Digital Equipment Professional 300 Series
Professional 325 & Professional 350

■ PROFILE

Operating Systems • Professional Operating System (P/OS), a multitasking proprietary system; PRO/V7M, a UNIX system; and PRO/RT-11, a single-user, real-time operating system from Digital Equipment • UCSD p-System Version IV.1 from Softech Microsystems • CP/M-80 on a softcard.

Data Management • NPL Information System; RS/1 data management system; PRO/Datatrieve data management system.

Communication/Networks • PRO/Communications terminal emulator and file transfer system; PRISM 3276 BSC emulator; PRO 2780/3780 emulator • Digital Network Architecture (DNA) with DECnet software scheduled to be available by year end 1984.

Languages • PRO/BASIC, UCSD Pascal, UCSD FORTRAN, R/M COBOL.

Models • Professional 325, Professional 350.

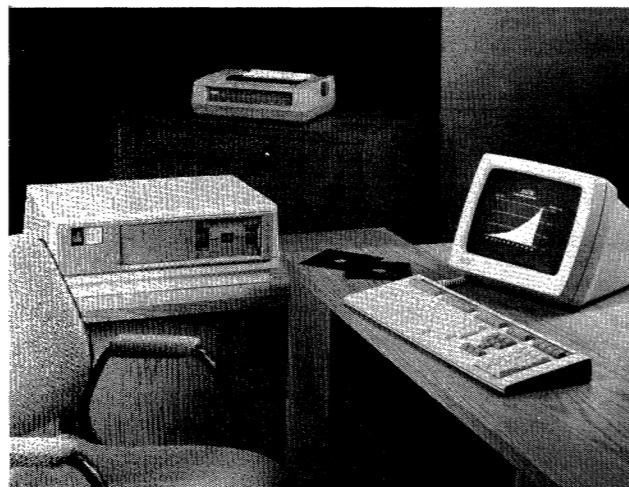**CPU** • 16-bit F11 (PDP-11/23) microprocessor.

Memory • 512K bytes of RAM expandable to 768K bytes on the 325 and 1M bytes on the 350.

Chassis slots • 1 expansion slot on the 325: 3 expansion slots on the 350.

Ports • RS-232C/423 communication port, 1 RS-232C/423 printer port on each model.

Mass Storage • 1.6M bytes of diskette storage on the 325; 800K bytes of diskette storage and 10M bytes of hard disk storage on the 350.

Terminals/Workstations • single-user systems.

PURCHASE PRICE RANGE   hardware & software

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systems software
        ■ $370 to $1.9K
                    packaged system/cpu complex
                    ■ $3.9K to $4.9K
memory
    ■ to $1.6K
I/O communications
    ■ to $945
disk & tape
        ■ to $2.8K
    terminals, printers, & other peripherals
        ■ $1.3K to $4.1K
    $2K     $4K     $6K     $8K     $10K

        total system (sum of above)     $5.6K to $16.2K

    $4K     $8K     $12K     $16K    $20K
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PROFESSIONAL 300 PURCHASE PRICING • bar graphs illustrate price ranges for small to large systems, with solid bars reflecting software/hardware purchase pricing • **SMALL SYSTEM** is based on **PROFESSIONAL 325 packaged system** (includes CAU, 512K-byte RAM, dual 400K-byte diskette drive, 2 serial ports, floating point processor, 1 expansion slot) and the following options: P/OS 1.7 operating system, PRO/BASIC software; monitor, keyboard, and dot matrix printer. • **LARGE SYSTEM** is based on **PROFESSIONAL 350 packaged system** (includes CPU, 512K-byte RAM, dual 400K-byte diskette drive, 2 serial ports, floating-point processor) and the following options: P/OS 1.7 operating system, PRO/BASIC, PRD/Communications, PRISM, SuperComp-Twenty spreadsheet, Prose Plus word processor **software**; additional 512K-byte **memory**; autocall **modem**; 10M-byte hard **disk**; color **monitor** with extended graphics module, **keyboard**, letter-quality/dot matrix **printer**.

Printers • dot-matrix and letter-quality printers available from Digital.

First Delivery • January 1983.

Systems Delivered • approximately 50,000.

Comparable Systems • Data General Desktop Generation, Honeywell microSystem 6/10, 6/20, IBM XT/370.

Vendor • Digital Equipment Corporation; 146 Main Street, Maynard, MA 01754 • 617-897-5111.

Canada • Digital Equipment of Canada Ltd; P.O. Box 13000, 100 Herzberg Road, Kanata, ON K2K 2A6 • 613-592-5111.

