HEWLETT-PACKARD

Computer Museum

The Integral Personal Computer

What's in It for You

Work Where You Want

A Small but Powerful Package
The Integral Personal Computer is the first personal computer to offer the power of the UNIX™ operating system in a 25-pound package. This easy-to-carry machine has a 16/32-bit microprocessor, a graphics co-processor, and internal memory that starts at 800K bytes, including 256K bytes of Read Only Memory (ROM) where the HP-UX/RO Operating System, Personal Applications Manager (PAM), and HP Windows reside.

You also get a built-in 710K byte, 3½-inch, double-sided disc drive, a 9-inch electroluminescent flat display, an HP-IB interface, two I/O slots, and the ThinkJet Personal Printer.

A Whisper of a Printer
Hewlett-Packard built the ThinkJet Printer into the Integral Personal Computer so you can get your thoughts down on paper anywhere you happen to be working. The ThinkJet Printer gives you permanent copies quickly and quietly.

Saves Time

One Fast Start
The Integral Personal Computer has stored the HP-UX (Hewlett-Packard's version of the UNIX operating system) kernel in ROM. This gives you the ability to run UNIX operating system based software programs and applications available on 3½-inch microfloppy discs. You keep the power and versatility of the UNIX operating system without needing a Winchester disc. But should you require a large memory bank, you have that option. Hewlett-Packard offers Winchester disc drives in capacities ranging from 15M bytes to 55M bytes.

Because the operating system, along with PAM and HP Windows, is in ROM, it's available the moment you turn on the computer.

Shift into Overdrive
One-half of the Random Access Memory may be allocated as RAM disc, a high-speed internal disk drive. Applications requiring two disc drives can use the RAM disc as the second drive. Applications also execute at higher speeds off the RAM disc than they do off of a standard microfloppy disc drive.

We Do Windows
The Integral Personal Computer with HP Windows is like having a telephone with multiple lines and a hold button. You can put one project "on hold" while you get information from another. Once you get the information you need, you can pick up the first project right where you left off. No reloading applications or swapping discs necessary.

Powerful Programming Punch
The Integral Personal Computer offers several programming options, each with its own strengths. HP-UX Technical BASIC is an easy-to-learn BASIC

enhanced with math, graphics and instrumentation I/O commands. HP-UX Technical BASIC is the perfect upgrade path for current Series 80 users.

High-level languages like HP-UX "C" offer software developers a choice when writing solutions packages for the Integral Personal Computer. The standard UNIX programmers' tools are available to make the Integral Personal Computer a most powerful programming machine.

Additionally, there's the Device Independent Library (DIL)* which is accessible through HP-UX "C". DIL provides high-level language control of instruments through compiled languages. DIL saves you time when you're programming high performance computer-aided test solutions.

Finally, real-time extensions available through HP-UX provide reliable interrupt handling and priority setting in a multi-tasking instrument control environment.

*Not available at introduction

Accomplish More

A Masterful Juggling Act

The Integral Personal Computer with multi-tasking is just like having several terminals constantly at your disposal. You can compile a program, print a file, and write your monthly report while waiting for results from your liquid chromatograph. And when multi-tasking is used with HP Windows you have a powerful productivity combination. Now you can do any number of things at once with the computer that works the way you do.

Work in Comfort

The Eyes Have It

The Integral Personal Computer incorporates a high-contrast, amber display with square pixels for a sharper, crisper image. The amber color makes the screen easy on the eyes, which is important when using the computer for long or even short periods of time. You can even adjust the tilt of the screen to give you the best view.

Not a Big Concern

The Integral Personal Computer offers a complete computer system: CPU, keyboard, display, disc drive, and printer in a 7- by 16-inch footprint. That's less than one square foot of deskspace. You can put the Integral Personal Computer on your desk and eliminate the need for an extra table. Plus, you can take it with you when you leave.

