

## HP Apollo Series 400 Model 425e



### UNIX Power at a PC Price

The HP Apollo Series 400 Model 425e is a premier low-cost, high-performance workstation. Based on the MC68040, the Model 425e supports both HP-UX and Domain/OS UNIX operating environments. The 425e delivers 22 MIPS, powerful X Window performance, and a rich array of I/O capabilities, including parallel, serial, and SCSI ports. Expandable configurations give you the flexibility to customize each workstation to match specific application requirements. The 425e also offers such options as built-in

CD ROM, a 3½" floppy disk, and a 420MB 3½" high-performance internal disk. Memory can be configured with 8 to 48MB of ECC RAM.

The Model 425e is an ideal client in the client/server environment, and offers the added benefit of local processing power. By combining this with powerful X Window functionality and multitasking capabilities, the 425e provides unmatched productivity improvements in your networked environment.

User-friendly enhancements are available with HP VUE and Instant Ignition. HP VUE lets you take advantage of an easy-to-learn, and use, interface. Instant Ignition provides

you with a preloaded operating system, so you can start becoming productive as soon as the system is delivered.

The Model 425e is object-code compatible with the rest of the Series 400 family, and has access to a library of over 3500 applications.

For your CASE, DTP, low-end CAD, and commercial requirements, the Model 425e is the low-priced quality solution that typifies HP's workstation offerings. Invest in performance today, and protect that investment into the future. And, as always, when you buy an HP product, you are assured of the quality of our service and support.

HP is building on its success in commercial markets, which are characterized by the need for custom applications, low cost, large networks, and client/server architecture. With the Model 425e, we offer comparable PC cost and functionality (an AT keyboard, floppy disk, DOS emulation, and a CD ROM). The Model 425e reflects HP's leadership in standards. And, as always, HP offers excellent support.

## Technical Specifications

|                                     |  |                                                |
|-------------------------------------|--|------------------------------------------------|
| <b>425e Central Processor:</b>      |  | MC68040                                        |
| Clock                               |  | 25MHz                                          |
| Integer Performance*                |  | 22.1 MIPS                                      |
| SPECmarks*                          |  | 11                                             |
| <b>Floating Point Performance*†</b> |  | 2.6 MFlops                                     |
| <b>Cache Memory on Chip</b>         |  |                                                |
| Organization                        |  | Separate instruction and data                  |
| Architecture                        |  | Physical copy back                             |
| Size                                |  | 4KB each                                       |
| Transfer Rate                       |  | 100MB/s                                        |
| <b>Cache Memory External</b>        |  | None available                                 |
| <b>Main Memory:</b>                 |  |                                                |
| Type                                |  | ECC (single-bit correct;<br>double-bit detect) |
| Bus Width to DRAM                   |  | 64 bits                                        |
| Standard RAM                        |  | 8MB                                            |
| Maximum RAM                         |  | 48MB                                           |
| Memory Increments                   |  | 4,8,16MB                                       |
| Read Rate                           |  | 50MB/sec                                       |
| Peak Write                          |  | 80MB/sec                                       |
| Sustained Write Rate                |  | 50MB/sec                                       |
| <b>Memory Management Unit</b>       |  |                                                |
| Virtual Memory HP-UX                |  | 4GB/process                                    |
| Domain/DS                           |  | 2GB/process                                    |
| Contexts                            |  | 84 default, user settable                      |

## Clocks and Timers

|                         | HP-UX                                         | Domain O/S                         |
|-------------------------|-----------------------------------------------|------------------------------------|
| <b>Real-time Clock:</b> |                                               |                                    |
| Resolution              | 10 milliseconds                               | 10 milliseconds                    |
| Accuracy                | + 5 seconds/day                               | + 5 seconds/day                    |
| Battery back-up         | Lithium, expected<br>life = 1 year            | Lithium, expected<br>life = 1 year |
| <b>Timers:</b>          |                                               |                                    |
| Match interrupt         | Match on time of day<br>0.00 to 84,600.00 sec | Timers:<br>Periodic 1/60 sec.      |
| Delay interrupt         | 10 msec to 1.94 days                          |                                    |
| Cyclical interrupt      | 10 msec to 1.94 days                          |                                    |
| System timer            | 4 $\mu$ sec resolution accurate<br>to 25 ppm  |                                    |