Distribution • direct sales through Digital; also available through retailers.
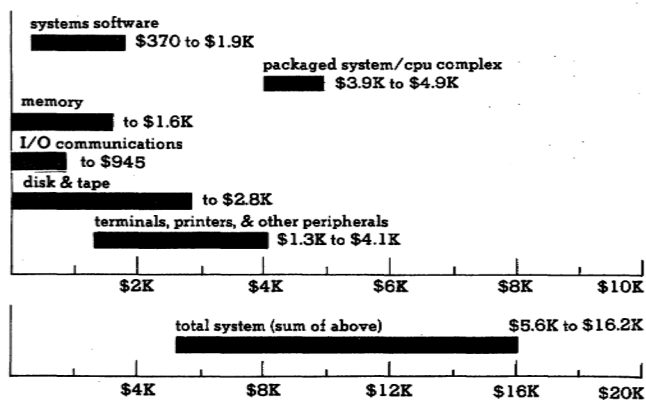
■ ANALYSIS

Digital Equipment Corporation is the number-one supplier of minicomputer systems worldwide. It is the manufacturer of the first mass-produced minicomputer—the PDP-8—as well as the manufacturer of the PDP-11 and VAX machines. Its Professional Series, which is built around a PDP-11 microprocessor, was introduced in 1982 along with 2 other personal computers, the Rainbow 100 and the DECmate II.

Outwardly the Professional resembles its 2 sister products, since all 3 utilize the same monitor, keyboard, and disk drives. However, that is where the resemblance ends. The Professional is a more powerful machine that is compatible with Digital systems running RSX-11M, RSX-11M PLUS, and VAX/VMX software.

Digital's initial marketing efforts of its Professional line were not very successful. Product delivery was later than promised to dealers, software availability was extremely limited, and system performance was criticized. Also,

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Digital initially introduced the Professional as a high-end personal computer and did not emphasize its role as a workstation to its PDP-11 base.

The Professional has undergone a major overhaul since its introduction and now boasts a larger software base, enhanced standard features, and greater storage capacity. Software additions include an enhanced P/OS operating system, plus the availability of UNIX System 7, RT-11 and CP/M-80 operating systems, the Professional Tool Kit, and various applications packages. The system's base configuration now includes 512K bytes of memory and floating point hardware while the disk storage capacity has been increased to 10M bytes.

In order to position the system in more environments, Digital is offering a real-time interface module which enables the Professional to serve as a frontend controller in a laboratory environment. No-charge licensing of the Professional's Computing Terminal Interconnect (CTI) bus to third-party hardware vendors was also announced. This will pave the way for third-party developers to design options for the systems.

In addition to the system enhancements and the open architecture policy, Digital is also making other moves to bolster sales. They have initiated a new service and warranty package called the "Investment Protection Plan", which provides retail buyers with a 1-year, on-site service warranty and corporate buyers with a 90-day, on-site service warranty, extendable to one year for a fee. Additionally, Digital salespeople have been assigned to focus exclusively on marketing the personal computer.

☐ Strengths

The Professional will serve as the ideal PC in a DEC-based user shop since software files from both the PDP-11 and VAX machines can be downloaded to the system. The system's support of UNIX and CP/M-80 also adds strength to its software repertoire.

Digital's new policy of an open architecture environment ensures that more expansion features will appear in the marketplace from third-party vendors. Also, the company's new protection plan is one of the best in the micro industry. Digital's commitment to the Professional is obvious considering all the major enhancements made to the product line. This should give users a feeling of security that the system will not be abandoned despite its initial slow start.

☐ Limitations

The Professional 325 is, in itself, a limitation since its level of expandability is practically nil. And at $4,000 a system, that's something to consider. Users would be better off purchasing the Professional 350 from the start. Not that the 350 is without shortcomings—it could use additional expansion slots to take advantage of some of the more interesting options. For example, if a user wished to utilize the full 1M bytes of memory, the extended graphics option, and the Telephone Management System, he/she would be a slot short. And what about future growth? The system's inability to run MS-DOS applications is also a limiting factor.

■ SOFTWARE

☐ Terms & Support

Terms ● available for a one-time license fee ● 1-year warranty covers software in addition to hardware.

Support ● Applications Advisory Support Services available for a fee after initial warranty.

☐ Software Overview

The Professional Series employs a proprietary operating system that was developed from Digital's RSX-11M-PLUS minicomputer operating system. Called the Professional Operating System (P/OS), it provides multitasking capabilities, file, disk, and print services, a memo editor, and a Computer Based Instruction (CBI) course. Because of its compatibility with the PDP-11 minicomputer line, the Professional will support the existing PDP-11 software base. The latest release is Version 1.7.

Other operating systems include PRO/V7M, a UNIX system offered by Digital under license from AT&T; the RT-11 V5.1 single-user, real-time operating system which is a modification of the RT-11 operating system running on the PDP-11 minicomputers; and the UCSD p-System.

To run 8-bit, industry-standard micro software, Digital is offering a CP/M softcard. This includes the operating system, a Z80 microprocessor, and 64K bytes of RAM on one card.

With the optional PRO/Communication package, users can transfer files between a Professional system and a VAX/VMS, RSX-11M, or RSX-11M PLUS host as well as emulate VT52, VT102, and VT125 terminals. Digital also provides 3270 and 2780/3780 emulation packages and a Tool Kit for applications development.

☐ Packaged Software

QBA25/26-A3 Applications Starter Kit ● for novice Professional users; an integrated, day-to-day, personal package of easy-to-learn applications ● consists of the PRO/spreadsheet, PRO/Graph, PRO/DataManager, PROSE word processor, and DEClander—a game designed to help user's get acquainted with the system ● available in hard disk and diskette version:

$399 lcns

QA111-C3 UCSD p-System & Pascal ● operating system and language processor for hard disk-based systems only:

975

☐ Operating Systems

The Professional Operating System is available in 2 versions—a diskette version and a hard disk version. Both versions include file, disk, and print services. Only the hard disk version includes the PROSE text editor and accommodates the Developer's ToolKit. The operating system is included with the diskette/disk drives.

