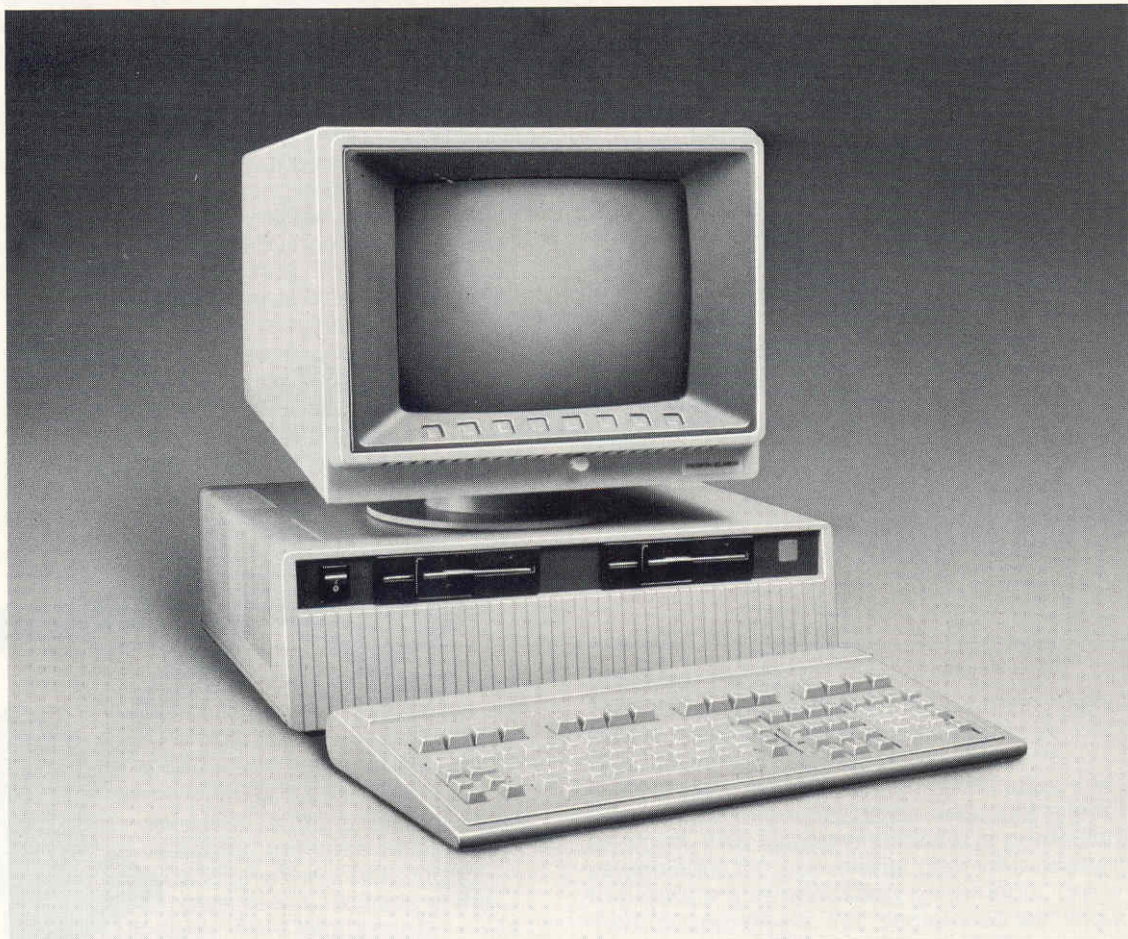# 7350

Professional Computer System

Overview

The Perkin-Elmer 7350 Professional Computer is a high-performance, multifunction, desktop workstation that can be used as a stand alone system or integrated with other Perkin-Elmer systems. It features the Uniplus+* operating system, derived from UNIX* System III.

The Perkin-Elmer 7350 is designed for those who wish to develop desktop applications using industry-standard UNIX software and who wish access to the growing wealth of application programs being developed under UNIX software by industry specialists around the world. In addition, the optional decision support applications assure the effectiveness of the Perkin-Elmer 7350 as a professional productivity tool.

The Perkin-Elmer 7350 is a cost-effective entry into the burgeoning world of computer systems with UNIX operating systems. Cost effectiveness and flexibility are enhanced by the multi-user cluster configuration options, allowing up to four users to share machine resources. The PE 7350 has broad applicability for business, technical and scientific/engineering solutions, both as a stand alone system and as an integrated companion product with installations of Series 3200 supermini systems.