\*Based upon HP-UX 8.0 compilers and operating system

†Coded BLAS

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## I/O Specifications (Internal interfaces)

| HP-UX and Domain OS††                      |                                                                                 |
|--------------------------------------------|---------------------------------------------------------------------------------|
| <b>Graphics Bus: (standard)</b>            |                                                                                 |
| Width                                      | 32 bits address; 32 data                                                        |
| Bandwidth                                  | 20MB/sec.                                                                       |
| DMA channels                               | 2 dynamically assigned                                                          |
| <b>LAN Interface: (standard)</b>           |                                                                                 |
| Type                                       | IEEE 802.3, Ethernet 1.0                                                        |
| Data Rate                                  | 10 Mbits/sec.                                                                   |
| Connectors                                 | 15-pin AUI and BNC tee                                                          |
| MAUs                                       | 10BASE2 built-in<br>10BASE5 requires p/n 30241A<br>10BASE T requires p/n 28685A |
| <b>SCSI Interface: (standard)</b>          |                                                                                 |
| Type                                       | SCSI-I (ANSI X3.131-1986),<br>single-ended                                      |
| Data rate                                  | 5MB/sec synchronous<br>1.5MB/sec async.                                         |
| Device                                     | 7 per interface                                                                 |
| Connector                                  | Shielded High Density 50 pin                                                    |
| Cable                                      | Not included                                                                    |
| <b>Serial Interface: (standard)</b>        |                                                                                 |
| Type                                       | RS-232 C**                                                                      |
| Data Rate                                  | 19,200 bps                                                                      |
| Device Limit                               | 1 per interface                                                                 |
| Connector                                  | 9 pin male                                                                      |
| <b>Parallel Interface: (standard)</b>      |                                                                                 |
| Type                                       | Centronics; ACK, BUSY and HP<br>ScanJet handshakes                              |
| Data Rate                                  | 300 + KB/sec with DMA                                                           |
| Device Limit                               | 1 per interface                                                                 |
| Connector                                  | 25-pin female (PC standard)                                                     |
| Cable                                      | Not included                                                                    |
| DIO, DIO2, EISA, and VME are not available |                                                                                 |

\*Based upon HP-UX 8.0 compilers and operating system

\*\*Three ports available

†Coded BLAS

††Requires HP-UX 8.0 or Domain/OS SR10.3 PSKQ3\_91



### Optional Mass Storage (two slots available)

#### Internal 3.5" DOS compatible Floppy Disc

|                             |                               |
|-----------------------------|-------------------------------|
| Size                        | 3.5 inch                      |
| Media                       | 2MB or 1MB Floppy disk        |
| Formatted Capacity          | up to 1.44MB                  |
| Format                      | Double-sided and High Density |
| Transfer Rate               | 500KB/sec or 250KB/sec        |
| Track to Track Access Time  | 3 msec                        |
| Average Latency             | 100 msec                      |
| Average Access with Latency | 194 msec                      |
| Number Supported per system | 1 per unit                    |

#### CD ROM

|                             |                       |
|-----------------------------|-----------------------|
| Size                        | 5.25 inch half height |
| Media diameter              | 4.7 inches            |
| Number of surfaces          | 1                     |
| Data capacity mode 1        | 599MB                 |
| Data capacity mode 2        | 683MB                 |
| Average data transfer rate  | 153Kbits/sec          |
| Average random access time  | 350 msec              |
| Number Supported per system | 1 per unit            |

|                             |            |            |
|-----------------------------|------------|------------|
| <b>3 1/2" Hard Drive</b>    | 209MB      | 420MB      |
| Format                      | 3.5 inch   | 3.5 inch   |
| Formatted capacity          | 209MB      | 420MB      |
| Average seek time           | 14 msec    | 14 msec    |
| Average latency             | 8.3 msec   | 8.3 msec   |
| Random I/Os per sec         | 42         | 42         |
| Read/write throughput       | 1300KB/sec | 800KB/sec  |
| Number Supported per system | 2 per unit | 2 per unit |

### System Electrical Specifications

|                                        |                       |
|----------------------------------------|-----------------------|
| Line voltage, tolerance, and frequency | 47-66Hz               |
| Maximum Current                        | 2.7 AMP @ 88-135 VAC  |
| Power Consumption                      | 1.5 AMP @ 193-269 VAC |