PRO/V7M includes all standard features of UNIX version 7 and is highly compatible with Digitals's V7M operating system for the PDP-11. Communications between PRO/V7M on the Professional and V7M-11 on PDP-11s include the ability to transfer text and program files. Programs are also easily adaptable between these systems.

RT-11 is a popular operating system on the PDP-11. The new version for the Professional includes a communications option which is helpful to users who require I/O intensive applications.

With the CP/M card installed, users can run Rainbow and DECmate II CP/M-80 applications without modification as long as they do not access hardware devices directly. Users can also transfer ASCII files between P/OS and CP/M software environments as well as format an area of the hard disk to function as a CP/M diskette for storing and accessing CP/M files.

P/OS Version 1.7 ● multitasking system ● provides menus for selecting services and applications; a Help service; file services for manipulating, organizing, and providing up-to-date file

LCNS: one-time license fee. Prices effective as of December 1983.

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information; disk and diskette services for copying, naming, and erasing diskettes; PROSE editor; print service; and a message/status board • includes a runtime environment for applications development • PROSE memo editor has baseline word processing capabilities; provides for document editing with cut and paste capabilities; search and replace; and word, line, paragraph, and page advance and backup • Version 1.7 takes advantage of the increased memory and floating-point processing capabilities of the systems; places parts of menu-handling in main memory, making menu selections for certain applications faster; provides an optional, native P/OS development tool kit that handles local development capabilities in PDP-11-compatible languages; accesses TMS, IVIS, IBM 3276 BSC and IBM 2780/3780 BSC, and diskette-copying services.

QBA23-A3 PRO/V7M • includes all standard features of UNIX Version 7 such as kernel routines; a tree-structured directory system; C compiler; the Shell (Bourne) command language; pipes, background, and more than 100 utility programs • compatible with Digital's V7M for the PDP-11 • additional features include complete error language and user diagnostics; VI full screen editor from the University of California at Berkeley (UCB 2.8 UNIX System) for program development and document preparation; user overlay kernel scheme for large programs; and communications with other PRO/V7M and V7M-11 systems including the ability to transfer text and program files:

$695 lcns

QBA39-H3 PRO/RT-11 Version 5.1 • single user, real-time system operating in native mode • contains the full set of functions found in previous versions plus the following: Virtual Terminal Communications Package (VTCOM) which enables the Professional to emulate a local terminal and to transfer ASCII files between the host and the RT-11 system; also allows binary files to be transferred with the optional TRANSF utility; Transparent Spooling Package (SPOOL) for simultaneous output to RT-11 serial devices concurrent with other system actions; SET-UP for setting video characteristics and manipulating them during program execution:

700

QA112-C3 UCSD p-System Version 4.12 • provides a portable environment for developing and executing applications software; programs can be written in UCSD Pascal and FORTRAN-77 • consists of 3 modules: operating system, the p-machine emulator, and the basic I/O system • the operating system contains 5 components: interactive operating system; screen-oriented printer; file handler; library of program modules; and dynamic runtime binding facility • Version IV.1 supports event-driven multitasking; 2-level filing and utilities; and improved error handling • hard disk-based system:

600

QA579-C3 UCSD p-System • for diskette-based systems:

600

CP/M (2.2) • single-user, single tasking, general-purpose operating system designed to support the Intel and Zilog families of 8-bit processors; features and facilities of this basic system are all upward compatible and are present in all other versions of CP/M; consists of 4 elemental structures: Basic I/O System (BIOS), Basic Disk Operating System (BDOS), Console Command Processor (CCP), and a Transient Program Area (TPA) • BIOS is the modified portion of the operating system enabling users to tailor CPM systems to meet specific configurations; allows users to define all hardware-independent elements of the system by defining low-level interface and the peripheral I/O for the system • BDOS provides all the disk management control; supports up to 16 logical devices, containing up to 65,536 records, with up to an 8M-byte capacity • CCP provides the interface between the user's console and the rest of the CP/M system; it reads, interprets, and executes commands entered from the console; commands are both built-in commands and transient commands; transient commands are loaded into TPA and executed • TPA is the area designated to hold programs that are loaded from disk and then executed • standard utilities provided include: DDT interactive debugger; PIP file transfer utility; DUMP utility; SUBMIT/XSUB batch control utilities; ED command-oriented text

editor; ASM assembler; and STAT system status utility • memory requirements depend on number and types of options implemented; basic system requires 20K bytes of memory and an ASCII terminal • included with CP/M Option Module.

☐ Utilities

Standard utilities are incorporated in the operating systems.

