments for add-on               | 32, 64, 128, 256,<br>also available in 16MB<br>increments for add-on               |

### Operating System

HP-UX 9.05: 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).

HP-UX 9.05 also complies with IS 9945/1 and Base Component and all Optional Components except XTI only.

### 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 (17.48")

Width 177.6mm (6.99")

Height 53.5mm (2.11")  
(max - highest angle setting)  
38.6mm (1.52")  
(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")

Width 177.6mm (6.99")

Height 3 angle settings  
38.6mm (1.52") lowest  
55.3mm (2.17") highest

Weight 1.54kg (3.39 lbs)

101/102 Key PC standard, available in 13 languages

Length 463.2mm (18.23")

Width 177.6mm (6.99")

Height 3 angle settings  
38.6mm (1.52") lowest  
55.3mm (2.17") highest

Weight 1.54kg (3.39 lbs)

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

#### Mouse

3 button, rollerball, HP-HIL, IBM PS/2

### **Keyboard and Mouse Interface**

#### Electrical

IBM PS/2 compatible

#### Connectors

MiniDIN Pair

#### Data rate

2.5K 11-bit samples/sec

#### Power available

4A Fused

### **Audio**

16-bit CD/DAT quality stereo

#### Digital data rate

The sampling rate can be set to many rates between 4K & 48KHz

#### Connectors

1 mono mic, 1 stereo headphones,  
1 stereo line in, 1 stereo line out  
(all mini phone jacks)

#### Built-in speaker

Three independent time generators  
controllable over 30db frequency  
range-81.46Hz to 83.3KHz

Speaker is built in

### **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

### **I/O Specifications**

#### GSC bus (standard)

1 slot

#### Width

32-bit address

#### Peak bus performance

715/64 114MB/sec

715/80 142MB/sec

715/100 118MB/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-2: 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

33MB/sec sequential memory write

### **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 9.05

Size

3.5"

Formatted capacity

525MB

Average seek time

10.5 ms

Average latency

6.7 ms

Spindle speed

4,500 rpms

#### **Internal 1GB/2GB Disks**

Number supported

up to 2

Operating system

HP-UX 9.05

Size

3.5"

Formatted capacity

1.05GB/2.1GB

Average seek time

15.1 ms

Average latency

5.56 ms

Spindle speed

5,500 rpms

#### **Digital Audio Tape Drive**

Max. number supported

1 per unit

Operating system

HP-UX 9.05

Size

5.25" 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 9.05  
Media diameter  
4.7 inches  
Avg. data transfer rate  
300Kbits/sec  
Avg. random access time  
180 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  
90-132VAC  
98-264 Volts  
Line Frequency  
47-63Hz  
Power Consumption  
210 max. watts  
716 BTU/hour  
180 Kcal/hour

**Physical Dimensions**

Desktop:  
Height  
110mm (4.3")  
Width  
470mm (18.5")  
Depth  
399mm (15.7")  
Deskside:  
Height  
470mm (18.5")  
Width  
110mm (4.3")  
Depth  
399mm (15.7")  
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**

**17" color (Multimode)**

Screen refresh rate  
50-150Hz (multisync)  
Video signals  
RS-343A  
Resolution  
up to 1200 x 1024  
Electrical specifications  
Line voltage  
90-264VAC  
Line frequency  
47-63Hz  
Maximum current  
2.7A/1.5A  
Power consumption  
140 watts max.  
  
Environmental characteristics  
Operating temperature  
10-40°C  
Non-operating temperature  
-40-60°C  
Humidity operating  
10-80% R.H.  
Max. altitude operating  
3048m (10,000 ft.)  
Max. altitude non-operating  
10,668m (35,000 ft)

| <b>Power Budget</b>    | <b>+5V<br/>(Amps)</b> | <b>+12V<br/>(Amps)</b> | <b>-12V<br/>(Amps)</b> | <b>-5V<br/>(Amps)</b> | <b>Totals<br/>(Watts)</b> |
|------------------------|-----------------------|------------------------|------------------------|-----------------------|---------------------------|
| 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                       |

**For more information, contact  
any of our worldwide sales  
offices or HP Channel Partners  
(In the U.S., call 1-800-637-7740;  
in Canada, call 1-800-387-3867).**

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

#### Regulatory compliance

CISPR level: B  
FCC class: B  
VCCI class: II  
Safety  
UL, CSA, EN60950, GS Mark

#### Monitor's physical characteristics

Height  
414mm (16.3")  
Width  
406mm (15.98")  
Depth  
450mm (17.71")  
Net weight  
22kg (48.4 lbs)

#### **20" color (Multimode)**

Screen refresh rate  
50-150Hz (multisync)  
Video signals  
RS-343A  
Resolution  
up to 1280 x 1024  
Electrical specifications  
Line voltage  
90-264VAC  
Line frequency  
47-63Hz

Maximum current  
3.0A/1.8A  
Power consumption  
140 watts max.

#### Environmental characteristics

Operating temperature  
10-40°C  
Non-operating temperature  
-40-60°C  
Humidity operating 40°C  
10-80% R.H.

Max. altitude operating  
3048m (10,000 ft.)  
Max. altitude non-operating  
10,668m (35,000 ft)

#### Regulatory compliance

CISPR level: B  
FCC class: B  
VCCI class: II  
Safety  
UL, CSA, IEC950, GS Mark

#### Monitor's physical characteristics

Height  
474mm (16.3")  
Width  
474mm (15.98")  
Depth  
505.5mm (17.71")  
Net weight  
30kg (60.4 lbs)