Product Description

The Perkin-Elmer 7350 Professional Computer combines the 16/32 bit M68000 microprocessor with the programming flexibility of the Uniplus + operating system to address the needs of both application designers and users. The PE 7350 features a modular design, consisting of a CPU and memory, a video display unit, a detached keyboard, a 15-megabyte Winchester disk and two double-density, double-sided floppy diskette drives. It is supported by a wide range of system and application software.

The PE 7350 is available in three configurations: the single user professional workstation, the color graphics workstation, and the multifunction cluster controller console.

- **The single user workstation**, a high-performance personal computer offering the Uniplus + operating environment for both software development and execution of application programs, comes with a high resolution graphics display, 416 kilobytes of RAM of which 96 kilobytes are for display support, and 15 megabytes of hard disk storage. It can be upgraded to a multifunction cluster controller.

- **The color graphics workstation** has the same high performance as the PE 7350 single user workstation, with the addition of a color graphics display, featuring a palette of 27 vivid colors of which any 16 can be simultaneously displayed. This version of the product has 640 kilobytes of RAM of which 192 kilobytes are for display support.

- **The multifunction cluster console** version of the PE 7350 allows attachment of up to three terminals to provide a four user cluster configuration. The attached terminals have complete access to all PE 7350 programming facilities and applications (except for graphics).

Multi-Function Cluster
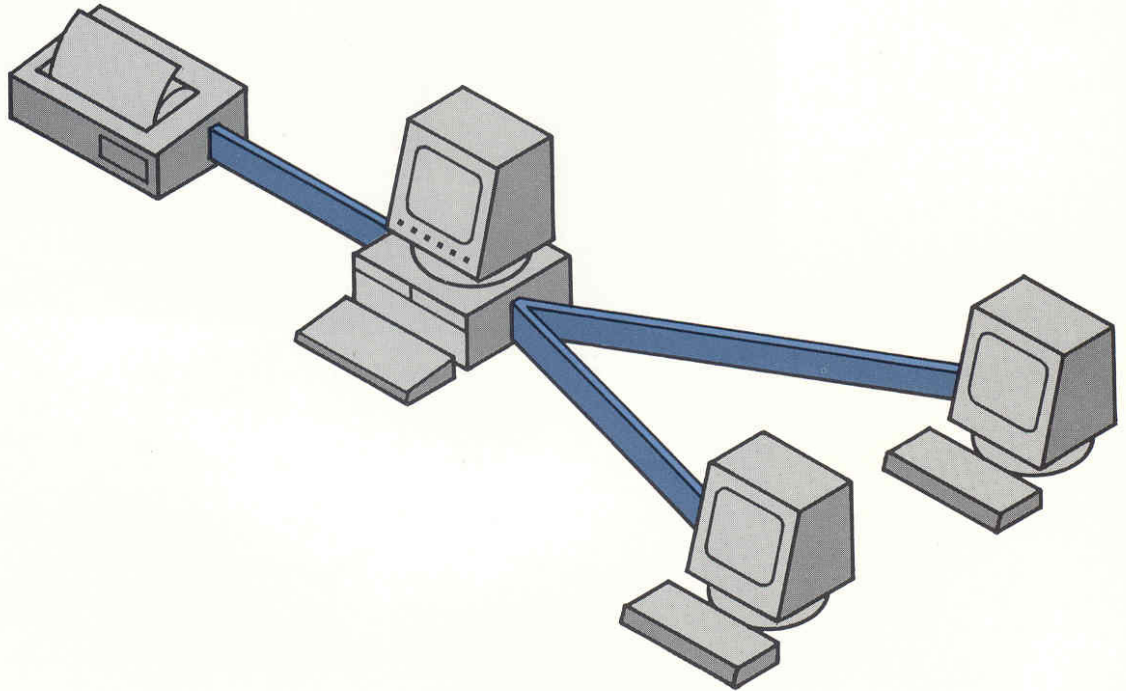
Compatibility with Series 3200 Computer Systems

Perkin-Elmer's selection of standard versions of UNIX software as operating environments for the Series 7000 desktop computers and Series 3200 superminicomputers provides an unparalleled migration path among Perkin-Elmer computer systems.