☐ Data Management

QBA43-A3 PRO/Datatrieve • full implementation of the Datatrieve-11 interactive data management system available on the VAX and PDP-11 • used to create customized database applications, perform queries, and generate reports for the database using the Datatrieve command language • requires a hard disk:

$495 lcns

QBA20-A3 PRO/Datatrieve Layered Application Facility (LAF) • designed for DEMs and users who want to build specialized applications that can be installed and invoked directly from a menu by the application name:

495

QA117-C3 NPL Information System • data management system for nonprogrammers • provides an ad-hoc query facility; a report writer; a database manager; a data entry system; and a direct access data editor • compatible with such information management systems as FOCUS, RAMIS, and NOMAD • formats the screen layout and automatically checks the validity of data as it is entered; interfaces with other program data; stores multiple NPL requests in a file and reformats or rebuilds a program; offers a choice of being menu- or command-driven • requires a hard disk:

800

QA497-C3 RS/1 Data Management System Version 11.7 • designed for use by scientists, engineers, and technicians • inserts data into tables; produces 2- and 3-dimensional graphs and bar charts; performs mathematical and statistical calculations, curve fitting and modeling • uses simple English commands without the need to program • statistical routines include analysis of variance, linear or non-linear regression, multivariate analysis, nonparametric statistics, and contingency table analysis • Research Programming Language (RPL) allows the user to construct new analysis procedures, prepare formatted output, and automate programs, resources, and data files such as ASCII of binary data produced by other packages • requires a hard disk:

1,900

☐ Communications/Networks

QBA05-A3 PRO/Communications Version 1.5 • enables a Professional system to emulate a terminal to a host system and to transfer files between 2 Professionals or a Professional and a host • emulates VT52/VT102 video terminal or VT125 graphics terminal • files can be transferred between a Professional and a VAX/VMS, RSX-11M, or RSX-11M-PLUS host by invoking a file transfer task on the host • also maintains a directory of names, phone numbers, and line characteristics:

$195 lcns

QA176-C3 PRISM (Professional Inter-System Management) • for communicating directly with an IBM system • offers 2 main facilities: Virtual Terminal Emulator (VTE) and Inter-task Communication Facility • VTE allows emulation of an IBM 3276/3278 Model 2 terminal using the 3270 subset of BSC; also provides 3287 printer emulation • Inter-task Communications Facility is used with the Professional Developer's Toolkit for writing programs that share data with an IBM system across 3270 links • features local and remote data communications at up to 9600 bps; menus which set up connections to and from the IBM host; full on-screen Help; and computer-based instruction course, TUTOR, for learning how to set up and use PRISM • several Professionals may share a single hard-wired communications line to the IBM system through the multidrop or multipoint capability of the 3270 • requires hard disk:

595

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QBA47-A3 PRO-2780/3780 Emulator ● emulates an IBM 2780/3780 workstation; sends and receives information between the Professional and remote systems as batch mode of file transfer; can also run as a background job ● requires hard disk:

595

☐ Programming/Development Languages

Languages presently available from Digital include PRO/BASIC, UCSD Pascal and FORTRAN, and R/M COBOL. To design customized applications, the PRO/Tool kit is available.

The Tool Kit's development environment requires 2 computer systems—a host computer and a personal computer. The host can be a Digital RSX-11M, RSX-11M-PLUS, or a VAX/VMS system. The programmer's computer must be a Professional 350 with a hard disk. The host system uses its own PRO-Host Tool Kit software which is available separately.

QBA04-A3 PRO/BASIC ● provides online Help; performs immediate syntax checking; identifies errors; and provides immediate feedback ● includes instructions to move the cursor to any pixel position; draws lines and curves; uses alternate character fonts; controls character size, angle, and spacing; and controls the color map ● contains a single-line editor that uses the arrow keys of the editing pad and the insert and delete keys ● supports virtual arrays, dynamic dimensioning of arrays, advanced error handling, extended mathematical capabilities, string functions and variable names of up to 31 characters ● debugging tools include Trace mode, Step mode, and Show, which alues, the program size, the number of lines, and the amount of free memory:

$195 lcns

QA113-C3 UCSD Pascal ● hybrid compiler supports subset implementation of International Standards Organization (ISO) Working Draft #6 for Pascal language; generates pseudo-code which is interpreted at runtime ● features include: overlays; optional separate compilation of functions and procedures; EXTERNAL routines; 36-digit integer operands; 32-bit floating-point operands; access to graphics/sound facilities through systems through system library routines; checking for syntax, type, and range errors; compiler directives:

375

QA114-C3 UCSD FORTRAN-77 Compiler ● hybrid compiler supports implementation of ANSI-1977 FORTRAN; generates pseudo-code which is interpreted at runtime ● features include extensions for development and commercial programming:

250

QA466-C3 RM/COBOL ● a high-level implementation of the ANSI-74 COBOL, (X3.23-1974) standard ● features include Level 2 sequential, relative, and indexed file access methods; full arithmetic capability; standard DISPLAY and COMPUTATIONAL data type support, extended to include binary as well as packed decimals; extended ACCEPT DISPLAY operations for CRT control; interactive debug at the source statement level; undermarked errors with self-explanatory messages; cross-reference listing; single-pass compilation; segmentation at the source language level; and built-in security features for source language library control ● developed by Ryan/McFarland:

950

QBA14-A3 Pro/Tool Kit ● includes an interactive forms-based utility for creating menus, online help, and message frames; RMS record and file management service to enable keyed access data files to be defined, populated, updated, and maintained; uses the Indexed Sequential Access Method (ISAM); FMS forms-oriented video I/O management system for designing forms directly and interactively on the screen; and a Sort utility ● CORE graphics Library is callable from the Tool Kit's development languages and enables developers to build detailed control of the picture-generating process into their software ● all phases of development can be performed at the Professional 350 using it alternately in local mode and in terminal emulation mode to communicate with the host system ● utilizes a MACRO Assembler:

295

QBA15-A3 PRO/Tool Kit FORTRAN-77 ● requires standard Tool Kit:

495

QBA16-A3 PRO/Tool Kit DIBOL ● requires standard Tool Kit:

495

QBA17-A3 PRO/Tool Kit BASIC-PLUS-2 ● requires standard Tool Kit:

495

QBA18-A3 PRO/Tool Kit Pascal ● requires standard Tool Kit:

495

QBA19-A3 PRO/Tool Kit COBOL-81 ● requires standard Tool Kit:

495

QBA21-A3 PRO/Tool Kit FORTRAN-77 Debug ● requires standard and FORTRAN-77 Tool Kits:

200

☐ Application Packages

PRO/Spreadsheet ● provides all the basic capabilities found in most spreadsheets ● helps perform numerical calculations and financial analysis, including balancing budgets, completing expense reports or generating expense reports ● included with the Applications Starter Kit.

PRO/Graph ● for creating bar, line, or pie charts ● data is entered through the system's keyboard or compiled through PRO/Spreadsheet or PRO/DataManager ● included with Applications Starter Kit.

PRO/DataManager ● for storing, finding, and sorting information such as telephone directories, and mailing and inventory lists, and creating detailed reports from these lists ● included with Applications Starter Kit.

PROSE ● word processor for creating, revising, editing, and printing memos, reports, and BASIC programs ● included with Applications Starter Kit.

QBA11-A3 Prose Plus ● superset of PROSE ● provides 4-way cursor movement; global search and replace; word wrapping; text manipulation and layout features such as cut and paste, inserting text from another document, moving selected text, and recovery and deletion; formatting features including right, left, and centering justification; and specialized function keys for previous screen, next screen, nonbreaking hyphen, cancel, resume, and next or previous page:

$295 lcns

QA476-C3 Supercomp-Twenty ● electronic spreadsheet ● provides for columns up to 126 characters in length; creates text labels up to 200 characters in length as long as the adjacent cells are blank ● specifies relative or absolute references directly in a formula; noncontiguous cells can be chosen and copied into another area or a whole new worksheet ● automates series of often-used procedures and stores them in a file; built-in logic includes IF-THEN-ELSE, SELECT, and LOOK UP functions; provides auto backup facilities; worksheet and individual cells may be locked or unlocked to data entry ● reads and writes ASCII text files containing text and numbers with user-specified delimeters:

400

QA431-C3 MAPS/PRO Financial Modeling ● includes an interactive command language and editor, a financial database subsystem, a procedural modeling language, a tabular report generator, and a financial function library ● provides a model definition menu; a help facility; and a consolidation facility ● can exchange models and data with a VAX machine running compatible MAPS/Host software:

1,250

QA432-C3 MAPS/PRO Graphics ● fully functional business graphics system ● generates custom multishared or multicolored

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line, stacked bar, and clustered bar charts on the monitor; supports various colors, fill patterns, and line patterns for generating X-Y axes graphics ● requires extended bit-mapped option and hard disk:

200

QA434-C3 FINGRAPH Graphics System ● decision support graphics system for converting databases in visual displays; as data changes over time, FINGRAPH regenerates the new information in the same standard style and scale for direct, one-to-one comparison ● produces 5 chart formats: component charts, item charts, variance charts, ratio charts, and time series charts ● features built in Help; full menu driver interface; initial, one-time set up of chart formats stored for future access; automatic scaling and labeling of charts; addition, subtraction, and totaling of elements; multicolor options for chart identification; slide show capabilities:

595

QA180-C3 TK!Solver ● tool kit and multiple equation solver for modeling programs requiring real number solutions to sets of algebraic equations ● models are created using English-like statements and solved by entering values for certain parameters ● accepts data in the DIF file format from VisiCalc, VisiFile, VisiTrend/Plot, and some database programs ● requires a hard disk:

299

QA434-C3 Financial Management TK!SolverPack ● requires TK!Solver equation package:

100

QA442-C3 Mechanical Engineering TK!SolverPack ● requires TK!Solver equation package:

100

■ HARDWARE

☐ Terms, Support & Documentation

Terms ● available on a purchase-only basis; 90-day warranty on parts and labor.

Support ● warranty service includes telephone help line; mailings of updated software releases and documentation; and a newsletter ● extended warranty for on-site repair is available at the time of system purchase ● 3 post-warranty agreements are available for on-site service, carry-in service, and mail-in service; carry-in service is to one of the 145 Digital Servicenters; mail-in service is for more technically-oriented users, and means the customer isolates the faulty component using system diagnostics, removes the component and mails it to a Customer Return Center for replacement ● educational courses are available on how to use the system, fundamentals of P/OS operating system, hands-on knowledge of CP/M, and how to use the Developer's Tool Kit.