## Graphics-Technical Specifications

| Monitor Size                  | 16" Color<br>(A1497A) | 19" Gray<br>(98774A) | 19" Color<br>(A1097A) |
|-------------------------------|-----------------------|----------------------|-----------------------|
| Screen Resolution             | 1024 x 768            | 1280 x 1024          | 1280 x 1024           |
| Screen Refresh Rate           | 75Hz                  | 72Hz                 | 72Hz                  |
| Color Planes                  | 8                     | 8                    | 8                     |
| Color Palette                 | 256                   | 256 gray             | 256                   |
| Overlay Planes                | 0                     | 0                    | 0                     |
| Video signal                  | RS-343                | RS-343               | RS-343                |
| Raster size                   | 300mm x 225mm         | 343mm x 274mm        | 343mm x 274mm         |
| Brightness (adjustable up to) | 26FL                  | 29FL                 | 29FL                  |
| Scan Rate                     | 62.9KHz               | 78.1KHz              | 78.1KHz               |
| Tube phosphor                 | p22                   | p22                  | p22                   |
| Mask                          | Invar Shadow mask     | Aperture Grill       | Invar Shadow mask     |

## Graphics and X Window Performance\*

| Screen Resolution                           | 1024 x 768 | 1280 x 1024 |
|---------------------------------------------|------------|-------------|
| <b>Starbase Graphics Library</b>            |            |             |
| DC Vectors (10 pixel random)/sec            | 110 K      | 107 K       |
| WC 2D Vectors (10 pixel random)/sec         | 65 K       | 63 K        |
| WC 3D Vectors (10 pixel random)/sec         | 40 K       | 40 K        |
| Full screen clears Mpixels/sec              | 101        | 104         |
| DC Block Write (byte/pixel)                 | 9.2 M      | 9.2 M       |
| DC Block Write (bit/pixel)                  | 16 M       | 16 M        |
| <b>X11 Window Performance</b>               |            |             |
| X11 Perf 1.2 ops/sec overall geometric mean | 2017       | 2017        |
| Dots (1-pixel "vectors")/sec                | 335 K      | 335 K       |
| 10 pixel line/sec                           | 65.9 K     | 65.9 K      |
| 10 x 10 rectangle/sec                       | 73.8 K     | 73.8 K      |
| Create and Map Subwindow (50 kids)/sec      | 1720       | 1720        |
| Characters in 80 character line/sec         | 77 K       | 77 K        |
| Scroll Text (100 x 100 pixels)/sec          | 496        | 496         |

\*Based on HP-UX

## Software

|                  | HP-UX                                                                                       | Domain OS                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Operating System | HP-UX complies with the UNIX System V interface Definition X/Open and POSIX Specifications. | Domain/OS is a single operating system that provides users a choice of UNIX System V release 3,4.3 BSD, or Aegis. |
| Revisions        | HP-UX 8.0 or later                                                                          | Domain/OS SR 10.3 PSKQ3_91                                                                                        |
| Window Systems   | X Window System Version 11(X11) Release 4                                                   | X Window System Version 11(X11) Release 4 or Apollo Domain Display Manager/X Shared Mode                          |
| Languages        | C, Pascal, FORTRAN, COBOL, Common LISP, C + +, Ada                                          | C, Pascal, FORTRAN, COBOL, Common LISP, C + +, Ada                                                                |
| User Interfaces  | HP VUE 2.0 or later                                                                         | HP VUE 1.0, Apollo Domain Display Manager                                                                         |

## Human Interfaces

|                                  |                                                                                                                                                                                                                         | Operating System                                                      |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
|                                  | HP-UX                                                                                                                                                                                                                   | Domain/OS                                                             |
| HP-UX Keyboard                   | 109-key, low profile, HP-HIL<br>Available in 25 local languages                                                                                                                                                         | N/A                                                                   |
| Domain/OS Keyboard               | N/A                                                                                                                                                                                                                     | 106-key, 7-pin DIN serial interface<br>Available in 9 local languages |
| PC/AT Keyboard                   | 101-KEY, HP-HIL<br>Available in U.S. and German languages                                                                                                                                                               | N/A                                                                   |
| Mouse                            | 3-button, roller ball, HP-HIL                                                                                                                                                                                           | 3-button, roller ball, quadrature<br>interface on keyboard            |
| Audio IN/OUT                     | 8KHz voice quality<br>Microphone input w/standard stereo microjack, 128 byte buffering of<br>input channel<br>Headphone output w/standard stereo microjack, 128 byte buffering of<br>output channel<br>Internal speaker |                                                                       |
| <b>Interface Specifications:</b> |                                                                                                                                                                                                                         |                                                                       |
| Type                             | HP-HIL, 1.0A                                                                                                                                                                                                            | Domain Keyboard                                                       |
| Device limit                     | 7 per interface                                                                                                                                                                                                         | 1 per interface                                                       |
| Connector                        | AMP SMD                                                                                                                                                                                                                 | 7-pin DIN                                                             |
| Audio Speaker                    | Built-in                                                                                                                                                                                                                | Built-in                                                              |