This compatibility allows Perkin-Elmer users to create distributed processing versions of their applications; the PE 7350 can provide the interactive aspects of an application, while the supermini performs the heavy processing and central resource functions. Or the PE 7350 can be used for program development and the mainframe for processing.

The PE 7350 also features connectivity with Edition VII Workbench and OS/32-based Series 3200 machines, giving the workstation user access to a rich variety of systems and application software. This provides the PE 7350 user access to both local and wide area networks of Series 3200 machines, as well as the ability to emulate 3270 terminals for access to IBM systems over SNA or BSC connections.

System Software

The PE 7350 comes with a single-user version of the Uniplus+ operating system, with optional system extensions available for multi-user operation, text processing, and software development.

The Uniplus+ operating system has proven itself an effective productivity tool on a wide variety of computer systems. Its time-sharing environment is ideal for interactive program development and support of interactive applications.

To accommodate the varied modes of operation of the PE 7350, Uniplus+ software is offered in a variety of packages:

- **The baseline system** suitable for running applications is available as a single-user package for standalone operation.
- **A Multi-User Package** can be added for support of cluster configurations with up to four users. It includes communications facilities for interfacing with other compatible UNIX software systems, including Series 3200 computers running Edition VIII Workbench. The communications capabilities include file transfer and virtual terminal facilities.
- **An optional Text Processing Package** includes the text formatting utilities, *nroff* and *troff,* as well as the many text processing tools of UNIX software. The package also includes the *vi* editor and the Source Code Control System (SCCS). The text processing package can be used in either the standalone environment or the mutli-user configuration.

- **An optional Software Development Package** capable of operating in single or mutli-user mode, offers the C language, the *vi* editor, SCCS, *lex, yacc* and various other development tools. It includes all the components of the Text Processing Package. The Software Development Package in combination with either the baseline system or the Multi-User Package provides users the full features of the Uniplus+ operating system.

In addition to the C compiler and run-time libraries that are included in the full Uniplus+ operating system, other high-level languages are available, including FORTRAN 77 and BASIC. For the application programmer using graphics, the DI-3000* subroutine library provides SIGGRAPH CORE standard graphics facilities.

DI-3000 graphics tools offer a library of versatile, general-purpose graphics facilities with which users can easily tailor specific graphics applications. DI-3000 software features full PE 7350 color support, two and three-dimensional graphics primitives, shading and patterns, graphics data structures, a meta-file system used in preparing pictures for later viewing, full graphics input, interactive image manipulation and object modeling.

Application Software

The PE 7350 Professional Computer System offers a variety of application packages and the latest in professional productivity tools. Additional applications from industry leaders will be made available in the future.

To simplify operation, a menu system allows the user to select the available decision support applications without needing to master the full operational facilities of the operating system. Word processing, spreadsheet and graphics packages are presently offered.

The FinalWord* Package
The FinalWord software is a complete, sophisticated word processing package, offering unique formatting facilities that assist in the creation and editing of lengthy documents, complete with footnotes, tables of contents and indices. It has a free-form text and a full screen editor which greatly enhances the creation and editing of programs. The ability to read standard ASCII files permits data from other applications to be inserted in the documents. The FinalWord software is intended for professional and technical workers and others who need to handle large or complex word processing tasks.

VisiWord* Package
VisiWord software offers a full-function, menu-driven, easy-to-use word processing. A QuickStart* course makes the VisiWord system easy to learn. Within 30 minutes, the user is able to create, revise and print a letter or report. The VisiWord software is particularly valuable for the occasional user who needs to produce and print short documents, like memos and letters. Yet, secretaries will find it powerful enough to handle many of the word processing requirements of the office.

Supercomp-Twenty* Package
Supercomp-Twenty software offers a powerful, electronic spreadsheet that combines ease of use with modeling power to responsively accommodate even the largest spreadsheets. Complex tasks like multidivisional long range plans can be processed with ease. The Supercomp-Twenty package includes a wide variety of special functions for financial analysis, production planning and engineering decision support. Many advanced built-in functions are provided, including rate of return, regression analysis and depreciation.

Grafmaker* Package
The Grafmaker system, an optional application that uses the DI-3000 graphics library, is a comprehensive set of software tools for creating bar graphs, line graphs, pie charts and other presentation graphics. Grafmaker software is particularly appropriate for creating business-related graphics

presentations. It supports many advanced features including arbitrary axis positioning, explosion of pie segments, and legends; it also provides creation of multiple charts in a single picture.