Documentation ● Owner's Manual, installation instructions, Diskette System User's Guide packaged with the system.

☐ Physical Specifications (H x W x D); Weight

System Unit ● 6.5 x 14.3 x 22 inches; 35 pounds maximum.

Display ● monochrome monitor, 11.5 x 13.8 x 12.3 inches; 14 pounds ● color monitor, 12.8 x 14.5 x 15.5 inches; 35 pounds.

Keyboard ● 2 x 21 x 6.8 inches; 4.5 pounds.

☐ Systems Overview & Configurability

The Professional Series 300 consists of 2 models, the 325 and the 350. Both models include a system unit that contains a 16-bit PDP-11 microprocessor with 22-bit addressing, a system clock, 512K bytes of RAM, 16K bytes of ROM, and a floating-point processor. Two serial ports and a dual 5.25-inch diskette drive round out standard system features.

The differences in the 2 models are as follows: the 325 system unit has 1 expansion slot to accommodate options while the 350 has 3. The 350 also has a larger power supply for adding a 5M-

or 10M-byte hard disk and can accommodate the CP/M Option Module and the Realtime Interface Module as well as the Telephone Management System. The memory on the 325 is expandable to 784K bytes while the 350's memory is expandable to 1M-byte.

Users have a choice of 3 monochrome monitors or a color monitor. The Professional's built-in, bit-mapped graphics capability which supports one plane of 960 x 240 pixels can be extended on the 350 model to include 2 additional planes. Keyboards can be ordered in one of 16 national country kits.

Interesting system options include a Telephone Management System (TMS) which consist of a telephone management module, a voice unit, and PRO/Communications software. The TMS provides for conference calling, automatic dialing, a personal phone directory, a modem for VT100 and VT125 emulation, plus other communications features. The Realtime Interface Module (RTI) option turns the Professional 350 into a personal workstation for a laboratory.

Another option, the Interactive Video Information System (IVIS), combines the graphics of the system with color video segments from a 2-channel audio videodisk system. Using the color monitor, users working with complex procedures can call-up video segments while receiving voice-over narration. System graphics can be overlaid on any video image enabling graphs, arrows, and charts to be used to highlight the visual portion of various procedures.

The 325 can be upgraded to a 350 by replacing the system board. This provides expanded capabilities including increased room for system options and the ability to add the hard disk. The Professional 325 board can be returned to Digital for credit.

Maximum configurability is stated below; minimum configurations are discussed under Packaged Systems.

Professional 325 System Maximums ● 16-bit CPU, 784K bytes of RAM, CRT, keyboard, 2800K-byte dual diskette drives, 2 serial ports.

Professional 350 System Maximums ● 16-bit CPU, 1M bytes of RAM, CRT, keyboard, one 800K-byte dual diskette drive, 10M byte hard disk, 2 serial ports, one remaining expansion slot.

☐ Packaged Systems

PC325-D2 Professional 325 System Unit ● 16-bit CPU, 512K bytes of RAM, 16K bytes of ROM, one dual diskette drive with a total of 800K bytes, system clock, RS-232C/423 printer port, RS-232C/423 communications port, floating point processor, 1 expansion slot:

$3,975 prch

PC350-D2 Professional 350 System Unit ● same as 325 except with larger power supply, 3 expansion slots:

4,975

PC325-UG Upgrade Kit ● to upgrade a Professional 325 system unit to a 350 system unit:

2,300

PC3XS-AA CP/M Option Module ● includes Z80 microprocessor, 64K-byte RAM, and CP/M operating system ● requires hard disk, 1 expansion slot:

695

☐ CPU

The Professional systems employ a 16-bit DEC PDP-11/23 minicomputer microprocessor as the CPU. They also include a floating-point processor for high-speed calculation of large numbers. An optional CP/M softcard with an 8-bit Z80 microprocessor is available for the Professional 350 to run industry-standard CP/M software.

F11 PDP 11/23 Processor ● 16-bit NMOS microprocessor provides 22-bit addressing ● includes 4-level vectored interrupt handling, 9 general-purpose registers, last-in/first-out (LIFO)

PRCH: purchase only. Prices effective as of December 1983.

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register stack, power fail/auto-restart capability, memory battery backup (MOS static RAM only), and memory management ● through the use of memory management, 16-bit virtual addresses are translated to 22-bit physical addresses; programs are mapped in pages consisting of 1 to 128 64-byte blocks; a program may contain up to 8 pages ● the instruction set can operate on bits, bytes, words, and multiple words ● 32-bit single and 64-bit double floating-point instructions (46 total) provide respectively 8- and 17-digit precision via the floating-point processor.

Zilog Z80 Processor ● 8-bit internal architecture, 8-bit data bus interface; direct addressing to 64K bytes of memory; fourteen registers include 16-bit program and stack pointers, two index registers, and a duplicate set of an 8-bit accumulator and a 7-bit flag register; upwardly compatible with the Intel 8080, it provides binary coded decimal (BCD) arithmetic, double-precision operations, multiple indexing with address registers, multiple interrupt, increment, decrement and move capabilities ● in addition to being able to execute all 78 Intel 8080 instructions, 50 enhancements to the instruction set include advanced block move and search macros, relative jump, and three types of selectable response interrupts, for a total of 128 operations.