## Networking Options

| HP-UX and Domain/OS |                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------|
| LAN                 | IEEE 802.3/Ethernet interface with thinMAU and BNC "T" connector or AUI (jumper selectable) |
| Network Protocols   | X.25, SNA, RJE, TCP-IP, HP Diskless                                                         |

## System Environmental Characteristics

|                                   | Base System          | w/floppy or hard disc |
|-----------------------------------|----------------------|-----------------------|
| <b>Temperature:</b>               |                      |                       |
| Operating                         | 0 to + 55°C          | 5 to 40°C             |
| Non-operating                     | – 40 to + 70°C       | – 10 to 60°C          |
| <b>Humidity (Non-condensing):</b> |                      |                       |
| Operating                         | 15 to 95%            | 20-80%                |
| Non-operating 65°C                | 95% RH               | 90%                   |
| <b>Maximum Altitude:</b>          |                      |                       |
| Operating to 47°C                 | 4570 m (15,000 ft)   | 3050 m (10,000 ft)    |
| Non-operating                     | 15,240 m (50,000 ft) | 15,240 m (50,000 ft)  |



|                                   | Monitors              |                      |                       |
|-----------------------------------|-----------------------|----------------------|-----------------------|
|                                   | 16" Color<br>(A1497A) | 19" Gray<br>(98774A) | 19" Color<br>(A1097A) |
| <b>Temperature:</b>               |                       |                      |                       |
| Operating                         | 10 to 40°C            | 10 to 40°C           | 10 to 40°C            |
| Non-operating                     | – 40 to 71°C          | – 40 to 71°C         | – 40 to 71°C          |
| <b>Humidity (Non-condensing):</b> |                       |                      |                       |
| Operating                         | 15 to 95%             | 15 to 95%            | 15 to 95%             |
| Non-operating 65°C                | 95% RH                | 95% RH               | 95% RH                |
| <b>Maximum Altitude:</b>          |                       |                      |                       |
| Operating                         | 3352 m (10,997 ft)    | 4570 m (15,000 ft)   | 4570 m (15,000 ft)    |
| Non-operating                     | 15,240 m (50,000 ft)  | 15,240 m (50,000 ft) | 15,240 m (50,000 ft)  |

## System Regulatory Compliance

|             |                                     |
|-------------|-------------------------------------|
| Base System | w/internal mass storage and monitor |
| VDE         |                                     |
| Level       | B                                   |
| FCC         |                                     |
| class       | A                                   |
| VCCI        |                                     |
| class       | I                                   |
| Safety      | UL, CSA, IEC                        |

## System Physical Characteristics

|        | Monitors          |                       |                      |                       |
|--------|-------------------|-----------------------|----------------------|-----------------------|
|        | SPU               | 16" color<br>(A1497A) | 19" gray<br>(98774A) | 19" color<br>(A1097A) |
| Height | 7.6 cm (3 in)     | 42.4 cm (16.7* in)    | 47.1 cm (18.6* in)   | 47.1 cm (18.6* in)    |
| Width  | 41.9 cm (16.5 in) | 41.4 cm (16.3 in)     | 50 cm (20 in)        | 50 cm (20 in)         |
| Depth  | 35.5 cm (14 in)   | 43.4 cm (17.1 in)     | 50.5 cm (20.2 in)    | 50.5 cm (20 in)       |
| Weight | 11.3 kg (25 lb)   | 17.9 kg (39.6 lb)     | 30 kg (66.5 lb)      | 29 kg (64.3 lb)       |

\*includes tilt/swivel base

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