Communications Capabilities

The PE 7350 can easily communicate with other compatible UNIX software-based systems, including Perkin-Elmer Series 3200 machines through the communications facilities built in to the Multi-User Package. With this facility the PE 7350 user can log in to virtually any system running UNIX software, to which access has been granted. It then

appears that the user is actually connected to the remote machine. The PE 7350 user can easily access files on the other machines. Or, the network can be used to send electronic mail back and forth to users on the other systems.

Series 3200
Connections
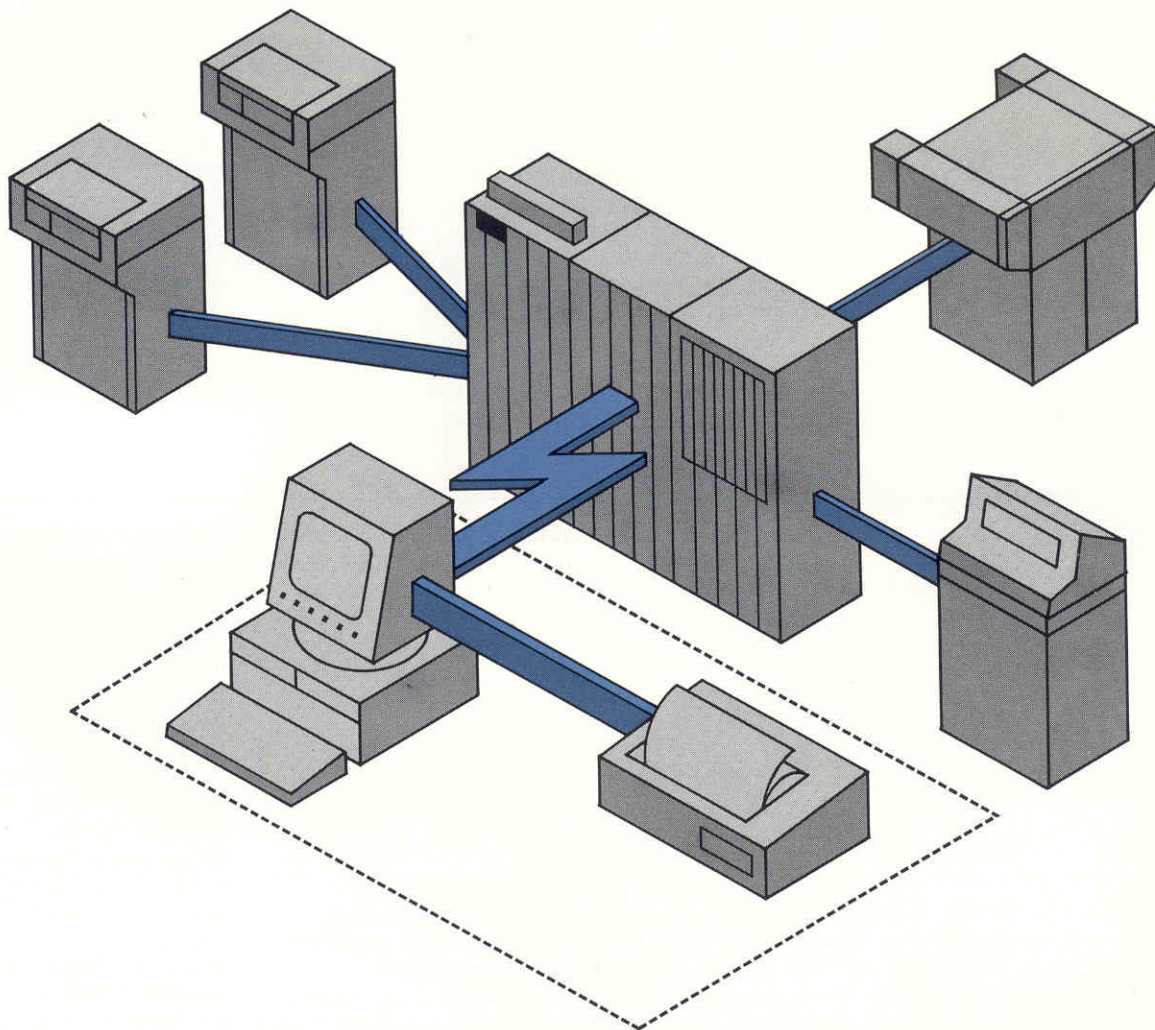
For connection to OS/32 based Series 3200 machines, an optional package is available providing both file transfer and PE 6300 terminal emulation.