☐ **Memory**

The systems come equipped with 512K bytes of memory, which is expandable in 256K byte increments. The Professional 325 maximum memory is 768K bytes and the Professional 350 maximum memory is 1M bytes.

MSC11-CK 256K-byte Memory Option ● occupies one expansion slot; maximum of 1 on 325, 2 on 340:

$795 prch

☐ **I/O & Communications**

In addition to the Professional's 2 serial ports, the 325 contains one expansion slot and the 350, 3 expansion slots. Available options include a Telephone Management Module, voice unit, Real-time Interface Module, Modem, Mini-Exchange Computer linker, and a floor stand for the system unit.

Printer Port ● general-purpose RS-423 printer port ● supports 75- to 9600-baud programmable bit rates; software programmable character formats ● included in packaged system.

Communications Port ● RS-423 asynchronous/byte synchronous port full- or half-duplex; up to 19,200 baud ● supports communication to a host, direct or through a modem ● included in packaged system.

DTC11-A Telephone Management Module ● consists of a telephone line interface and a controller board ● telephone interface provides 4 jacks: 2 for telephone lines (one for data, one for voice communications); one for a local telephone handset; and one for the optional voice unit; connects to the computer via a special mounting slot located on the back panel of the system unit; does not utilize any expansion slots ● controller board contains a modem, voice digitizing circuitry, and a transceiver to send and receive pushbutton telephone signals; integral modem transmits at 300/1200 bps with AT&T 103J- and 212A-compatible modems; voice digitizing circuitry converts analog voice signals from either one of the 2 telephone lines of the voice unit into digital signals for storage on the hard disk; it can reverse this process to send the recorded voice over the telephone lines of voice unit; occupies one expansion slot ● requires PRO/Communications software and a hard disk:

$895 prch

DTC11-B Voice Unit ● contains a pushbutton telephone keypad, voice dictation function keys, and a built-in microphone and speaker ● plugs into a jack on the telephone interface module:

295

PC3XX-AA Realtime Interface Module (RTI) ● for monitoring and controlling intelligent instruments, collecting and analyzing data, and outputting text and graphics reports ● combines 3 interfaces: IEEE-488 bus, 2 RS-232C/423 ports, and 24-line bidirectional parallel port ● interfaces can be used singly, in combinations or all concurrently ● internal cabling and a 62-

pin connector for attaching to the system unit's back panel are included; optional external cables also available ● occupies 1 expansion slot:

595

IEEE-488 General Purpose Instrument Bus ● allows the system to act as a master or slave and to control up to 14 compatible external devices ● has 2 complete bus ports, one for interfacing and one for verifying correct operation and handshaking in maintenance mode.

RS-232C/423 Asynchronous Ports ● 50 to 9600 bps rate, 5- to 8-bit word length with 0 to 2 stop bits, and odd, even, or no parity flags under software control.

Parallel Port ● 24-line bidirectional port 8-, 16-, and 24-bit data transfers to TTL compatible devices; handshaking in 8- and 16-bit modes can be supressed through software; 24-bit mode has no handshaking.

PC3XX-AB Connector Pad ● connector box for RTI; required when multiple functions are being run concurrently:

295

BCC10/11/12-03 RTI Cables ● for connecting various devices to the 62-pin connector on the RTI Module ● cables available for each of the 3 interfaces; price is per cable:

50

Mini-Exchange ● for linking personal computers with each other; for transferring information in document or file format and for sharing I/O devices such as printers, modems, or multiplexers ● supported by standard asynchronous Professional communications package ● links up to 8 of any combination of personal computers and I/O devices through RS-232/423 ports; connects up to 200 feet from the unit; speeds range from 300 to 19,200 bps; operates on point-to-point circuit switching; includes 128K-byte read/write data memory, power-up and self-test diagnostics, and external loop-back test:

895

DF03-AA Modem ● provides synchronous transmission at 1200 bps or asynchronous transmission at 300/1200 bps:

745

DF03-AC Modem ● same as DF03-AA except with auto-call:

945

PCXXF-AA System Unit Floor Stand ● for standing the system unit vertically on the floor:

99

☐ **Mass Storage**

Diskettes

Both Professional systems come equipped with a dual diskette subsystem. This subsystem consists of a microprocessor-based diskette controller card and a dual diskette drive which accommodates 2 diskettes on a single spindle. Each diskette stores 400K bytes of information. The diskette subsystem contains self-diagnostics that test and verify that all system components are working during power up. The diagnostics also provide continuous error checking during normal operation and maintain a dialog with the system to report error status.

Integrated Diskette Subsystem ● single-sided, double-density, dual 5.25-inch diskette drive and controller ● 819K-byte total formatted storage; 164-microsecond average seek time; 96 tracks per inch; 250K-bps transfer rate; 290-millisecond access time; 300-rpm rotation speed ● included with packaged system.