Central Processing Unit/ Microprocessor

Motorola 68000, 16/32-bit microprocessor running at 8 Megahertz clock rate

Graphics Processing Unit (GPU)

16-bit graphics processor with 32K bytes of dedicated Random Access Memory (RAM)

Internal Memory

256K bytes of Read Only Memory (ROM)

512K bytes of RAM, expandable up to 1.5M bytes of RAM in the main system, or expandable up to 5.5M bytes of RAM with Bus Expanders. Up to ½ of the total RAM may be allocated as RAM disc.

Mass Storage

Double-sided, double-density 3½-inch microfloppy disc drive built in

710 K byte disc capacity (512 bytes per sector, 9 sectors per track, 80 tracks per surface, 2 recording surfaces per disc)

600 RPM rotational speed

350 milliseconds average access time

Display

9-inch electroluminescent (EL) display

255 by 512 pixel, bit-mapped display

24-line by 80-character standard window size (variable depending on font and window size)

Adjustable viewing angle (5 to 17 degrees in 2 degree steps)

Keyboard

Fully-spaced, 90-key, typewriter-style, full-travel keyboard

Low-profile, detachable

Numeric keypad

8 function keys

Flexible key mapping

Internal Printer

Built-in ThinkJet Personal Printer

Ink-jet dot-matrix printing method

150 characters per second (CPS) print speed

1K byte buffer size

Less than 50 decibels of sound pressure printing noise

11 by 12 dot character matrix text print resolution

96 by 96 dots per inch or 192 by 96 dots per inch graphics resolution

12 characters per inch, 80 characters per line normal print pitch

6 characters per inch, 40 characters per line expanded print pitch

21.3 characters per inch, 142 characters per line compressed print pitch

10.7 characters per inch, 71 characters per line expanded/compressed print pitch

Boldface and underline print modes

10 character sets in HP ROMAN8, including Danish, Dutch, English, French, German, Italian, Norwegian, Portuguese, Spanish and Swedish.

Pin-feed paper feed for fanfold paper

Friction-feed paper feed for single sheets

8½ by 11-inch paper size

Physical Characteristics

7 inches deep by 13 inches high by 16 inches wide (17.5 cm by 32.5 cm by 40 cm)

0.78 square feet footprint (700 square cm)

25 pounds (11.4 kilograms)

Input/Output

Hewlett-Packard Interface Bus (HP-IB, IEEE-488)

2 Expansion Ports

2 Hewlett-Packard Human Interface Loops (HP-HIL)

System Clock

1 millisecond resolution

6–10 year lithium cell battery life

Accuracy within six minutes per year

System control capability (alarm functions)

Shock Resistance

30-g force on all six sides

Ergonomic Considerations

40 decibels of sound pressure in idle mode

Slim keyboard design (30 mm width)

Selectable character fonts

Environmental Constraints

− 20° to 60° Celsius (− 4° to 140° Fahrenheit) while in storage

10° to 40° Celsius (50° to 103° Fahrenheit) while in operation

8 to 80 percent relative humidity at 40° Celsius while in operation

55 to 500 Hz vibration

3-g maximum acceleration

Electrical Interference

FCC Class B, VDE (Radio Protection Mark-0871B)

Safety Approvals

UL Listed, CSA, TUV, SEV, KEMA, NEMKO, RKMC, and EI Finland certified and approved

Software Built into Read Only Memory

HP-UX/RO–Hewlett-Packard's version of the UNIX software kernel required for running applications software

Personal Applications Manager (PAM)– user interface for HP-UX

HP Windows–window manager for HP-UX

Software Included with Product on Disc

Tutor–Interactive "Getting Started" guide to using the Integral PC

Utilities–Easy-to-use tools for performing standard system functions

HP-UX Commands– 32 standard UNIX commands including **csh,** a powerful UNIX "C" shell

Standard Applications–A collection of useful editors (**vi** and **ed**), fun games (Adventure, Mille, and GraphicArt), plus several fonts