The *File Transfer Utility* has two modes of operation. One provides a full set of options to the knowledgeable OS/32 user who wishes to have access to the full flexibility of the OS/32 file system, with its four file types and variety of blocking and formatting features. The other mode permits a PE 7350

user to treat the OS/32 file store as an archive space for local files. Files can be transmitted to the OS/32 file system with no knowledge of its structure. These files can be retrieved as needed.

The Terminal Emulator allows a PE 7350 to appear to a Series 3200 as a PE 6300 editing terminal. This permits line or block operation, and can be used to interact with OS/32 based systems running the MTM and

4

Reliance PLUS monitors, as well as user-written applications. A valuable feature of the emulator is its ability to capture data transmitted from the Series 3200 machine into a local disk file. Among other possibilities, this permits data to be selected from a remote database, for subsequent local processing.

When operating in line mode, the terminal emulator appears to the host like a standard asynchronous ASCII terminal. In this mode, the emulator can be used as an interactive timesharing terminal under the OS/32 MTM monitor. In block emulation mode, the PE 7350 duplicates the functions of the PE 6300 editing terminal and is a fully functional Reliance PLUS workstation.

**Series 7000
and Series 3200
Network**
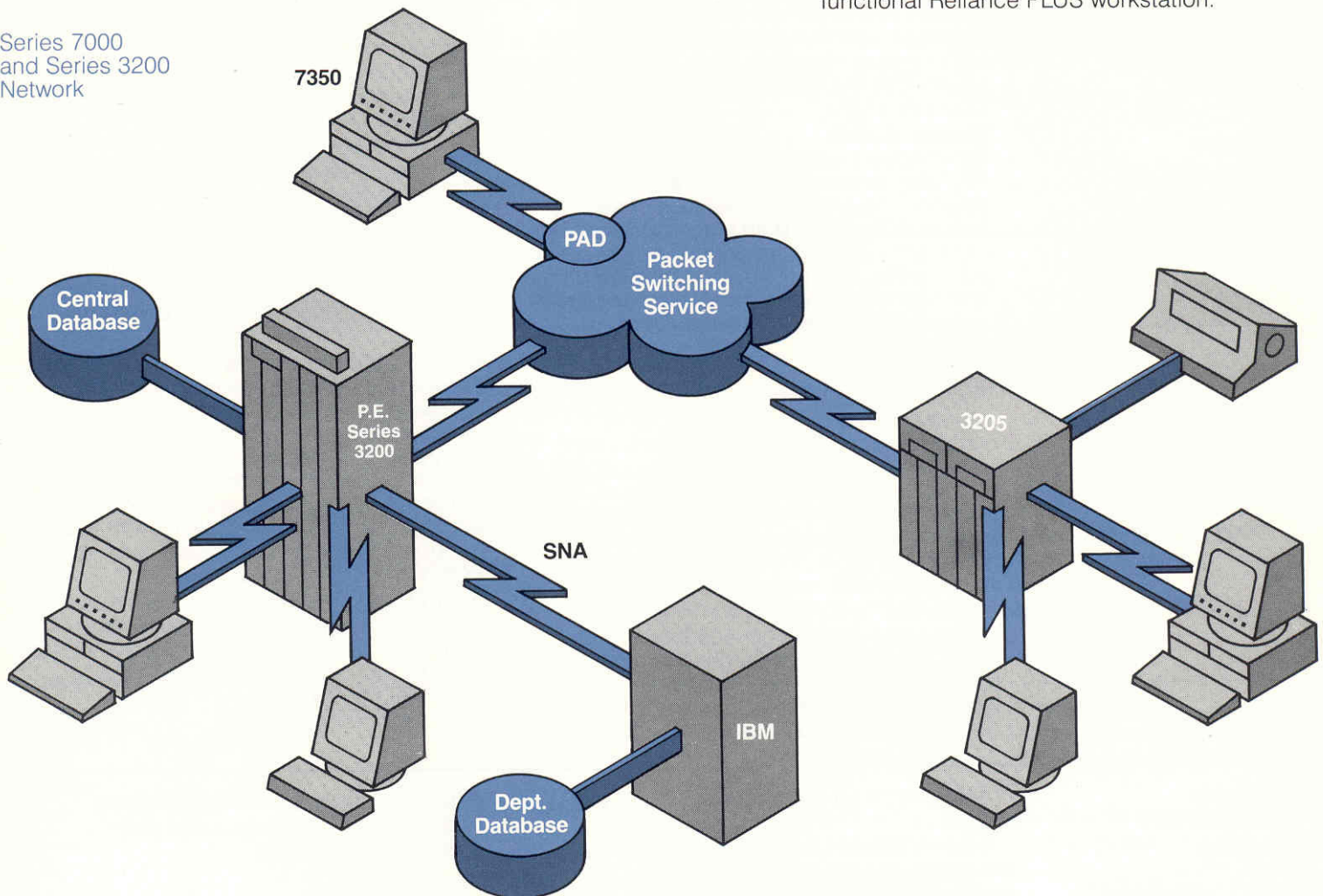
The OS/32 communications package is configurable for both local and remote (modem) operating environments. Using Series 3200 machines as gateways, the operator can use terminal emulation to access the PENnet Plus network. This gives access to systems connected locally via Ethernet (IEEE 802.3) or remotely via the X.25 packet switching services.