RX50-XA Add-on Dual Diskette Unit ● for adding a second drive to the unit; for use with model 325:

$995 prch

Hard Disk

The Professional 350, because of its larger power supply and system unit, can accommodate an internal 5M- or 10M-byte hard disk drive. A user merely has to slide the disk drive into its

Digital Equipment Professional 300 Series
Professional 325 & Professional 350

designated bracket until it snaps into place. The controller card is then placed in an option slot and the power cable is connected from the power supply to drive unit. No tools are needed. Like the diskette drive, the hard disk also contains diagnostics to test and verify system components.

RCD50-AA Winchester Storage Option • 5.25-inch, 5M-byte hard disk drive • 1.25M bytes per surface; 8192 bytes per track; 512 bytes per sector; 16 sectors per track; 5M-bps transfer rate; 170-millisecond average access time; 3600-rpm rotational speed; 254 tracks per inch:

$1,570 prch

RCD51-AA Winchester Storage Option • internal 5.25-inch, 10M-byte hard disk drive • same specs as 5M-byte drive except 2.5M bytes per surface; 85-millisecond average access time; 345 tracks per inch:

2,820

☐ Terminals/Workstations

Digital offers both monochrome and color monitors as well as extended graphics capabilities for the Professional series. Additionally, users can choose from 16 international keyboard country kits which consists of a power cord and documentation as well as the keyboard.

The system's graphics capability is made possible through the integral bit-mapped video controller. Graphics are implemented through an interface between the application program and graphics support software that conforms to the CORE conventions. CORE is a proposal supported by the ACM Special Interest Group of Graphics (ACM-SIGGRAPH). Extensions have been added to the Professional's graphics cabability that include rectangles, circles, arcs, and interpolated curves. The end user can program graphics using the Professional BASIC programming language.

Digital also offers the optional Interactive Video Information System (IVIS) for users who need assistance in learning complex procedures. IVIS combines the graphics capabilities of the computer with color video segments from a 2-channel videodisc system by providing graphics overlays on any video image.

Display • detached monochrome monitor; 12-inch, 24-line x 80-/132-column display • features include 4K-byte character RAM; 4K-byte video attribute RAM; 7x10 dot matrix includes 2-dot descenders • bit-mapped graphics capability of 960x240 pixels • full and split scrolling; double height line; double width characters; memory mapped video; bold, blink, and underline; reverse video; variable intensity • 60-image-per-second refresh rate • 5- to 15-degree adjustable tilt.

VR201-A White Phosphor Monitor:

$325 prch

VR201-B Green Phosphor Monitor:

325

VR201-C Amber Phosphor Monitor:

375

VR241-A RGB Color Monitor • 13 inch screen with same characteristics as monochrome monitor • displays 8 colors from a palette of 256 • requires extended bit-map graphics module:

1,325

VC241-A Extended Bit-Map Graphics Module • provides 2 additional bit-mapped planes of 960 x 240 pixels each for a total of 3 planes on the system • uses 1 option slot:

895

Keyboard • detached, 105-key, low-profile keyboard; complies with European 30mm home row requirement • contains its own 8-bit microprocessor; 36 function keys of which 16 are programmable; separate cursor control pad; 18-key data entry keypad; 6-foot cord; audio feedback speaker.

PC3K1-AA U.S./Canadian Country Kit • includes keyboard, power cord, documentation:

295

All Other Kits:

295

PC3VS-A Interactive Video Information System • for combining graphics capabilities with segments from a 2-channel audio videodisc system • occupies 2 expansion slots:

2,995

☐ Printer/Graphics

Digital offers 3 printers for its personal computers. Each contains internal self-diagnostics tests which are executed automatically on power-up and are composed of modular subassemblies for easy maintenance. In addition to the 3 printers, Digital also offers an assortment of character fonts, printwheels, and other printer supplies for the units.

LA50-RA Personal Printer • dot-matrix impact printer • features 3 print modes; text (100 cps); enhanced (50 cps); and full bit-mapped graphics (144 x 72 dots per inch) • 80/132 print columns; 2/3/4/6/8/12 cpi; 10/12/16.5 cpi; 255-character buffer; up to 10-inch fanfold/single-sheet paper; 110 to 4,800 bps • international character set stored in ROM enables printing in 11 major languages • self-test and power-up diagnostics • attaches to printer port:

$695 prch

LA 100 Letterprinter 100 • 30-/240-cps letter-quality/fast drafting dot matrix printer; 80 cps memo mode optional • 2/3/4/6/8/12/lpi; 5/6/6.6/8.25/10/12/13.2/16.5 cpi: 50 to 9,600 bps; 9-wire printhead; graphics mode of 132 x 72 dots per inch; 66 to 217 print columns; 3- to 14.9-inch fanfold, single-sheet, or rolled paper; 4K character buffer optional • multinational character set, Courier 10 typeface, and VT-100 line drawing characters standard • attaches to printer port:

1,595

LQP02-AA Letter-Quality Printer • full-character, bidirectional, daisywheel printer • 32 cps; 10/12 cpi; 132/158 print columns; 2/3/4/6/8 lpi; 110 to 9,600 bps; up to 15-inch fanfold or single sheet paper • attaches to printer port:

2,800

LQPXX-AA • bidirectional forms tractor:

270

LQPX2-SF • dual-tray cut-sheet feeder:

1,800

• END