Diagnostics–Easy-to-use program to verify system integrity

System Disc–A collection of drivers including the HP Graphics Language (HPGL) window driver, Real Time OS Extensions, and a serial driver for connecting RS-232 printers.
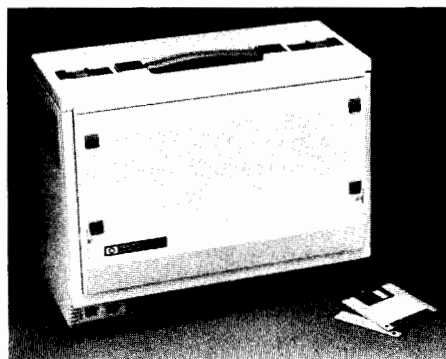
Disc Drives

Single, 3½-inch, double-sided, microfloppy disc drive 710K byte capacity (HP 9122S)

Dual 3½-inch, double-sided, microfloppy disc drive 710K byte capacity per drive (HP 9122D)

15M byte Winchester with single 3½-inch microfloppy drive, 710K byte capacity for microfloppy drive (HP 9133D)

15M byte Winchester (HP 9134D)

24M byte Winchester (HP 7941)

24M byte Winchester with tape back-up (HP 7942)

55M byte Winchester (HP 7945)

55M byte Winchester with tape back-up (HP 7946)

Printers

Daisy wheel printer with standard RS-232C Interface or Option 046 with HP-IB interface (HP 2602A)

Dot-matrix printer with standard RS-232C interface or Option 046 with HP-IB interface (HP 2932A & HP 2934A)

The LaserJet Professional PC Printer with RS-232C interface (HP-2686)

Graphics Plotters

Two-pen plotter Option 001 with RS-232C interface or Option 002 with HP-IB interface (HP 7470A)

Six-pen plotter Option 001 with RS-232C interface or Option 002 with HP-IB interface (HP 7475A)

Eight-pen plotter Option 001 with RS-232C interface or Option 002 with HP-IB interface (HP 7550)

Interfaces

RS-232C Interface (HP 82919A)

Current Loop Interface (HP 82920A)

Binary Coded Decimal (BCD) Interface (HP 82922A)

General Purpose Input/Output (GPIO) Interface (HP 82923A)

GPIO/BCD Cable (HP 82976A)

Hewlett-Packard Interface Loop (HP-IL) (HP 82924A)

Hewlett-Packard Interface Bus (HP-IB) Cables recommended for use with the Integral PC

.3 meter right angle HP-IB cable (HP 92220R)

1 meter right angle HP-IB cable (HP 82977A)

2 meter right angle HP-IB cable (HP 82977B)

Memory Expansion Cards

256K byte RAM card (HP 82925A)

512K byte RAM card (HP 82927A)

Communications

300/1200 bps modem (HP 82921A)

Accessories

HP Mouse (HP 46060A)

Bus Expander (HP 82904A)

Briefcase cover (HP 92251F)

Carrying case with strap (HP 13269Y)

Modem cable, female/male connectors (HP 82974A)

Instrument cable, female/female connectors (HP 82974B)

Serial printer cable, female/female connectors (HP 82974C)

Serial printer cable, female/male connectors (HP 82974D)

Current loop cable (HP 82975A)

Configuration Information

When You Want To Connect Your Computer

To:	Using:	You Want To Use:
Peripherals and instruments with an HP-IL interface		An HP-IL Interface (HP 82924A)

[To use the following interfaces, you must order the appropriate cables. Please see the Integral PC Price Guide and Software List (5954-2423) for ordering information]

To:	Using:	You Want To Use:
Instruments with a parallel interface	A flexible data path and handshaking	General Purpose I/O Interface (HP 82923A) with GPIO/BCD Cable (HP 82976A)
Peripherals and instruments with a BCD interface		A BCD Interface (HP 82922A) with GPIO/BCD Cable (HP 82976A)
Modems with a serial interface	The industry standard RS 232C connection	A Serial I/O Interface (HP 82919A)
Peripherals and instruments with a serial interface	The industry standard RS 232C connection	A Serial I/O Interface (HP 82919A)
Peripherals and interfaces with a serial interface	A high-noise tolerant connection with long-distance capabilities	A Current Loop I/O Interface (HP 82920A)
Peripherals and instruments with an IEEE-488 interface		The built-in HP-IB Interface with any of the following cables: HP 92220R, HP 82977A, or HP 82977B