A further networking feature is the ability to access IBM systems using the 3270 emulation facilities of Series 3200 machines. The PE 7350 appears to the user as an IBM 3270 terminal connected to a remote IBM system over Binary Synchronous lines or via SNA/SDLC. Similarly, the user can submit remote jobs for IBM execution via HASP, 3770 (SNA) or 2780/3780 emulation.

Hardware

Processor and Memory
The Perkin-Elmer 7350 processor fully exploits the power of the 16/32-bit Motorola M68000 microprocessor, with its 32-bit data paths and 16-bit data buses. The M68000 is operated at a true clock rate of 8 MHz with no wait states.

The bus architecture of the PE 7350 is a subset of the Motorola VERSAbus* standard.

Monochrome PE 7350 systems contain 320 kilobytes of user-accessible RAM, with

expansion modules available offering 256K, 512K or a full megabyte of additional memory. The color graphics workstation offers as standard 448 kilobytes of RAM.

The electronics module incorporates a battery-backed calendar/clock that logs time in years, months, days, hours and minutes. The user never has to enter the date or time because the internal clock runs continuously. As data files are generated, they are automatically date and time stamped.

Keyboard Module

The PE 7350 contains a full ASCII keyboard, which conforms to the DIN ergonomic standards for keyboard height and slope. The keyboard contains 16 special-function keys which, when used in conjunction with the SHIFT key, can generate 32 distinct codes. In most cases, function keys are used by software applications to permit more efficient interaction with the user. The keyboard also contains a numeric pad and eight dedicated editing keys. The keyboard is attached to the electronics module by a six foot coiled cord.

Display Module

Two display modules are available for the PE 7350: a color version and a monochrome version. The graphics resolution of each is 720 by 256 pixels. Both video modules have eight soft keys located on the lower bezel of the monitor. All eight keys are programmable and offer the software developer flexibility in designing the user interaction for applications.

Color Display

The color display includes a 13-inch monitor capable of displaying up to 16 colors simultaneously. The system includes two separate memories or display planes: one for alphanumerics, the other for graphics. This allows alphanumeric and graphic data to be superimposed or displayed independently, permitting, for example, the clearing or scrolling of alphanumeric data while the graphics display remains unaltered.

When used in alphanumeric mode, up to eight background and eight character colors may be displayed. In graphics mode, the PE 7350 offers the simultaneous display of up to 16 colors from a palette of 27. The displayed colors can be instantly changed by a simple command. Multicolor graphics facilitates the comparison and evaluation of data, monitoring of processes, etc.

Monochrome Display

The monochrome display is a 15-inch raster-scan CRT with a green or amber phosphor. Character attributes includes inverse video, blinking, underlining and half-intensity.

As with the color display, the alphanumeric and graphic data are managed independently, permitting superimposition and independent operation of the two types of display.

Disk Storage

The primary storage module of the PE 7350 is a 5¼-inch 15-megabyte Winchester disk. Archiving and back-up of data and files are provided by two slim-line 5¼-inch floppy diskette drives. Each formatted double-density, double-sided floppy diskette can store 320 kilobytes, for a total of 640 kilobytes.

Input/Output Capabilities

The PE 7350 comes standard with two bidirectional RS-232C communication interfaces. Line disciplines are fully programmable. Standard line rates up to 9600 bits per second are supported. Two optional RS-232C ports are available to accommodate communications with further peripherals or a host computer, such as a Perkin-Elmer Series 3200.

An IEEE-488 interface is also optionally available for interfacing to local clusters of peripherals or instruments. Up to 16 separate devices can be connected to the single IEEE-488 interface.

Hardware Specifications

Processor

- M68000 8-MHz processor with no wait states
- 32-bit data and address registers
- 24-bit memory address bus
- 16-bit data bus
- 150-nanosecond RAM access time
- 500-nanosecond RAM cycle time
- 32 kilobytes of ROM

Memory

Color:
640 kilobytes standard, 192 kilobytes for display support

Monochrome:
416 kilobytes standard, 96 kilobytes for display support
Optional addition of 256K, 512K or 1M

Clock

- Battery-backed calendar/clock (year, month, day, hour, minute)

Keyboard

- Detached, full ASCII low profile
- DIN standard ergonomics
- Six-foot coiled cord
- Operator-controllable audible tone
- 16 user-definable special-function keys, shiftable to 32
- 14-key control pad, including system and cursor control keys
- Numeric keypad

Video Monitors

Color:
13-inch, raster scan CRT

Monochrome:
15-inch, raster scan CRT

Alphanumerics	**Color:** ■ Eight background and eight character colors (black, green, blue, cyan, red, yellow, white, magenta) ■ 25 lines of 80 characters ■ Brightness control ■ Inverse video, underlining and blinking ■ Programmable cursor ■ 9 x 7 pixel characters in 12 x 9 matrix	**Monochrome:** ■ 25 lines of 80 characters ■ Brightness control ■ Inverse video, underlining, blinking and half-intensity ■ Programmable cursor ■ 9 x 7 pixel characters in 12 x 9 matrix
Graphics	**Color:** ■ Palette of 27 colors; 16 simultaneously displayable ■ Bit maps for instantaneous changes ■ 256 vertical by 720 horizontal pixel resolution	**Monochrome:** ■ 256 vertical by 720 horizontal pixel resolution
Soft Keys	■ Eight bezel-mounted soft keys ■ Software programmable	
Disk Storage	■ 5¼-inch 15-megabyte Winchester disk ■ Drive transfer rate: 5 megabits per second ■ Two double-sided, double-density, slim-line floppy diskette drives	■ 320 kilobytes per floppy drive ■ Floppy drive transfer rate: 250 kilobits per second
Options	**Communications Interface** ■ Two serial, RS-232C asynchronous ports ■ Software-selectable line discipline ■ Communications rate: 300 to 9600 bits per second ■ Industry Standard IEEE-488 Interface	**Memory Board** ■ One megabyte capacity available in 256K, 512K and 1M versions ■ 150 nanosecond access time ■ 700 nanosecond cycle time

Product Numbers

N526-0010 Model 7350 Professional Computer. Includes electronics module with M68000 microprocessor, 32KB ROM, 416KB RAM (320KB User Accessible), two 320KB each Floppy Diskettes, two RS 232C ports, battery-backed calendar clock, 15-megabyte Winchester disk, low-profile keyboard, 15-inch green phosphor monochrome video monitor, 720 x 256 pixel graphics facility, user's operation manual, Uniplus+ single user operating system with user manuals, and power supply for 115V, 60Hz.

N526-0011 Same as N526-0010, except 230V, 50Hz power supply.

N526-0012 Same as N526-0010 but with amber phosphor.

N526-0013 Same as N526-0011 but with amber phosphor.

N526-0020 Same as N526-0010, except substitute 13-inch color video monitor and 720 x 256 pixel color graphics facility with 256KB RAM extension (total user accessible RAM 448KB), 115V, 60 Hz power supply.

N526-0021 Same as N526-0020, except 230V, 50Hz power supply.

N526-10X0 Memory Board Expansion Options

N526-4001 Uniplus+ Multi-User Version

N526-4002 Uniplus+ Full Development System

N526-4003 Uniplus+ Text Processing Package

N526-4100 VisiWord Word Processing Software

N526-4110 The FinalWord Word Processing Software

N526-4120 Supercomp-Twenty Spreadsheet Software

N526-4130 DI-3000 Graphics Tool Kit

N526-4132 DI-3000 Grafmaker Software

N526-4170 Fortran-77 Compiler

N526-4185 BASIC Interpreter

PERKIN-ELMER

EVERYWARE™